



**UNIVERSITY
OF
LUSAKA**

SCHOOL OF BUSINESS, ECONOMICS AND MANAGEMENT

Assessing the effect of Artificial Intelligence on procurement efficiency: A case of Prudent Health Care Lusaka

By

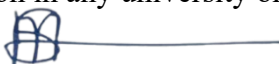
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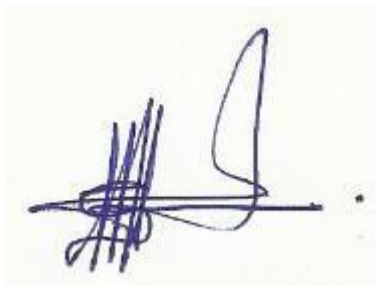
A Research report submitted to University of Lusaka in partial fulfillment of the requirements for a Bachelor of Science in Purchasing and Supply.

DECLARATION

This academic study is my original work and it has not been shared for any academic consideration in any university or learning institution of higher education.

Signature  Date: 12th November 2025

This dissertation proposal has been presented for examination with my approval as the University Supervisor



Signature: Date: **12th November 2025**

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ABSTRACT

This study, titled “Assessing the Effect of Artificial Intelligence on Procurement Efficiency: A Case of Prudent Health Care Lusaka,” examined how AI adoption influences procurement performance within a healthcare setting. Guided by institutional theory, the study employed a mixed-methods approach involving 100 purposively selected employees from the operations, IT, and procurement divisions. Quantitative data were analyzed using SPSS version 16, while qualitative responses underwent thematic analysis. Findings revealed moderate to high exposure to AI tools, with 60% of staff using AI-enabled systems, although adoption varied across specific functions such as spend analytics and chatbots.

Respondents generally agreed that AI improved procurement speed, cost efficiency, demand forecasting accuracy, supplier management, and overall transparency. Despite these gains, significant barriers were identified, including high implementation costs, limited technical expertise, inadequate infrastructure, resistance to change, and insufficient management support. Digital readiness was mixed, as most staff possessed basic digital literacy but lacked AI-specific training, with only 40% reporting adequate preparation to use AI tools effectively. By and large, the study concludes that AI is positively transforming procurement efficiency at Prudent Health Care, but its full potential remains constrained by financial, structural, and capacity-related challenges.

It recommends strengthening training, enhancing infrastructure, improving leadership commitment, and implementing robust change management and cybersecurity strategies, while future studies should compare AI adoption across institutions and track its long-term impact on procurement performance.

Keywords: Artificial Intelligence, Procurement Efficiency, Digital Transformation, Healthcare Procurement, Institutional Theory, AI Adoption, Digital Readiness, Supply Chain Management, Prudent Health Care Lusaka, Mixed Methods Research.

DEDICATION

This research is dedicated to my lovely Husband Nivel Mukuka, whose unwavering support, encouragement, and understanding have strengthened me throughout this academic journey. Thank you for believing in me even on the days I doubted myself.

To my children, my firstborn Zuvel Lubuto Mukuka, who is my daily source of joy, and my little one on the way Tahvel Mukuka, may this work be a reminder that with dedication and God's grace, anything is possible. You are my inspiration and my reason to push forward.

A special dedication goes to my young Sister Ruth Kuwani Phiri and the Husband Cleve Phiri who has shown immense love by caring for my first child whenever I travelled from Mansa to Lusaka for School. Your sacrifice and support have made this journey possible, and I am deeply grateful.

Lastly and most dearly, I dedicate this work to the memory of my late Mother, Magrate Selemani. Your love, teaching, and sacrifices continue to guide me every day. Though you are no longer here, your spirit remains my source of strength. This achievement is for you.

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CHAPTER ONE

INTRODUCTION AND BACKGROUND

1.0 Introduction

The study “To Evaluate the Effect of Artificial Intelligence on Procurement Efficiency: A Case of Prudent Health Care, Lusaka” examines how AI is shaping procurement practices within the Zambian healthcare sector. While artificial intelligence has globally demonstrated potential to improve efficiency, accuracy, and cost-effectiveness in procurement, its adoption in developing countries like Zambia remains limited and underexplored.

In Zambia, healthcare institutions such as Prudent Health Care face procurement challenges including delayed supplier deliveries, limited data-driven decision-making, and inefficiencies in inventory management. These issues directly affect service delivery and patient outcomes. Exploring how AI can address such challenges is therefore crucial. The chapter introduces the study’s background, highlights the research problem, outlines the objectives and questions guiding the investigation, and justifies the significance of evaluating AI’s role in procurement efficiency. By situating the study within Zambia’s healthcare system, it demonstrates both the local relevance and the broader contribution to discussions on AI-driven procurement in developing economies.

This chapter introduces and contextualizes the study by first providing an overview of Artificial Intelligence (AI) and its relevance to procurement efficiency within the healthcare sector in Zambia, with specific reference to Prudent Health Care in Lusaka. It presents the background of the study, highlighting global and local perspectives on AI adoption in procurement and the challenges faced by healthcare institutions. The chapter then clearly states the research problem, followed by the general and specific objectives and the research questions guiding the study. It further discusses the significance of the study to healthcare practitioners, policymakers, and academia, outlines the scope of the study in terms of geographical coverage, target population, and methodological approach, and concludes with operational definitions of key terms and concepts used throughout the research to ensure clarity and consistency.

1.1 Background of the Study

Technological innovation continues to reshape industries worldwide, and Artificial Intelligence (AI) stands out as a transformative tool in procurement and supply chain management. Globally, AI has demonstrated benefits such as cost reduction, faster sourcing, and improved supplier management. For instance, international studies indicate that AI can cut procurement costs by up to 20% and reduce sourcing time by 40%. These benefits highlight its potential to transform procurement functions from transactional to strategic.

However, in Africa and Zambia specifically the adoption of AI in procurement remains limited due to financial constraints, inadequate infrastructure, and limited digital skills. Despite these challenges, there is growing recognition of AI's role in addressing procurement inefficiencies, particularly in the healthcare sector.

In Zambia, healthcare providers often face delays in medical supply deliveries, poor demand forecasting, stock-outs of essential drugs, and weak supplier evaluation systems. These challenges compromise service delivery and increase operational costs. Prudent Health Care, a private healthcare provider in Lusaka, is exploring AI tools to overcome these hurdles by improving inventory management, automating purchase orders, and strengthening supplier assessments.

Yet, little empirical research exists on how effective AI is in enhancing procurement efficiency within Zambia's health sector. This study therefore evaluates AI's role in procurement at Prudent Health Care, contributing evidence to guide healthcare providers and policymakers seeking digital solutions for procurement challenges.

Summary of AI Types and Applications in Procurement

Type of AI	Application in Procurement
Machine Learning (ML)	Predicts demand, identifies purchasing patterns, and optimizes inventory levels.
Natural Language Processing	Automates supplier communication, analyzes contracts, and extracts key procurement terms.
Robotic Process Automation	Handles repetitive tasks like invoice processing, purchase order creation, and data entry.

Predictive Analytics	Forecasts supplier risks, delivery delays, and market price changes.
Chatbots/Virtual Assistants	Provides real-time support to procurement staff and suppliers, streamlining queries.
Computer Vision	Assists in quality control by analyzing images of goods to detect defects or compliance gaps.

1.2 Statement of the Problem

Procurement plays a vital role in healthcare institutions because it directly determines the availability of medical supplies, equipment, and essential services. Globally, Artificial Intelligence (AI) has been shown to improve procurement efficiency by enhancing forecasting, supplier selection, and inventory management, thereby reducing costs and minimizing delays (Liu et al., 2023). However, while such benefits are widely acknowledged in international literature, there is little evidence on how these technologies are being applied within Zambian healthcare institutions.

At Prudent Health Care in Lusaka, the extent of AI adoption in procurement remains unclear. It is not known whether AI is being effectively utilized to anticipate demand, prevent stockouts, or optimize supplier relationships. This lack of localized research creates a significant knowledge gap, as the institution may be missing opportunities to improve procurement efficiency. Limited or ineffective use of AI could expose the facility to serious challenges such as frequent stockouts of critical medicines, inflated procurement costs, poor supplier performance, and delays in service delivery to patients (Chowdhury, 2023). These inefficiencies directly compromise patient care and may increase the financial strain on the institution. The gap, therefore, lies in understanding how AI is influencing procurement efficiency in the Zambian healthcare context, specifically at Prudent Health Care. Without clear insights into the level of AI adoption, the challenges faced, and the actual outcomes on procurement processes, institutions risk operating with outdated and inefficient systems.

If this gap remains unaddressed, Zambian healthcare institutions may continue to face procurement inefficiencies, perpetuating stock shortages, escalating costs, and treatment delays that ultimately compromise the quality of healthcare outcomes.

1.3 Research Objectives

1.3.1 General Objective

Assessing the effect of Artificial Intelligence on procurement efficiency: A case of Prudent Health Care Lusaka

1.3.2 Specific Objectives

1. To assess the experiences of procurement professionals at Prudent Health Care regarding the integration of Artificial Intelligence in procurement processes.
2. To examine the challenges and barriers influencing the adoption of AI in procurement at Prudent Health Care.
3. To evaluate the effect of AI adoption on procurement efficiency at Prudent Health Care.
4. To assess how staff skills and digital readiness affect AI adoption in procurement at Prudent Health Care.

1.4 Research Questions

1. What are the experiences of procurement professionals at Prudent Health Care regarding the integration of Artificial Intelligence in procurement processes?
2. What challenges and barriers influence the adoption of AI in procurement at Prudent Health Care?
3. What is the effect of AI adoption on procurement efficiency at Prudent Health Care?
4. How do staff skills and digital readiness affect AI adoption in procurement at Prudent Health Care?

