Evaluation of Medicines Pooled Procurement Programmes (PPPs) in Ghana

By

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A DISSERTATION

Presented to the Department of
Supply Chain Management
program at Selinus University
Faculty of Business & Media
in fulfillment of the requirements
for the degree of Doctor of Philosophy
in Supply Chain Management

2025

DECLARATION

I do hereby declare that this thesis titled "Evaluation of Medicines Pooled Procurement Programmes (PPPs) in Ghana", submitted to Selinus University, Faculty of Business & Media, for the award of a Doctor of Philosophy in Supply Chain Management is a result of my original research and has not been presented by anyone for any academic award at this university. All references used in this work have duly been acknowledged. I bear sole responsibility for any shortcomings in this document.

Date: 01/08/2025

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DEDICATION

To the memory of my late mother, Maame Salomey Akua Fremah and to everyone who is contributing to improving access to quality and affordable medicines.

AKNOWLEDGEMENT

I thank the Lord Almighty for His unfailing love and faithfulness towards me.

I thank the leadership of the Catholic Health Service Trust in Ghana and the Ghana Adventist Health Service for allowing me to use their facilities for this research. I am also grateful to all participating institutions.

I am grateful to the Country Director of Pharmaccess, Ghana, Dr Maxwell Antwi for his support and encouragement and all member of the Med4All team the cooperation.

I am grateful to my research supervisor, Dr. Salvatore Fava for his guidance throughout this work.

I also express my sincere thanks to everyone who in diverse ways played a role in this work.

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ABSTRACT

This present study sought to assess the effectiveness and impact of Medicines Pooled Procurement Programmes (PPPs) on healthcare delivery in Ghana. The various programs in Ghana that were included in the study are Catholic Health Service Trust, Ghana Adventist Health Service and Med4All. The study adopted a qualitative research methodology. The study conducted interview to solicit relevant information from individual in areas such as procurement, finance, logistics/supply chain, pharmacy as well as policy and planning within the 3 main PPPs institutions. Information gathered from the interview were analyzed using thematic analytical procedure. The study found that PPPs in Ghana have varying levels of efficiency, with CHST achieving 90–95% fulfillment through centralized governance, GAHS ensuring access via a warehousing model, and Med4All using a digital platform for rapid procurement. Also, study found that PPP success is driven by policy mandates, demand aggregation, quality assurance, financial support, and digital systems, which together enable equitable medicine access. Again, study found that PPPs have improved medicine availability and accessibility, especially in rural areas, through reliable supply chains and direct delivery. Moreover, the study found that PPPs have strengthened medicine quality and safety through audits, regulatory checks, and field testing. Furthermore, study found that payment delays, inflation, logistics, and limited product coverage threaten PPP sustainability. The study recommends that pooled procurement programmes in Ghana should expand their product catalogues to include non-drug consumables, enhance digital platform reliability, strengthen supplier performance management, establish centralized payment systems linked to NHIS reimbursements, and harmonize procurement across major faith-based networks to improve sustainability, scalability, and medicine access.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Healthcare is crucial for the development and sustainability of any country, serving as a cornerstone for economic growth, social stability, and improved quality of life. Effective healthcare systems not only reduce mortality and morbidity but also enhance productivity and social well-being. Medicines play a pivotal role in healthcare delivery, directly impacting patient outcomes and the overall quality of care. In countries like Ghana, access to essential medicines is fundamental to addressing prevalent health issues and achieving universal health coverage. The availability and proper management of medicines are critical for treating chronic diseases, managing infectious diseases, and ensuring maternal and child health (Kefale and Shebo, 2019; WHO, 2024). Proper procurement and distribution practices are essential to maintaining a consistent supply of these vital resources.

However, the rising cost of medicines is a significant challenge affecting healthcare delivery in developing countries like Ghana. As stated by the World Health Organization (2024), high medicine prices limit access to essential treatments, particularly for low-income populations. According to a study by Cameron et al. (2009), the cost of medicines in low- and middle-income countries can be up to 20 times higher than international reference prices. This situation exacerbates health inequalities and places a financial burden on healthcare systems. Various strategies have been adopted to mitigate these rising costs, including the implementation of national medicine policies, price regulation, and promoting generic medicines. As shown by the Domfeh (2021), pooled procurement programmes (PPPs) are one such strategy, aimed at reducing costs through bulk purchasing and improved negotiation power. These measures are crucial for ensuring sustainable access to affordable medicines.

Pooled Procurement Programmes (PPPs) play a critical role in ensuring the accessibility and availability of medicines, thereby enhancing the quality of healthcare delivery. As stated by the World Health Organization (2024), PPPs help lower medicine costs through bulk purchasing and improved negotiation power, which is especially beneficial for countries with limited resources. In Ghana, several pooled procurement entities have been established to optimize medicine procurement and distribution. The Ghana Adventist Central Medical Store, for instance, coordinates the procurement of medicines for various Adventist health facilities, ensuring a consistent supply of essential drugs. Again, National Catholic Health Service Pooled Procurement system similarly aims to reduce costs and improve availability by centralizing the procurement process for Catholic health facilities across Ghana. The Pentecost Health Service Pooled Procurement Programme also plays a significant role by aggregating demand from various Pentecost health institutions, facilitating economies of scale. Lastly, the Ministry of Health (MoH) Framework Contract provides a structured approach to medicine procurement for public health facilities, ensuring transparency and efficiency in the supply chain (MoH Ghana, 2017). These entities collectively contribute to the overarching goal of improved healthcare delivery in Ghana.

These PPPs in Ghana employ various procurement approaches to enhance efficiency and reduce costs. For instance, the Ghana Adventist Central Medical Store utilizes bulk purchasing to leverage economies of scale, while the National Catholic Health Service adopts a centralized procurement system to streamline the supply chain. The Pentecost Health Service focuses on aggregating demand from member institutions to negotiate better prices and ensure a steady supply of medicines. Despite their successes, PPPs in Ghana face several challenges. As shown by a report from the WHO (2021), common issues include logistical hurdles, funding constraints, and regulatory barriers that can impede the timely distribution of medicines. Furthermore, coordination among various health entities and maintaining the quality of

procured medicines remain significant concerns. Addressing these challenges is crucial for the sustainability and effectiveness of PPPs in enhancing healthcare delivery in Ghana.

Pooled Procurement Programmes (PPPs) continue to play a crucial role in optimizing medicine procurement and distribution in Ghana. These programs aggregate demand across health facilities, leverage economies of scale, and negotiate better prices, thereby enhancing accessibility and affordability of medicines (World Health Organization, 2021). Despite their importance, there has been a noticeable gap in academic investigations into the effectiveness and impact of PPPs in Ghana. While limited academic evidence (e.g., Domfeh, 2021, 2023) suggests their positive contribution to healthcare delivery, comprehensive academic studies on this topic are lacking. Therefore, this study aims to conduct a detailed investigation into the activities and outcomes of PPPs in Ghana, employing case studies of entities such as the Ghana Adventist Central Medical Store, the National Catholic Health Service Pooled Procurement, and others, to provide empirical insights into the effectiveness, challenges, and potential enhancements of PPPs.

