

**INFLUENCE OF PROCUREMENT PROCESS ON AVAILABILITY OF
ESSENTIAL DRUGS IN THE PUBLIC HEALTH FACILITIES OF
MOMBASA COUNTY, KENYA**

RIZIKI MWANGOLO CHIKOPHE

**A RESEARCH THESIS SUBMITTED IN PARTIAL FULFILLMENT FOR
THE DEGREE OF MASTER IN SCIENCE IN HEALTH SYSTEMS
MANAGEMENT OF KENYA METHODIST UNIVERSITY**

SEPTEMBER 2024

DECLARATION

I declare that this thesis is my original work and has not been presented for a degree or any other award in any other university.

Signed

Date:

Riziki Mwangolo Chikophe

HSM 3-0314-1/2017

Supervisors

This thesis has been submitted for examination with our approval as university supervisors.

Signed

Date

Prof. Wanja Mwaura Tenambergen, PhD.

Riara University, Kenya.

Signed

Date

Dr. Caroline Kawila Kyalo

Department of Health Systems Management

Kenya Methodist University

COPYRIGHT

© Riziki Mwangolo Chikophe, 2024

All rights reserved.

No part of this thesis may be reproduced, stored in any retrieval system or transmitted in any form or by any means, electronically, mechanically, by photocopying or otherwise, without prior written permission of the author or Kenya Methodist University, on that behalf.

DEDICATION

I dedicate this study to my family, the staff of Kenya Medical Training College Mombasa Campus, staff of the Mombasa County Health Facilities and the Ministry of Health and the entire country of Kenya.

ACKNOWLEDGEMENT

My acknowledgement goes to the Almighty God the most mercifully and most gracious for having taken me through the entire process of my learning. I wish to acknowledge my family for having given me their time to work on my studies and their support both spiritually and financial. They have given me peace during this hard time and they have made the environment conducive for my learning. I wish to acknowledge my supervisors Prof. Wanjia Mwaura Tenambergen and Dr. Caroline Kawila for having been guiding me through the whole journey despite their busy schedule but they were able to shade light on the way forward. I also extend my sincere acknowledgement to the entire faculty of the Health Systems Management in Kenya Methodist University for their effective team work.

ABSTRACT

Procurement process and practices are crucial components in the successful realization of universal healthcare and in particular the availability of essential drugs. Despite various attempts and contributions aimed at enhancing the procurement process, there remain issues with the availability of essential medications. Therefore, the research focused on determining how the procurement process influences the availability of essential drugs in public health facilities in Mombasa County, Kenya. More precisely, the study sought to identify how procurement planning, choosing suppliers, financing procurement, and assessing needs impact the availability of essential drugs in the public health facilities of Mombasa County, Kenya. The study adopted descriptive research design targeting the level 4 and 5 facilities. The study population comprised 1216 health workers in level 4 and level 5 public health facilities in Mombasa County including the medical laboratory personnel, clinical and medical officers, nurses and specialist nurses, medical officers and specialists as well as pharmacists and pharmaceutical technologists. The study adopted stratified sampling approach and simple random sampling approach to select respondent from a sample size of 301. A structured questionnaire was deployed to gather primary data to achieve the objectives of this research. Descriptive statistics were used in the analysis process. The study found and concluded that procurement planning, supplier selection, procurement financing, and needs assessment positively and significantly influenced the availability of essential drugs. Specifically, each unit increase in procurement planning, supplier selection, procurement finance, and needs assessment corresponded to increases in drug availability of 0.079, 0.085, 0.157, and 0.609, respectively. At a 95% significance level, all factors were significant, with need assessment being the most influential factor ($p\text{-value} = .000$), followed by procurement financing ($p\text{-value} = .000$), and procurement planning ($p\text{-value} = .028$). The study recommended that there is need to conduct a comprehensive and regular need assessment of essential drugs in public health facilities. The assessment should involve collaboration between healthcare professionals, administrators, and relevant stakeholders. Further recommended that the development of a robust procurement planning strategy that aligns with the identified needs and available financing. Also, recommends that there should be a transparent and competitive supplier selection process. Finally, the study recommends that for establishment of partnerships with international organizations, non-governmental organizations or donor agencies that are committed to improving healthcare access.

TABLE OF CONTENT

DECLARATION	ii
COPYRIGHT	iii
DEDICATION	iv
ACKNOWLEDGEMENT	v
ABSTRACT	vi
TABLE OF CONTENT	vii
LIST OF FIGURES	ix
LIST OF TABLES	x
ABBREVIATIONS AND ACRONYMS	xi
CHAPTER ONE: INTRODUCTION	1
1.1 Background of the Study	1
1.2 Statement of the Problem	8
1.3 Broad objective	9
1.4 Specific Objectives	9
1.5 Research Questions	10
1.6 Justification of the Study	10
1.7 Limitation of the study	11
1.8 Delimitation of the study	12
1.9 Significance of the study	12
1.10 Assumption of the study	13
1.11 Operational definition of terms	13
CHAPTER TWO: LITERATURE REVIEW	16
2.1 Introduction	16
2.2 Theoretical Framework	16
2.3 Availability of Essential Drugs	18
2.4 Procurement Planning and Availability of Essential Drugs	20
2.5 Supplier selection process and availability of essential drugs	23
2.6 Procurement Financing and Availability of Essential Drugs	25
2.7 Needs Assessment and Availability of Essential Drugs	27
CHAPTER THREE: RESEARCH METHODOLOGY	31
3.1 Introduction	31
3.2 Research design	31
3.3 Target Population	31
3.4 Sample Size and Sampling Technique	32
3.5 Instrumentation	34

3.6 Data Collection procedure	34
3.7 Pre-Test	34
3.8 Methods of Data Analysis	36
3.9 Ethical Considerations	37
CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSIONS	38
4.1 Introduction	38
4.2 Pre-test Results	38
4.3 Response rate by the Respondents	39
4.4 Demographic Information	40
4.5 Procurement Planning	45
4.6 Supplier selection	47
4.7 Procurement Financing	49
4.8 Need Assessment	51
4.9 Availability of Essential Drugs	53
4.10 Bivariate Analysis	55
4.11 Inferential Statistics	57
Table 4.12:	60
CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS	63
5.1 Introduction	63
5.2 Summary of Findings	63
5.3 Conclusions	67
5.4 Recommendations	67
5.5 Areas for Further Research	69
APPENDICES	78
Appendix I: Consent Form	78
Appendix II: Questionnaire	80
Appendix III: Introduction Letter	86
Appendix IV: Ethical Approval	87
Appendix V: County Government Approval	89
Appendix VI: Research License	90

LIST OF FIGURES

Figure 2.1: Conceptual Framework	30
Figure 4.1: Rating of the Procurement Process by the Respondents	44

LIST OF TABLES

Table 3.1: Target Population	32
Table 3.2: Sample Size	33
Table 4.1: Pre-Test Results of Health Employees	39
Table 4.2: Response Rate by the Respondents	40
Table 4.3: Demographic Information of Respondents	41
Table 4.4: Procurement Planning response from Respondents	46
Table 4.5: Supplier Selection responses from Respondents	48
Table 4.6: Procurement financing responses from Respondents	50
Table 4.7: Need Assessment responses from Respondents	52
Table 4.8: Availability of Essential Drugs responses from Respondents	54
Table 4.9: Bivariate Analysis	56
Table 4.10: Model Summary	58
Table 4.11: Analysis of Variance (ANOVA).....	59
Table 4.12: Coefficients of determination.....	57

ABBREVIATIONS AND ACRONYMS

CME	Continuous Medical Education Control
CMS	Central Medical Store
EML	Essential Medicine List
Ems	Essential Medicines
FBOs	Faith Based Organizations
GoK	Government of Kenya
HSS	Health Systems Strengthening
ICT	Information Communication Technology
KEMSA	Kenya Medical Supplies Authority
KNPP	Kenya National Pharmaceutical Policy's
LMICs	Low- and Middle-Income Countries
MEDS	Mission for Essential Drugs
NGO	Non-Governmental Organizations
NPP	National Pharmaceutical Policy
PPB	Pharmacy and Poisons Board
PPOA	Public Procurement and Oversight Authority
SDGs	Sustainable Development Goals
SPSS	Statistical Package for Social Sciences
TRIPS	Trade Related Aspects of Intellectual Property Rights
USA	United States of America
WHO	World Health Organization

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The medical procurement process is closely interconnected with various health system pillars. Governance and leadership establish transparent policies, while health information systems provide essential data. A knowledgeable health workforce ensures quality procurement without overspending. Adequate financing facilitates a smooth process, and optimized procurement affects the availability of medical products. Efficient procurement positively affects service delivery and health system financing (OECD, 2018). Health system governance ensures adherence to policies and transparency. These pillars collectively form a reliable medical procurement system vital for optimal healthcare delivery.

Essential drugs are a cornerstone of healthcare systems worldwide, providing critical treatments for a wide range of diseases and conditions (World Health Organization, 2023). These drugs are deemed indispensable for addressing the most prevalent health issues in a community and are considered essential by public health authorities. The WHO defines essential drugs as those that meet most people's healthcare needs. These drugs should be available in sufficient quantities, at affordable rates, and in the right doses. Their efficacy, safety, and cost-effectiveness were chosen (Wirtz et al., 2019). A Model List of Essential Medicines created by the WHO serves as a worldwide guide for nations creating their own national lists. Essential drugs play a vital role in promoting health and well-being across populations (WHO, 2019). They are crucial for preventing and treating both communicable and non-communicable diseases. By providing

availability of essential drugs, healthcare systems effectively manage common health conditions, reduce morbidity and mortality rates, and enhance overall public health.

Even while the idea of essential drugs is well-established, ensuring that everyone has access to them remains a major challenge, especially in low- and middle-income nations. Several factors contribute to limited availability, such as the high cost of essential drugs, posing a substantial barrier for vulnerable populations with limited financial resources (Roth et al., 2018). Additionally, in certain regions, the lack of availability arises from supply chain issues, inadequate distribution systems, or frequent stock outs (Rossaki et al., 2021). Ensuring the quality and safety of essential drugs is also paramount, as substandard or counterfeit drugs can pose serious risks to patients and erode trust in healthcare systems. Furthermore, promoting the rational use of essential drugs is critical to avoiding overuse, under use, or misuse, thereby preventing adverse effects and the development of drug resistance. Addressing these challenges is crucial to enhance availability of essential drugs and improve healthcare outcomes for all.

Addressing the challenges of universal availability to essential drugs requires a multi-faceted approach. Firstly, governments can engage in price regulation by negotiating with pharmaceutical companies to establish affordable pricing for essential drugs, making them more available to the population (Gaffney et al., 2018). Secondly, strengthening supply chains is essential to ensure a consistent and reliable flow of these drugs to healthcare facilities (Spieske et al., 2022). Thirdly, implementing robust quality control measures and stringent regulatory frameworks safeguards the quality and efficacy of essential drugs (Guzman et al., 2020). Fourthly, education and training initiatives should be directed towards healthcare professionals and the public, promoting the appropriate

use of these drugs to maximize benefits and minimize risks (Daniel et al., 2018). Finally, investing in research and development for new and improved essential drugs is crucial to expanding treatment options and enhancing overall healthcare outcomes. Through these collective efforts, greater strides can be made in achieving universal availability of essential drugs and improving global health equity (Godman et al., 2018).

The medical procurement process is a critical aspect of healthcare systems worldwide. It involves acquiring essential medical supplies, equipment, pharmaceuticals, and services necessary for the effective delivery of healthcare to patients. A well-organized and efficient procurement process is essential to ensure the availability of high-quality medical products while optimizing financial resources (OECD, 2018). The medical procurement process is essential for several reasons. Firstly, it ensures a steady supply of medical products and services, critical for uninterrupted healthcare provision. Timely availability of supplies is vital in emergencies and routine care. Secondly, an efficient process maintains product quality and safety through rigorous standards and evaluation. Only approved and safe items reach healthcare facilities. Thirdly, proper procurement practices lead to cost savings and efficient allocation of resources, supporting healthcare system sustainability (Pham et al., 2019).

The medical procurement process comprises several important steps. It commences with a needs assessment, during which healthcare facilities analyze their medical supply requirements based on patient needs and treatment protocols. Following this is procurement planning, a strategic process that involves meticulously preparing and outlining all necessary steps and considerations for acquiring goods, services, or works required by an organization or project (World health Organization [WHO], 2020). It is a

fundamental aspect of the procurement process, vital for ensuring the efficient and effective acquisition of necessary resources while optimizing costs and minimizing risks. Subsequently, reliable vendors are identified and assessed based on factors like product quality and compliance with regulations. The Request for Proposals (RFP) or Quotations (RFQ) phase invites potential vendors to submit proposals, serving as the foundation for negotiations. Contract negotiation is conducted to ensure fair pricing and establish service-level agreements. Adequate budgeting becomes imperative to allocate sufficient funds for procurement activities, while financial planning guarantees the availability of necessary resources when required, preventing delays or disruptions in the procurement process (Marnburg et al., 2018).

In the USA, the medical procurement process plays a crucial role in healthcare systems, ensuring the timely and cost-effective acquisition of essential medical resources. This literature review examines three studies that together provide a comprehensive overview of the process, the challenges it faces, and its impact on patient care. De Oliveira et al. (2019) offer an extensive examination of the procurement process, covering aspects such as needs assessment, vendor identification, contract negotiation, order management, and inventory control. Brown et al. (2018) evaluate its efficiency, revealing significant variations across hospitals and identifying areas for improvement. Smith et al. (2017) underscore the process's impact on patient outcomes, highlighting the importance of streamlined processes.

In India, the public drug procurement process exhibits significant variation across different states. Arora, et al (2014) identified several challenges that hinder the process's efficiency and effectiveness, including lack of transparency and accountability,

inadequate planning and budgeting, poor supplier management, and corruption. Additionally, Chebolu-Subramanian and Sundarraj (2021) found that the procurement process is a major contributing factor to shortages of essential drugs in India's public healthcare system. To address these issues, there is need for the implementation reforms such as centralized procurement, e-procurement utilization, strengthened supplier management, and increased transparency and accountability. On a positive note, Arora et al. (2019) revealed that India's public health facilities now have far better availability of essential drugs because to unified procurement. However, challenges persist, including inadequate funding, poor supplier management, and corruption, which necessitate further attention and action for sustained improvements in the procurement process.

In Nigeria, Mohammed, et al (2013) conducted a study on medical equipment and supplies procurement in the Federal Ministry of Health. The research exposed challenges like lack of transparency, inadequate planning and budgeting, poor supplier management, and corruption, leading to a complex and inefficient procurement process. Similarly, Collaborative Africa Budget Reform Initiative (2016) focused on Nigeria's drug supply system, identifying fragmentation and inefficiencies, alongside challenges such as insufficient coordination between government levels, inadequate funding, subpar procurement practices, and corruption. Furthermore, Onwujekwe et al. (2018) assessed the positive impact of the drug revolving fund on essential drug availability in public health facilities in Nigeria. However, persistent challenges, including inadequate funding, ineffective procurement practices, and corruption, necessitate further attention and improvement to enhance the overall efficiency of the drug supply system and procurement process in the country.