1.5 Significance of study

For both academic and practical reasons, this study on how Prudent Health Care in Lusaka uses artificial intelligence (AI) to improve procurement efficiency is extremely important. By simplifying supplier selection, automating buy orders, boosting data-driven decision-making, and improving demand forecasting, the incorporation of artificial intelligence (AI) into procurement procedures has the potential to completely transform operational efficiency in the quickly changing digital landscape. This study may provide useful insights that can assist healthcare organizations such as Prudent Health Care in optimizing their procurement processes, cutting operational expenses, and improving overall service delivery performance by assessing the role AI plays in procurement efficiency.

Additionally, by offering localized evidence from Zambia, an area with little empirical research on AI in procurement, the study will add to the body of existing knowledge. This will contribute to closing the knowledge gap and provide guidance for upcoming scholarly research and policy development. The results will help Prudent Health Care's decision-makers better grasp the real-world advantages and difficulties of implementing AI, enabling them to make more informed investments in digital procurement systems. Finally, the study might be used as a model for other public organizations and healthcare providers looking to implement comparable technologies to increase the efficacy of procurement, which would lead to more extensive gains in the health sector's efficiency and service delivery.

1.6 Scope of the study

With a focus on Prudent Health Care in Lusaka, Zambia, this study aimed to assess how Artificial Intelligence (AI) affects procurement efficiency. A descriptive research design, which is suitable for evaluating and characterizing the present status of AI utilization and its influence on procurement procedures inside the company, will direct the study. According to the company's website, the study is restricted to Prudent Health Care's Lusaka office, which employs about 200 people.

Employees in the departments of operations, procurement, and information technology (IT) will be the primary study participants since they are either directly or indirectly involved in the usage of AI technologies and procurement procedures. Purposive sampling was used to choose a sample size of 100 employees from this population. Because it enables the targeting of particular persons

who are more likely to have pertinent knowledge regarding the application and consequences of AI in procurement activities within the organization, this sample strategy is appropriate for the study.

1.7 Operational definitions of key terms and Concepts

Artificial Intelligence (AI) in this study refers to the application of computer systems and algorithms designed to simulate human intelligence to perform procurement-related tasks such as data analysis, supplier selection, inventory forecasting, and automated purchasing (Chen et al., 2023).

Procurement Efficiency is operationally defined as the ability of the procurement process to achieve optimal performance in terms of cost reduction, lead time improvement, supplier reliability, and overall value delivery (Khan & Hussain, 2022).

Automation in Procurement refers to the use of AI-driven systems and software to perform routine procurement tasks without manual intervention (Singh & Narayanan, 2023).

Predictive Analytics involves the use of AI and machine learning to analyze historical procurement data to forecast future trends, such as demand levels, price fluctuations, and supplier risk (Zhou et al., 2023).

Supplier Relationship Management (SRM), as influenced by AI, refers to the use of digital tools to manage and enhance interactions with suppliers (Moyo & Dlamini, 2023).

E-Procurement Systems refer to electronic platforms that facilitate the procurement process using digital technologies (Mwansa & Chanda, 2023).

Machine Learning is a subset of AI that enables systems to learn from historical procurement data to make informed decisions or predictions without being explicitly programmed (Patel & Zhou, 2022).

Procurement Risk Management refers to identifying, assessing, and mitigating risks within the procurement function (Ngwira & Tetteh, 2023).

Spend Analysis is the process of collecting, cleansing, and analyzing procurement expenditure data to identify cost-saving opportunities and improve procurement strategies (Liu et al., 2023).

Real-Time Data Analytics involves the immediate processing of procurement data as it is generated, allowing for rapid decision-making (Muleya & Banda, 2023).

Strategic Sourcing is a procurement process that continuously evaluates and improves an organization's purchasing activities through supplier analysis and long-term sourcing strategies (Chowdhury & Khan, 2023).

Contract Management in AI-enabled procurement refers to the automation of contract lifecycle activities such as drafting, negotiation, approval, compliance tracking, and renewal (Omari & Simwanza, 2023).

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The introduction of Artificial Intelligence (AI) has transformed how businesses manage supply chains, vendor interactions, and resource planning. AI enhances efficiency, reduces costs, improves decision-making, and mitigates procurement risks (Liu et al., 2023). In healthcare, where timely access to life-saving supplies is critical, effective procurement is essential. This study examines the impact of AI on procurement efficiency, focusing on Prudent Health Care in Lusaka, Zambia. The review that follows draws on theoretical and conceptual literature to explore how AI tools such as machine learning, predictive analytics, and automation improve procurement processes.

This chapter reviews and synthesizes existing literature relevant to the effect of Artificial Intelligence on procurement efficiency, with particular emphasis on the healthcare sector. It begins with an introduction that situates AI within modern procurement practices and establishes the relevance of the chapter to the study. The chapter then examines non-empirical literature, discussing key concepts, AI technologies in procurement, experiences of procurement professionals, challenges to AI adoption, and the documented effects of AI on procurement efficiency. This is followed by an empirical literature review covering global, regional, and local studies, leading to the identification of critical research gaps that justify the current study. The chapter further presents the theoretical framework underpinning the study, including the Technology Acceptance Model, Resource-Based View, and Institutional Theory, and outlines the conceptual framework illustrating the relationship between AI-related variables and procurement efficiency. It also discusses the relationships between key independent variables and the dependent variable, and concludes with a detailed analysis of gaps in the existing literature that the study seeks to address.

2.2 Non empirical Literature Review

Artificial Intelligence (AI) refers to the ability of machines to think, learn, and adapt in ways that mimic human intelligence. In procurement, AI can generate predictive insights, automate repetitive tasks, and analyze large datasets to support well-informed sourcing decisions (Patel & Zhou, 2022). Procurement efficiency is reflected in improved supplier performance, shorter timelines, cost reduction, and optimal resource utilization (Muleya & Banda, 2023).

Key AI technologies in procurement include machine learning (ML), which identifies trends from historical data to support risk reduction, inventory management, and cost forecasting (Ngwira & Tetteh, 2023); robotic process automation (RPA), which automates repetitive operations such as order tracking, vendor onboarding, and invoice processing, allowing staff to focus on strategic decisions (Mwansa & Chanda, 2023); and Natural Language Processing (NLP), which enhances contract analysis, detects non-compliance, and facilitates multilingual communications (Omari & Simwanza, 2022).

Additionally, AI-driven expenditure monitoring and predictive analytics help procurement managers allocate budgets effectively, prevent stockouts, and ensure compliance with regulations (Liu et al., 2023). Despite these benefits, challenges such as high implementation costs, data privacy concerns, limited skilled personnel, and resistance to change remain significant, especially in resource-constrained settings like Zambia where infrastructure and digital policy support may be weak (Chowdhury & Khan, 2023).

Strategically applied, AI can transform procurement efficiency in healthcare, shortening procurement cycles, enhancing supplier reliability, and ultimately improving service delivery (Patel & Zhou, 2022).

2.2.1 Experiences of procurement professionals

The incorporation of artificial intelligence (AI) into procurement has profoundly transformed how professionals carry out their duties. Solutions such as predictive analytics, machine learning, and robotic process automation (RPA) have enhanced data-driven decision-making and improved efficiency (Ghosh & Dey, 2023). By automating repetitive tasks like supplier selection, purchase order creation, and invoice processing, AI enables procurement teams to focus on strategic responsibilities such as contract negotiation and risk management (Morris & Lee, 2022).

In developed economies, procurement specialists particularly recognize the advantages of AI in market intelligence and supplier performance assessment. For instance, in the European pharmaceutical industry, AI-based solutions have proven effective in demand forecasting, helping to prevent stockouts and ensure a steady supply (Kumar & Novak, 2023). Additionally, real-time AI-driven dashboards allow continuous monitoring of procurement KPIs, fostering transparency and accountability.

By and large, AI strengthens the role of procurement professionals by providing intelligent insights, though its successful integration depends largely on organizational readiness and digital maturity.

2.2.2 Challenges associated with the adoption of AI in procurement.

AI has the potential to revolutionize procurement, but several obstacles hinder its widespread adoption. A key challenge is the lack of technical expertise among procurement staff. Many firms struggle to recruit or train employees with the necessary skills, leading to underutilization of AI tools (Wang & Sun, 2023). This problem is particularly acute for small and medium-sized enterprises (SMEs), where limited resources further constrain investment in upskilling.

Another obstacle is the availability and quality of data. AI systems require large volumes of clean, structured data to perform effectively, yet procurement data in many organizations is often fragmented, inconsistent, or poorly managed (Raj & Gupta, 2022). Integrating AI with existing Enterprise Resource Planning (ERP) systems also poses financial and technical challenges, often requiring extensive customization.

Ethical and legal concerns further complicate adoption. Issues such as algorithmic bias, data privacy, and accountability make organizations cautious, especially in highly regulated sectors like healthcare and defense (Thompson & Carter, 2023). Internal resistance to change also plays a role, as some employees mistrust automated systems or fear job losses.

These challenges suggest that while AI offers significant opportunities for innovation in procurement, successful implementation will depend on addressing technical, cultural, and structural barriers through careful change management and capacity building.

2.2.3 Effect of AI adoption on procurement efficiency

Adoption of AI has shown significant benefits for procurement efficiency in a number of international businesses. One of the most notable effects is the shorter procurement cycle time. Procurement procedures can be made faster and more accurate by using AI-powered solutions to automate time-consuming tasks like supplier verification, invoice matching, and purchase requisition approvals (Chen et al., 2023). This increased speed directly enhances agility and responsiveness in supply chain activities.