1.2 Problem of Statement

Pooled Procurement Programmes (PPPs) play a crucial role in Ghana's healthcare system by enhancing the accessibility and affordability of medicines. These initiatives aggregate demand, negotiate better prices, and streamline procurement processes, thereby contributing significantly to healthcare delivery (World Health Organization, 2021; Ministry of Health, Ghana, 2017). Centralizing procurement efforts enables PPPs to ensure a consistent supply of essential medicines across health facilities, particularly benefiting underserved populations and improving overall healthcare outcomes.

Despite their intended benefits, PPPs in Ghana face several challenges identified by Domfeh (2021). These include delays in payments from the National Health Insurance Scheme, inadequate consultation between health facilities and the PPP secretariat, insufficient physical infrastructure, poor internet accessibility hindering data management, and incomplete coverage of healthcare facilities under PPP arrangements. These challenges undermine the efficiency and effectiveness of PPPs, impacting their ability to fully meet healthcare demands (Domfeh, 2021).

On top of that, issues related to PPPs have not received significant academic attention over the years. Limited academic studies have focused on PPPs in Ghana, with notable contributions from Domfeh (2021, 2023). These studies primarily examine the operational efficiency and challenges of PPPs, highlighting gaps in comprehensive research on their broader impacts and sustainability within the Ghanaian context. Consequently, there remains a significant gap in understanding the holistic implications of PPPs beyond operational challenges and efficiency metrics (Domfeh, 2021, 2023).

Furthermore, there is limited empirical evidence regarding various aspects of PPPs in Ghana. Previous studies by Domfeh (2021, 2023) predominantly address operational efficiency and challenges, neglecting crucial aspects such as the factors influencing the establishment of PPPs and their long-term sustainability. This void restricts a thorough understanding of the essential factors necessary for successful implementation and sustainability of PPPs in the Ghanaian healthcare landscape.

Due to the aforementioned challenges and evidence gaps, this study aims to conduct an in-depth investigation into PPPs in Ghana. Specifically, it seeks to provide empirical evidence on various dimensions of PPPs, including their operational efficiency, challenges, factors influencing their establishment, sustainability issues, and broader impacts on healthcare

delivery. Therefore, this research endeavors to contribute significantly to the body of knowledge on PPPs in Ghana, providing actionable insights for policymakers, healthcare administrators, and stakeholders involved in enhancing healthcare delivery and ensuring sustainable access to medicines.

1.3 Aim of the Study

The aim of this study is to assess the effectiveness and impact of Medicines Pooled Procurement Programmes (PPPs) on healthcare delivery in Ghana.

1.4 Research Objectives

I. To assess the efficiency and effectiveness of the programmes in Ghana.
II. To identify and evaluate the enabling factors for setting up PPPs in Ghana.
III. To explore the challenges and limitations and risks associated with PPPs in Ghana.
IV. To investigate the impact of PPPs on the accessibility and availability of essential medicines.
V. To examine the sustainability and scalability of PPPs in the Ghanaian healthcare system.
VI. To assess the impact of PPPs on the quality and safety of medicines procured.

1.5 Research Questions

i. How efficient and effective are the Medicines Pooled Procurement Programs (PPPs) in Ghana?
ii. What are the enabling factors for setting up PPPs in Ghana?
iii. What are the challenges, limitations, and risks associated with PPPs in Ghana?
iv. How do PPPs impact the accessibility and availability of essential medicines in Ghana?
v. How sustainable and scalable are PPPs within the Ghanaian healthcare system?

vi. What is the impact of PPPs on the quality and safety of medicines procured in Ghana?

1.6 Significance of the Study

This study contributes to the academic field by addressing the existing research gap on Medicines Pooled Procurement Programmes (PPPs) in Ghana. The provision of empirical data and in-depth analysis enhances the understanding of PPPs' role in healthcare delivery. The findings will offer valuable insights for scholars and researchers interested in healthcare management and procurement strategies, thus enriching the literature on health economics and policy.

From a practical standpoint, this study provides healthcare practitioners and administrators with evidence-based recommendations for optimizing PPP operations. Through the identification of the best practices and highlighting operational challenges, the research offers actionable strategies to improve the efficiency and effectiveness of PPPs. This, in turn, can lead to better resource allocation, reduced medicine costs, and improved access to essential medications for health facilities across Ghana.

On a policy level, the study informs policymakers about the strengths and weaknesses of current PPP implementations. The findings can guide the development of more robust and sustainable PPP frameworks, influencing policy reforms and strategic planning in the healthcare sector. Addressing critical issues such as infrastructure, financing, and regulatory challenges enables the research to support the creation of policies that enhance the overall impact of PPPs on healthcare delivery in Ghana.

1.7 Scope of the Study

This study focuses on the implementation and impact of Medicines Pooled Procurement Programs (PPPs) within the healthcare system in Ghana. The research is specifically limited to the following PPPs: the Ghana Adventist Central Medical Store, the National Catholic Health Service Pooled Procurement, the Pentecost Health Service Pooled Procurement Programme,

and the Ministry of Health (MoH) Framework Contract. The study examines these programs in terms of their efficiency, challenges, and contributions to healthcare delivery in Ghana, providing insights into how these specific PPPs operate within the broader context of the national healthcare system.

1.8 Organisation of the Study

This study is structured into six chapters. Chapter One introduces the research topic, objectives, and significance of the study. Chapter Two reviews relevant literature, covering key concepts, theoretical frameworks, and empirical studies related to Medicines Pooled Procurement Programs. Chapter Three outlines the research methodology, including the research design, data collection, and analysis methods. Chapter Four presents the results of the study based on the data collected. Chapter Five discusses the findings in relation to the literature and research objectives. Chapter Six concludes the study, summarizing the key findings and providing recommendations.

1.9 Chapter Summary

Chapter One provided an overview of the study, outlining the background and significance of Medicines Pooled Procurement Programs (PPPs) in Ghana's healthcare system. The chapter detailed the problem statement, highlighting the challenges and gaps in existing research on PPPs. It also presented the aim and objectives of the study, emphasizing the need to assess the effectiveness, challenges, and impact of PPPs on healthcare delivery. The scope of the study was defined, focusing on specific PPPs within Ghana, and the chapter concluded with the organization of the study across six chapters. The next chapter will delve into the literature review, examining relevant concepts, theories, and empirical studies related to PPPs.

CHAPTER TWO

LITERATURE REVIEW

2.1 Chapter Introduction

This chapter presents a detailed review of relevant literature on Medicines Pooled Procurement Programs (PPPs) in the healthcare sector, focusing on three main areas: key concepts, theoretical frameworks, and empirical studies. The chapter begins by exploring the concept of procurement within healthcare organizations, including various procurement methods and the specific context of pooled procurement in Ghana. It then examines the application of Institutional Theory, Resource-Based View Theory, and Public Goods Theory to understand the dynamics of PPPs. The latter part of the chapter provides an empirical review of existing studies, identifying gaps and establishing how this research aims to address them within the Ghanaian healthcare system.

2.2 Concepts Review

2.2.1 The Concept of Procurement in Healthcare Organizations

Procurement, broadly defined, is the process of acquiring goods, services, or works from an external source, often through a tendering or competitive bidding process. It encompasses a range of activities, from identifying needs, specifying requirements, sourcing suppliers, and negotiating contracts to purchasing, receiving, and paying for the goods or services procured (Nollet, Rebolledo, and Popel, 2012). In the context of healthcare, procurement is particularly critical as it involves the acquisition of medical supplies, equipment, pharmaceuticals, and services necessary to ensure the effective delivery of healthcare (Caldwell, Roehrich, and Davies, 2009). The complexity and high stakes involved in healthcare procurement require that the process be meticulously managed to ensure the timely availability of quality products and

services that are cost-effective and meet the required standards of safety and efficacy (Panya and Awuor, 2023).