In recent decades, Kenya's public procurement system has undergone significant development. The evolution of public procurement regulations in Kenya can be traced from a lack of regulations in the 1960s to the subsequent implementation of Treasury Circulars. However, a significant milestone was achieved in 2005 with the introduction of the Public Procurement and Disposal Act (PPDA) and the subsequent implementation of the Procurement Regulations in 2006. These legislative measures have played a crucial role in establishing new standards for public procurement in the country (Republic of Kenya, 2006). In alignment with Kenya's public procurement reform agenda, the country participated in the pilot testing of the OECD-DAC Joint Venture for Procurement's new Methodology for Assessment of National Procurement Systems (version 4) in 2006. As healthcare demands and technological advancements have evolved, Kenya's healthcare system has grown, resulting in an increased demand for medical supplies (Republic of Kenya, 2006). Consequently, the medical procurement process has become more complex, necessitating effective policies and practices to address the population's healthcare needs.

Kenya has established a robust regulatory framework to govern medical procurement and uphold transparent and accountable practices. This framework includes key policies that guide the procurement process, such as the Public Procurement and Disposal Act, which fosters transparency, fairness, and competition in the public sector, including healthcare. Another crucial policy is the Essential Drugs and Medicines Policy, which prioritizes the accessibility and availability of essential drugs and medicines in healthcare facilities nationwide, emphasizing efficient procurement to prevent shortages and wastage (Mbau et al., 2018). Additionally, the Health Sector Strategic and Investment Plan outline the

strategic direction for the healthcare sector, specifying the procurement requirements to fulfill Kenya's healthcare system's objectives and goals.

Despite having established policies, Kenya encounters challenges in its medical procurement process that affect its efficiency and effectiveness. Currently, the procurement system suffers from fragmentation, with various healthcare facilities and entities conducting individual procurement, resulting in duplication, increased costs, and inconsistencies in the quality of medical supplies (Kazungu et al., 2021). Moreover, limited transparency remains a concern, raising issues of corruption and resource mismanagement, highlighting the need to enhance transparency for public trust and fair procurement practices. The medical supply chain in Kenya also faces hurdles in distribution and storage, causing delays and inefficiencies in delivering crucial medical supplies to the facilities in need. Additionally, restricted budget allocations for healthcare procurement create a significant barrier to acquiring adequate and high-quality medical supplies, particularly in rural and underserved areas (Njoki, 2018). Addressing these challenges is essential to optimize Kenya's medical procurement process and ensure timely and equitable availability of vital healthcare resources.

In Mombasa County, as in many other regions, an effective procurement process is vital to provide accessible and quality healthcare services to the population. The medical procurement process in Mombasa County faces challenges like limited resources, complex regulations, supply chain disruptions, transparency, and corruption. Prioritizing transparency and accountability through proper documentation, adherence to guidelines, competitive bidding, and regular audits can optimize the process. Collaboration and data sharing between healthcare facilities, government, and suppliers enhance planning. This

study therefore seeks to examine the influence of procurement process on availability of essential drugs at public hospitals in Mombasa County.

1.2 Statement of the Problem

Medicines' procurement is a key part of the medicine management process (Hamzah & See, 2019). Alongside this, there are other vital components such as choosing the right medicines, their distribution, proper storage, and their appropriate use. All of these aspects require consistent financial and management support to be effectively maintained. Before the devolution of health services in Kenya, the responsibility for sourcing and supplying medicines and health products to public health facilities primarily rested with the Kenya Medical Supplies Authority (KEMSA) (Wangu & Osuga, 2019). However, with the introduction of devolution, most aspects of the public health sector were decentralized, resulting in the county governments taking on the responsibility for the procurement and supply of pharmaceuticals.

However, the majority of counties, including Mombasa County, face significant challenges in maintaining functional public supply chain systems. These challenges stem from various breakdowns in their procurement process Nyanchoka, et al., (2019). Evidently, there is a complete lack of attention, ineffective leadership, poor coordination, insufficient competition and transparency, corruption, and incompetence in managing human resources within the public procurement systems. The rigid and bureaucratic nature of the procurement process contributes to delays in contract processing, inflated costs, and manipulation of contracts, ultimately leading to sluggish and inefficient operations, as well as increased corruption (Wangu & Osuga, 2019).

Despite being constitutionally mandated to handle health-related matters in Kenya, county governments are not obligated to source medicines and medical supplies exclusively from the country's medical supplies agency, KEMSA (Omoga, 2021). This is noteworthy despite KEMSA's advantage in bulk procurement, which enables cost-saving economies of scale. Furthermore, most counties lack well-defined procurement plans and procedures for acquiring medicines, resulting in compromising the quality of medicines sourced from other suppliers and interfering with the national government's Ministry of Health's Kenya Essential Medicines List (KEML). Consequently, there are frequent shortages of medicines, procurement at inflated prices, and instances of corruption. Despite these challenges, there is paucity of local studies on the influence of the procurement process on availability of essential drugs in the public health facilities (Omoga, 2021; Muhia, et al., 2017). This study thus seeks to close this gap by investigating on the influence of procurement process on availability of essential drugs in the public health facilities of Mombasa County.

1.3 Broad objective

To evaluate the influence of procurement process on availability of essential drugs in the public health facilities of Mombasa County, Kenya.

1.4 Specific Objectives

- i. To determine the influence of procurement planning on availability of essential drugs in the public health facilities in Mombasa County, Kenya
- ii. To establish the influence of supplier selection on availability of essential drugs in the public health facilities in Mombasa County, Kenya

- iii. To assess the influence of procurement financing on availability of essential drugs in the public health facilities in Mombasa County, Kenya
- iv. To examine the influence of needs assessment on availability of essential drugs in the public health facilities in Mombasa County, Kenya

1.5 Research Questions

- i. What is the influence of procurement planning on availability of essential drugs in the public health facilities in Mombasa County, Kenya?
- ii. How does supplier selection influence availability of essential drugs in the public health facilities in Mombasa County, Kenya?
- iii. To what extent does procurement financing influence availability of essential drugs in the public health facilities in Mombasa County, Kenya?
- iv. What is the influence of needs assessment on availability of essential drugs in the public health facilities in Mombasa County, Kenya?

1.6 Justification of the Study

A well-functioning health system relies on the availability of inexpensive, high-quality essential drugs. Nearly 10 million lives can be saved by increasing availability of essential drugs, with 4 million of those saved in Africa and Southeast Asia alone (McCarthy, 2017). Universal availability of essential drugs is a serious difficulty in the majority of low- and middle-income countries (LMIC) (Vledder et al., 2019). Recent studies have shown that in low income and middle income countries, the average drug supply rate in the public sector is only 35% (Kefale & Shebo, 2019; Namaya, 2017;

Vledder et al.,2019). This can only be achieved if the procurement process will be done as according to the Act, standards and guidelines.

The stated goal of the Kenya National Medicines Policy (KNPP) is to provide all Kenyans with effective, efficient, sustainable, fair and affordable medical services, as well as appropriate use of safe, effective and high quality medicines (MOH, 2008). Therefore, the results of this study is intended to provide a platform for future interventions to improve the rational use and availability of essential drugs in the county of Mombasa and Kenya as a country.

1.7 Limitation of the study

A major limitation is the wide geographical distribution of the respondents, making it expensive to collect data. To solve this the researcher identified the target population which was all the service providers and planned well by going to every facility once a week for three months in order to meet the staff who have been away from the facilities due to various reasons. To ensure the acquisition of reliable data, the researcher provided the respondents with a guarantee of utmost confidentiality, assuring them that their information would be treated with the highest level of privacy. Additionally, the researcher ensured that the collected data did not contain any identifying information pertaining to the participants. The research was carried out within the public health facilities of Mombasa County, with a specific emphasis on all level 4 and 5 facilities. Hence, the conclusions drawn from the discovery were limited to public health facilities, and it is not feasible to extrapolate these findings to non-governmental hospitals, faith-based hospitals, and private health facilities. The study was constrained by a cross-

sectional research design in which both the exposure and outcome variables were assessed simultaneously.

1.8 Delimitation of the study

This research examined the impact of the procurement process on the availability of essential drugs in public health facilities within Mombasa County. Specifically, the study focused on the execution of the procurement process for essential drugs and its correlation with the availability of these products.

1.9 Significance of the study

The study findings possess three significant implications. Firstly, they will provide valuable insights to relevant stakeholders, including public policy makers, regarding the strategies required to establish effective procurement processes and ensure the sustainable availability of essential drugs. The study findings are also giving meaning feedback to the government, MOH, County government, donors and other stakeholders in the health sector and more to the government of Mombasa County. The study results are shedding more light on good planning and management practices, especially in the procurement of essential drugs. The study results will assist the government, educationalists, non-governmental organizations and policy makers to be enlighten of what is happening during the procurement process so that they work to achieve quality universal health care in all public health facilities in the country.

1.10 Assumption of the study

The study operated under the assumption that the information provided by the research participants was both credible and truthful, thereby allowing the researcher to effectively address the research questions in a conclusive manner.

1.11 Operational definition of terms

Availability The consistent presence of essential medications required for treating common health conditions within these facilities. It reflects the capacity of health centers to meet the medication needs of patients without significant shortages or delays in supply (WHO, 2020).

Essential drugs Drugs that meet the basic health needs of the population, they were selected on the basis of relevance to public health, have evidence of effectiveness and safety

Healthcare professional Medical practitioners such as doctors, nurses, and pharmacists responsible for prescribing, dispensing, and ensuring the proper use of essential medications to manage various health conditions. These professionals play a crucial role in the accessibility, availability, and efficient distribution of essential drugs in the public healthcare system (WHO, 2020).

Procurement process The process of identifying, merging and determining the required item so that they can be used when needed (World Health Organization, 2017).

Public Government-run institutions that provide healthcare services, including

health facilities	diagnosis, treatment, and preventive care, to the general population. In relation to essential drugs, these facilities are expected to stock and dispense vital medicines deemed necessary for addressing common health issues, though challenges such as supply chain inefficiencies and budget constraints often affect their availability (World Health Organization, 2017).
Procurement planning	Process involving forecasting drug needs, budgeting, and timely acquisition to ensure consistent supply and prevent stock-outs, while complying with regulatory and institutional procurement policies. Effective procurement planning is critical for maintaining drug availability and accessibility in healthcare systems, thus promoting optimal patient care and health outcomes. (World Health Organization, 2020).
Supplier selection	Process involving evaluating and choosing suppliers based on factors such as price, quality, reliability, and delivery time to ensure a consistent supply of vital medications. Effective supplier selection is critical for maintaining drug availability and preventing stock outs, directly impacting public health service delivery (Mwangi et al., 2022).
Procurement financing	The methods and resources used to secure funds for the purchasing of essential drugs in public health facilities, ensuring a steady supply and availability of medicines to meet patient needs (Kimenyi & Njuguna, 2019)

Needs assessment Systematic process of identifying gaps between the current availability of essential medications and the required levels to meet patient needs. This evaluation helps prioritize resource allocation and strategies for improving drug availability and healthcare outcomes in the region (WHO, 2020).

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The present chapter offers an extensive and thorough examination of the existing literature on the concept of essential drugs, examining its global, African, and local perspectives. Additionally, the paper presents various theoretical frameworks pertaining to the subject matter. Lastly, it provides the conceptual framework that served as the foundation for the study.

2.2 Theoretical Framework

2.2.1 The Theory of Planned Behavior (TPB)

The Theory of Reasoned Action (TRA), first presented by Fishbein and Ajzen in 1975, is the foundation for the Theory of Planned Behavior (TPB), and was further refined by Ajzen and Fishbein in 1980. Both theoretical models are founded on the underlying assumption that individuals make rational and deliberate decisions regarding their participation in specific behaviors, which involves an assessment of the information accessible to them. The carrying out of a specific action is influenced by a person's intent to perform it. This intent is shaped by several elements, including how much value the person attaches to the action, how easy they think it is to do, and the views of important people in their life. Furthermore, the person's belief in their ability to control the action also affects whether or not they will actually perform it.

The Theory of Planned Behaviour (TPB) is utilized in examining how procurement processes influence essential drug availability in hospitals. Theory of Planned Behaviour highlights three primary determinants of human behavior: beliefs, societal pressures, and

perceived control over behavior. Positive attitudes towards effective procurement planning can lead to better availability of essential drugs, as it promotes organized and timely procurement processes. Subjective norms, such as the opinions of others in the organization, also play a role in procurement decisions. Moreover, perceived behavioral control, or the level of control the procurement team feels over the planning process, can influence the outcome. Similarly, positive attitudes towards evaluating suppliers based on reliability, quality, and cost-effectiveness can improve the availability of essential drugs. Subjective norms and perceived behavioral control in supplier selection also impact availability. Additionally, attitudes towards securing adequate funding and resource allocation affect the availability of essential drugs, influenced by subjective norms and perceived behavioral control in financial management. Finally, positive attitudes towards conducting thorough needs assessments enhance availability, influenced by subjective norms and perceived behavioral control in the assessment process. By integrating TPB with the study's goals, one can understand of how attitudes and subjective norms, and perceived control influence drug availability, aiding in identifying improvements and strategies for better healthcare outcomes.

2.2.2 The Resource-Based View (RBV)

RBV, a strategy for gaining a competitive edge, first appeared in the 1980s and 1990s following significant contributions by scholars like Wernerfelt (1984), Prahalad (1990) and Barney (1991) among others. Proponents of this viewpoint maintain that companies should prioritize leveraging their internal assets to gain a competitive edge, instead of focusing exclusively on external market conditions. Those who support the Resource-Based View (RBV) contend that it is more efficient to creatively utilize what resources a

company already possesses to take advantage of opportunities outside the organization, rather than trying to develop new competencies for each distinct opportunity. In the RBV model, resources play a central role in enhancing companies' organizational performance. These resources can be classified into two categories: tangible and intangible.

The Resource-Based View (RBV) highlights that the distinctive and valuable resources of a firm are the source of its competitive edge. Effective procurement planning, supplier selection, adequate financing, and thorough needs assessment are crucial resources that enhance drug availability (Peteraf, 1993). Properly aligned planning with facility needs and a rigorous supplier selection process can lead to timely availability of reliable and high-quality drugs, giving a competitive edge. Sufficient financing enables steady drug supply, reducing stock outs. Comprehensive needs assessments lead to tailored healthcare services and optimal drug availability, providing a competitive advantage over facilities lacking such capabilities (Barney, 1991).

In applying the Resource-Based View to the study objectives, we can understand how procurement planning, supplier selection, procurement financing, and needs assessment practices contribute to the availability of essential drugs in public health facilities in Mombasa County, Kenya. This perspective can guide policymakers and administrators in leveraging their resources effectively to enhance drug availability and overall healthcare services.

2.3 Availability of Essential Drugs

Essential drugs availability (quality, quantity, and diversity) is vital for healthcare systems, especially in low- and middle-income nations. The majority of the population's

healthcare needs are effectively met by pharmaceutical goods known as essential medications, according to the World Health Organization (WHO, 2021). Consequently, these drugs should be consistently accessible in sufficient quantities and appropriate dosage forms. The availability of essential drugs in public hospitals is reportedly inconsistent, especially in nations with poor and medium incomes. A study by Robertson et al. (2022) found frequent occurrences of drug stock outs in public hospitals in Sub-Saharan Africa, significantly affecting healthcare provision. Moreover, a study by Pandey et al. (2023) corroborates these findings, noting a high frequency of drug stock outs in public hospitals in India.