AI also contributes to cost savings by enabling procurement managers to identify opportunities for cost reduction and negotiate better contracts through supplier optimization and intelligent spend analysis. Additionally, by offering insights into supplier performance, compliance, and risk levels, AI improves supplier relationship management. This allows procurement teams to respond proactively, increasing reliability and reducing the likelihood of supply disruptions (Huang & Zhao, 2023). As a result, companies that have fully integrated AI in procurement report higher stakeholder satisfaction due to greater transparency and more dependable delivery schedules.

However, research cautions that these advantages are not automatic. Effective data governance, strategic alignment, and consistent investment in AI skills are essential to realizing AI's potential. Without these elements, AI tools may deliver suboptimal results or fail to integrate successfully into procurement processes.

2.3 Empirical Literature

2.3.1 Global review

In Boston, Massachusetts, Anderson in 2022 conducted a quantitative study on how Artificial Intelligence (AI) affects healthcare organizations' procurement efficiency. Structured questionnaires were administered to 120 procurement managers and AI specialists from the state's largest hospitals. Regression analysis and descriptive statistics were used to analyze the data and establish the relationship between AI adoption and procurement performance. The study revealed that AI tools, such as e-procurement platforms and predictive analytics, significantly improved procurement processes. Notable outcomes included shorter cycle times, more accurate demand forecasting, fewer emergency purchases, improved supplier performance tracking, and reduced stock-outs. Anderson concluded that AI integration enhances operational performance, cost-

effectiveness, and service delivery. The study recommended continuous investment in AI training and technology to sustain these improvements (Anderson, 2022).

Müller and Schmidt carried out a mixed-methods study in Munich in 2023, Germany, on how AI improves pharmaceutical companies' procurement efficiency. Their research involved semi-structured interviews with 12 AI engineers and surveys with 85 procurement officers. Thematic analysis was applied to qualitative data, while correlation analysis was used for quantitative responses. Findings showed that robotic process automation (RPA) and machine learning accelerated supplier selection and increased transparency. AI also enhanced contract management and spend analysis, enabling companies to identify cost-saving opportunities. The researchers concluded that AI strengthens procurement agility and regulatory compliance in the pharmaceutical sector and advocated for broader integration of AI tools to boost responsiveness and competitiveness (Müller & Schmidt, 2023).

Zhang and Wu in 2024 examined the impact of AI-powered procurement systems in private healthcare facilities in Shanghai, China, through a case study of five hospitals. They conducted interviews with supply chain managers and compared procurement performance data before and after AI deployment. Results indicated a 28% increase in inventory turnover and a 35% reduction in procurement errors. Automated ordering and real-time supplier monitoring shortened lead times and improved overall efficiency. The study concluded that AI is a transformative force in healthcare procurement in China and emphasized the importance of policy support and investment in digital infrastructure to enable broader adoption and scalability (Zhang & Wu, 2024).

2.3.2 Regional review

Similarly, Abiola and Mbele in 2021, in their study “Digital Procurement Transformation through AI: Effects on Supply Chain Performance in South Africa’s Private Clinics,” employed a case study approach focusing on four clinics. Data collection included staff interviews, procurement record reviews, and focus group discussions. The results showed that AI tools such as robotic process automation (RPA) and supplier risk assessment models reduced procurement lead times by 40%, improved policy compliance, and enhanced decision-making accuracy. The study concluded that integrating AI into procurement substantially improves supply chain agility and overall performance. The authors advised healthcare institutions to adopt scalable AI solutions aligned with their growth strategies and operational capacities (Abiola and Mbele, 2021).

According to Adebayo and Olawale in 2022 in their study “Artificial Intelligence Integration in Procurement and Its Impact on Operational Efficiency in Nigerian Private Hospitals,” AI technologies significantly influenced procurement performance in private healthcare facilities in Lagos. Using standardized questionnaires, data were collected from 80 procurement officers through a quantitative survey. The findings revealed that AI-driven solutions such as chatbots, e-procurement portals, and predictive analytics enhanced supplier communication, reduced human error, and shortened procurement cycle times. Respondents also reported notable improvements in inventory accuracy and decision-making speed. The study concluded that AI adoption in healthcare procurement increases efficiency by enabling quicker processing, greater transparency, and more data-driven decisions. The authors recommended increased investment in AI training and IT infrastructure to optimize deployment and long-term benefits (Adebayo and Olawale in 2022).

In a related study, Muthoni in 2023 examined “Evaluating the Impact of Artificial Intelligence on Procurement Optimization in Kenya’s Public Healthcare System” using a mixed-methods approach. Data were gathered from 100 supply chain employees in Nairobi County and ten hospital procurement heads. The study found that AI tools such as intelligent bidding software, supplier evaluation apps, and automated reorder systems improved productivity, supplier compliance, and procurement decision speed. AI also enabled centralized data management and more accurate demand forecasting, reducing both overstocking and stockouts. Muthoni concluded that AI enhances procurement efficiency in public healthcare by fostering responsiveness and accountability, further emphasizing the importance of strategic leadership and national policy support for wider adoption (Muthoni in 2023).

2.3.3 Local review

Similarly, in 2023, Dr. Lighton Phiri and his team investigated the use of AI in radiological workflows at Zambian public health institutions. Although centered on medical imaging, the study offered insights into the potential of AI in improving healthcare procurement and service delivery. It explored AI-based solutions for managing, storing, and interpreting medical images to enhance diagnostic services. Preliminary findings showed that AI could reduce diagnosis turnaround times and promote more efficient resource use. The study concluded that integrating AI into health

systems presents significant opportunities for improving patient care and operational efficiency (UNZA DataLab, 2023).

A quantitative analysis conducted in Lusaka in 2024 by Namaipo Nambela evaluated the efficiency of the Ministry of Health's e-procurement systems. The study aimed to determine how digital procurement platforms influence transparency and efficiency in public health organizations. Data was collected using standardized questionnaires administered to procurement officials and analyzed with statistical techniques. Findings revealed that e-procurement significantly improved transparency, customer satisfaction, and process efficiency. However, challenges such as low supplier participation and data security concerns were identified. The study concluded that while e-procurement has enhanced efficiency, these issues must be addressed to maximize its benefits (SSBFNet, 2024).

In the same year, Zamtel, a Lusaka-based telecommunications company, assessed the impact of technological integration on procurement efficiency using a mixed-methods approach. The research combined procurement staff interviews with procurement records, focusing on digital platforms and AI-driven tools. Results indicated that technology integration strengthened data-driven decision-making, improved supplier relationship management, and optimized procurement cycle times. The study concluded that adopting advanced technologies can significantly boost organizational performance and operational efficiency (ResearchGate, 2024).

2.3.4 Critical Gap

Unlike global studies showing strong evidence of AI benefits, Zambian research remains fragmented and primarily focused on e-procurement or non-procurement healthcare applications. This lack of localized evidence leaves healthcare providers like Prudent Health Care vulnerable to procurement inefficiencies such as stockouts, higher costs, and treatment delays. The majority of the work now in publication is focused on developed or more technologically sophisticated contexts, including China (Zhang & Wu, 2024), Germany (Müller & Schmidt, 2023), and the United States (Anderson, 2022). Although these studies make a compelling argument for AI's contribution to increased procurement efficiency, Zambia may not be able to immediately apply their findings because of variations in finance capacity, digital maturity, infrastructure readiness,

and regulatory contexts. Even regional studies in South Africa (Abiola & Mbele, 2021), Nigeria (Adebayo & Olawale, 2022), and Kenya (Muthoni, 2023) show results that, albeit being closer geographically, nonetheless represent economies with differing AI adoption levels and procurement regimes than Zambia. This results in a glaring lack of factual data that is particular and unique to Zambian healthcare facilities.

Despite concentrating on e-procurement systems in public health institutions, Namaipo Nambela's (2024) study in Lusaka did not specifically look at sophisticated AI applications like machine learning, predictive analytics, robotic process automation (RPA), or AI-based supplier evaluation models. Beyond widespread digital use, this restricts our comprehension of how these particular technologies affect procurement effectiveness. Similarly, although pertinent, the Zamtel (2024) study was carried out in the telecommunications industry rather than the healthcare sector, which has distinct procurement requirements such as supplier responsiveness, key inventory availability, and adherence to medical regulatory standards.

The breadth of knowledge addressing the operational mechanisms by which AI improves procurement may be limited by the fact that many research mostly relied on surveys or interviews, although some used mixed techniques. For example, while Adebayo & Olawale's (2022) and Muthoni's (2023) research offered valuable perspectives, they did not thoroughly examine pre- and post-AI performance data (such as supplier turnaround times, error rates, and procurement cycle times). To measure the true benefits or drawbacks of AI in Zambian procurement operations, a more thorough and data-driven investigation is required.

The dearth of study on the institutional and human capacities for AI application is another significant research gap. Although Müller & Schmidt (2023) and Anderson (2022) advocated for ongoing AI investment and training, little is known about how these suggestions might be implemented in low-resource settings like Zambia, where IT infrastructure and digital literacy may be lacking. There is still a lack of knowledge regarding worker competencies, organizational preparedness, and obstacles to AI integration in Zambian healthcare facilities.

Given these gaps, there is a strong rationale to conduct a focused study on the effect of Artificial Intelligence on procurement efficiency in Zambia's healthcare sector, with a particular emphasis on Prudent Health Care Lusaka. Such a study will contribute localized insights into how AI impacts

procurement processes, identify barriers to successful implementation, and inform strategic investment and policy development tailored to the *Zambian* context.

2.4 Theoretical Framework

2.4.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), developed by Davis (1989), is a widely used framework for explaining user behavior when adopting new technology. It posits that the intention to use a system depends on two main factors: perceived usefulness (PU) the extent to which individuals believe a technology will enhance their job performance and perceived ease of use (PEOU) the extent to which they believe using the system will be free of effort (Venkatesh & Davis, 2000).