Healthcare procurement is distinct from procurement in other sectors due to the unique challenges and considerations inherent in the healthcare industry. One of the primary concerns is ensuring that the procured items meet stringent quality and safety standards, as substandard or counterfeit products can have dire consequences for patient health and safety (Narsai, Williams, & Mantel-Teeuwisse, 2012; WHO, 2017). Additionally, the procurement process in healthcare often involves dealing with complex regulatory requirements and a rapidly evolving market landscape, where new medical technologies and treatments are constantly being developed and introduced (Murthy, 2010). These factors necessitate a procurement process that is both flexible and rigorous, capable of adapting to new developments while ensuring compliance with existing regulations (Ojo and Gbadebo, 2012).

Another critical aspect of procurement in healthcare is the management of the supply chain. Healthcare organizations must not only procure the right products but also ensure that they are delivered in a timely manner and stored under appropriate conditions to maintain their integrity and efficacy (Monczka et al., 2021). This involves coordinating with various stakeholders, including manufacturers, distributors, and regulatory bodies, to manage the entire lifecycle of the procured items, from production to final use (Schneller et al., 2006). Effective supply chain management is essential to preventing shortages of critical supplies, reducing wastage, and ensuring that patients have access to the treatments they need when they need them (Göleç and Karadeniz, 2020).

In recent years, the importance of strategic procurement in healthcare has become increasingly recognized. Strategic procurement involves not just the acquisition of goods and services but also the proactive management of supplier relationships and the optimization of procurement

processes to achieve broader organizational goals, such as cost savings, improved patient outcomes, and enhanced operational efficiency (McKevitt and Davis, 2012). This approach often involves the use of advanced data analytics and procurement technologies to inform decision-making, manage risks, and improve transparency and accountability throughout the procurement process (Caniato, Luzzini, & Ronchi, 2014).

Procurement in healthcare also plays a crucial role in supporting public health objectives, particularly in low- and middle-income countries. Effective procurement strategies can help to ensure the equitable distribution of essential medicines and medical supplies, support the implementation of national health programs, and contribute to the overall strengthening of health systems (Yadav, 2015). However, achieving these outcomes requires addressing the numerous challenges that healthcare organizations face in the procurement process, including limited financial resources, weak regulatory frameworks, and a lack of technical expertise (Govender et al., 2022).

2.2.2 Common Procurement Methods Used by Healthcare Organisation

Common procurement methods used by healthcare organizations are critical for ensuring the timely and cost-effective acquisition of goods and services essential to healthcare delivery. These methods range from competitive processes like open and restricted tendering, where multiple suppliers are invited to bid, to more direct approaches such as direct procurement and framework agreements that allow for long-term supplier relationships. International Competitive Bidding (ICB) is particularly relevant in global markets, while pooled procurement and centralized procurement strategies enable healthcare organizations to leverage collective buying power to achieve better pricing and terms. The choice of procurement method often depends on factors such as urgency, market conditions, and the complexity of the goods or services being procured (OECD, 2016).

2.2.2.1 Open Tendering

Open tendering is a procurement method widely used in healthcare organizations due to its transparency and inclusiveness. This method involves publicly inviting suppliers to bid on the provision of goods or services, allowing for broad participation from qualified vendors. The fundamental principle behind open tendering is to ensure that all potential suppliers have an equal opportunity to compete, thereby promoting fairness in the procurement process (Thai, 2017). This openness not only helps in securing competitive pricing but also drives innovation by encouraging a wide range of proposals from diverse suppliers (Patrucco, Luzzini, & Ronchi, 2016). In healthcare, where the timely and efficient procurement of medical supplies and services is crucial, open tendering helps mitigate risks associated with supplier monopolies and encourages competitive practices that can lead to cost savings and improved service delivery.

However, open tendering is not without its challenges. One of the primary issues associated with this method is the extensive time required to complete the procurement process. The steps involved in advertising the tender, allowing sufficient time for bid preparation, evaluating numerous bids, and selecting a winner can be lengthy, which may not be ideal in situations where urgent procurement is necessary (Bajari, Houghton, & Tadelis, 2014). Moreover, the administrative burden of managing an open tender can be substantial, requiring significant resources in terms of time, personnel, and expertise to ensure that the process is conducted fairly and efficiently (Ngumi, 2015). This complexity can lead to delays, especially in healthcare settings where rapid response times are often critical.

Another critical issue with open tendering is the risk of attracting low-quality bids. While the process is designed to encourage competition, it can sometimes lead to a focus on cost over quality, as suppliers may submit low bids to win contracts, potentially compromising the quality of the goods or services provided (Tadelis, 2012). In healthcare, where the quality of

procured items such as pharmaceuticals and medical equipment can directly impact patient outcomes, this risk is particularly concerning. Ensuring that the evaluation criteria adequately prioritize quality alongside cost is essential to mitigating this risk, but it adds another layer of complexity to the process (Fazekas and Blum, 2021).

Despite these challenges, open tendering remains a popular method in healthcare procurement due to its ability to uphold principles of transparency and competition. It allows healthcare organizations to engage a wide pool of suppliers, increasing the likelihood of obtaining the best value for money. However, to maximize its effectiveness, healthcare organizations must carefully design their tendering processes to balance the competing demands of cost, quality, and efficiency. The careful management of these factors is crucial to ensuring that open tendering achieves its intended outcomes in the complex and high-stakes environment of healthcare procurement (Graells, 2015).

2.2.2.2 Restricted Tendering

Restricted tendering, also known as selective tendering, is a procurement method that limits the number of suppliers invited to submit bids. Unlike open tendering, where the invitation to bid is publicly advertised and open to all qualified suppliers, restricted tendering involves a pre-selection process where only a certain number of suppliers, deemed capable of fulfilling the contract, are invited to participate (Guarnieri and Gomes, 2019). This approach is often employed in situations where the procurement of highly specialized goods or services is required, and the buyer wishes to ensure that only suppliers with the necessary expertise and capacity are considered (McCrudden, 2004). The pre-selection process is intended to streamline the bidding process, reducing the administrative burden on both the procuring entity and the suppliers while ensuring that the bids received are from qualified entities.

One of the primary advantages of restricted tendering is the ability to control the quality of bids received. By limiting the number of participants to those with proven track records or specific qualifications, healthcare organizations can mitigate the risk of receiving bids from suppliers who may lack the capability or experience to deliver high-quality products or services (Yadav, 2015). This is particularly important in the healthcare sector, where the quality and reliability of procured items are critical to patient safety and outcomes (Graells, 2015). Moreover, by focusing the competition among a smaller, more qualified group of suppliers, restricted tendering can foster a more collaborative and constructive bidding process, potentially leading to better contract outcomes.