Quality is another critical component of drug availability. It is not enough to have a large quantity of medicines if the quality is compromised. Quality concerns pharmaceutical properties such as drug efficacy, safety, and standardization. Ogunleye et al. (2023) emphasized the surge of substandard and falsified essential medicines in public hospitals in Nigeria. This situation, coupled with inadequate regulatory surveillance, undermines the quality of healthcare provision and risks patient safety. On the other hand, in high-income countries like the USA, the quality of essential drugs seems less of a problem due to robust regulatory systems (Smith et al., 2022).

Variety, referring to the diversity of available essential drugs, is a significant aspect of drug availability. Having a wide variety of medicines allows healthcare providers to accommodate individual patient needs, allergies, and responses to treatments. Lee and Xu (2022) in China revealed that while the quantity and quality of drugs were generally sufficient, the variety was lacking, especially concerning rare diseases and personalized

treatment. Almalki et al. (2023) reported comparable results in Saudi Arabia.. Hence, the issue of variety in essential drug availability is also a vital aspect needing consideration.

Kumar et al. (2022) demonstrate significant shortfalls in essential drugs availability in the South Indian union territory, with persisting inconsistencies impacting non-communicable disease medications despite government efforts towards universal health coverage. Similarly, in China, Li et al. (2020) expose significant disparities in the cost and accessibility of necessary medications in Hefei, indicating that despite state policies, the high costs associated with these drugs pose an additional hurdle for residents. These studies accentuate the pressing need for policy interventions and reforms across regions.

In Africa, the healthcare systems in Kenya, Nigeria, and Tanzania are currently facing significant issues pertaining to the availability of essential drugs within public health institutions. Macharia et al. (2021) illustrate the regularity of essential drugs stock outs in Kenyan hospitals, largely due to supply chain inefficiencies and inadequate funding, underscoring the need for health system reform. A parallel narrative unfolds in Nigeria, as depicted by Okoli et al. (2022), where only about half of the surveyed facilities consistently stock essential drugs, suggesting an urgent need for policy and practice reform.

2.4 Procurement Planning and Availability of Essential Drugs

Ogolla et al. (2022) conducted studies to investigate how the process of procurement affects the accessibility and necessary of drugs in public healthcare centers in Bungoma County, Kenya. The researchers employed a well-structured cross-sectional study design to gather data from public health facilities in Bungoma County. Utilizing a structured

questionnaire and conducting interviews with key informants, they examined the procurement process, medicine availability, and other relevant factors. The study's findings revealed the crucial role of adhering to procurement procedures in determining essential drugs availability. Additionally, procurement timelines and costs emerged as significant factors affecting the availability of essential drugs.

Another study PAHO (2018) offers a practical guide outlining crucial steps for effective procurement planning of essential drugs and public health supplies. Emphasizing key considerations such as procurement timelines, procurement cost, and regulatory compliance, the study emphasizes the pivotal role of procurement planning in ensuring the availability of essential drugs and supplies. The step-by-step process outlined in the guide underscores the need to address specific factors during planning. Procurement timelines are highlighted as essential for timely availability, while considering procurement cost ensures optimal resource utilization. Additionally, strict adherence to relevant regulations is stressed to guarantee the quality and safety of essential drugs and supplies, thereby enhancing the overall effectiveness of healthcare interventions.

Teklay et al. (2022) conducted a robust cross-sectional survey among health professionals in southwestern Ethiopia's public health facilities to study their perceptions of pharmaceuticals procurement performance. The results were significant, revealing that health professionals perceived procurement timelines, costs, and regulatory compliance as critical factors influencing essential drugs availability. Moreover, the health professionals expressed overall satisfaction with the procurement performance of the facilities. These findings carry substantial implications for Ethiopian public health policy, emphasizing the need for improved procurement processes, including shorter timelines,

reduced costs, and strict adherence to regulations, ultimately enhancing the availability of essential drugs and benefiting the health outcomes of the southwestern Ethiopian population.

Ishola et al (2019) conducted studies to look into the effects of a program for essential drugs on their availability and sensible utilization. The researchers employed a pre-post study design to evaluate the effects of an essential drugs programme in Democratic Yemen. They gathered data on essential drug availability, non-essential drug utilization, and rational use of essential drugs before and after the programme's implementation. The findings were significant, showing that the essential drugs programme had a substantial positive impact on the availability of essential drugs in peripheral health units, with the proportion of units having a full stock increasing from 33% to 80% after the programme. Additionally, the study observed a decrease in non-essential drug usage and an improvement in the rational use of essential drugs due to the programme's implementation.

Getachew, et al. (2019) investigated how planning for procurement impacts the availability of essential drugs in Ethiopia's public health institutions. The findings emphasize the significance of effective procurement planning in ensuring the availability of essential drugs in public health facilities, essential for the efficient delivery of healthcare services. The study's identification of procurement timelines and procurement cost as influential factors on drug availability provides insightful guidance for policymakers and healthcare administrators to optimize the drug supply chain, ensuring that public health facilities are well-equipped with essential drugs to properly address the population's healthcare demands. Ultimately, the study highlights the potential positive

impact of procurement planning in enhancing patient outcomes, treatment adherence, and overall healthcare quality in Ethiopia.

2.5 Supplier selection process and availability of essential drugs

Ogunlana, et al. (2019) conducted research to look at the impact of supplier selection on the availability of essential drugs in low- and middle-income nations. The researchers implemented a robust and well-structured methodology, utilizing a mixed-methods approach. This involved surveying procurement officers and presenting a case of a government procurement agency in Nigeria. The survey data was instrumental in identifying key factors in ensuring the availability of essential drugs, with the case study serving as a practical demonstration of the application of these factors. The research identified product quality and compliance, competitive pricing, and contractual compliance as the most significant determinants of essential drugs availability. The study further emphasized the need for a supplier selection process based on clear and regularly reviewed criteria to maintain relevance.

Khan, et al. (2020) carried out research to look at the effect of supplier selection on essential drugs availability in public health systems. The findings echoed the significance of supplier selection in enhancing the availability of essential drugs, pinpointing product quality and compliance, competitive pricing, and contractual compliance as the most critical factors. The study underlined the need for a clear set of criteria for supplier selection that should be regularly reviewed for continued relevance. The results carry significant implications for entities responsible for procuring essential drugs, suggesting that these organizations must scrutinize factors such as product quality, pricing, and

compliance during supplier selection, while maintaining a regularly updated, clear set of criteria for this process.

Smith, et al. (2021) conducted a study on the role supplier selection plays in essential drugs availability in the United States. The findings reveal a significant correlation between supplier selection and the availability of essential drugs, highlighting key factors such as product quality, competitive pricing, and contractual compliance. The authors assert the necessity for a transparent set of selection criteria that undergoes regular updates to stay abreast of market changes and healthcare system needs.

Muiruri, et al. (2021) carried out a study to determine how the procurement procedure affected the availability of essential drugs in public health facilities. The study established a distinct correlation between the procurement process and the availability of essential drug supplies; strict adherence to procurement protocols led to a more consistent availability of essential drugs. Additionally, it was uncovered that the most pervasive reasons for shortages or stock-outs were attributable to delays from suppliers and insufficient funding.

Muinde et al. (2020) conducted a cross-sectional analysis of the pricing and availability of non-communicable disease drugs in Kenyan hospitals and retail pharmacies. The study found that just 42% of retail drug stores and 58% of public health facilities have availability of all required essential drugs. The main causes of stock outs were late deliveries from suppliers and insufficient finance. Additionally, the prices of these essential drugs were found to be high, averaging 1,200 Kenyan shillings (US\$10) in public health facilities and 1,500 Kenyan shillings (US\$12) in retail drug outlets.

The study conducted by Muiruri et al., (2019) aimed to investigate the factors affecting the availability of essential drugs in public health facilities within Embu County, Kenya. The results indicated that several key factors influenced essential drugs availability: firstly, irregular adherence to the procurement process resulted in frequent stock-outs of essential drugs. Secondly, inadequate funding posed a significant challenge in maintaining a steady supply of these drugs. Additionally, subpar storage conditions contributed to the deterioration of essential drugs, rendering them unsuitable for use. Lastly, the high demand for essential drugs placed immense pressure on their supply. These findings shed light on critical issues affecting the availability of essential drugs in Embu County, calling for attention and improved strategies to enhance their availability and ultimately ensure better public healthcare.

2.6 Procurement Financing and Availability of Essential Drugs

In a research project carried out in Bungoma County, Kenya, Otieno, et al., (2020) explored how financing procurement affects the availability of essential drugs in public healthcare facilities.

The survey found that public health facilities in Bungoma County have availability of 63.35% of essential drugs. 51.30 days on average were needed to run out of stock. According to this study, inadequate funding for drugs was shown to be the main reason for the Essential medication shortages in public health institutions located in Bungoma County, Kenya.

De Walque et al. (2018) investigated how performance-based financing impacts Cameroon's availability of essential drugs. This study found that performance-based

financing (PBF) had a significant effect on the availability of family planning methods in Cameroon, but no evidence of an impact on other essential drugs. The study's findings reveal a significant positive effect of performance-based financing on the availability of family planning methods in the country. This suggests that the introduction of financial incentives based on performance encouraged health facilities to prioritize and improve the supply and availability of family planning methods. However, the study did not find any evidence of PBF's impact on other essential drugs besides family planning methods. This indicates that while the financing mechanism had a targeted effect on improving family planning services, it might not have had the same level of influence on the supply and availability of other essential drugs in the healthcare system.

Dussault et al. (2017) conducted a systematic review of the evidence on the effect of decentralized purchasing of essential drugs on availability, prices, and quality. The researchers searched for studies published between 1990 and 2016. They included studies from low- and middle-income countries that assessed the impact of decentralized purchasing on the availability, prices, and quality of essential drugs. The study found that decentralized purchasing had the potential to improve the availability of essential drugs at health facilities. However, the researchers found that the impact of decentralized purchasing depended on a number of factors, including the way in which decentralized purchasing was implemented, the level of government support, and the availability of data and information.

In their study, Mengistu, et al., (2016) examined the impact of procurement financing on the availability of essential drugs in public healthcare establishments within Ethiopia. The study made use of a cross-sectional survey methodology to gather data from a

representative sample of 1,200 public health facilities located in Ethiopia. The information was acquired by use of a methodical questionnaire, which was designed to evaluate the availability of essential drugs, the extent of fiscal assistance provided by the government, and additional variables that could potentially impact the availability of essential drugs. The study's conclusions demonstrated that the accessibility of essential drugs was significantly higher in facilities that received more financial support from the government. The study also found that other factors, such as the distance of the facility from the central warehouse, the number of staff, and the level of training of the staff, also influenced the availability of essential drugs. However, the influence of these factors was smaller than the influence of financial support from the government.

A study on the impact of procurement financing on the availability of essential drugs in public health institutions in Uganda was undertaken by Ndeezi, et al., (2015). The study's findings revealed that facilities that got more financial assistance from the government had much higher availability of essential drugs. The study also found that other factors, such as the distance of the facility from the central warehouse, the number of staff, and the level of training of the staff, also influenced the availability of essential drugs. However, the influence of these factors was smaller than the influence of financial support from the government.

2.7 Needs Assessment and Availability of Essential Drugs

Teshome et al. (2022) examined how needs assessment affects essential drug availability in Ethiopian primary care institutions. The study's methodology was a cross-sectional study. The research sample comprised 200 primary health care facilities located in

Ethiopia. The data pertaining to the availability of essential drugs, the frequency of instances where stocks were depleted, and the utilization of needs assessment were gathered by the researchers. The study's findings showed that the implementation of a needs assessment had a notable and beneficial effect on the availability of essential drugs within primary healthcare facilities in Ethiopia. The study also found that facilities that have carried out needs assessments saw a marked decrease in the frequency of stock-outs.

Afolabi et al. (2021) examined how needs assessment affects essential drugs availability in Nigerian public health institutions. The study's methodology was a cross-sectional study. The study sample consisted of 350 public health facilities in Nigeria. The study gathered information on the presence of essential drugs, the length of time they were out of stock, and the application of needs assessment. The research results indicated that implementing needs assessment substantially improved the supply of essential drugs in Nigerian public health centers. Additionally, the study revealed that facilities which had performed needs assessment experienced considerably reduced periods of stock shortages.

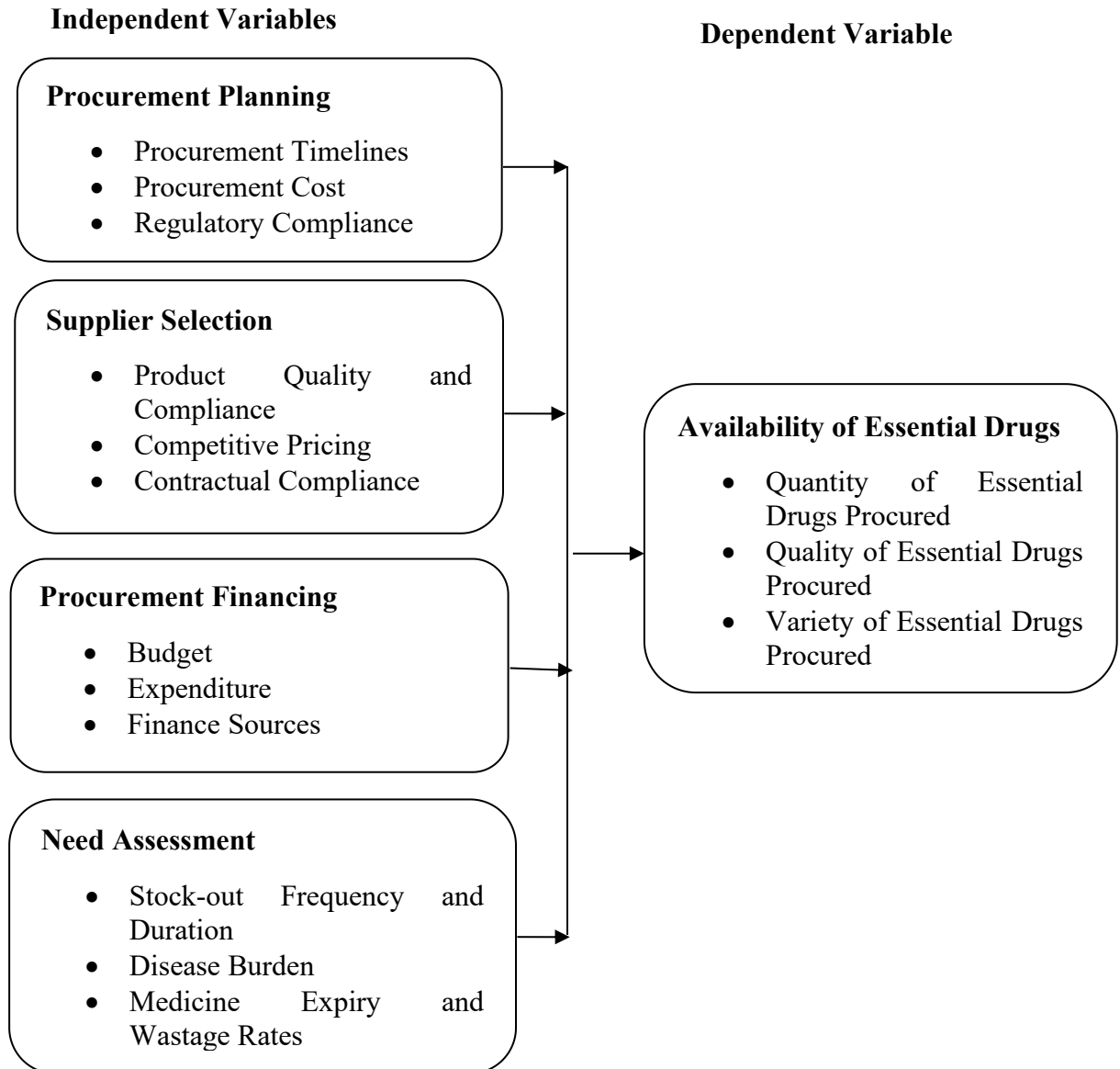
Irfan, et al. (2020) conducted a study on the effect of needs assessment on the availability of essential drugs in rural health facilities in Pakistan. The study sample consisted of 200 rural health facilities in Pakistan. The researchers collected data on the availability of essential drugs, the prevalence of medicine expiry and wastage, and the use of needs assessment. The study results depicted that needs assessment had a significant positive effect on the availability of essential drugs in rural health facilities in Pakistan. Further the findings established that the prevalence of medicine expiry and wastage was significantly lower in facilities that had conducted needs assessment.