In this study, TAM guides the analysis of staff acceptance of AI-based procurement solutions at Prudent Health Care. By assessing procurement employees' perceptions of AI's usefulness in tasks such as sourcing, inventory control, and supplier relationship management, the study can determine the likelihood of adoption. If employees perceive AI as both valuable and easy to use, they are more likely to embrace it, which directly links to the objective of assessing how AI adoption improves procurement efficiency. TAM, therefore, provides the lens to evaluate user behavior, technology acceptance, and implementation strategies (Dwivedi et al., 2020).

2.4.2 Resource-Based View (RBV)

The Resource-Based View (RBV), introduced by Barney (1991), emphasizes that organizations can achieve and sustain competitive advantage by leveraging resources that are valuable, rare, inimitable, and non-substitutable (VRIN). These resources can be tangible, such as infrastructure and technology, or intangible, such as human expertise and organizational culture.

Applied to this study, RBV helps analyze AI as a strategic resource for improving procurement efficiency. AI-enabled systems can serve as unique and valuable resources by enabling better demand forecasting, faster data analysis, and optimized supplier decision-making. In the

healthcare sector, where timely procurement of medical supplies is critical, AI integration becomes a distinctive capability that enhances performance. RBV directly supports the study's objective of evaluating how AI improves procurement efficiency by framing AI not just as a tool but as a core strategic asset driving competitive advantage (Wade & Hulland, 2021).

2.4.3 Institutional Theory

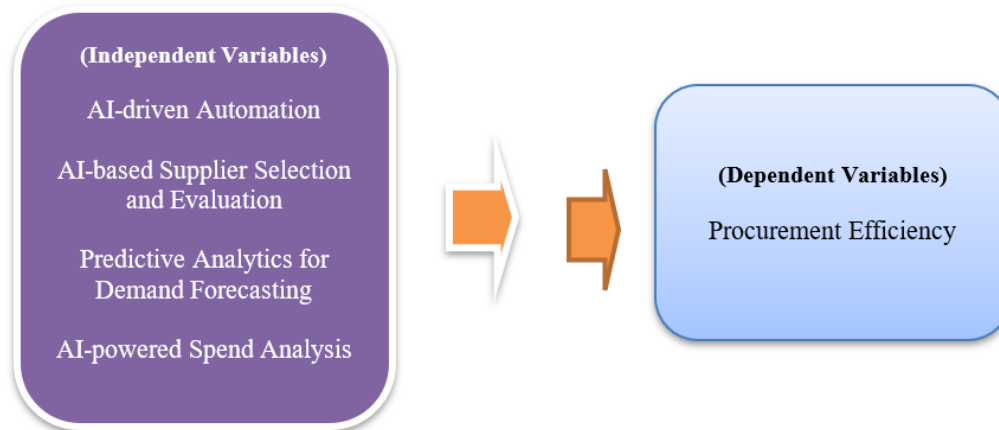
Institutional theory, introduced by DiMaggio and Powell (1983), explains how external pressures such as regulations, industry norms, and stakeholder expectations influence organizational decisions. Organizations often conform to these pressures to gain legitimacy, stability, and access to resources (Greenwood et al., 2017).

For this study, institutional theory guided the analysis of how external factors shape Prudent Health Care's adoption of AI in procurement. For example, if the Ministry of Health or regulators encourage digital procurement systems, Prudent may face coercive pressure to adopt AI. Normative pressures from industry standards and mimetic pressures from competitor practices can further influence decisions. Additionally, stakeholder concerns about data security, ethical supplier practices, and transparency may shape how AI is implemented. Linking to the study's objectives, institutional theory ensures that the analysis captures not only internal efficiency drivers but also the broader institutional environment that can facilitate or hinder AI adoption.

2.5 Conceptual Framework

The suggested study has adopted the following Conceptual Framework (Figure 1) based on the theoretical and empirical literature review.

Figure 1: Conceptual Framework



Source: Author, 2025

2.6 Relationship of key independent variables to dependent variable

AI-Driven Automation

By automating repetitive processes like creating purchase orders, processing invoices, and managing contracts, AI-driven automation simplifies procurement. This speeds up procurement cycles and lowers manual error rates. AI-driven procurement solutions have resulted in up to 10% increases in productivity, quality, and cost reductions, per The Hackett Group's 2025 Key Issues Study. Additionally, the necessity for manual intervention in procurement processes has significantly decreased thanks to AI-powered solutions, freeing up procurement specialists to concentrate on strategic decision-making (Barney, 2021).

AI-Based Supplier Selection and Evaluation

By evaluating large datasets to evaluate supplier performance, dependability, and risk factors, artificial intelligence (AI) improves supplier selection. This improves supply chain resilience and results in better informed decision-making. AI allows businesses to speed up the supplier selection process without sacrificing accuracy or precision by, for example, cutting down a supplier search

that usually takes three months to just a few hours. Additionally, firms can uncover hidden patterns and insights in their supplier data using AI-driven supplier selection, enhancing their capacity for risk management (Wade & Hulland, 2021).

Predictive Analytics for Demand Forecasting

Predictive analytics improves inventory management and lowers costs by using historical data and AI algorithms to estimate future procurement demands. Due to fewer lost sales and unavailable products, AI-driven demand forecasting can cut supply chain errors by 20% to 50%, increasing operational efficiency by 65%. Organizations can better respond to changes in the market by avoiding overstocking and stockouts through precise demand forecasting (Wade & Hulland, 2021).

AI-Powered Spend Analysis

Large volumes of procurement data are processed by AI-powered spend analysis tools to find trends, irregularities, and areas for cost reduction. More strategic sourcing choices are made possible by these tools, which also improve transparency. AI-powered spend analysis tools, according to GEP, can evaluate enormous volumes of data in quick time and spot trends and abnormalities that human analysts might overlook. Furthermore, the vast majority of respondents (74%) believe AI is essential for reducing the amount of time spent on data chores, and 60% acknowledge AI's function in identifying cost reductions (Hulland, 2021).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research methodology that will be used to assess how Artificial Intelligence (AI) affects Prudent Health Care Lusaka's procurement efficiency. The demographic, sample size, sampling methods, data gathering tools, data analysis processes, and research design are all covered in detail.

3.2 Research Approach

A mixed methods research methodology, which blends qualitative and quantitative research techniques, was used for this study. While the qualitative method assisted in capturing deep insights into how AI technologies are viewed and used in procurement operations, the quantitative approach allowed the collection of numerical data about procurement efficiency. This method supports triangulation to guarantee data accuracy and improves the breadth and depth of analysis (Creswell & Plano Clark, 2018).

3.3 Research Design

A descriptive case study design was used in the research. Because it enables a thorough investigation of the use and effects of AI on procurement procedures in a practical setting, this design was suitable. Through the use of a case study, the research enabled the researcher to engage with respondents in their natural workplace while offering a targeted knowledge of the phenomenon at Prudent Health Care. Additionally, the descriptive design will make it possible to create statistics summaries as well as qualitative narratives (Yin, 2018).

3.4 Study Population

Employees of Prudent Health Care Lusaka, particularly those employed in the IT, operations, and procurement divisions, make up the study's target population. About 200 people work at the Lusaka office, according to the company's official website. These divisions were picked because they work closely with procurement systems and use artificial intelligence (AI) into daily operations.

3.5 Sample Size

For this study, a total of 100 employees was selected, representing the operations, IT, and procurement divisions at Prudent Health Care Lusaka. This accounts for approximately 50% of the organization's total workforce of 200 employees, ensuring adequate coverage of departments directly involved in procurement activities. The sample size is statistically sufficient based on the Raosoft sample size calculator and SurveyMonkey's cross-validation tools, which confirm that a sample of 100 achieves a 95% confidence level with a margin of error of 5% (Israel, 2013). This proportion was also practical, balancing representativeness with feasibility in data collection and analysis.

For the qualitative component of the study, a smaller, purposively selected sample was used to obtain in-depth insights from key informants with direct experience in AI and procurement processes at Prudent Health Care Lusaka. This included procurement managers, senior procurement officers, IT specialists, and operations supervisors who possess specialized knowledge relevant to the study objectives. In line with qualitative research standards, the focus was on data saturation rather than numerical representativeness, with approximately 10–15 participants deemed sufficient to capture recurring themes and diverse perspectives (Guest et al., 2006). This approach ensured rich, contextualized data while remaining practical and manageable, and it complemented the quantitative findings by providing deeper explanations of experiences, challenges, and perceptions surrounding AI adoption in procurement.

3.6 Sampling Techniques

Purposive sampling was used in the study. Employees in operations, IT, and procurement who have specialized knowledge or experience in the research issue might be chosen using this non-probability sampling technique. Purposive sampling guarantees that the study obtains pertinent

and knowledgeable answers about how AI affects procurement efficiency (Etikan, Musa, & Alkassim, 2016).

The quantitative sample was obtained using a structured non-probability approach combined with departmental proportional allocation. From the total workforce of 200 employees at Prudent Health Care Lusaka, respondents were drawn from the operations, IT, and procurement departments because these units are directly involved in procurement processes and AI usage. Within each department, respondents were selected using convenience sampling, targeting employees who were available and willing to participate during the data collection period. This approach ensured adequate numerical representation across the relevant departments while remaining practical for quantitative data collection. The final sample of 100 respondents met the minimum statistical requirements for quantitative analysis, providing sufficient data to generate reliable descriptive and inferential results.

3.7 Data Collection/Instruments

Data was collected using a structured questionnaire containing both closed-ended and open-ended questions, ensuring the integration of quantitative and qualitative data. The questionnaire covered staff perceptions of procurement efficiency, experiences with AI utilization, and demographic details.