However, restricted tendering also has its challenges. The pre-selection process can introduce biases, either intentional or unintentional, that may exclude potentially capable suppliers who do not have prior relationships with the procuring entity or are not as well-known in the market (Fazekas and Blum, 2021). This can reduce competition and lead to higher costs or less innovation, as the pool of bidders is artificially constrained. Furthermore, the transparency of the procurement process can be called into question if the criteria for pre-selection are not clearly defined or if the process is not conducted in an open and accountable manner (Bosio & Djankov, 2022). In the healthcare sector, where public trust and the efficient use of resources are paramount, any perception of favoritism or lack of transparency can undermine confidence in the procurement process.

Another issue with restricted tendering is that it may not always result in the most competitive pricing. While the suppliers invited to bid are generally more capable and qualified, the reduced level of competition can lead to less aggressive pricing strategies compared to open tendering (Tadelis, 2012). This is particularly relevant in the procurement of healthcare products, where cost-effectiveness is a critical consideration. In some cases, restricted tendering can result in

higher prices for goods and services, as the invited suppliers may have less incentive to offer lower prices when competition is limited (Von Hobe and Musshoff, 2021).

Restricted tendering remains a valuable procurement method in healthcare, particularly when the need for specialized products or services justifies the selection of a limited pool of suppliers. However, it also presents risks that need to be carefully managed, particularly regarding transparency, competition, and cost control. The success of restricted tendering in healthcare procurement depends largely on the rigorous and fair application of pre-selection criteria, as well as the overall management of the procurement process (Thai, 2017).

2.2.2.3 Direct Procurement

Direct procurement, also known as single-source procurement, is a method where a contract is awarded to a single supplier without a competitive bidding process. This approach is typically employed in situations where there is an urgent need for specific goods or services, or where only one supplier is capable of providing the required items due to proprietary technology, expertise, or unique capabilities (OECD, 2017). In the healthcare sector, direct procurement is often used for acquiring highly specialized medical equipment, pharmaceuticals, or services that are not readily available from multiple suppliers (Thai, 2017). The method is designed to expedite the acquisition process, ensuring that essential goods and services are delivered in a timely manner, particularly in emergencies or when continuity of care is at stake (Miriti, 2018).

One of the primary advantages of direct procurement in healthcare is its speed and efficiency. The process bypasses the competitive bidding procedures, allowing healthcare organizations to quickly secure the necessary supplies or services, which is crucial in time-sensitive situations such as public health emergencies or urgent medical needs (Monczka et al., 2015). The reduction in administrative burden associated with tendering processes allows procurement

teams to focus on more strategic tasks. Additionally, direct procurement is often beneficial when dealing with complex, highly specialized products that require close collaboration between the buyer and the supplier, fostering a more direct and ongoing relationship (Nollet & Beaulieu, 2003).

However, direct procurement carries significant risks, particularly concerning transparency and accountability. The lack of competition introduces a higher risk of favoritism, corruption, or mismanagement, potentially leading to inflated prices or substandard products (Bosio & Djankov, 2022). The absence of competitive pressure may result in less favorable terms for the buyer, as the supplier may have little incentive to offer discounts or improve the quality of their goods or services (Von Hobe and Musshoff, 2021). In the healthcare sector, where procurement decisions directly impact patient outcomes and public health, the lack of transparency in direct procurement can undermine trust in the healthcare system and lead to public scrutiny.

Another challenge associated with direct procurement is the potential for dependency on a single supplier. Frequent reliance on direct procurement from the same supplier can create a monopoly, reducing competition in the market and limiting the organization's future procurement options (Patrucco et al., 2016). This dependency is particularly problematic if the supplier faces production issues, price increases, or quality control problems, as the healthcare organization may have few alternative sources to turn to. The reliance on a single supplier also increases the vulnerability of the supply chain, particularly in times of crisis or disruption (Graells, 2015).

2.2.2.4 Framework Agreements

Framework agreements are an increasingly popular procurement method in the healthcare sector, designed to streamline the acquisition of goods and services over a specified period.

Unlike traditional procurement methods that require a separate contract for each transaction, a framework agreement establishes the terms and conditions under which specific purchases can be made during the agreement's lifespan (Kaye Nijaki & Worrel, 2012). This approach is particularly useful for recurring purchases of goods and services that are needed consistently over time, such as pharmaceuticals, medical supplies, and maintenance services. Framework agreements are typically established with one or more suppliers, providing flexibility in procurement while ensuring that the terms agreed upon, such as pricing and delivery schedules, remain consistent (Bergman and Lundberg, 2013).

One of the key benefits of framework agreements in healthcare procurement is the efficiency they bring to the purchasing process. Setting up a framework agreement allows healthcare organizations to avoid the repetitive and time-consuming process of negotiating terms for each individual purchase (Hefetz, 2014). This efficiency not only saves time but also reduces administrative costs associated with procurement. Additionally, framework agreements can help stabilize supply chains by guaranteeing suppliers a certain volume of business over the duration of the agreement, which can lead to better pricing and more reliable supply (Flynn & Davis, 2014). The predictability provided by these agreements is particularly valuable in the healthcare sector, where consistent access to critical supplies is essential.

However, framework agreements also have their limitations. One significant challenge is the potential for reduced competition once the framework is in place. Because the suppliers are pre-selected at the outset of the agreement, other potential suppliers may be excluded from participating in future transactions, which could lead to complacency among the chosen suppliers (Bolton & Dewatripont, 2004). This reduced competition might result in less competitive pricing or lower quality of goods and services over time. Additionally, the inflexibility of being tied to specific suppliers could pose risks if the suppliers face difficulties

such as supply chain disruptions or quality control issues (Graells, 2015). In healthcare, where the stakes are particularly high, such risks must be carefully managed to ensure the ongoing effectiveness of framework agreements.

Another concern with framework agreements is the potential for "locking in" prices that may not reflect future market conditions. While the stability of pricing is an advantage, it can also be a drawback if market prices decrease significantly after the agreement has been established (Arrowsmith, 2011). Healthcare organizations may find themselves paying higher prices than the current market rate, which can be particularly problematic in sectors with rapidly changing technologies or where prices fluctuate frequently due to market dynamics. Furthermore, the long-term nature of framework agreements requires rigorous performance monitoring to ensure that suppliers continue to meet the agreed-upon standards throughout the contract's duration (Patrucco et al., 2016). Without proper oversight, the benefits of a framework agreement can quickly erode, leading to inefficiencies and increased costs.

2.2.2.5 International Competitive Bidding (ICB)

International Competitive Bidding (ICB) is a procurement method that allows healthcare organizations to source goods and services from suppliers worldwide. This method is often employed when the required goods or services are not readily available in the domestic market, or when an organization seeks to achieve the best possible value by inviting competition on a global scale (World Bank, 2011). ICB is characterized by a transparent and structured process where the procurement opportunity is advertised internationally, enabling a wide range of suppliers to participate. The goal is to attract high-quality bids that offer the best combination of price, quality, and service, thereby ensuring that the procuring entity secures the most favorable terms (Bolton, 2004).

One of the primary advantages of ICB in healthcare procurement is the potential to access a broader range of products and services that may not be available locally. This is particularly important in sectors such as pharmaceuticals and medical equipment, where cutting-edge technologies and specialized products are often developed in different parts of the world (Patrucco et al., 2016). By opening the bidding process to international suppliers, healthcare organizations can benefit from increased competition, which can lead to better pricing and improved access to innovative products (Shu Hui, 2011). Additionally, ICB helps to mitigate the risks associated with relying on a limited number of domestic suppliers, providing a more diversified and resilient supply chain.