The research by Kumar et al. (2019) investigated the impact of needs assessment on the availability of essential drugs in urban health facilities in India. The research sample included 200 urban health institutions located in India. The researchers gathered data pertaining to the availability of indispensable drugs, the quantity of indispensable drugs available, as well as the application of needs assessment. The outcomes of the research indicated that the implementation of a needs assessment approach had a notable and favorable effect on the availability of essential drugs inside urban healthcare institutions in India.

2.8 Conceptual Framework

Figure 2.1:

Conceptual Framework



CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The chapter offers a thorough summary of the procedures and technique employed to accomplish the goals of this study. This chapter focuses on the research's design, including the selection of the study population, the geographical location of the study, the data collecting technology used, and the methodologies used for data analysis.

3.2 Research design

This study's research design was primarily descriptive. A descriptive survey study entails procedures of realizing raw data from the respondents by the use of structured questionnaires. e (Kothari, 2014). The design is that it allows researchers to gather in-depth and detailed information about a phenomenon as it naturally occurs, providing a clear understanding of the situation without manipulating variables (Siedlecki, 2020). Another advantage is the design's flexibility, enabling the use of various data collection methods such as surveys, observations, or case studies, which can lead to more comprehensive insights (Nassaji, 2015).

3.3 Target Population

It connotes the complete set of individuals or objects that were utilized to facilitate the execution of a comprehensive and meticulously detailed study (Borg & Gall, 2012). It encompassed all components exhibiting discernible attributes that were of significance to an investigation. Health professionals working in public health institutions made up the research population in Mombasa County including the medical laboratory personnel, clinical and medical officers, nurses and specialist nurses, medical officers and specialists

as well as pharmacists and pharmaceutical technologists. For the purpose of manageability, the research concentrated on all level 4 and level 5 public health facilities where Mombasa County has four level 4 facilities and one level five facility with a collective workforce of 1216 worker. The selection of these hospitals was influenced by the hospitals they were top public hospitals in the Mombasa County with well-established and diversified procurement platforms compared to facilities below them. Based on the health report (2023) published by the Mombasa County Government, the hospital was staffed with a total of 1216 healthcare professionals, as indicated in Table 3.1.

Table 3.1:
Target Population

Category	Frequency (N)	Percent (%)
Medical Laboratory Personnel	157	13
Clinical Officers	133	11
Nurses and Specialist Nurses	718	59
Medical Officers and Specialists	95	8
Pharmacists and pharmaceutical technologists	113	9
Total	1216	100

3.4 Sample Size and Sampling Technique

The stratified sampling was used in the research approach where the population was divided into five categories hence forming five strata to choose the sample from guided by the cadre of the workforce in the hospitals. Additionally, the study used a random

sampling technique within each stratum, meaning that each piece had an equal chance of being selected. The Yamane formula (1967) was used to determine the sample size.

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

Where: N = Population size

n = sample size

e = Margin error of the study

Sample size therefore was;

$$= \frac{1216}{1+1216(0.05)^2} = \frac{1216}{1+1216(0.0025)} = \frac{1216}{1+3.04} = \frac{1216}{4.04} = 301 \text{ which is } 24.7\% \text{ of the target}$$

population. This was dispersed proportionately as seen in Table 3.2 below;

Table 3.2:
Sample Size

Category	Frequency (N)	Sample (24.7% of N)
Medical Laboratory Personnel	157	39
Clinical Officers	133	33
Nurses and Specialist Nurses	718	177
Medical Officers and Specialists	95	24
Pharmacists and pharmaceutical technologists	113	28
Total	1216	301

3.5 Instrumentation

The researchers employed a structured questionnaire to gather the necessary information to fulfill the goals of this investigation. The questionnaire was designed with closed-ended questions in order to ensure consistency in the responses submitted. The questionnaire had five sections (A-F). Section A focused on respondents' demographics to confirm eligibility, while Sections B to F dealt with the research variables.. A five-point Likert scale assessed respondents' agreement on statements related to each variable.

3.6 Data Collection procedure

The research instruments were self-administered by the healthcare professionals working in public health institutions at levels 4 and 5. The data collection process used the 'drop and pick' approach. The researcher consistently offered the respondents an extended period of one week to complete the questionnaire in cases where they were unable to do so within the first week(s). The process of completing the questionnaire required a time frame of around fifteen to twenty minutes. The process of data collecting and cleansing spanned a duration of two weeks. This measure was implemented in order to give sufficient time for the collection of precise data for the purposes of analysis and

3.7 Pre-Test

Conducting a pretest has a vital function in enhancing the structural coherence and reliability of a questionnaire during its development phase (Kothari, 2014). A pretest was therefore performed using a sample of 90 health employees drawn from Changamwe hospital in order to evaluate the study tools' dependability, as Changamwe hospital health

facility has similar procurement characteristics as health facilities in level four and five hospitals in Mombasa County targeted by the study.

3.7.1 Validity of Research Instruments

According to Vincent et al. (2019), validity concerns how well a study accurately assesses the intended construct or correctly represents the outcomes of the research. Pre-testing was employed by the researcher to verify both the content and construct validity of the research tools. The idea of content validity pertains to how well a tool can thoroughly assess the relationship between variables (Mugenda & Mugenda, 2003).

In contrast, construct validity pertains to the extent to which an instrument is capable of effectively measuring the underlying theoretical construct it is intended to evaluate. The acquired scores throughout the testing periods demonstrated a statistically significant correlation coefficient (r), with a p -value less than 0.5.

3.7.2 Reliability of Research Instruments

The consistency of findings generated by a research tool over several trials is referred to as reliability (Mugenda & Mugenda, 2003). The instrument underwent pretesting to ascertain its reliability in collecting the necessary data as required by the researcher. The researchers employed the test-retest methodology to assess the reliability of the instrument. The collected data was subjected to analysis, and subsequently, the same group of individuals underwent the identical procedure after a two-week interval. The results obtained from this second administration of the test were consistent with the initial findings. Consequently, the tool was considered reliable (Cooper & Schindler, 2008). To

evaluate using a Cronbach's Alpha coefficient of 0.7 as the benchmark for the research instrument's dependability.

3.8 Methods of Data Analysis

The research utilized a quantitative methodology in order to achieve its objectives. The information gathered in the field underwent organization, cleaning, coding, entry, and analysis through the application of SPSS version 26.

Descriptive outputs were employed in the analysis. The findings were displayed through the utilization of visual aids such as figures and tables, and subsequently analyzed and explained through written discourse. Using Pearson correlation analysis, the strength and direction of the relationship between the variables under investigation were also assessed. Multiple regression analysis was also performed to evaluate the independent components' combined predictive power on the dependent variable. To determine if there are any statistically significant variations in the means of three or more groups, Analysis of Variance (ANOVA) was used. The ANOVA works by analyzing the variance within groups and between groups, which helps to identify whether the observed differences in means are due to actual group differences or merely random variation. The correlation between the independent and dependent variables was demonstrated using the regression model that is provided here.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Whereby the variables are identified as follows: -

Y = Availability of Essential Drugs

X_1 = Procurement Planning

X_2 = Supplier selection

X_3 = Procurement Financing

X_4 = Need Assessment

While β_1 , β_2 , β_3 and β_4 are coefficients of determination and ϵ is the error term.

3.9 Ethical Considerations

Kenya's National Commission for Science, Technology, and Innovation (NACOSTI) authorized the study, along with the Science and Ethical Review Committee (SERC) at Kenya Methodist University later sought for approval from the Mombasa County Research Committee. The researcher employed an introductory letter to inform the participants that the study was exclusively of an academic nature, and any data provided by them would be utilized solely for academic objectives. Participants were told by the researcher that participation was entirely optional, with the right to withdraw at any time. No coercion was involved, and informed consent was obtained. Confidentiality and privacy were ensured through adherence to anonymity principles throughout the study.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter provides a thorough examination and display of the information gathered during the fieldwork, along with the corresponding results. The data entry procedure was undertaken using SPSS version 26. During this process, careful attention was given to ensure accurate variable specifications and codes, with any potential inaccuracies being thoroughly verified. Descriptive statistics were used to examine the data from the research instrument, including measures such as mean, mode, median, and standard deviations. These statistics were used to generate tables that were subsequently utilized in the findings' presentation. The presentation of the findings were then conveyed in prose form.

4.2 Pre-test Results

The researcher carried out a pre-test on 90 health employees in Changamwe hospital in an effort to evaluate the research instruments' dependability, as Changamwe hospital health facility has similar characteristic as health facilities in level four and five hospitals targeted by the study. The assessment of the study tool's internal consistency analysis was carried out using Cronbach's alpha. The results are displayed as follows in Table 4.1;

Table 4.1:***Pre-Test Results of Health Employees***

	Cronbach's Alpha	N of Items	Conclusion
Procurement planning	.725	18	scale reliable
Supplier selection	.779	18	scale reliable
Procurement financing	.702	20	scale reliable
Needs assessment	.760	16	scale reliable
Availability of essential drugs	.745	18	
Overall	.742	90	Instrument reliable

Based on the findings stated in Table 4.3, the collective alpha coefficient for the four items is determined to be 0.742. This finding suggests that the items exhibit a notable degree of internal consistency across the measurement tool. The results indicate that the instrument has a high level of dependability, since a reliability coefficient of 0.70 or above is often regarded as satisfactory and reliable.

4.3 Response rate by the Respondents

The study involved a sample of 301 participants drawn from five public hospitals in Mombasa County. Out of the 301 distributed questionnaires, 223 were completed and returned, achieving a 74% response rate. As noted by Mugenda and Mugenda (2009), a response rate above 50% is considered adequate for analysis, rates over 60% are viewed as good, and rates of 70% or higher are seen as excellent. Therefore, the 74% response rate in this study was considered highly satisfactory for the purposes of analysis and generalization. The reason for the 78 incomplete questionnaires could be due to various factors such as respondents' unwillingness or inability to participate, time constraints,

lack of interest, incomplete understanding of the questions, or any other unforeseen circumstances that may have prevented them from completing the survey. Incomplete responses are common in research studies, and researchers often aim to minimize them by designing clear and concise questionnaires, providing proper instructions, and ensuring a user-friendly survey environment. Despite efforts to maximize response rates, some level of incompleteness is usually anticipated and accounted for in the analysis and interpretation of study results. The findings are displayed in Table 4.2 provided below;

Table 4.2:
Response Rate by the Respondents

	Frequency (N)	Percentage (%)
Completed questionnaires	223	74
Uncompleted questionnaires	78	26
Total	301	100

4.4 Demographic Information

The research sought to determine the demographic profiles of the participants to verify their suitability for involvement in the study. This involved examining the participants' gender, age, highest educational attainment, and length of time working at the facility. The findings are presented in Table 4.3.

Table 4.3:
Demographic Information of Respondents

Characteristics	Frequency (N)	Percent (%)
Gender		
Male	93	42
Female	130	58
Total	223	100
Age Bracket		
25 years and below	15	7
26-35 years	102	46
36-45 years	76	34
46-55 years	30	14
Total	223	100
Education Level		
Certificate	15	7
Diploma	118	53
Degree	52	23
Post graduate level	38	17
Total	223	100
Duration of Service in the Facility		
5 years and below	14	6
6- 10years	131	59
11- 15 years	27	12
Above 15 years	51	23
Total	223	100

Table 4.3 offers a summary of the demographic characteristics of the individuals involved. The findings indicate that the female participants constituted the larger

proportion of respondents, accounting for 130 individuals or 58% of the total, whereas males comprised a smaller portion with only 93 individuals or 42%. The findings suggest that the healthcare personnel at levels 4 and 5 in Mombasa County during the study period were predominantly female. Moreover, the findings suggest that the recruitment efforts of the organization prioritize the establishment of a predominantly female workforce, as they are perceived to possess qualities such as compassion and approachability, which are highly valued in-patient interactions.

Further, The findings indicate that 102 (46%) of the respondents were between the ages of 26 and 35, 76(34%) were aged 36-45 years; 30(14%) were aged 46-55 years while 15(7%) were aged 25 years and below. This implies that the bulk, 178 (80%), of those in Mombasa County at levels 4 and 5 fell within the 26 to 45 age bracket. This demographic is considered to be at the prime of their age, possessing peak skills, vitality for productive work, and a strong orientation towards personal development and advancing the goals of the facility. The majority of respondents (80%) falling within the age group of 26-45 years is noteworthy. This age group is often considered to be at its optimum age, possessing the right skills, energy, and focus for productivity and personal growth. This demographic composition suggests that the workforce within the level 4 and 5 public healthcare facilities in Mombasa County is primarily comprised of individuals in their prime working years. The age group's characteristics may influence their perspectives on the procurement process and its impact on essential drugs availability.

Further, the results show that majority 118(53%) of the respondents had diploma as the highest education level, 52(23%) were degree holders; 38(17%) were first postgraduate degree holders while 15(7%) had postgraduate level of academic qualification. The

results demonstrate that each responder has completed certain professional training to work within the health facilities. Hence, the participants were considered sufficiently capable of providing responses to the inquiries presented in the questionnaires on the impact of the procurement process on the availability of essential drugs in public healthcare facilities. The fact that a significant proportion of respondents (53%) had a diploma as their highest education level, coupled with the observation Because each responder have specialized expertise in their field for their roles within health facilities, implies that the participants were adequately qualified for their positions. This qualification is crucial for the study, as it suggests that the respondents had the necessary background knowledge to understand and provide informed responses regarding the impact of procurement procedures on essential drugs availability. This is similar to a study by Zuma (2016) who found out that to manage procurement process of essential drugs is a collaborative process that involves staff with different skills besides drugs. A study done by Mengistu et al. (2016) in Ethiopia public health facilities showed that the availability of essential drugs was also affected by factors such as number of staff and the level of training of the staff in the facility.