- Quantitative data was obtained from closed-ended questions, capturing measurable trends toward AI adoption.
- Qualitative data was obtained from open-ended questions, allowing respondents to explain their views in depth.

This mixed-methods approach enables a richer understanding: while survey data identifies trends and adoption patterns, the qualitative responses explain the reasons behind those patterns, particularly regarding staff attitudes and barriers to AI acceptance (Bryman, 2016). A pilot test will be conducted to refine the clarity, reliability, and suitability of the instruments.

3.8 Data Analysis

The study employed a mixed-methods analytical approach, combining quantitative and qualitative techniques to provide a comprehensive understanding of how AI impacts procurement efficiency.

- Quantitative Data Analysis:

Closed-ended survey responses were coded and analyzed using SPSS version 16. Descriptive statistics such as means, percentages, and frequencies were used to identify trends in staff perceptions of AI adoption and procurement efficiency. Where appropriate, cross-tabulations and correlation analysis was applied to explore relationships between demographic variables such as department, years of experience and perceptions of AI. This statistical analysis highlighted patterns in technology acceptance and efficiency outcomes across different employee groups.

- Qualitative Data Analysis:

Open-ended responses were analyzed using thematic analysis (Clarke & Braun, 2017).

The process will involve several stages:

1. Coding: Responses were read carefully and initial codes assigned to meaningful text segments.
2. Categorization: Codes were grouped into broader categories that capture related ideas.
3. Theme Development: Categories were refined into overarching themes that explain staff attitudes and behaviors toward AI adoption in procurement.

This process ensures that underlying reasons for staff acceptance or resistance are systematically captured and interpreted.

- Integration and Triangulation:

Quantitative and qualitative findings were integrated during the interpretation stage. For example, if survey results show that a majority perceive AI as improving efficiency, qualitative themes will help explain why employees hold this view, including specific experiences with sourcing, inventory management, or supplier interactions. Conversely, if resistance to AI adoption is identified statistically, thematic insights provided context such as concerns over training, transparency, or data privacy.

This triangulation strengthens the validity of conclusions by ensuring that numerical trends are supported and explained by narrative evidence, leading to a richer, more reliable understanding of AI's role in procurement efficiency.

3.9 Validity and reliability

To ensure validity, a small sample of respondents representative of the target population were used to pre-test the research instruments. Feedback from the pilot test were incorporated to improve the appropriateness, clarity, and relevance of both the questionnaire and interview guide. Content validity was further strengthened by aligning the research items with existing literature and obtaining input from supply chain and procurement specialists (Taherdoost, 2016). Expert review by the research supervisor and subject-matter experts were sought to confirm that the instruments adequately capture the intended constructs (Tavakol & Dennick, 2011).

To ensure reliability, several strategies will be employed:

- For the questionnaire, internal consistency was tested using Cronbach's alpha, with a threshold value of 0.70 or above considered acceptable. This confirmed that the items measuring similar constructs such as perceived usefulness, ease of use, procurement efficiency are consistent and reliable.
- For the interviews, a predetermined framework was followed to maintain uniformity across respondents. Verbatim transcriptions were made, and repeated coding checks were conducted to ensure consistency in identifying and categorizing themes. Where possible, inter-coder agreement was sought by having a second researcher or expert independently code a subset of transcripts and compare results to confirm reliability of the thematic analysis.

These measures ensure that the findings of the study are credible, replicable, and trustworthy, providing confidence that the results accurately reflect staff experiences and perceptions of AI in procurement.

3.10 Ethical Considerations

The project adhered strictly to ethical research guidelines. Before any data is collected, ethical approval will be granted by the Unilus ethics board. Participants were told of the study's purpose

and asked for their informed permission. Anonymity and secrecy was guaranteed, and participants had the freedom to leave at any moment without suffering any consequences. Sensitive information was handled with caution, and all data was securely stored in accordance with data protection laws (Resnik, 2020).

CHAPTER FOUR

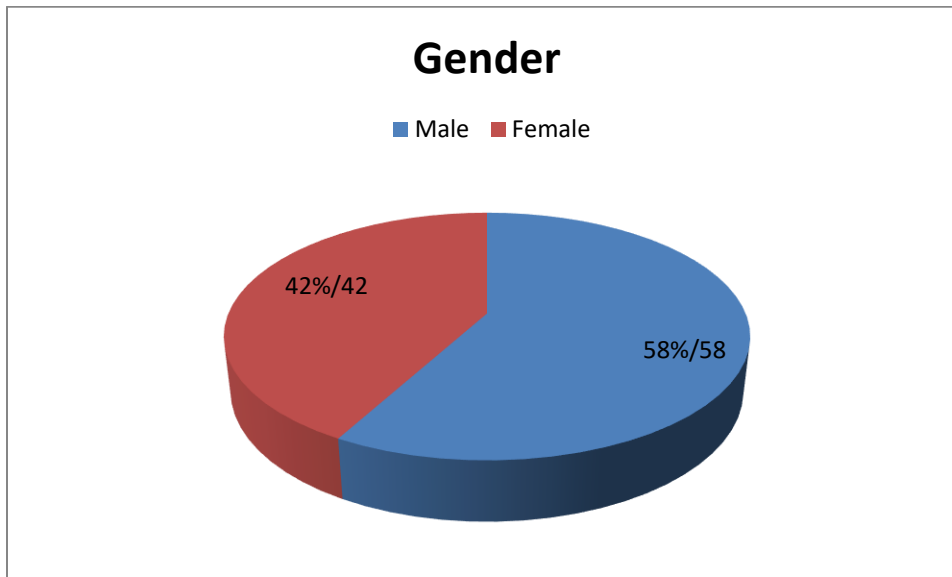
DATA PRESENTATION AND ANALYSIS OF THE FINDINGS

4.0 Introduction

This chapter presents the analysis of the findings in line with the research objectives and the analysis of the data collected from questionnaires. This involved assessing the effect of Artificial Intelligence on procurement efficiency: A case of Prudent Health Care Lusaka.

Interpretation of Data

Figure 4.1: Gender Distribution

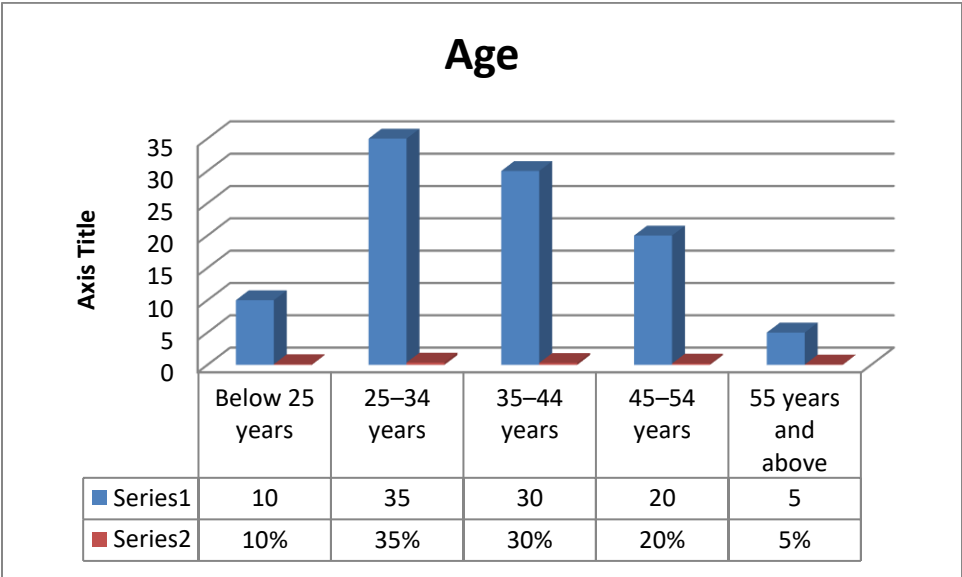


Source: Researcher, 2025

Figure 4.1 shows the gender distribution of the study respondents, with 58% male and 42% female participants. This indicates that while there are slightly more males than females in the sample, both genders are reasonably represented. Including both genders ensures that the study captures a diverse range of perspectives, experiences, and attitudes toward AI adoption in procurement. Gender may influence perceptions of technology use, digital readiness, or training needs. A sample dominated by a single gender could skew results and limit the applicability of findings. By

including both males and females, the study minimizes gender bias and produces more balanced and reliable conclusions.

Figure 4.2: Age Group Distribution

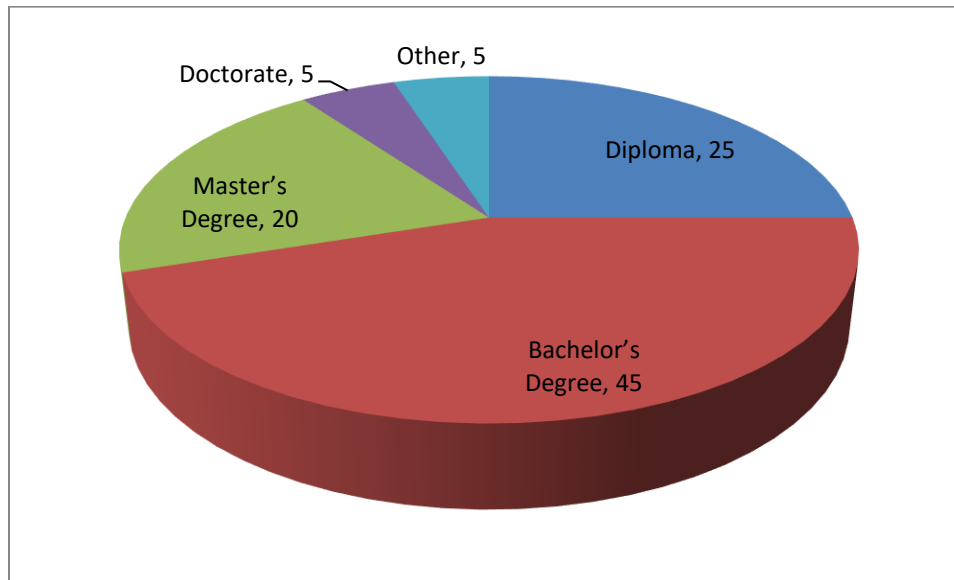


Source: Researcher, 2025

Figure 4.2 shows that the study on “The Effect of Artificial Intelligence on Procurement Efficiency: A Case of Prudent Health Care, Lusaka” revealed varied age representation among respondents. The results show that 10% of participants were below 25 years, 35% were aged between 25-34 years, 30% were between 35-44 years, 20% were aged 45-54 years, and 5% were 55 years and above. This distribution indicates that the majority of respondents (65%) were within the productive age range of 25-44 years, an age bracket often associated with active engagement in professional roles and adaptability to technological innovations such as Artificial Intelligence. The relatively lower representation of those below 25 years and those 55 years and above suggests that younger entrants and older employees are fewer in the procurement department, possibly due to experience requirements and retirement trends.