However, International Competitive Bidding also presents several challenges, particularly in terms of complexity and cost. The process of organizing and managing an ICB can be time-consuming and resource-intensive, requiring extensive documentation, legal expertise, and coordination across multiple jurisdictions (Bovis, 2012). The need to comply with various international regulations and standards can further complicate the process, making it difficult for smaller healthcare organizations with limited procurement capacity to participate effectively (Snider and Rendon, 2012). Moreover, the evaluation of bids from different countries requires careful consideration of factors such as currency fluctuations, import duties, and differences in regulatory environments, all of which can impact the final cost and delivery of the procured goods or services (Raymond, 2008).

Another significant challenge associated with ICB is the potential for delays in the procurement process. Given the international scope of the bidding process, the time required to advertise the tender, receive bids, evaluate proposals, and finalize contracts can be considerable (Dimitri, 2013). These delays can be particularly problematic in the healthcare sector, where timely access to medical supplies and equipment is critical. Additionally, logistical challenges, such

as customs clearance and transportation issues, can further complicate the timely delivery of goods procured through ICB (Kaye Nijaki & Worrel, 2012). These factors must be carefully managed to ensure that the benefits of international competition are not outweighed by the risks of delays and increased costs.

Despite these challenges, International Competitive Bidding remains a vital tool for healthcare organizations seeking to optimize their procurement strategies. ICB facilitates the acquisition of high-quality goods and services at competitive prices by enabling access to a global pool of suppliers. However, the successful implementation of ICB requires careful planning, robust legal and logistical support, and a clear understanding of the international market dynamics that influence the procurement process (Kaye Nijaki & Worrel, 2012).

2.2.2.6 Pooled Procurement

Pooled procurement is a strategy where multiple healthcare organizations or countries combine their purchasing power to procure medicines, medical supplies, or services collectively. The main objective of pooled procurement is to achieve economies of scale, which can lead to securing lower prices, improving supply chain efficiency, and enhancing access to essential healthcare products (Yadav, 2015). Aggregating demand allows participating entities to negotiate better terms with suppliers, resulting in significant cost savings and more consistent supply availability (WHO, 2017). This approach proves particularly beneficial in resource-constrained settings where individual organizations might struggle to obtain necessary products at competitive prices.

One of the key advantages of pooled procurement is its potential to reduce procurement costs. Organizations pooling their purchasing needs leverage higher volumes to negotiate lower unit prices, which is crucial for expensive medicines or specialized medical equipment (Moon,

Jambert, Childs, & von Schoen-Angerer, 2011). The collective nature of pooled procurement also enhances the bargaining power of smaller or lower-income countries, enabling them to access markets and prices that might otherwise be unattainable (Danzon, Mulcahy, & Towse, 2015). Additionally, pooling resources helps mitigate risks associated with supply chain disruptions, providing more stable and predictable access to essential goods.

However, several challenges accompany pooled procurement. Coordinating multiple stakeholders, each with distinct needs, priorities, and procurement processes, can be complex and time-consuming (Owoeye, 2019). Differences in regulatory environments, financial capacities, and logistical infrastructures among participating entities further complicate the process, making it difficult to standardize procurement practices across the group (Glassman, Giedion, & Smith, 2017). Effective governance and transparency are critical for the success of pooled procurement, as well as ensuring the equitable distribution of benefits among all participants (Diaconu et al., 2014).

Pooled procurement plays a crucial role in global health initiatives, especially in efforts to increase access to affordable medicines in low- and middle-income countries. However, implementing this strategy requires careful planning and coordination to address inherent challenges and ensure that all participating entities benefit from the arrangement (Hill et al., 2014).

2.2.2.7 Centralized Procurement

Centralized procurement refers to a procurement system where purchasing decisions and processes are consolidated under a single entity or central authority within an organization or across multiple organizations. In the healthcare sector, centralized procurement often involves a national or regional health authority managing the acquisition of medicines, medical

equipment, and other healthcare supplies on behalf of various hospitals, clinics, and healthcare facilities within its jurisdiction (OECD, 2017). This approach contrasts with decentralized procurement, where individual healthcare facilities manage their purchasing independently. Centralized procurement is favored for its potential to streamline processes, reduce costs, and standardize the quality of healthcare supplies (Contreras, 2016).

One of the significant advantages of centralized procurement is its ability to leverage economies of scale. Aggregating the purchasing power of multiple healthcare facilities allows the central authority to negotiate better prices and terms with suppliers, resulting in substantial cost savings (Vogler et al., 2017). This approach is particularly beneficial in low- and middle-income countries, where financial resources for healthcare are often limited, and maximizing the value of procurement budgets is critical (Murthy, 2023). Additionally, centralized procurement facilitates more consistent and equitable access to essential medicines and supplies across all healthcare facilities, reducing disparities in healthcare service delivery (Yang et al., 2017).

However, centralized procurement also presents challenges. The complexity of managing procurement for multiple facilities can lead to inefficiencies, particularly in large, diverse healthcare systems. The central authority must accurately assess the needs of all facilities, ensure timely delivery, and manage inventory levels effectively to avoid stockouts or overstocking (Contreras, 2016). Furthermore, the bureaucratic nature of centralized systems can slow down the procurement process, making it less responsive to urgent needs or changes in demand (Flynn & Davis, 2014). In healthcare, where the timely availability of medicines and supplies is crucial, delays in procurement can have serious consequences for patient care.

Another challenge associated with centralized procurement is the potential for reduced flexibility at the local level. Centralized systems often impose standardized procurement

practices and product specifications, which may not always align with the specific needs or preferences of individual healthcare facilities (WHO, 2015). For instance, local variations in disease prevalence, patient demographics, or treatment protocols might necessitate different products or quantities than those provided through centralized procurement. Additionally, centralized procurement can lead to a concentration of power, increasing the risk of corruption or mismanagement if oversight mechanisms are weak (Patrucco et al., 2016).

Despite these challenges, centralized procurement remains a widely adopted strategy in healthcare systems worldwide. Its ability to reduce costs, standardize quality, and ensure equitable access to healthcare supplies makes it an attractive option, particularly in resource-constrained environments (Thai, 2017). However, the success of centralized procurement depends on effective management, robust oversight, and the ability to adapt to the diverse needs of the healthcare facilities it serves (Bosio et al., 2022).

2.2.3 Medicines Pooled Procurement in Ghana Healthcare System

The concept of medicines pooled procurement in Ghana has evolved over the past few decades as the country has sought to improve access to essential medicines and address the inefficiencies in its healthcare supply chain. The roots of this approach can be traced back to the broader health sector reforms in the 1980s and 1990s, which aimed to strengthen the overall healthcare system and ensure equitable access to quality healthcare services (Ministry of Health, Ghana, 2004). During this period, Ghana recognized the need for a more coordinated approach to procurement, especially in the public health sector, where fragmented and uncoordinated procurement practices were leading to inefficiencies, stockouts, and higher costs. The Ghana National Drugs Programme (GNDP), established in 1997, was one of the earliest initiatives aimed at improving the procurement of medicines. This program emphasized

the importance of a centralized and coordinated procurement system to enhance the availability of essential medicines across the country (Ministry of Health, Ghana, 2004).