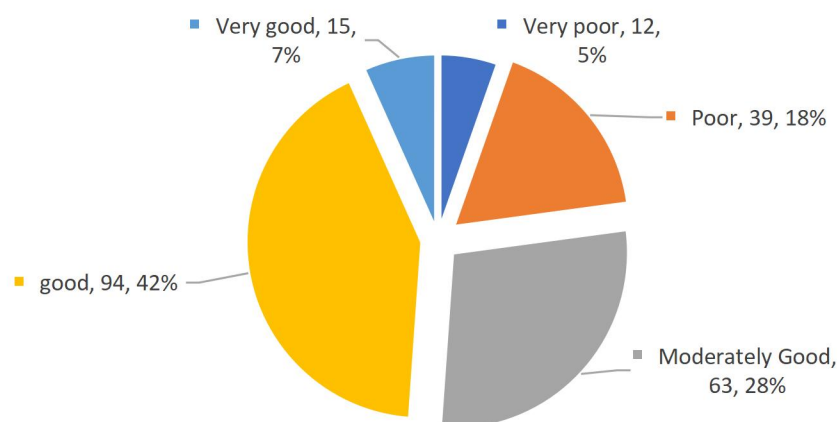
Moreover, results show that majority 131(59%) of The responders had worked at the establishment for 6- 10years; 51(23%) had served for over15 years; 27(12%) had served for 11- 15 years while 14(6%) had served for 5 years and below. The findings suggest that a significant majority of the respondents, that is 209 individuals (94%), had a service tenure of 6 years or more. This indicates that they had a considerable level of awareness about the impact of the procurement process on the availability of essential drugs within the public health facilities of Mombasa County, Kenya. The finding that a substantial

majority of respondents (94%) had a service tenure of 6 years or more is important. This suggests that a large portion of the participants had considerable experience and tenure within the public health facilities. Their long service tenure implies that they may have witnessed and experienced changes in the procurement processes over the years, allowing for a deeper understanding of how these processes impact the availability of essential drugs.

Additionally, the study sought to establish the rating of the procurement process in the facilities overall. The findings are displayed in Figure 4.1 below.;

Figure 4.1:

Rating of the Procurement Process by the Respondents



The findings in figure 4.1 above show that most 94(42%) of the respondents held that the overall procurement process was good; 63(28%) indicated it was moderately good; 39(18%) indicated it was poor. The results imply that the procurement process required inputs and the right resources aimed at improving the procurement process. Most of the

respondents (73%) agreed that procurement process is cost effective (Mean=3.73) This agrees with the Kenya Law Report (2010) which states that in Kenya the procurement process is governed by the Procurement Law and Government Regulations 2006. Similarly, a study done in Southern Ethiopia public health facilities by Teklay et al. (2022) found out that workers' perception of pharmaceuticals procurement performance expressed overall satisfaction with the procurement performance of the facilities.

4.5 Procurement Planning

In the analysis, the disagreement result was formed by combining the replies to strongly disagree, disagree, and moderately agree, while the agreement result was formed by combining the responses to agree and strongly agree. In order to analyze the data, the research also employed the mean and standard deviation. Table 4.4 presents the results;

Table 4.4:***Procurement Planning response from Respondents***

	Disagree N(%)	Agree N(%)	Mean	Std. Deviation
Procurement planning allows health facilities to strategically source essential drugs from reputable suppliers	10(5)	213(95)	4.96	.20742
There is data-driven decision making within the facilities	25(11)	198(89)	4.23	.63436
There is prioritizing essential drugs	29(13)	194(87)	4.07	.77358
There is compliance with the set procurement regulations	56(25)	167(75)	3.90	.81270
Inventory levels are optimized in the facilities	61(27)	162(73)	3.81	.71057
The procurement for essential drugs meets the set timelines	67(30)	156(70)	3.71	.67801
Coordinating with suppliers is done throughout the process	79(35)	144(65)	3.65	.69234
Forecasting the demand for essential drugs based on historical data, disease prevalence, population trends is frequently done	60(27)	163(73)	3.62	1.10812
Procurement cost is fairly regulated	62(28)	161(72)	3.50	1.04353

The findings displayed in Table 4.4 above indicate that the participants were in agreement that procurement planning allowed health facilities to strategically source essential drugs from reputable suppliers (Mean=4.96). Further, respondents agreed that there was data-driven decision making within the facilities (Mean=4.23) and that there was prioritizing essential drugs (Mean=4.07). In addition, the respondents agreed that there was compliance with the set procurement regulations (Mean=3.90). Further, agreed that inventory levels were optimized in the facilities (Mean=3.81) and that the procurement for essential drugs met the set timelines (Mean=3.71). Moreover, the respondents agreed that coordinating with suppliers was done throughout the process (Mean=3.65); that forecasting the demand for essential drugs based on historical data,

disease prevalence, population trends was frequently done (Mean=3.62) and that procurement costs were fairly regulated (mean=3.50). The findings suggest that the participants were cognizant of the different procurement planning in enhancing availability of essential drugs in the public health facilities of Mombasa County.

The results were in line with Ogolla et al. (2022) that it is a crucial role of adhering to procurement procedures in determining essential drugs availability. Also, the results agree with PAHO (2018) that procurement timelines were highlighted as essential for timely availability, while considering procurement cost ensures optimal resource utilization. Additionally, the study found that strict adherence to relevant regulations is stressed to guarantee the quality and safety of essential drugs and supplies. Similarly, a study done in Southern Ethiopia public health facilities by Teklay et al. (2022) found out that worker's perception of pharmaceuticals procurement performance critical factors that influence the availability of essential drugs were timelines, costs and regulatory compliance and they expressed overall satisfaction with the procurement performance of the facilities.

4.6 Supplier selection

In the analysis, combining responses into categories like disagreement and agreement is common in survey analysis, simplifying interpretation, reducing complexity, and aligning with research objectives. This approach enhances statistical power, facilitates comparison between groups, and improves the stability of estimates, particularly when dealing with limited sample sizes for specific responses. Table 4.5 presents the results;

Table 4.5:***Supplier Selection responses from Respondents***

	Disagree N(%)	Agree N(%)	Mean	Std. Deviation
Supplier's ability to respond promptly to emergency situations or disease outbreaks is considered	2(1)	221(99)	4.49	.50100
Contract compliance is observed in the selection of suppliers	37(17)	186(83)	4.36	.75211
Product quality is central in the selection of suppliers	7(3)	216(97)	4.28	.45123
Contracts are given to suppliers with steady and consistent flow of essential drugs	23(10)	200(90)	4.26	.90153
Suppliers offering a diverse range of essential drugs are considered first	35(16)	188(84)	4.25	.70849
There are strong partnerships with suppliers to foster long-term collaborations	2(1)	221(99)	4.19	.38824
Suppliers with competitive prices have upper hand to be selected	38(17)	185(83)	4.09	.91785
Suppliers with extensive and efficient distribution network are given priority	50(22)	173(78)	3.99	.84358
Supplier selection prioritize suppliers that comply with local and international regulations in the facilities	29(13)	194(87)	3.93	.66051

Table 4.5 demonstrates that the participants concurred that supplier's ability to respond promptly to emergency situations or disease outbreaks was considered (Mean=4.49) and that contract compliance was observed in the selection of suppliers (Mean=4.36). Further, the respondents agreed that product quality was central in the selection of suppliers (Mean=4.28) and that contracts were given to suppliers with steady and consistent flow of essential drugs (Mean=4.26). Additionally, the respondents agreed that suppliers offering a diverse range of essential drugs were considered first (Mean=4.25) and that there were strong partnerships with suppliers to foster long-term collaborations (Mean=4.19). Also, respondents agreed that suppliers with competitive prices had an upper hand to be selected (Mean=4.09) and that suppliers with extensive and efficient

distribution network were given priority (Mean=3.99). Further, respondents agreed that supplier selection prioritized suppliers that complied with local and international regulations in the facilities (Mean=3.93). The findings suggest that the participants were cognizant of the different of supplier selection in enhancing availability of essential drugs in the public health facilities of Mombasa County.

The results agree with Ogunlana et al. (2019) who identified product quality and compliance, competitive pricing, and contractual compliance as the most significant determinants of essential drugs availability and emphasized the need for a supplier selection process based on clear and regularly reviewed criteria to maintain relevance. Furthermore, the findings concur with Khan et al. (2020) that significant implications for entities responsible for procuring essential drugs highlighting that these organizations must scrutinize factors such as product quality, pricing, and compliance during supplier selection, while maintaining a regularly updated, clear set of criteria for this process. Similarly, a study in United States by Smith, et al. (2021) revealed that the correlation between supplier selection and availability of essential drugs depends on factors such as product quality, competitive pricing and contractual compliance.

4.7 Procurement Financing

The researcher analyzed the data using the mean and standard deviation. on procurement financing. Table 4.6 presents the results;

Table 4.6:***Procurement financing responses from Respondents***

	Disagree N(%)	Agree N(%)	Mean	Std. Deviation
Procurement expenses are regularly monitored	15(7)	208(93)	4.10	.47377
The procurement financing is predictable ensuring a continuous supply of essential drugs	43(19)	180(81)	3.85	.69786
Procurement process is cost effective	50(22)	173(78)	3.73	1.00417
Financing mechanisms are flexible to allow public health facilities to adapt to fluctuating demand and changing healthcare needs	83(37)	140(63)	3.45	.92331
Adherence to budget allocations is maintained	105(47)	118(53)	3.38	1.13177
Budget execution is transparently done and reported	83(37)	140(63)	3.32	.91226
Financial sources are sufficient to procure essential drugs	118(53)	105(47)	3.31	1.21927
There is timely disbursement of funds	112(50)	111(50)	3.11	1.07263
Budget allocation matches the needs highlighted	121(54)	102(46)	2.98	.96779
Essential drugs are covered and adequately funded by insurance schemes	142(64)	81(36)	2.96	1.01927

Findings in Table 4.6 reveals that the respondents agreed that procurement expenses were regularly monitored (Mean=4.10) and that the procurement financing was predictable ensuring a continuous supply of essential drugs (Mean=3.85). Further, respondents agreed that procurement process is cost effective (Mean=3.73). Moreover, Respondents agreed somewhat that financing mechanisms were flexible to allow public health facilities to adapt to fluctuating demand and changing healthcare needs (Mean=3.45) and that adherence to budget allocations was maintained (Mean=3.38). In addition, moderately agreed that budget execution was transparently done and reported

(Mean=3.32) and that financial sources were sufficient to procure essential drugs (Mean=3.31). In addition, the respondents moderately agreed that there was timely disbursement of funds (Mean=3.11). Further, the respondents disagreed that budget allocation matched the needs highlighted (Mean=2.98) and that essential drugs were covered and adequately funded by insurance schemes (Mean=2.96). The findings suggest that the participants knew about the roles of procurement financing in enhancing availability of essential drugs in the public health facilities of Mombasa County

The results are in line with Otieno et al. (2020) that inadequate funding for essential drugs was the main reason for stock outs of essential drugs in public health facilities. Also agree with De Walque et al. (2018) that financing mechanism had a targeted effect on improving family planning services, it might not have had the same level of influence on the supply and availability of other essential drugs in the healthcare system. Further, agreed with Dussault et al. (2017) that the impact of decentralized purchasing depended on a number of factors, including the way in which decentralized purchasing was implemented, the level of government support, and the availability of data and information. A study done by Mengistu et al. (2016) in Ethiopia public health facilities showed that the availability of essential drugs was significantly higher in facilities that received more financial support from the government.

4.8 Need Assessment

The research analyzed the data using the mean and standard deviation on need assessment. Table 4.7 presents the results;

Table 4.7:***Needs Assessment responses from Respondents***

	Disagree Agree		Mean	Std. Deviation
	N(%)	N(%)		
Medicine dispensing rate is frequently assessed	12(5)	211(95)	4.65	.57896
Monitoring stock-out frequency is key in the availability of essential drugs	25(11)	198(89)	4.07	.53689
Disease burden determines the amount of drugs procured	14(6)	209(94)	4.00	.34871
The facilities adhere to the official essential drug list (EDL) or formulary	28(13)	195(87)	3.94	.43621
Drug storage conditions are assessed to maintain their efficacy and safety.	52(23)	171(77)	3.91	.63360
Analyzing the utilization patterns of essential drugs is used to identify trends and potential issues	25(11)	198(89)	3.90	.57197
The facilities often determine the average duration of essential drugs stock-outs	41(18)	182(82)	3.81	.61545
Medicine expiry and wastage rates guides the procurement frequency	63(28)	160(72)	3.78	.54023

Table 4.7 show that the respondents agreed that medicine dispensing rate was frequently assessed (Mean=4.65) and that monitoring stock-out frequency is key in the availability of essential drugs (Mean=4.07). Furthermore, participants concurred that disease burden determined the amount of drugs procured (Mean=4.00) and that the facilities adhered to the official essential drug list (EDL) or formulary (Mean=3.94). Moreover, the respondents agreed that drug storage conditions were assessed to maintain their efficacy and safety (Mean=3.91) and that analyzing the utilization patterns of essential drugs was used to identify trends and potential issues (Mean=3.90). Additionally, respondents agreed that the facilities often determined the average duration of essential drugs stock-outs (Mean=3.81) and that medicine expiry and wastage rates guided the procurement frequency (Mean=3.78). The findings suggest that the participants had sufficient

knowledge regarding the various roles of procurement financing in enhancing availability of essential drugs in the public health facilities of Mombasa county and need assessment is always done.

The results agree with Teshome et al. (2022) that the frequency of stock-outs was significantly lower in facilities that had conducted needs assessment. In addition, agreed with Afolabi et al. (2021) that the duration of stock-outs was significantly shorter in facilities that had conducted needs assessment. Further, the results agreed with Irfan, et al. (2020) that the prevalence of medicine expiry and wastage was significantly lower in facilities that had conducted needs assessment. The study agrees with a study done by Kumar et al. (2019) who found out that needs assessment had a significant positive impact on the availability of essential drugs in urban health facilities in India.

4.9 Availability of Essential Drugs

In the analysis, responses categorized as strongly disagree, disagree, and moderately agree were grouped together to represent disagreement, while Strongly agree and agree were merged to represent agreement. Additionally, the study utilized mean and standard deviation for data analysis. The outcomes are shown in Table 4.8;

Table 4.8:***Availability of Essential Drugs responses from Respondents***

	Disagree N(%)	Agree N(%)	Mean	Std. Deviation
Patient satisfaction is promoted	15(7)	208(93)	4.40	.49172
Emergency preparedness is boosted	15(7)	208(93)	4.39	.61167
Improved rational drug usage among medical professionals and their patients	2(1)	221(99)	4.35	.47797
Hospitals and clinics are running short of essential medications.	15(7)	208(93)	4.28	.45123
Quantity of essential drugs procured is maintained	25(11)	198(89)	4.25	.64353
Medicine dispensing rate is enhanced	15(7)	208(93)	4.24	.56315
Quality of essential drugs procured is enhanced	14(6)	209(94)	4.18	.52344
Inventory management is enhanced	2(1)	221(99)	4.05	.22615
Variety of essential drugs procured is promoted	37(17)	186(83)	3.95	.53041

As per outcomes in Table 4.8 The participants concurred that patient satisfaction was promoted (Mean=4.40) and that emergency preparedness was boosted (Mean=4.39). In addition, agreed that rational use of essential drugs among healthcare providers and patients was enhanced (Mean=4.35) and that stock-outs of essential drugs in health facilities was reduced (Mean=4.28). Further, the respondents agreed that quantity of essential drugs procured was maintained (Mean=4.25) and that Medicine dispensing rate is enhanced (Mean=4.24). Also, respondents agreed that quality of essential drugs procured was enhanced (Mean=4.18) and that inventory management was enhanced (Mean=4.05). Additionally, agreed that variety of essential drugs procured was promoted (Mean=3.95). The findings indicate that respondents of Mombasa county public health institutions were aware of essential drugs availability.