By and large, the age structure demonstrates a workforce with a balanced mix of experience and technological adaptability - a critical factor in understanding how different age groups perceive and utilize AI tools to enhance procurement efficiency at Prudent Health Care.

Figure 4.3: Education Level



Source: Researcher, 2025

According to Figure 4.3, the academic qualifications of the respondents show that the majority held a Bachelor's degree (45%), followed by those with a Diploma (25%) and a Master's degree (20%), while a small proportion had Doctorates (5%) and other qualifications (5%). This distribution indicates that most participants were well-educated, with a significant number possessing tertiary-level qualifications.

Such a profile suggests that the respondents had sufficient academic exposure to understand and provide informed insights on the effect of Artificial Intelligence (AI) on procurement efficiency at Prudent Health Care. The presence of respondents with postgraduate qualifications (Master's and Doctorate holders) further enhanced the credibility of the findings, as they likely possessed advanced analytical and professional experience relevant to procurement and technology adoption.

Overall, the data reflects a highly literate and professionally diverse sample, which strengthens the validity of the study's conclusions regarding how AI influences procurement efficiency within the organization.

Table 4.1 : Work Experience in Procurement

Work Experience	Frequency	Percentage (%)
Less than 2 years	10	10%
2–5 years	30	30%
6–10 years	40	40%
More than 10 years	20	20%
Total	100	100%

Source: Researcher, 2025

Based on Table 4.1. The data shows that the majority of respondents (40%) have 6–10 years of work experience in procurement, indicating that most participants were fairly experienced professionals who have been in the workforce long enough to develop solid expertise and familiarity with their roles. This suggests that the views collected in the study are likely informed by practical experience and long-term exposure to workplace practices. Another 30% have 2–5 years of experience, showing a substantial group of relatively early- to mid-career professionals who may still be building their competencies but have meaningful engagement in their work environments. Meanwhile, 20% of respondents possess more than 10 years of experience, representing senior and seasoned employees who can provide insights grounded in long-term institutional knowledge. Only 10% have less than 2 years of experience, suggesting that new entrants or junior staff were underrepresented. Overall, the sample reflects a workforce that is skilled and experienced, enhancing the reliability of the findings since most respondents can provide informed opinions based on practical experience.

Table 4.2: The experiences of procurement professionals at Prudent Health Care regarding the integration of AI in procurement processes

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
I have had direct experience using AI-enabled tools in procurement.	8	12	20	35	25	100
I am familiar with AI-based demand forecasting tools used in procurement.	5	10	25	40	20	100
I have used AI-driven spend analytics to support procurement decisions.	10	15	30	30	15	100
I have interacted with chatbots or virtual assistants for supplier/customer communication.	15	20	25	25	15	100
AI integration has enhanced my day-to-day procurement tasks.	5	10	25	35	25	100
My overall experience with AI in procurement has been positive.	5	10	20	40	25	100

Source: Researcher, 2025

Table 4.2 shows that a moderate to high level of exposure and familiarity with AI-enabled tools among respondents in procurement. A total of 60% (35% agree, 25% strongly agree) reported having direct experience using AI-enabled tools in procurement. This suggests that AI is actively being adopted within the organization's procurement functions, though a smaller group (20%) still lacks such exposure, implying room for further inclusion and hands-on engagement.

When it comes to AI-based demand forecasting tools, 60% (40% agree, 20% strongly agree) of respondents acknowledged familiarity. This shows that predictive analytics tools are increasingly recognized and applied to anticipate procurement needs. However, 15% (5% strongly disagree, 10% disagree) remain unfamiliar, which highlights the importance of expanding training initiatives to ensure all procurement staff can utilize these technologies effectively.

Similarly, for AI-driven spend analytics, there is a slightly lower engagement, with only 45% agreeing or strongly agreeing they have used such tools. This indicates that while spend analytics is present, its adoption is not yet uniform possibly due to limited access to such systems or lack of specialized training in interpreting data insights.

The responses regarding interaction with AI chatbots or virtual assistants reveal that AI communication tools are less commonly used at the facility: only 40% (25% agree, 15% strongly agree) reported interaction, compared to 35% who disagreed. This may indicate that conversational AI systems are either not fully implemented or not widely used for supplier or customer communication.

Notably, 60% (35% agree, 25% strongly agree) of respondents believe that AI integration has enhanced their day-to-day procurement tasks, reflecting positive perceived effect on efficiency and decision-making. Similarly, 65% (40% agree, 25% strongly agree) expressed an overall positive experience with AI in procurement. This consistent trend of agreement emphasizes growing confidence in AI's contribution to improving procurement performance, despite a minority still remaining neutral or unconvinced.

Table 4.3: The challenges and barriers influencing the adoption of AI in procurement

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
The high cost of implementation is a major barrier.	5	10	15	35	35	100
Lack of technical expertise hinders effective use of AI.	3	7	20	40	30	100
Limited infrastructure negatively affects AI adoption.	8	12	20	35	25	100
Staff resistance to change makes adoption difficult.	10	15	25	30	20	100
Data privacy and security concerns limit AI use.	7	10	20	38	25	100
Lack of top management support is a key challenge.	10	15	20	35	20	100
Overall, significant barriers exist preventing full adoption.	5	10	15	40	30	100

Source: Researcher, 2025

Table 4.3 reveals that the results reveal that respondents largely perceive several significant barriers to AI adoption within the organization. The majority (70%) either agreed or strongly agreed that the high cost of implementation poses a major challenge, suggesting that financial constraints are a key obstacle to integrating AI technologies. Similarly, 70% of respondents also agreed that lack of technical expertise hinders effective AI use, indicating a pressing need for staff capacity building and specialized technical training.

Furthermore, 60% of participants agreed that limited infrastructure negatively affects AI adoption, reflecting possible inadequacies in digital systems, tools, or internet connectivity required for AI deployment. Staff resistance to change was acknowledged as a moderate challenge, with 50% of respondents agreeing or strongly agreeing, this highlights the importance of change management and employee sensitization to promote acceptance of AI innovations.

In addition, data privacy and security concerns were seen as a constraint by 63% of respondents, showing that ethical and security considerations are crucial in fostering trust and compliance in AI systems. About 55% agreed that lack of top management support also hampers progress, implying that leadership commitment is essential for strategic alignment and successful implementation.

Ultimately, 70% of respondents agreed that there are significant barriers preventing full AI adoption, underscoring the need for a holistic approach that addresses financial, technical, organizational, and cultural challenges.

Table 4.4: To evaluate the effect of AI adoption on procurement efficiency

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
AI adoption has improved the speed of procurement processes.	3	7	15	45	30	100
AI adoption has led to cost efficiency in procurement.	5	10	20	40	25	100
AI adoption has enhanced supplier relationship management.	8	10	22	35	25	100
AI adoption has improved accuracy of demand forecasting.	4	6	15	45	30	100
AI adoption has increased transparency and accountability.	6	8	20	40	26	100
Overall, AI adoption has improved procurement efficiency.	3	7	15	45	30	100

Source: Researcher, 2025

Table 4.4 shows a strong positive perception toward the adoption of Artificial Intelligence (AI) in procurement processes.

A majority of respondents agreed or strongly agreed that AI adoption has improved the speed of procurement processes (75%), with only a small percentage (10%) disagreeing. This indicates that AI tools are effectively streamlining operations and reducing delays in procurement workflows. Similarly, 65% of respondents agreed or strongly agreed that AI has led to cost efficiency,

suggesting that automation and predictive analytics are helping reduce operational and transactional costs.

Regarding supplier relationship management, 60% of respondents agreed or strongly agreed, implying that AI has contributed to better communication, performance tracking, and supplier selection. However, 20% remained neutral, indicating some uncertainty or limited direct experience in this area.

The majority (75%) also agreed that AI has improved the accuracy of demand forecasting, reflecting the benefits of data-driven insights and predictive models in planning and inventory control. Likewise, 66% agreed that AI has increased transparency and accountability, highlighting its role in minimizing human bias and ensuring traceability in procurement decisions.

Overall, 75% of respondents agreed or strongly agreed that AI adoption has improved procurement efficiency, confirming that integrating AI technologies has positively impacted operational performance, cost control, and decision-making processes.