The formalization of pooled procurement in Ghana took a significant step forward with the establishment of the Central Medical Stores (CMS) under the Ghana Health Service. The CMS was tasked with the centralized procurement, storage, and distribution of medicines and medical supplies for all public health facilities nationwide (WHO, 2017). This centralized approach allowed Ghana to aggregate demand from various regions and negotiate better prices with suppliers, thereby reducing the overall cost of medicines. The pooled procurement model also facilitated standardization across the healthcare system, ensuring that medicines met quality standards and were available where they were needed most. However, the effectiveness of this system was contingent on the ability of the CMS to manage the procurement and distribution processes efficiently, a task that became increasingly challenging as the demand for healthcare services grew (Ghana Health Service, 2015).

The centralized procurement system faced a significant setback in 2015 when a devastating fire destroyed the Central Medical Stores, which housed about 80% of the country's medical supplies (Ghana Health Service, 2015). This incident exposed critical vulnerabilities in Ghana's pooled procurement system, including the risks associated with the over-centralization of storage and the lack of redundancy in the supply chain. The destruction of the CMS led to widespread disruptions in the supply of medicines across the country, highlighting the need for a more resilient and decentralized approach to medicines procurement (WHO, 2017). In the aftermath of the fire, the Ghanaian government and its development partners undertook significant efforts to rebuild and modernize the country's medicines procurement and distribution systems. These efforts included the introduction of regional medical stores to decentralize storage and improve the resilience of the supply chain (USAID, 2020).

Despite the challenges posed by the CMS fire, Ghana has made considerable progress in strengthening its pooled procurement system in recent years. One of the key developments has been the implementation of the Ghana Integrated Logistics Management Information System (GhiLMIS), a digital platform designed to enhance the transparency, efficiency, and accountability of the procurement process (USAID, 2020). GhiLMIS provides real-time data on inventory levels, procurement activities, and distribution, enabling better decision-making and coordination across the healthcare system. This system represents a significant step forward in addressing the inefficiencies and challenges that have historically plagued Ghana's pooled procurement system. Additionally, the government has worked to improve the governance of the procurement process by enhancing regulatory oversight and increasing stakeholder engagement to ensure that procurement practices align with the country's health priorities (Ministry of Health, Ghana, 2021).

The current status of medicines pooled procurement in Ghana reflects both the achievements and the ongoing challenges in the system. While there have been significant improvements in terms of infrastructure, digitalization, and regulatory oversight, the system still faces issues related to funding, supply chain management, and coordination among stakeholders (World Bank, 2021). For instance, while GhiLMIS has improved transparency and accountability, its full potential has yet to be realized due to challenges in data integration and the need for further capacity building at the regional and facility levels (USAID, 2020). Additionally, the financial constraints faced by the healthcare sector, particularly in the wake of global economic challenges, have limited the ability of the government to fully fund and sustain the pooled procurement system (World Bank, 2021). These challenges underscore the need for continued investment and reform to ensure that the pooled procurement system can meet the evolving needs of Ghana's healthcare system.

Moreover, the impact of medicines pooled procurement in Ghana can be seen in specific programs and initiatives. For example, the procurement of antiretroviral drugs for HIV treatment has been significantly improved through pooled procurement mechanisms, leading to lower costs and more reliable supply chains (UNAIDS, 2019). However, challenges remain in other areas, such as the procurement of vaccines, where delays and logistical issues during the COVID-19 pandemic highlighted gaps in the system's responsiveness and capacity to manage large-scale, urgent procurement needs (UNICEF, 2020). These examples illustrate the mixed success of pooled procurement in Ghana and the ongoing need for targeted reforms and capacity-building efforts to address the system's weaknesses and enhance its strengths.

2.2.4 Levels of Pooled Procurement in Medicines Procurement

Levels of pooled procurement in medicines procurement constitute the varying degrees of collaboration and integration among healthcare organizations or countries when jointly purchasing medicines. These levels range from coordinated procurement, where entities align their purchasing schedules and strategies while maintaining separate contracts, to more integrated approaches such as joint procurement, where entities combine their purchasing power under a single contract to achieve economies of scale and improve access to medicines. Each level represents a different approach to balancing autonomy with collective bargaining power, allowing entities to select the most suitable model based on their specific needs and objectives (Yadav, 2015).

2.2.4.1 Coordinated Procurement

Coordinated procurement is a level of pooled procurement where multiple healthcare entities collaborate to align their purchasing strategies and schedules while maintaining separate contracts with suppliers. This approach allows participating organizations to benefit from the

shared knowledge and market insights that arise from collective decision-making without fully integrating their procurement processes (WHO, 2012). Coordinated procurement often involves entities sharing information on supplier performance, market conditions, and pricing trends, which can help each entity optimize its procurement outcomes. This method is particularly useful in situations where full integration is not feasible due to legal, logistical, or policy constraints, yet there is still a desire to harness the benefits of collective action (Barlow, 2016).

One of the primary advantages of coordinated procurement is its flexibility. Healthcare organizations can maintain their autonomy and tailor their procurement practices to their specific needs while still benefiting from the economies of scale and increased bargaining power that come with coordinated efforts (Smith and Hanson, 2012). This model also reduces the complexity and administrative burden associated with more integrated forms of pooled procurement, as each entity remains responsible for its own contracting and procurement decisions. In contexts where healthcare systems are decentralized or where there are significant differences in the needs and capacities of participating entities, coordinated procurement provides a practical way to achieve some of the benefits of pooling without the challenges of full integration (Bossert, 2013).

However, coordinated procurement is not without its challenges. The lack of a unified contracting process can limit the overall impact on pricing and supplier terms, as suppliers may not view the combined demand as a single, cohesive unit (Glassman et al., 2017). Additionally, the success of coordinated procurement depends heavily on the willingness of participants to share information and collaborate effectively. In cases where trust or communication is lacking, the potential benefits of coordination may not be fully realized (Hill et al., 2014). Furthermore, the variability in procurement practices among participating entities can lead to inconsistencies

in quality, delivery times, and pricing, undermining the overall effectiveness of the approach (Lunze et al., 2017).

Despite these challenges, coordinated procurement has been successfully implemented in various global health initiatives. For instance, in some regions, coordinated procurement has been used to improve access to vaccines and essential medicines by aligning the purchasing schedules of multiple countries, thereby increasing the predictability of demand for suppliers (WHO, 2017). This approach has proven particularly effective in contexts where full joint procurement is not feasible, yet there is a need to stabilize supply chains and reduce costs (Smith & Hanson, 2012). Overall, while coordinated procurement may not achieve the same level of cost savings and efficiency as more integrated forms of pooled procurement, it remains a valuable tool for enhancing collaboration and optimizing procurement outcomes in healthcare.

2.2.4.2 Group Contracting

Group contracting is a procurement strategy that allows multiple healthcare organizations or countries to collectively negotiate and agree on a single contract with suppliers. Each participating entity retains autonomy over managing its own orders and deliveries, but all operate under the same contract terms, which standardizes pricing, quality, and delivery conditions (Burnett, 2014). This strategy contrasts with coordinated procurement, where entities align their purchasing strategies but do not necessarily share a common contract. Group contracting effectively leverages the combined purchasing power of the participating entities, enabling them to secure more favorable terms from suppliers, particularly for high-cost items such as pharmaceuticals and medical equipment (Li et al., 2024).