The findings concur with those of Robertson et al. (2022) that frequent occurrences of drug stock outs in public hospitals in Sub-Saharan Africa, significantly affecting

healthcare provision. Also the findings are in line with Lee and Xu (2022) that while the quantity and quality of drugs were generally sufficient, the variety was lacking, especially concerning rare diseases and personalized treatment. A study by Ogunleye et al. (2023) emphasized the surge of substandard and falsified essential drugs in public hospitals in Nigeria is due to inadequate regulatory surveillance while a study from the high income countries like USA showed the quality of essential drugs was not a problem due to the robust regulatory systems (Smith et al.,2022). Moreover, the results support the conclusions of Li et al. (2020) that gaps in both accessibility and cost of necessary medications in Hefei, indicating that despite state policies, the high costs associated with these medicines pose an additional hurdle for residents. Macharia et al. (2021) illustrate the regularity of essential drugs stock outs in Kenya hospitals largely due to supply chain inefficiencies and inadequate funding.

4.10 Bivariate Analysis

The study utilized Pearson correlations to ascertain the direction and magnitude of the relationship between the variables under investigation. Studying the relationship between two variables, the patterns, correlations, or dependencies that exist are identified. Table 4.9 below presents the outcomes;

Table 4.9:

Bivariate Analysis

		Procurement Planning	Supplier selection	Procurement Financing	Need Assessment	Availability of Essential Drugs
Procurement Planning	Pearson	1	.124	.005	-.273**	.259**
	Correlation					
	Sig. (2-tailed)		.064	.937	.000	.000
Supplier selection	N	223	223	223	223	223
	Pearson	.124	1	.210**	.053	.211**
	Correlation					
Procurement Financing	Sig. (2-tailed)	.064		.002	.431	.001
	N	223	223	223	223	223
	Pearson	-.005	.210**	1	.070	.273**
Need Assessment	Correlation					
	Sig. (2-tailed)	.937	.002		.295	.000
	N	223	223	223	223	223
Availability to Essential Drugs	Pearson	-.273**	.053	.070	1	.673**
	Correlation					
	Sig. (2-tailed)	.000	.431	.295		.000
	N	223	223	223	223	223
	Pearson	-.259**	.211**	.273**	.673**	1
	Correlation					
	Sig. (2-tailed)	.000	.001	.000	.000	
	N	223	223	223	223	223

** . Correlation is significant at the 0.01 level (2-tailed).

The data in Table 4.9 above demonstrates that procurement planning and availability to essential drugs had a positive and significant correlation with a correlation value of .259**. In addition, supplier selection and availability to essential drugs had a positive and significant correlation of .211**. Also, procurement financing and availability of essential drugs had positive significant correlations with value of .273**. Finally, need

assessment and availability of essential drugs had positive significant correlations with value of .673**. The findings suggest that the research components that had positive correlations were associated with one another in a close way and were heading in the same general direction.

The results concur with those of Teklay et al. (2022) that Procurement Planning was a significant determinant of availability of essential drugs. Further, agreed with Smith, Jones, and Brown (2021) that supplier selection significantly influenced the availability of essential drugs in the United States. Additionally, results agreed with Dussault et al. (2017) that procurement financing significantly and positively influenced the availability of essential drugs. Further, the results concur with those of Mengistu et al. (2016). that procurement financing significantly influenced the availability of essential drugs. Furthermore, the findings concur with Kumar et al. (2019) that needs assessment significantly influenced availability of essential drugs. Similarly, a study by Getachew, et al. (2019) highlighted the potential positive impact of procurement planning in enhancing patient outcomes, treatment adherence, and overall healthcare quality in Ethiopia. Further the findings agree with Khan, et al. (2020) who echoed the significance of supplier selection in enhancing the availability of essential drugs, pinpointing product quality and compliance.

4.11 Inferential Statistics

To determine the prediction effectiveness of the independent factors on the availability of essential drugs inside the public health facilities situated in Mombasa County, Kenya. A linear model comprising the Model, an ANOVA for regression, and coefficients of

determination was employed in the investigation. Below is the model overview in Table 4.10;

Table 4.10:

Model Summary

Model	R	R Square	Adjusted Square	RStd. Error of the Estimate
1	.730a	.533	.524	.12086

a. Predictors: (Constant), Need Assessment , Supplier selection , Procurement Financing , Procurement Planning

The procurement process, consisting of procurement planning, supplier selection, procurement financing, and needs assessment, has a significant impact of 53.3% on the supply of necessary pharmaceuticals in the public health facilities of Mombasa County, Kenya, as shown by the R² value. This finding suggests that external variables outside the scope of this research have an impact on 46.7% of the availability of essential drugs at the public healthcare institutions located in Mombasa County, Kenya. Therefore, it is recommended that further investigation be undertaken in order to ascertain the various factors within the procurement process that contribute to the 46.7% impact on the supply of essential drugs in public health institutions located in Mombasa County, Kenya.

4.11.1 Analysis of Variance (ANOVA)

Analysis of variance (ANOVA) was the statistical technique applied in this study, which helped to clarify the link between the variables under examination. The following table, Table 4.11, presents the results:

Table 4.11:

Analysis of Variance (ANOVA)

Model		Sum Squares	of df	Mean Square	F	Sig.
1	Regression	3.628	4	.907	62.104	.000b
	Residual	3.184	218	.015		
	Total	6.813	222			

a. Dependent Variable: Availability to Essential Drugs

b. Predictors: (Constant), Need Assessment , Supplier selection , Procurement Financing , Procurement Planning

Based on the results displayed in Table 4.11, it can be observed that the p-value (sig.) was determined to be 0.000 ($p < 0.05$). This indicates that the variables of need assessment, supplier selection, procurement financing, and procurement planning had a statistically significant impact on the availability of essential drugs in the public health facilities of Mombasa County, Kenya, with a confidence level of 95%. At the 5% level of significance, the F critical value was calculated to be 62.104, which is larger than the significance threshold of 0.05. The results agree with a study done by Muiruri, et al. (2021) in Bungoma County which revealed a distinct correlation between the procurement process and availability of essential drugs.

4.11.2 Coefficients of Determination

A multiple regression analysis was performed to assess how various independent factors affect the availability of essential drugs in public healthcare centers in Mombasa County, Kenya. The results are presented in Table 4.12 below;

Table 4.1:***Coefficients of determination***

Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	Beta	t	
1	(Constant)	1.201	.289		4.161	.000
	Procurement Planning	.079	.036	.107	2.205	.028
	Supplier selection	.085	.027	.150	3.140	.002
	Procurement Financing	.157	.038	.198	4.165	.000
	Need Assessment	.609	.047	.622	12.855	.000

a. Dependent Variable: Availability to Essential Drugs

Based on the regression equation, assuming all parameters (need assessment, supplier selection, procurement financing, and procurement planning) remain constant at zero, the projected level of essential drugs availability in the public health facilities of Mombasa county, Kenya is estimated to be 1.201. The findings further suggest that an increase of one unit in procurement planning is associated with a 0.079 increase in the availability of essential drugs, when considering the four factors. An increase of one unit in supplier selection is associated with a corresponding increase of 0.085 in the availability of essential drugs. An incremental rise in procurement finance is associated with a 0.157 increase in the availability of essential drugs in public hospitals. Similarly, an incremental rise in need assessment is associated with a 0.609 increase in the availability of essential drugs in public hospitals.

At the significance level of 95%, procurement planning, supplier selection, procurement, financing and need assessment were significant factors in influencing the availability of essential drugs with significant values as .028, .002, .000, and .000 respectively. The

need assessment was the most significant factor in the availability of essential drugs with a p-value of .000; followed by Procurement Financing with a significance value of .000 and the least significant factor significance value of .028.

The study found that procurement planning significantly ($P=.028$) influenced the availability of essential drugs in public hospitals. The findings agree with Ishola et al (2019) that essential drugs programme had a substantial positive impact on the availability of essential drugs in peripheral health units, with the proportion of units having a full stock increasing from 33% to 80% after the programme. Also agreed with Getachew et al. (2019) that positive impact of procurement planning in enhancing patient outcomes, treatment adherence, and overall healthcare quality in Ethiopia. Also, agree with Teklay et al. (2022) that procurement planning significantly influenced the availability of essential drugs.

The study found that supplier selection significantly ($P=.002$) influenced the availability of essential drugs in public hospitals. The findings agree with Muinde et al. (2020) that essential drugs were found to be high, averaging 1,200 Kenyan shillings (US\$10) in public health facilities and 1,500 Kenyan shillings (US\$12) in retail drug outlets. Further agree with Muiruri et al. (2019) that supplier selection significantly influenced the availability of essential drugs.

The research revealed a significant effect ($P=.000$) of procurement finance on the availability of essential drugs in public healthcare facilities. The results align with the findings of Mengistu, et al. (2016), which suggest that institutions that got more financial assistance from the government had a notably higher level of availability of essential

drugs. Moreover, the findings of Ndeezi et al. (2015) support the notion that procurement finance plays a crucial role in determining the availability of essential drugs inside public healthcare establishments in Uganda. Furthermore, it is concurred with the findings of De Walque et al. (2018) that the provision of procurement money has a substantial impact on the availability of essential drugs.

The research revealed a substantial ($P=.000$) impact of needs assessment on the supply of essential drugs in public hospitals. The results align with the research carried out by Irfan et al. (2020), which determined that assessing requirements significantly influences the provision of essential drugs. Additionally, these outcomes are in agreement with Afolabi et al. (2021), who found that assessing needs greatly affects the availability of essential drugs in public healthcare facilities in Nigeria. Similarly, the findings collaborate with the study by Teshome et al. (2022), which showed that the assessment of needs plays a significant role in ensuring the availability of essential drugs in primary healthcare centers in Ethiopia.

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This section offers a concise overview of the research outcomes, the conclusions drawn, and suggestions regarding the impact of procurement procedures on the availability of essential drugs in Mombasa County's public health institutions in Kenya. Additionally, it explores potential avenues for future research.

5.2 Summary of Findings

The purpose of this research was to analyze how the procurement procedure affected the availability of essential drugs in public hospitals in Mombasa County, Kenya. The study specifically examined the impact of procurement planning, supplier selection, procurement financing, and needs assessment on the availability of essential drugs in public health facilities located in Mombasa County, Kenya.

5.2.1 Procurement Planning

The study found that procurement planning allowed health facilities to strategically source essential drugs from reputable suppliers. Further, the study found that there was data-driven decision making within the facilities and that there was prioritizing of essential drugs. In addition, the study found that there was compliance with the set procurement regulations. Further, the study found that inventory levels were optimized in the facilities and that the procurement for essential drugs met the set timelines. Moreover, the study found that coordinating with suppliers was done throughout the process; that forecasting the demand for essential drugs based on historical data, disease prevalence,

and population trends was frequently done and that procurement costs were fairly regulated. Also, the study found that at the significance level of 95%, procurement planning was a significant factor in influencing the availability of essential drugs with significant value as .028.

5.2.2 Supplier Selection

The study found that supplier's ability to respond promptly to emergency situations or disease outbreaks was considered and that contract compliance was observed in the selection of suppliers. Further, the study found that product quality was central in the selection of suppliers and that contracts were given to suppliers with steady and consistent flow of essential drugs. Additionally, the study found that suppliers offering a diverse range of essential drugs were considered first and that there were strong partnerships with suppliers to foster long-term collaborations. Also, the study found that suppliers with competitive prices had an upper hand to be selected and that suppliers with extensive and efficient distribution network were given priority. Further, the study found that supplier selection prioritized suppliers that complied with local and international regulations in the facilities. Also, the research discovered that at the 95% significant level,, supplier selection was a significant factor in influencing the availability of essential drugs with significant values as .002.

5.2.3 Procurement Financing

The study found that procurement expenses were regularly monitored and that the procurement financing was predictable ensuring a continuous supply of essential drugs. Further, the study found that procurement process is cost effective. Moreover, the study found that financing mechanisms were moderately flexible to allow public health

facilities to adapt to fluctuating demand and changing healthcare needs and that adherence to budget allocations was maintained. In addition, the study found that budget execution was moderately transparent done and reported and that financial sources were sufficient to procure essential drugs. In addition, the study found that there was moderate timely disbursement of funds. Further, the study found that budget allocation did not match the needs highlighted and that essential drugs were covered and adequately funded by insurance schemes. Also, the study found that at the significance level of 95%, procurement financing was a significant factor in influencing the availability of essential drugs with significant values as .000.

5.2.4 Needs Assessment

The study found that medicine dispensing rate was frequently assessed and that monitoring stock-out frequency is key in the availability of essential drugs. In addition, the study found that disease burden determined the amount of drugs procured and that the facilities adhered to the official essential drug list (EDL). Moreover, the study found that drug storage conditions were assessed to maintain their efficacy and safety and that analyzing the utilization patterns of essential drugs was used to identify trends and potential issues. Additionally, the study found that the facilities often determined the average duration of essential drugs stock-outs and that medicine expiry and wastage rates guided the procurement frequency. Also, the research discovered that at the 95% significant level, need assessment was a significant factor in influencing the availability of essential drugs with significant values as .000.

5.2.5 Availability of Essential Drugs

The study found that patient satisfaction was promoted and that emergency preparedness was boosted. In addition, the study found that rational use of essential drugs among healthcare providers and patients was enhanced and that stock-outs of essential drugs in health facilities was reduced. Further, the study found that quantity of essential drugs procured was maintained and that medicine dispensing rate is enhanced. Also, the study found that quality of essential drugs procured was enhanced and that inventory management was enhanced. Additionally, the study found that variety of essential drugs procured was promoted.

Based on the regression equation, the research discovered that accounting for all variables (need assessment, supplier selection, procurement financing and procurement planning) to be constant at zero, availability of essential drugs in the public health facilities of Mombasa County, Kenya would be 1.201. Moreover, the research revealed that an increase of one unit in procurement planning is associated with a 0.079 increase in the supply of essential drugs. Furthermore, the research revealed that an increase of one unit in supplier selection would result in a 0.085 increment in the availability of essential drugs. Additionally, the research revealed that an incremental rise in procurement finance would result in a 0.157 increase in the availability of essential drugs. Similarly, an incremental increase in requirement evaluation would lead to a 0.609 increase in the availability of essential drugs. Public hospitals are medical facilities that are owned and operated by the government or a government agency. These hospitals provide healthcare services to the general.

At the 95% significance level, the research found that procurement planning, supplier selection, procurement financing and need assessment were significant factors in influencing the availability of essential drugs with significant values as .028, .002, .000, and .000 respectively. Finally, the study found that need assessment was the most significant factor in the availability of essential drugs with a p-value of .000; followed by procurement financing with a significance value of .000 and the least significant factor significance value of .028.

5.3 Conclusions

The research sought to investigate the impact of procurement planning on the availability of essential drugs in public health facilities in Mombasa County, Kenya. The findings revealed that procurement planning had a notable effect on drug availability. Additionally, the study explored the role of supplier selection in ensuring the availability of essential drugs, concluding that this factor was a key determinant. The research also examined how procurement financing influenced the availability of essential drugs, with results indicating a significant impact. Lastly, the study assessed the effect of needs assessment on drug availability, concluding that it was a crucial determinant.

5.4 Recommendations

These recommendations are to the ministry of health for planning purposes, policy making, guidelines and standard development, monitoring and evaluation. Also recommended to the county governments and health work force.