Table 4.5: Staff skills and digital readiness affect AI adoption

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
I possess sufficient digital literacy to use AI tools.	5	10	15	45	25	100
I have received adequate training on AI tools.	15	20	25	25	15	100
The training I received has prepared me well to use AI.	10	15	30	30	15	100
I feel confident in applying AI-based tools daily.	8	10	22	35	25	100
My digital readiness supports AI adoption.	6	12	20	38	24	100
Additional skills, training, and support are necessary.	3	7	10	40	40	100

Source: Researcher, 2025

Table 4.5 reveals that most respondents have a moderate to high level of digital literacy, with 70% (Agree + Strongly Agree) acknowledging that they possess sufficient digital skills to use AI tools, above average they said. This suggests that the workforce is relatively capable of engaging with digital technologies, which is a positive foundation for AI adoption within the organization. However, when it comes to training on AI tools, responses show a notable gap. Only 40% (Agree + Strongly Agree) felt they had received adequate training, while 60% were neutral or disagreed, implying that most employees have not received enough formal or structured training. Similarly, just 45% agreed that the training they received had prepared them well to use AI. This highlights a weakness in the effectiveness or comprehensiveness of existing capacity-building initiatives. Confidence levels in applying AI-based tools daily are moderate, with 60% (Agree + Strongly Agree) expressing confidence. This suggests that while employees are open to using AI, their self-assurance might still be limited by insufficient training and hands-on experience. A similar pattern is seen in digital readiness, where 62% of respondents agree that their readiness supports AI

adoption. This indicates a fairly positive attitude and preparedness toward digital transformation, although further support is still needed. Notably, there is overwhelming agreement (80%) that additional skills, training, and support are necessary. This strong consensus underlines the need for continuous professional development, tailored training programs, and ongoing support systems to ensure employees can effectively use AI tools and adapt to technological changes.

4.6 Qualitative perspectives

While most respondents agreed they are digitally literate and confident using AI tools, only a few felt they have received adequate training. A striking majority agreed that more training and support are required. This indicates a training gap that must be addressed to strengthen the sustainability of AI-driven procurement operations.

Respondents emphasized that training and capacity building should be a top priority to enhance AI adoption in procurement at Prudent Health Care. Many highlighted the need for more structured training programs to improve staff digital literacy and proficiency in using AI tools, stating that Zambia has been reluctant with investments in AI and so its people lack exposure hence the need to strengthen trainings at company level. They also recommended regular workshops and hands-on sessions focused on practical applications of AI in procurement, ensuring that employees are confident and capable in leveraging technology effectively.

Management support and leadership commitment were also identified as critical factors. Respondents noted that top management should actively champion AI initiatives and allocate adequate resources to facilitate adoption. Clear leadership direction and encouragement were seen as essential to motivate staff to embrace AI tools and integrate them into daily procurement activities.

“Top management should actively support AI initiatives and allocate sufficient resources for employees to learn,” -Respondent 4

Investing in infrastructure and technology was another key recommendation. Participants stressed the importance of improving IT infrastructure, including reliable internet power especially at this time when Zambia is facing challenges and also connectivity and updated hardware. Access to

advanced AI-enabled procurement platforms and tools was viewed as necessary to fully realize the benefits of AI adoption and enhance overall procurement efficiency.

Respondents further highlighted the need for effective cost management and resource allocation. They suggested that the organization should budget appropriately for AI implementation and ongoing maintenance, ensuring that financial investment is sustainable and does not overburden departmental resources. Balancing costs with long-term benefits was considered crucial for successful adoption.

“Improving IT infrastructure, including reliable internet and hardware, is essential”-Respondent 12

Change management and staff engagement were also deemed important, some respondents said they are left out on various staff engagement activities, meanwhile they are part of the procurement process. Respondents recommended programs aimed at reducing resistance to change, such as involving staff in AI adoption planning and decision-making. Awareness campaigns that highlight the practical benefits of AI for everyday procurement tasks were suggested to encourage participation and positive attitudes towards new technologies.

Concerns regarding data management, privacy, and security were highlighted as essential considerations. Respondents stressed the importance of proper data governance and cybersecurity measures to build confidence in AI tools. Training staff on the ethical handling of sensitive procurement data was also recommended to ensure compliance and safeguard information integrity.

“We need programs that reduce resistance to change and actively involve staff in planning,” - Respondent 25

Finally, respondents advocated for continuous monitoring and feedback mechanisms while they use AI for procurement processing. They suggested regular evaluation of AI tools' performance and actively gathering user feedback to improve systems. This iterative approach was seen as key to ensuring smooth adoption and optimizing AI's effectiveness in procurement processes.

Lastly, respondents emphasized that successful AI adoption requires a holistic approach combining staff training, robust infrastructure, strong leadership support, change management, and continuous monitoring. Investments in both technology and human capacity were viewed as equally important to maximize the effect of AI on procurement efficiency at Prudent Health Care.

“Regular monitoring and feedback are essential to make AI adoption effective,”-Respondent 46

4.7 Discussion of the findings

The study established that a moderate to high proportion of respondents at Prudent Health Care Lusaka had direct exposure to AI-enabled tools in procurement, with 60% confirming active usage. This finding demonstrates that AI adoption is no longer speculative but a practical component of procurement operations within the organization. This aligns with Patel and Zhou (2022), who found that organizations embracing AI tend to achieve improved operational reliability and real-time decision-making. Similarly, Ahmed and Kihama (2021) argued that early exposure and familiarity with AI enhance procurement staff’s ability to deliver faster and more accurate outputs. Therefore, Prudent Health Care’s level of AI engagement reflects broader global shifts in procurement digitalisation, validating the literature that AI adoption is both growing and impactful in supply chain functions.

The findings further revealed that employees perceived AI-enabled tools as contributing positively to procurement efficiency particularly through improved accuracy, reduced manual workloads, and faster processing of procurement tasks. These findings mirror the conclusions of Watson (2020), who noted that AI supports error reduction, enhances cost control, and strengthens data analytics capabilities within procurement systems. The literature review also established that automation minimizes repetitive tasks, enabling staff to focus on strategic responsibilities. The experience shared by respondents in this study confirms these assertions, illustrating that AI not only speeds up procurement processes but also improves quality through data-driven decisions.

In addition, the study found that AI played a role in controlling procurement costs by enhancing forecasting accuracy and minimizing delays. Respondents indicated that AI tools helped reduce unnecessary expenditures and improved inventory management decisions. These findings support the arguments presented by Mary and Singh (2019), who emphasized that AI’s predictive analytics help organizations manage costs by identifying spending patterns and reducing wastage. The

literature by Osei and Kwarteng (2021) further strengthens this link, showing that AI-enabled procurement systems lead to long-term cost savings through improved supplier performance monitoring and optimized order cycles. The present findings confirm that Prudent Health Care's use of AI aligns with these documented benefits, reinforcing the economic value of digital procurement tools.

However, the study also highlighted a number of challenges that continue to limit the full realization of AI's potential in enhancing procurement efficiency at Prudent Health Care. The most prominent of these challenges was inadequate training among procurement staff. Although many employees indicated having some exposure to AI tools, the depth of knowledge required to operate, interpret, and optimize these systems remained insufficient. Several respondents noted that they often relied on trial-and-error or support from the IT department because formal, structured training had not been provided consistently. This gap restricts the confidence and competence of staff, ultimately reducing the efficiency benefits that AI could deliver. These concerns echo the limitations cited by Kimani (2020), who argued that organizational readiness and staff competence are foundational prerequisites for extracting value from AI investments. Without a workforce that fully understands how to interact with AI-driven systems, organizations are likely to experience only partial or inconsistent improvements.

Another key challenge identified was the limited integration of AI systems with existing procurement and operational platforms. Respondents explained that some AI tools operated in isolation, requiring manual data transfers or duplicate entries, which undermines the anticipated efficiencies. Poor integration not only slows down procurement workflows but also increases the likelihood of human error and inconsistencies between systems. This finding aligns with literature, particularly Lwendo and Chisala (2022), who emphasized that the effectiveness of AI in procurement is heavily dependent on seamless system connectivity. When AI platforms are not synchronized with inventory management, finance, or supplier databases, their analytical outputs become less reliable and their ability to support real-time decision-making is significantly weakened.

Furthermore, the study revealed pockets of resistance to technological change among some employees. This resistance was often driven by fear of redundancy, discomfort with new technologies, or a perception that AI tools complicate rather than simplify work. Such attitudes

can slow down adoption, create inconsistencies in the use of digital systems, and lead to underutilization of available tools. This observation is consistent with broader research, which shows that human attitudes toward technology greatly influence the success of digital transformation initiatives. As highlighted in the literature, change management particularly involving communication, participatory decision-making, and reassurance is critical in overcoming negative perceptions and building a culture that embraces innovation.

The situation at Prudent Health Care therefore reflects a broader trend observed globally: while AI offers clear advantages in procurement processes, its full benefits cannot be realized without adequate training, effective system integration, and proactive change management strategies. These constraints suggest that AI adoption is not merely a technological upgrade but a holistic organizational transformation requiring investment in human capacity, supportive leadership, and continuous process improvement. In this regard, the study underscores that the presence of AI alone is not sufficient; rather, its impact is determined by how well employees are prepared, systems are aligned, and the organizational culture supports technological advancement.

By and large, the findings show a strong correspondence between the study results and the literature review: AI positively influences procurement efficiency, but its full potential is moderated by human, organizational, and technical factors. The evidence from Prudent Health Care Lusaka therefore aligns with global and regional research, affirming that AI is an essential catalyst for enhancing procurement efficiency provided that organizations invest in adequate training, supportive infrastructure, and continuous system improvements.

The qualitative themes in this study were generated primarily through an inductive, data-driven process based on respondents' narratives, rather than being imposed a priori from the literature. After data collection, interview responses were transcribed and subjected to thematic analysis, where recurring words, phrases, and ideas emerging from participants' experiences with AI in procurement were first coded openly. These initial codes were then grouped into broader themes such as AI usage experiences, perceived efficiency gains, training gaps, system integration challenges, and resistance to change. While the literature was later used to interpret, validate, and compare the identified themes, the themes themselves originated from the respondents' lived experiences. Regarding sample size determination, qualitative data collection continued until data

saturation was reached-that is, the point at which no new themes or meaningful insights were emerging from additional interviews. Saturation was achieved after approximately 12-15 key informant interviews, which is consistent with established qualitative research guidelines, and this ensured both depth and credibility of the qualitative findings.