Enhanced bargaining power is a significant advantage of group contracting. The collective demand presented to suppliers through group contracting often results in lower prices, improved payment terms, and more favorable delivery schedules compared to what individual entities might achieve on their own (Barlow, 2016). This approach is particularly beneficial in sectors like healthcare, where procurement costs can be substantial, and even small price reductions can translate into significant savings. Group contracting also helps reduce transaction costs by standardizing procurement processes across participating entities, thereby minimizing the need for repetitive negotiations and individual contract management (OECD, 2017). The uniformity of contract terms simplifies supply chain management, as all entities operate under the same conditions, which can enhance overall efficiency.

Despite these benefits, group contracting poses challenges, particularly in terms of coordination and governance. The process of negotiating a group contract requires the participating entities to reach a consensus on the terms, which can be complicated by differing organizational priorities, procurement practices, and regulatory requirements (Bossert, 2013). The complexity of these negotiations can create delays and make it difficult to finalize a contract that meets the needs of all parties involved. Moreover, managing the contract over its duration requires robust governance structures to ensure that all participants comply with the agreed terms and that any disputes or issues are addressed promptly (van Weele, 2018). Without strong governance, the potential benefits of group contracting may be diminished by conflicts, inefficiencies, or non-compliance among the participants.

Group contracting has been successfully implemented in various healthcare settings, particularly in regional and international procurement initiatives. For example, the Pan American Health Organization (PAHO) has employed group contracting to procure vaccines for member countries in the Americas, resulting in significant cost savings and improved

vaccine availability (PAHO, 2017). Similarly, in Africa, regional economic communities like the East African Community (EAC) have explored group contracting as a means of reducing costs and improving access to essential medicines (Makenga, 2022). These examples illustrate the potential of group contracting to enhance procurement outcomes in healthcare, especially when supported by strong coordination and governance mechanisms.

2.2.4.3 Centralized Procurement

Centralized procurement is a procurement strategy where a single central entity, often a government body or a designated procurement agency, is responsible for purchasing goods and services on behalf of multiple organizations or regions. This approach consolidates purchasing power, allowing for more streamlined procurement processes and often leading to significant cost savings and improved efficiency (Burnett, 2014). In the healthcare sector, centralized procurement is used to acquire medicines, medical supplies, and equipment for an entire country or large regions, ensuring uniformity in quality and access across all participating entities (Bossert, 2013). Centralized procurement systems are particularly common in public healthcare systems, where the centralization of procurement functions aims to optimize resource allocation and reduce duplication of efforts.

One of the primary advantages of centralized procurement is the ability to leverage economies of scale. When a central entity manages procurement for multiple organizations, the larger volume of purchases often results in lower prices and better terms from suppliers (Vogler et al., 2017). This is especially beneficial in the procurement of high-cost items such as pharmaceuticals and medical equipment, where volume discounts can lead to substantial cost reductions. Centralized procurement also facilitates standardization across the healthcare system, ensuring that all facilities receive consistent, high-quality products that meet established standards (Bossert, 2013). This uniformity is particularly important in maintaining

the quality and safety of medical supplies and in ensuring equitable access to essential medicines across all regions.

However, centralized procurement also presents several challenges, particularly in terms of logistics and responsiveness. The centralization of procurement processes can lead to delays in the acquisition and distribution of goods, especially in large and complex healthcare systems where the central entity must coordinate the needs of multiple facilities (Burnett, 2014). These delays can be exacerbated by bureaucratic inefficiencies, which may slow down decision-making and hinder the timely delivery of essential supplies. Additionally, the centralization of procurement may reduce the flexibility of individual healthcare facilities to respond to local needs and preferences, as decisions are made at a higher level and may not fully reflect the specific requirements of each facility (Brown et al., 2018).

Another significant challenge associated with centralized procurement is the risk of corruption and mismanagement. The concentration of purchasing power in a single entity can create opportunities for corrupt practices, particularly if there are weaknesses in oversight and accountability mechanisms (Petersen et al., 2019). Corruption in centralized procurement can lead to inflated prices, the procurement of substandard goods, and the diversion of resources, all of which can undermine the efficiency and effectiveness of the healthcare system. Ensuring transparency and robust governance in centralized procurement is critical to mitigating these risks and maximizing the benefits of this procurement strategy (Makenga, 2022).

2.2.4.4 Joint Procurement

Joint procurement is a procurement strategy where multiple organizations or countries come together to purchase goods and services under a single, unified contract. This approach involves the pooling of resources and collective decision-making, allowing the participating entities to

combine their purchasing power to secure better terms, lower prices, and improved supply chain efficiency (Gouveia et al., 2015). In the healthcare sector, joint procurement is often used to purchase medicines, vaccines, and medical equipment, particularly in situations where individual entities may lack the bargaining power to negotiate favorable deals with suppliers on their own (Horner, 2022). The collaborative nature of joint procurement makes it a powerful tool for achieving economies of scale and improving access to essential healthcare products.

One of the key benefits of joint procurement is the significant cost savings it can generate for the participating entities. When organizations or countries pool their demand, they can negotiate lower prices with suppliers due to the larger volume of purchases (Danzon et al. 2015). This is particularly advantageous for low- and middle-income countries, where healthcare budgets are often limited, and access to affordable medicines and supplies is a critical concern. Joint procurement also reduces the administrative burden on individual entities, as the procurement process is managed collectively, allowing for more efficient use of resources and expertise (Moon et al., 2011). Furthermore, joint procurement can enhance supply chain stability by ensuring that all participants have access to a consistent and reliable supply of essential products.

Despite its advantages, joint procurement also presents challenges, particularly in terms of coordination and governance. The success of joint procurement depends on the ability of the participating entities to work together effectively, which can be complicated by differences in procurement practices, regulatory requirements, and political interests (Barlow, 2016). Achieving consensus on the terms of the contract, the selection of suppliers, and the allocation of costs and benefits can be difficult, especially in multinational or multi-organizational contexts. Additionally, the centralized nature of decision-making in joint procurement can

reduce the flexibility of individual entities to respond to local needs and preferences, potentially leading to conflicts or dissatisfaction among the participants (Ahmadi et al., 2018).

Another challenge associated with joint procurement is the complexity of managing the procurement process over its duration. The need for continuous coordination, communication, and monitoring among the participating entities requires robust governance structures and clear accountability mechanisms (Urias, 2017). Without effective governance, joint procurement can be undermined by delays, inefficiencies, and disputes, which can erode the potential cost savings and supply chain benefits. Furthermore, the legal and logistical complexities of joint procurement, particularly in cross-border or multinational settings, can pose additional challenges, such as navigating different legal systems, currencies, and languages (Giedion et al., 2013). Ensuring the success of joint procurement requires careful planning, strong leadership, and a commitment to collaboration among all participants.