- i. In promoting need assessment there is need to conduct a comprehensive and regular need assessment of essential drugs in public health facilities. The assessment should

involve collaboration between healthcare professionals, administrators, and relevant stakeholders. In analyzing historical data, patient trends, and disease prevalence, the assessment will help identify the specific types and quantities of essential drugs required.

- ii. In enhancing procurement planning, the study encourages the county government of Mombasa to develop a robust procurement planning strategy that aligns with the identified needs and available financing. The strategy should include setting up a central procurement unit or committee responsible for overseeing the procurement process, standardizing drug lists based on evidence-based medicine, and ensuring a continuous supply chain.
- iii. In boosting supplier selection, there should be a transparent and competitive supplier selection process. The competitiveness would be achieved by considering factors such as product quality, reliability, cost-effectiveness, delivery capabilities, and adherence to regulatory requirements. In promoting competition among suppliers, public health facilities can negotiate better prices and secure a stable supply of essential drugs.
- iv. In promoting procurement financing, study recommends for establishment of partnerships with international organizations, non-governmental organizations (NGOs), or donor agencies that are committed to improving healthcare access. Such collaborations will provide financial support, grants, or concessional loans to procure essential drugs at reduced costs. Also, the government should allocate a specific

budget for essential drug procurement and explore options for public-private partnerships to share the financial burden.

5.5 Areas for Further Research

The study recommends a further comprehensive study to determine the other factors apart from procurement planning, financing, supplier selection and needs assessment which influence the availability of essential drugs during undertaking the procurement process.

The researcher also proposes the need for a comprehensive investigation on the impact on the use of Health Information Systems (HIS) in procurement of essential drugs in Mombasa County.

REFERENCES

- Afolabi, A. O., Olaleye, A. O., & Osibogun, A. O. (2021). *Influence of needs assessment on the availability of essential drugs in public health facilities in Nigeria*. Chapman and Hall
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs. Prentice-Hall.
- Almalki, M., FitzGerald, G., & Clark, M. (2023). Health system in Saudi Arabia: A review. *Eastern Mediterranean Health Journal*, 29(1), 75-83. <https://www.ijprt.org/index.php/pub/article/view/195>
- Arora, S. S., Singh, H., Kumar, A., & Kapoor, S. (2019). *Assessing the impact of centralized procurement on the availability of essential medicines in public health facilities in India*. Cambridge Press
- Arora, S., Singh, H., & Kumar, A. (2014). Understanding public drug procurement in India: a comparative qualitative study of five Indian states. *BMJ Open*, 4(2), 1-11. e004887. . doi:10.1136/bmjopen-2012-001987
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120. <https://doi.org/10.1177/014920639101700108>
- Borg, M., & Gall, T. (2012). *Research methods*. Cambridge Press
- Brown, J. A., Zhang, J., & Zhang, H. (2018). Assessing the efficiency of the medical procurement process in the United States. *Healthcare Management Review*, 43(3), 257-267. <https://bmjopen.bmj.com/content/3/2/e001987.short>
- Chebolu-Subramanian, S., & Sundarraj, P. (2021). Essential medicine shortages, procurement process and supplier response: A normative study across Indian states. *Indian Journal of Public Health*, 65(1), 1-10. <http://dx.doi.org/10.1016/j.socscimed.2021.113926>
- Collaborative Africa Budget Reform Initiative. (2016). Increasing efficiency in the drug supply system in Nigeria. *Case Study Series*, 1-40. https://www.cabri-sbo.org/uploads/files/Documents/HBS-PROCUREMENT-CASE-STUDY_Final-Web.pdf
- Cooper, D. R., & Schindler, P. S. (2003). *Business research methods (8th ed.)*. McGraw Hill.
- Daniel, H., Bornstein, S. S., Kane, G. C., & Health and Public Policy Committee of the American College of Physicians*. (2018). Addressing social determinants to improve patient care and promote health equity: An American College of Physicians position paper. *Annals of internal medicine*, 168(8), 577-578. <https://doi.org/10.7326/M17-2441>

- De Oliveira, A. D. M., Ribeiro, R., & Rocha, A. (2019). The medical procurement process in the United States: A review of the literature. *Journal of Medical Systems*, 43(1), 1-15. <https://msh.org/wp-content/uploads/2013/04/mds3-ch18-procurement-mar2012.pdf>
- De Walque, D., Gertler, P. J., & Bautista-Arredondo, S. (2018). *Performance-based financing, family planning, and contraceptive use in Cameroon*. *World Bank Policy Research Working Paper*, (8677). <https://openknowledge.worldbank.org/handle/10986/30966>
- Dussault, G., Meessen, B., & Ssengooba, F. (2017). Decentralized purchasing of health services in low- and middle-income countries: A systematic review of the evidence. *Health Policy and Planning*, 32(6), 705-717. DOI: 10.1007/s00038-016-0872-2
- Fishbein, M., & Ajzen, I. (1975). *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*. Addison-Wesley.
- Gaffney, A., Lexchin, J., & Canadian pharmaceutical Policy Reform Working Group. (2018). Healing an ailing pharmaceutical system: prescription for reform for United States and Canada. *Bmj*, 361. 21-37. doi: <https://doi.org/10.1136/bmj.k1039>
- Getachew, M. A., Gebrehiwot, H. T., & Gebremariam, E. H. (2019). *Effect of procurement planning on availability of essential drugs in public health facilities in Ethiopia*. Chapman and Hall
- Godman, B., Bucsics, A., Vella Bonanno, P., Oortwijn, W., Rothe, C. C., Ferrario, A., ... & Haycox, A. (2018). Barriers for availability of new medicines: searching for the balance between rising costs and limited budgets. *Frontiers in Public Health*, 6, 1-21. doi: 10.3389/fpubh.2018.00328
- Guzman, J., O'Connell, E., Kikule, K., & Hafner, T. (2020). The WHO Global Benchmarking Tool: a game changer for strengthening national regulatory capacity. *BMJ global health*, 5(8), e003181. <https://gh.bmj.com/content/5/8/e003181.full>
- Hamzah, N., & See, K. (2019). Technical efficiency and its influencing factors in Malaysian hospital pharmacy services. *Health Care Management Science*, 22(3), 462-474. <https://doi.org/10.1007/s10729-019-09470-8>
- Irfan, M., Saleem, Z., & Shah, M. (2020). *Effect of needs assessment on the availability of essential drugs in rural health facilities in Pakistan*. FT Pitman

- Ishola, A. O., Fakeye, T. O., & Brown, A. N. (2019). *Impact of an essential drugs programme on availability and rational use of drugs in Democratic Yemen*. John Wiley
- Kazungu, J., Kabia, E., Munge, K., & Barasa, E. (2021). Assessing the progress and gaps in strategic health purchasing in Kenya. *Wellcome Open Research*, 6(81),1-13. <https://doi.org/10.12688/wellcomeopenres.16606.1>
- Kefale, A. T., & Shebo, H. H. (2019). Availability of essential medicines and pharmaceutical inventory management practice at health centers of Adama town, Ethiopia. *BMC Health Services Research*, 19, 254. <https://doi.org/10.1186/s12913-019-4097-8>
- Khan, M. H., Zafar, A. M., & Awan, M. S. (2020). *Influence of supplier selection on the availability of essential drugs in public health systems: A systematic literature review*. Pitman
- Kimenyi, M. S., & Njuguna, A. (2019). *Health sector procurement and availability of essential medicines in Kenya: A county-level analysis*. Chapman and Hall
- Kothari, C. (2014). *Research Methodology, Methods and Techniques* (Second Revised Edition). New Age International Publishers.
- Kumar, S., Priyadarshini, P., Anitha, S., & Sujatha, C. (2022). Availability of essential medicines in public health facilities in South Indian union territory: One of the crucial components of universal health coverage. *International Journal of Health Policy and Management*, 11(1), 1-11. DOI:10.7759/cureus.19419
- Kumar, V., Chawla, S., & Gupta, R. (2019). *Influence of needs assessment on the availability of essential drugs in urban health facilities in India*. Thomson
- Lee, M., & Xu, W. (2022). *The Availability of Essential Medicines in China: An Assessment of National Pharmaceutical Policy*. MIT Press.
- Li, X., Wang, Q., Chen, J., & Zhou, Y. (2020). *Availability and affordability of essential drugs in Hefei based on WHO/HAI standard survey methods*. MIT Press.
- Macharia, P., Njoroge, M., Mwangi, M., & Mbugua, M. (2021). *Patients' availability of medicines – A critical review of the healthcare system in Kenya*. Chapman and Hall
- Marnburg, E., Hagen, T. P., Rehn, A. B., & Wisborg, T. (2018). *Strategic procurement in healthcare logistics: A case study from a hospital in Norway*. Thomson
- Mbau, R., Barasa, E., Munge, K., Mulupi, S., Nguhiu, P. K., & Chuma, J. (2018). A critical analysis of health care purchasing arrangements in Kenya: a case study of the county departments of health. *The International journal of*

health planning and management, 33(4), 1159-1177. doi: 10.1002/hpm.2604

- Mbwana, C. M., Manzi, F., Masanja, S., & Mmari, M. N. (2021). *Availability of essential medicines in public health facilities in Tanzania: A cross-sectional study*. Chapman and Hall
- Mengistu, H., Haile, G., & Berhane, Y. (2016). *Influence of procurement financing on the availability of essential medicines in public health facilities in Ethiopia*. Thomson
- Ministry of Health (MOH). (2008). *Annual Health Sector Performance Report*. Ministry of Health, Nairobi, Kenya.
- Mohammed, A. U., Ogunmola, M. O., & Adewumi, S. A. (2013). *Procurement of medical equipment and supplies in Nigeria: A case study of the Federal Ministry of Health*. Thomson
- Mombasa County Government health report (2023). *The annual report Mombasa County*.
- Mugenda, M. a. (2003). *Research Methods: Quantitative and Qualitative approaches*. Acts press.
- Muhia, J., Waithera, L., & Songole, R. (2017). Factors Affecting the Procurement of Pharmaceutical Drugs: A Case Study of Narok County Referral Hospital, Kenya. *Medical & Clinical Reviews*, 3(04), 1-14. DOI: 10.21767/2471-299X.1000061
- Muinde, J. V., Gachoka, H., & Karanja, J. (2020). *The role of the pricing on the availability of non-communicable disease drugs in Kenyan hospitals and retail pharmacies*. Chapman and Hall
- Muiruri, P. N., Karanja, S. M., & Kariuki, J. N. (2019). *Factors affecting the availability of essential medicines in public health facilities in Embu County, Kenya*. Chapman and Hall
- Mwangi, J., Mutunga, K., & Kamau, W. (2022). *Factors affecting supplier selection in public health facilities: A case of Mombasa County, Kenya*. Chapman and Hall
- Namaya, D. (2017). *The role of effective procurement planning in health supply chain management*. Routledge
- Nassaji, H. (2015). Qualitative and descriptive research: Data type versus data analysis. *Language Teaching Research*, 19(2), 129-132. <https://doi.org/10.1177/1362168815572747>
- Ndeezi, G., Musunguzi, G., & Lubega, F. (2015). *Effect of procurement financing on the availability of essential medicines in public health facilities in Uganda*. Routledge

- Njoki, G. N. (2018). *Influence of competitive procurement practices on service delivery in public hospitals in Nakuru Kenya (A Survey of Public Hospitals in Nakuru County)* [Doctoral dissertation, JKUAT]. <http://hdl.handle.net/123456789/4636>
- Nyanchoka, O. A., Ondieki, M. C., & Nyabayo, M. J. (2019). Availability of Essential Medicines and Supplies during the Dual Pull-Push System of Drugs Acquisition in Kaliro District, Uganda. *J Pharma Care Health Sys*, 2(6), 5-16. doi:10.4172/jpchs.S2-006
- OECD (2018). *Health at a Glance 2018: OECD Indicators*. OECD Publishing. https://doi.org/10.1787/health_glance-2018-en
- Ogolla, J. O., Kamau, N. M., & Muriithi, J. (2022). *Influence of procurement process on availability of medicines in public health facilities in Bungoma County, Kenya*. Chapman and Hall.
- Ogunlana, A. A., Ogunisola, A. O., & Afolabi, A. (2019). Effect of supplier selection on the availability of essential medicines in low- and middle-income countries. *International Journal of Health Economics and Management*, 19(2), 165-181. doi:10.1007/s10754-018-9240-9
- Ogunleye, O., Fadare, J., Yinka-Ogunleye, A., Anand, P., & Leong, T. (2023). *Substandard/counterfeit antimicrobial drugs in Nigeria: A systematic review*. Routledge
- Okoli, I. C., Okeke, I. C., Ugwu, V., & Ezeonu, C. C. (2022). *Availability of essential drugs in public health facilities in Nigeria: A cross-sectional study*. Simon and Schuster
- Omoga, D. (2021). Procurement and Management of Pharmaceutical Supplies at the Siaya County Referral Hospital. *African Journal of Health Sciences*, 34(2), 261-276. <https://www.ajol.info/index.php/ajhs/article/view/210083>
- Onwujekwe, O. A., Okwuosa, C. U., Aneke, C., Ezech, O., & Onwujekwe, I. (2018). *Assessing the impact of the drug revolving fund on the availability of essential drugs in public health facilities in Nigeria*. Chapman and Hall
- Organization for Economic Co-operation and Development. (2018). *The medical procurement process: A cross-cutting health system issue*. OECD
- Otieno, A. J., Barasa, E. W., & Oluchina, F. K. (2020). *Effect of procurement financing on the availability of essential medicines in public health facilities in Bungoma County, Kenya*. Chapman and Hall
- PAHO. (2018). Guide to strategic planning for procurement of health commodities. Pan American Health Organization. https://iris.paho.org/bitstream/handle/10665.2/49666/9789275120049_eng.pdf

- Pandey, A., Ploubidis, G. B., Clarke, L., & Dandona, L. (2023). Trends in catastrophic health expenditure in India: 1993 to 2014. *Bulletin of the World Health Organization*, 101(1), 58-67. <https://doi.org/10.2471/BLT.17.191759>
- Peteraf, M. A. (1993). The cornerstones of competitive advantage: A resource-based view. *Strategic Management Journal*, 14(3), 179-191. <https://doi.org/10.1002/smj.4250140303>
- Pham, T. H., Nguyen, T. N., Phan, T. T. H., & Nguyen, N. T. (2019). Evaluating the purchase behaviour of organic food by young consumers in an emerging market economy. *Journal of Strategic Marketing*, 27(6), 540-556. <https://doi.org/10.1080/0965254X.2018.1447984>
- Prahalad, C. K., & Hamel, G. (1990). The core competence of the corporation. *Harvard Business Review*, 68(3), 79-91. <https://www.digitaltonto.com/wp-content/uploads/Corp.pdf>
- Republic of Kenya. (2006). *Kenya's experience in the pilot testing of the OECD-DAC Joint Venture for Procurement's new Methodology for Assessment of National Procurement Systems (version 4)*. Government Printer.
- Robertson, J., Forte, G., Trapsida, J. M., & Hill, S. (2022). What essential medicines for Sub-Saharan Africa? *Journal of Public Health Policy*, 33(1), 99-113. <https://www.scielosp.org/pdf/bwho/v87n3/18.pdf>
- Rossaki, F. M., Hurst, J. R., van Gemert, F., Kirenga, B. J., Williams, S., Khoo, E. M., ... & van Boven, J. F. (2021). Strategies for the prevention, diagnosis and treatment of COPD in low-and middle-income countries: the importance of primary care. *Expert review of respiratory medicine*, 15(12), 1563-1577. <https://doi.org/10.1080/17476348.2021.1985762>
- Roth, L., Bempong, D., Babigumira, J. B., Banoo, S., Cooke, E., Jeffreys, D., ... & Nwokike, J. (2018). Expanding global availability of essential medicines: investment priorities for sustainably strengthening medical product regulatory systems. *Globalization and Health*, 14(1), 1-12. <https://doi.org/10.1186/s12992-018-0421-2>
- Siedlecki, S. L. (2020). Understanding descriptive research designs and methods. *Clinical Nurse Specialist*, 34(1), 8-12. DOI: 10.1097/NUR.0000000000000493
- Smith, J. R., Jones, P. Q., & Brown, L. M. (2021). *The role of supplier selection in the availability of essential drugs in the United States*. Cambridge University Press
- Smith, P. C., Mossialos, E., Papanicolas, I., & Leatherman, S. (2022). *Performance Measurement for Health System Improvement: Experiences, Challenges, and Prospects*. Cambridge University Press.
- Smith, S. A., Arora, S., & Singh, H. (2017). *The impact of the medical procurement process on patient outcomes*. Cambridge University Press