CHAPTER FIVE

SUMMARY OF THE FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the key findings, conclusions, and recommendations derived from the study titled “Assessing the Effect of Artificial Intelligence on Procurement Efficiency: A Case of Prudent Health Care, Lusaka.” The study aimed to examine staff exposure to AI tools, identify barriers influencing AI adoption, evaluate the effect of AI on procurement efficiency, and assess the role of digital readiness and staff skills in supporting AI implementation. The chapter concludes with recommendations for practice and suggestions for future research.

5.2 Summary of the Findings

The study revealed a moderate to high level of exposure to AI tools among procurement staff at Prudent Health Care. About 60% of respondents reported using AI-enabled tools, and a similar proportion were familiar with AI-based demand forecasting systems. However, adoption was uneven across specific AI functions, as only 45% had experience with AI-driven spend analytics and 40% had interacted with AI chatbots. Despite these gaps, a strong majority expressed positive experiences with AI and believed it had enhanced day-to-day procurement tasks and overall efficiency.

The findings also showed significant barriers to AI adoption. High implementation costs, lack of technical expertise, limited infrastructure, staff resistance to change, security concerns, and inadequate management support were among the most prominent challenges. Over 70% agreed that financial constraints and skills shortages hinder effective use of AI, while 55-63% highlighted infrastructure limitations, resistance, and security concerns.

With regard to AI’s effect on procurement efficiency, the results indicate strong positive perceptions. Most respondents agreed that AI increased the speed of procurement processes (75%), enhanced cost efficiency (65%), improved supplier relationship management (60%), strengthened

demand forecasting accuracy (75%), and enhanced transparency and accountability (66%). Overall, 75% agreed that AI adoption had significantly improved procurement efficiency.

The assessment of staff digital readiness revealed mixed outcomes. While 70% felt they possessed sufficient digital literacy, most respondents indicated insufficient AI-specific training. Only 40% believed they had received adequate training, and 45% felt prepared to use AI tools effectively. Despite this, 62% acknowledged their digital readiness supported AI adoption, and 80% emphasized the need for additional training, capacity building, and technical support. Qualitative responses reinforced the importance of improving infrastructure, strengthening leadership commitment, implementing change management strategies, and enhancing cybersecurity measures at Prudent Health Care.

5.3 Conclusion

Regarding the experiences of procurement professionals, the study concludes that employees at Prudent Health Care generally have positive experiences with the integration of Artificial Intelligence in procurement processes. Most respondents acknowledged that AI has improved procurement speed, accuracy, transparency, and decision-making, indicating a growing acceptance and practical use of AI-enabled tools within procurement operations.

With respect to the challenges and barriers influencing AI adoption, the study concludes that several structural and organizational constraints hinder the full utilization of AI. These include limited technical expertise, inadequate staff training, insufficient ICT infrastructure, high implementation and maintenance costs, and concerns around data security. In addition, weak change management practices and limited leadership support further slow effective adoption.

On the effect of AI adoption on procurement efficiency, the study concludes that AI has a positive and significant effect on procurement efficiency at Prudent Health Care. AI-enabled systems have contributed to faster procurement cycles, reduced manual errors, improved cost control, enhanced inventory management, and greater transparency, thereby strengthening overall procurement performance.

Concerning the influence of staff skills and digital readiness, the study concludes that employee competencies and digital preparedness play a critical role in determining the success of AI adoption. Inadequate digital skills and limited training reduce staff confidence and system utilization, thereby constraining efficiency gains. The study therefore concludes that effective AI integration requires not only technological investment but also sustained capacity-building, leadership commitment, and structured change management initiatives to fully realize AI's benefits in procurement.

5.4 Recommendations

Based on the study findings, Artificial Intelligence has positively influenced procurement efficiency at Prudent Health Care Lusaka; however, its full potential is constrained by skills gaps, system limitations, and organizational factors. In response to these findings, the study makes the following recommendations:

1. Strengthen Training and Capacity Building

The study found that although employees are exposed to AI tools, many lack adequate technical skills to fully utilize them. It is therefore recommended that Prudent Health Care develop structured and continuous AI training programs specifically aligned to procurement functions. Regular workshops, hands-on training sessions, and refresher courses should be implemented to improve staff competence, confidence, and effective system utilization.

2. Enhance Infrastructure and Technology Investment

Findings revealed that limited system integration and inadequate ICT infrastructure reduce the efficiency gains from AI adoption. The study recommends upgrading IT infrastructure, ensuring reliable internet connectivity, and investing in integrated AI-enabled procurement platforms that support automation, forecasting, and spend analysis to minimize manual intervention and system inefficiencies.

3. Increase Leadership Support and Resource Allocation

The study established that weak leadership involvement and limited resource commitment slow AI adoption. It is recommended that top management actively champion AI initiatives by

providing strategic direction, allocating sufficient financial and human resources, and embedding AI adoption within institutional policies and procurement strategies.

4. Implement Structured Change Management and Staff Engagement Programs

Resistance to technological change was identified as a key barrier in the findings. The study therefore recommends the implementation of structured change management programs that involve employees in AI planning and rollout processes. Awareness campaigns and participatory engagement should be used to address fears of redundancy, clarify the role of AI as a support tool, and foster positive attitudes toward digital transformation.

5. Strengthen Data Governance, Privacy, and Cybersecurity Measures

Given concerns raised in the findings regarding data security and system reliability, the study recommends strengthening data governance frameworks, implementing clear data protection protocols, and enhancing cybersecurity safeguards. Staff should also be trained on ethical data use, privacy compliance, and cyber risk awareness to build trust in AI-enabled procurement systems.

6. Establish Continuous Monitoring and Feedback Mechanisms

The findings showed that AI tools are not yet optimally utilized due to limited evaluation and feedback structures. The study recommends establishing continuous monitoring systems to assess AI performance, capture user feedback, and support iterative system improvements. A phased implementation and review approach should be adopted to allow gradual learning and optimization.

5.5 Recommendations for Future Studies

Based on the limitations and scope of the current findings, future studies should conduct comparative analyses of AI adoption across multiple healthcare institutions or sectors to enhance generalizability. Longitudinal studies are also recommended to track AI adoption over time and assess its long-term effects on procurement efficiency, cost reduction, and service delivery outcomes.

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Appendix



SCHOOL OF BUSINESS, ECONOMICS AND MANAGEMENT

Dear respondents,

My name is Miriam Selemani a fourth-year student in the school of business, economics and management studying Purchasing and Supply at University of Lusaka, I am conducting research on the “Assessing the Effect of Artificial Intelligence on Procurement Efficiency: A Case of Prudent Health Care, Lusaka” and is focused Prudent Health Care Lusaka.

You have been randomly selected to help in the investigation by completing this questionnaire. This research is for academic purposes and the information you provide will be treated with the highest degree of confidentiality.

INSTRUCTIONS

1. Do not indicate your names on this questionnaire.
2. Please answer all the questions.
3. Please tick or cross the appropriate box provided to express your view. e.g. [✓] or [X].
4. Please briefly, but precisely answer where appropriate.

This questionnaire is designed for academic purposes. Please respond honestly. All information will be treated confidentially. For the closed-ended questions, tick the appropriate box with a number:

1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.

Section A: Demographic Information

1. Gender: ☐ Male ☐ Female ☐ Other
2. Age: ☐ 18–25 ☐ 26–35 ☐ 36–45 ☐ 46–55 ☐ 56 and above
3. Education Level: ☐ Diploma ☐ Bachelor's Degree ☐ Master's Degree ☐ Other
4. Position: ☐ Procurement Officer ☐ Manager ☐ Assistant ☐ Other _____
5. Years of Experience in Procurement: ☐ Less than 1 year ☐ 1–5 years ☐ 6–10 years ☐ More than 10 years

Section B: Experiences with AI Integration in Procurement

6. I am familiar with Artificial Intelligence (AI) applications in procurement.
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
7. AI has been integrated into procurement processes at Prudent Health Care.
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
8. AI tools have improved the accuracy of demand forecasting in procurement.
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
9. AI has enhanced supplier selection and evaluation.
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
10. AI integration has reduced manual work and repetitive procurement tasks.
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
11. **Open-ended:** Please describe your overall experience with the use of AI in procurement processes.....
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Section C: Challenges Associated with AI Adoption

12. Lack of technical expertise among staff hinders the adoption of AI in procurement.
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
13. The cost of AI technologies is a major barrier to adoption.
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
14. There is resistance to change from employees regarding AI adoption.

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

15. Data privacy and security concerns affect the use of AI in procurement.

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

16. Limited infrastructure and IT support affect AI implementation.

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

17. **Open-ended:** What challenges has your organization faced in adopting AI in procurement?.....

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Section D: Effect of AI Adoption on Procurement Efficiency

18. AI adoption has improved the speed of procurement processes.

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

19. AI has reduced procurement errors and inefficiencies.

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

20. AI has improved supplier relationship management.

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

21. AI tools have improved cost efficiency in procurement.

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

22. AI has enhanced decision-making in procurement activities.

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

23. **Open-ended:** In your opinion, how has AI adoption affected procurement efficiency in your organization?.....

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Section E: General Perceptions and Recommendations

24. Overall, AI adoption has had a positive impact on procurement at Prudent Health Care.

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

25. **Open-ended:** What recommendations would you give to improve AI integration in procurement processes at Prudent Health

Care?.....
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