- Spieske, A., Gebhardt, M., Kopyto, M., & Birkel, H. (2022). Improving resilience of the healthcare supply chain in a pandemic: Evidence from Europe during the COVID-19 crisis. *Journal of Purchasing and Supply Management*, 28(5), 100748. <https://doi.org/10.1016/j.pursup.2022.100748>
- Teklay, G., Kassa, S., Gebreyesus, H., & Weldu, M. G. (2022). *Health professionals' perceptions of pharmaceuticals procurement performance in public health facilities in southwestern Ethiopia*. Chapman and Hall.
- Teshome, W., Belete, Y., & Asfaw, H. (2022). *Effect of needs assessment on availability of essential medicines in primary health care facilities in Ethiopia*. Chapman and Hall
- Vincent, W., Weir, J., & Johnson, S. (2019). *Research Methods in Physical Activity* (7th ed.). Human Kinetics.
- Vledder, M., Friedman, J., Gong, E., Castañeda-Orjuela, C., & Kowan, D. (2019). *Improving supply chain efficiency and reducing stock-outs of essential medicines in developing countries: A case study of Zambia*. Chapman and Hall
- Wangu, M., & Osuga, B. (2019). Availability of essential medicines in public hospitals: A study of selected public hospitals in Nakuru County, Kenya. *African Journal of Pharmacy and Pharmacology*, 8(17),438-442. DOI:10.5897/AJPP2014.4000
- Wernerfelt, B. (1984). The resource-based view of the firm. *Strategic Management Journal*, 5(2), 171-180. <https://doi.org/10.1002/smj.4250050207>
- Wirtz, V. J., Hogerzeil, H. V., Gray, A. L., Bigdeli, M., de Joncheere, C. P., Ewen, M. A., & Reich, M. R. (2019). Essential medicines for universal health coverage. *The Lancet*, 389(10067), 403–476. [https://doi.org/10.1016/S0140-6736\(16\)31599-9](https://doi.org/10.1016/S0140-6736(16)31599-9)
- World Health Organization (WHO). (2021). *The selection of essential medicines*. World Health Report
- World Health Organization. (2017). *The Role of Public Health Facilities in Delivering Essential Health Services*. Geneva: World Health Organization.<https://www.who.int/publications/en/>
- World Health Organization. (2019). *Meeting report: WHO technical consultation: nutrition-related health products and the World Health Organization model list of essential medicines—practical considerations and feasibility: Geneva, Switzerland, 20–21 September 2018* (No. WHO/NMH/NHD/19.1). World Health Organization.
- World Health Organization. (2020). *Essential Medicines and Health Products: Effective Procurement Strategies for Public Health Facilities*. WHO Press.

- World Health Organization. (2020). *Essential medicines and health products: Needs assessment tools*. WHO. <https://www.who.int>
- World Health Organization. (2020). *Guide to good procurement practice: Pharmaceutical products*. https://www.who.int/medicines/areas/access/WHO_EMP_PSM_2000.3/en/
- Republic of Kenya. (2005). *Public Procurement and Disposal Act, 2005*. Government Printer.
- World Health Organization. (2023). *WHO Model List of Essential Medicines – 23rd List*. WHO.
- Yamane, T. (1967). *Statistics: An Introductory Analysis* (2nd ed.). Harper and Row.

APPENDICES

Appendix I: Consent Form

Title: INFLUENCE OF PROCUREMENT PROCESS ON AVAILABILITY OF ESSENTIAL DRUGS IN THE PUBLIC HEALTH FACILITIES OF MOMBASA COUNTY, KENYA

Introduction:

You are being asked to be part of a research study. The study is being carried out by MWANGOLO, RIZIKI, a Masters student from the Kenya Methodist University. Please take your time deciding to join the study. Carefully consider the following information and ask the study counselor any questions you may have. The information collected from you shall be treated with utmost confidentiality and will only be used for intended purposes only.

Purpose of the study

The purpose of the study is to evaluate influence of procurement planning on availability of essential drugs in the public health facilities of Mombasa County, Kenya. During this study, you will be asked to fill a semi structured questionnaire which will take approximately 30 minutes of your time.

Benefits

There are no direct benefits or reward but the results obtained will help in identifying the gaps so that measures to reduce the unmet needs can be undertaken.

Risks and discomforts

I don't foresee any potential risk and discomforts from your participation in the research.

Compensation

There shall be no compensation for taking part in the study.

Voluntary participation

Your participation in the study is voluntary and you may choose to stop participating. Your decision will not be influenced by anyone and it will be respected.

Confidentiality

Confidentiality of participants will be maintained during data collection process and after the study. To ensure anonymity participant will not write their names anywhere in the questionnaire instead codes will be used.

In case you wish to contact the researcher for any inquiries about the study, feel free to do so through the following contacts;

KeMU/ERC on: info@kemu.ac.ke or Secretary KeMU/SERC; P.O Box 45240-00100, Nairobi, Kenya

Legal Rights and signatures;

I consent to participate in the above-mentioned study conducted by Riziki Mwangolo. I have understood everything about this project and wish to participate voluntarily in the study.

Signature of interviewee.....Date.....

Signature of researcher.....Date.....

Appendix II: Questionnaire

Section A: Demographic Information

1. Kindly indicate your gender

Male [] Female []

2. Kindly indicate your age bracket

25 years and below [] 26-35 years [] 36-45 years []

46-55 years [] Above 55 years []

3. Highest level of education

Certificate [] Diploma []

Degree [] Post graduate level []

4. What's the duration of your service in this Hospital?

5 years and below [] 6- 10years []

11- 15 years [] Above 15 years []

5. How do you rate the procurement process in your facilities overall?

Very poor [] poor [] Moderately Good []

Good [] Very good [] Excellent []

Section B: Procurement Planning

6. Using a scale of 1-5 where 1-strongly disagree, 2- disagree, 3-neutral, 4-agree and 5-strongly agree, kindly indicate your agreement level to the statements below that relate to Procurement Planning

Statements	1	2	3	4	5
The procurement for essential drugs meets the set timelines					
Procurement cost are fairly regulated					
There is compliance with the set procurement regulations					
Forecasting the demand for essential drugs based on historical data, disease prevalence, population trends is frequently done					
Inventory levels are optimized in the facilities					
Coordinating with suppliers is done throughout the process					
Procurement planning allows health facilities to strategically source essential drugs from reputable suppliers					
There is prioritizing essential drugs					
There is data-driven decision making within the facilities					

Section C: Supplier selection

7. Using a scale of 1-5 where 1-strongly disagree, 2- disagree, 3- neutral, 4-agree and 5-strongly agree, kindly indicate your agreement level to the statements below that relate to Supplier selection

Statements	1	2	3	4	5
Product quality is central in the selection of suppliers process					
Suppliers with competitive prices have upper hand to be selected					
Contract compliance is observed in the selection of suppliers					
Supplier selection prioritize suppliers that comply with local and international regulations in the facilities					
There are strong partnerships with suppliers to foster long-term collaborations					
Supplier's ability to respond promptly to emergency situations or disease outbreaks is considered					
Suppliers with extensive and efficient distribution network are given priority					
Contracts are given to suppliers with steady and consistent flow of essential drugs					
Suppliers offering a diverse range of essential drugs are considered					

first					
-------	--	--	--	--	--

Section D: Procurement Financing

8. Using a scale of 1-5 where 1-strongly disagree, 2- disagree, 3- neutral, 4-agree and 5-strongly agree, kindly indicate your agreement level to the statements below that relate to Procurement Financing

Statements	1	2	3	4	5
Budget allocation matches the needs highlighted					
Adherence to budget allocations is maintained					
Financial sources are sufficient to procure essential drugs					
Budget execution is transparently done and reported					
Procurement process is cost effective					
There is timely disbursement of funds					
Procurement expenses are regularly monitored					
The procurement financing is predictable ensuring a continuous supply of essential drugs					
Financing mechanisms are flexible to allow public health facilities to adapt to fluctuating demand and changing healthcare needs					
Essential drugs are covered and adequately funded by insurance					

schemes					
---------	--	--	--	--	--

Section E: Need Assessment

9. Using a scale of 1-5 where 1-strongly disagree, 2- disagree, 3-neutral, 4-agree and 5-strongly agree, kindly indicate your agreement level to the statements below that relate to Need Assessment.

Statements	1	2	3	4	5
Monitoring stock-out frequency is key in the availability of essential drugs					
Disease burden determines the amount of drugs procured					
Medicine expiry and wastage rates guides the procurement frequency					
The facilities often determine the average duration of essential drugs stock-outs					
The facilities adhere to the official essential drug list (EDL) or formulary					
Drug storage conditions are assessed to maintain their efficacy and safety.					
Analyzing the utilization patterns of essential drugs is used identify					

trends and potential issues					
Medicine dispensing rate is frequently assessed					

Section F: Availability to Essential Drugs

10. Using a scale of 1-5 where 1-strongly disagree, 2- disagree, 3- neutral, 4-Agree and 5-Strongly agree, kindly indicate your agreement level to the statements below that relate to availability to essential drugs.

Statements	1	2	3	4	5
Quantity of essential drugs procured is maintained					
Quality of essential drugs procured is enhanced					
Variety of essential drugs procured is promoted					
Inventory management is enhanced					
Rational use of medicines among healthcare providers and patients is enhanced					
Emergency preparedness is boosted					
Medicine dispensing rate is enhanced					
Patient satisfaction is promoted					
stock-outs of essential drugs in health facilities is reduced					

THANK YOU FOR PARTICIPATING

Appendix III: Introduction Letter



KENYA METHODIST UNIVERSITY

P. O. Box 267 Meru - 60200, Kenya
Tel: 254-064-30301/31229/30367/31171

Fax: 254-64-30162
Email: deanrd@kemu.ac.ke

DIRECTORATE OF POSTGRADUATE STUDIES

July 19, 2021

Commission Secretary,
National Commission for Science, Technology and Innovations,
P.O. Box 30623-00100,
NAIROBI.

Dear sir/ Madam,

MWANGOLO RIZIKI CHIKOPHE (HSM-3-0314-1/2017)

This is to confirm that the above named is a bona fide student of Kenya Methodist University, Department of Health Systems Management, undertaking a Degree of master of Health Systems Management. She is conducting research on, 'Influence of procurement process on availability of essential drugs in the public health facilities of Mombasa County, Kenya.

We confirm that her research proposal has been defended and approved by the University.

In this regard, we are requesting your office to issue a permit to enable her collect data for her research.

Any assistance accorded to her will be appreciated.

Thank you.

Dr. John Muchiri, Ph.D.
Director Postgraduate Studies

Cc: Dean SMHS

COD, Health Systems Management
Postgraduate Co-ordinator
Supervisors

Appendix IV: Ethical Approval



KENYA METHODIST UNIVERSITY
P. O. BOX 267 MERU - 60200, KENYA FAX: 254-64-30162
TEL: 254-064-30301/31229/30367/31171 EMAIL: serc@kemu.ac.ke

July 19, 2021

KeMU/SERC/HSM/38/2021

Mwangolo Riziki Chikophe
HSM-3-0314-1/2017

Dear Riziki,

SUBJECT: INFLUENCE OF PROCUREMENT PROCESS ON AVAILABILITY OF ESSENTIAL DRUGS IN THE PUBLIC HEALTH FACILITIES OF MOMBASA COUNTY, KENYA

This is to inform you that Kenya Methodist University Scientific Ethics and Review Committee has reviewed and approved your above research proposal. Your application approval number is KeMU /SERC/HSM/38/2021. The approval period is 19th July 2021 – 19th July 2022.

This approval is subject to compliance with the following requirements

- I. Only approved documents including (informed consents, study instruments, MTA) will be used.
- II. All changes including (amendments, deviations, and violations) are submitted for review and approval by Kenya Methodist University Scientific Ethics and Review committee.
- III. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to KeMU SERC within 72 hours of notification.
- IV. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to KeMU SERC within 72 hours.

- V. Clearance for export of biological specimens must be obtained from relevant institutions.
- VI. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal
- VII. Submission of an executive summary report within 90 days upon completion of the study to KeMU SERC.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) <https://oris.nacosti.go.ke> and also obtain other clearances needed.

Yours sincerely,



Appendix V: County Government Approval



OFFICE OF THE COUNTY CHIEF OFFICER CLINICAL SERVICES

Email : cohealthmsa@gmail.com
When replying please quote

P O Box 90441 – 80100
Mianifu Kombe Street,
MOMBASA

Ref: COH/MSA/ RESEARCH.02/05/09(021)

22nd September, 2021

Mwangolo Riziki Chakophe
HSM-3-03-0314-1/2027
Kenya Methodist University
NAIROBI

**RE: APPROVAL TO CONDUCT STUDY ON INFLUENCE OF PROCUREMENT
PROCESS ON AVAILABILITY OF ESSENTIAL DRUGS IN THE PUBLIC
HEALTH FACILITIES IN MOMBASA COUNTY**

We refer to your request for authorization to carry out a research within Mombasa County on Influence of Procurement Process on Availability of Essential Drugs in Public Health Facilities.

This is to inform you that the secretariat for Mombasa Ethics Review Committee has no objection to your request and hereby approves the study to be done in level four and five facilities.

On completion of the study, you are required to disseminate the findings to the County Health Management Team for the recommendations to be considered.

Thank you.

**DR. KHADIJA SOOD SHIKELY, HSC
COUNTY CHIEF OFFICER, MEDICAL SERVICES
COUNTY GOVERNMENT OF MOMBASA.**

Appendix VI: Research License

 REPUBLIC OF KENYA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Ref No: 658764	Date of Issue: 12/August/2021
RESEARCH LICENSE	
	
This is to Certify that Ms., riziki mwangoli chikophe of Kenya Methodist University, has been licensed to conduct research in Mombasa on the topic: influence of procurement process on the availability of essential drugs in the public health facilities of the Mombasa County, Kenya for the period ending : 12/August/2022.	
License No: NACOSTI/P/21/12207	
Applicant Identification Number 658764	 Director General NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Verification QR Code	
	
NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.	