2.2.5 Medicines Pooled Procurement Process Cycle

The Medicines Pooled Procurement Process Cycle is a structured approach to procuring medicines through collective efforts, ensuring efficiency, cost-effectiveness, and consistent quality across participating entities. This cycle involves several critical stages, starting with identifying medicine needs and specifying the required quantities. It then moves to collaborative sourcing, where entities work together to gather and evaluate supplier information, negotiate terms, and issue purchase orders. The process also includes monitoring order progress, receiving and inspecting medicines, and distributing them to the relevant facilities. The cycle concludes with making payments and reviewing procurement outcomes to inform future procurement decisions. This comprehensive process is illustrated in Figure 2.1, showing the continuous and interconnected nature of each step in achieving successful pooled procurement.

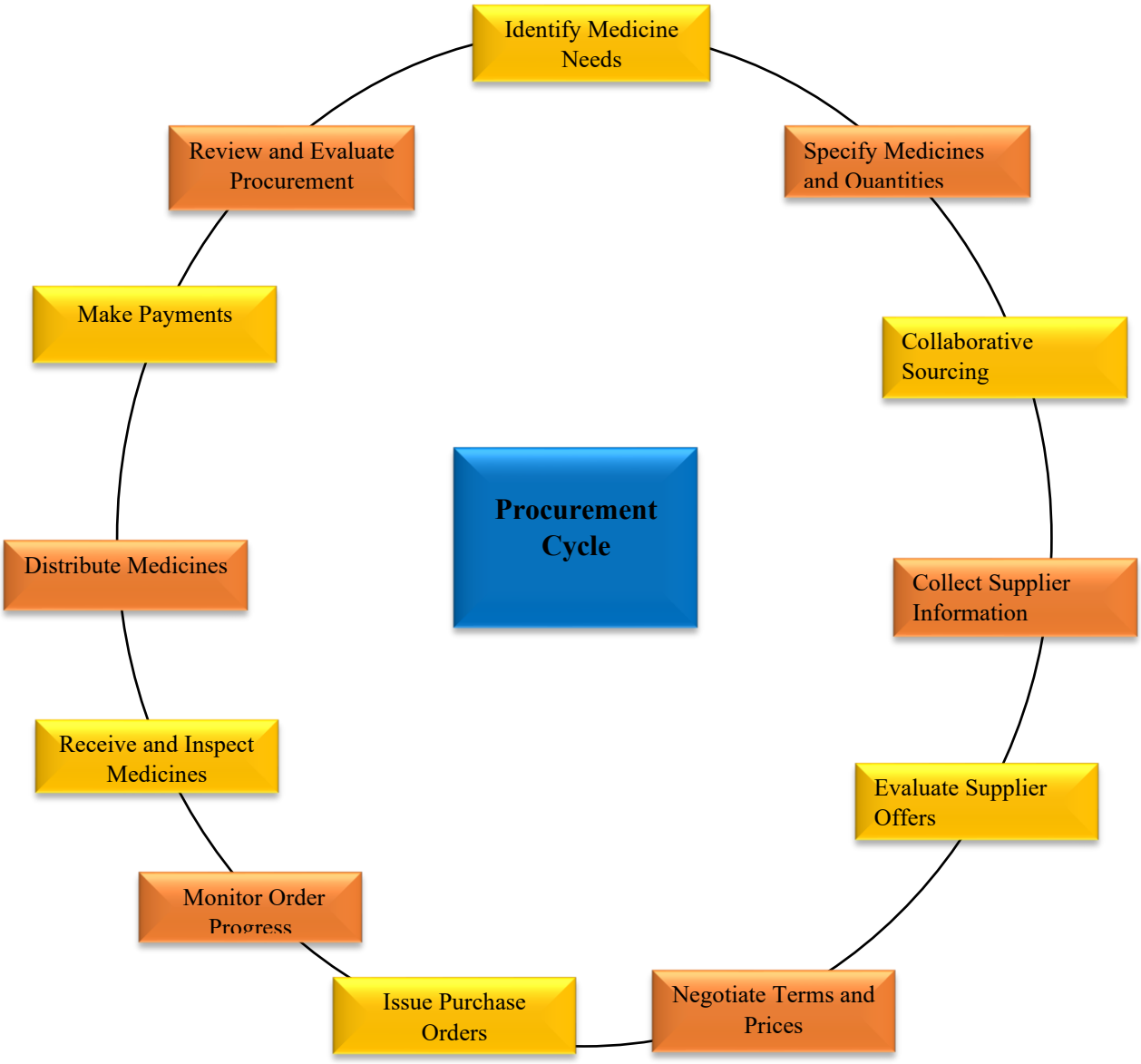

Figure 2.1: Medicines Pooled Procurement Process Cycle

Source: Authors Own Design

2.2.5.1 Identify Medicine Needs

Identifying medicine needs is the first and crucial step in the Medicines Pooled Procurement Process Cycle. This step involves a systematic assessment of the healthcare requirements of the population, taking into account disease prevalence, treatment protocols, and healthcare

facility capacities (WHO, 2015). The identification process is essential to ensure that the procurement aligns with the actual demand, preventing both shortages and overstocking. In Ghana, for instance, the Ghana Health Service conducts regular health assessments to determine the specific medicines required across various regions. These assessments are based on epidemiological data, healthcare utilization patterns, and input from healthcare providers (Ministry of Health, Ghana, 2021). The accuracy of this step directly impacts the effectiveness of the entire procurement cycle, as it lays the foundation for subsequent stages.

The process of identifying medicine needs also requires collaboration between different stakeholders, including healthcare providers, public health officials, and supply chain experts. This collaboration ensures that the identified needs reflect the realities of the healthcare environment, including the types of medicines that are most effective, the quantities required, and the specific conditions in which they will be used (Yadav, 2015). In many low- and middle-income countries, including Ghana, this step is particularly critical due to the limited resources available for healthcare. Accurately identifying needs helps to prioritize the most essential medicines, ensuring that procurement efforts focus on addressing the most pressing health challenges (UNICEF, 2019).

After identifying the medicine needs, the next logical step in the procurement process is specifying the exact medicines and quantities required. The identification phase provides the data and insights necessary to make informed decisions about which medicines should be procured, in what quantities, and for which healthcare facilities. This step is pivotal in ensuring that the procurement process is efficient, cost-effective, and aligned with the overall goals of the healthcare system (World Bank, 2020). The transition from identifying needs to specifying requirements underscores the importance of a data-driven approach to procurement, where

each step builds on the information gathered in the previous phase to optimize the outcomes of the procurement cycle.

2.2.5.2 Specify Medicines and Quantities

Specifying medicines and quantities is a critical step that follows the identification of medicine needs in the Medicines Pooled Procurement Process Cycle. This stage involves translating the identified healthcare needs into precise specifications that detail the types of medicines required and the exact quantities necessary to meet the demand (WHO, 2017). The specifications must be comprehensive and aligned with national treatment guidelines, ensuring that the medicines procured are appropriate for the conditions they are intended to treat. In Ghana, the Ministry of Health collaborates with healthcare providers and pharmacists to develop standardized lists of essential medicines, specifying the active ingredients, dosage forms, strengths, and packaging requirements (Ministry of Health, Ghana, 2021). These specifications serve as the foundation for the procurement process, guiding the selection of suppliers and the negotiation of contracts.

The process of specifying medicines and quantities also requires careful consideration of factors such as shelf life, storage conditions, and potential wastage. Accurate forecasting is essential to determine the appropriate quantities to procure, taking into account factors like patient load, seasonal variations in disease prevalence, and buffer stock levels (UNICEF, 2019). Overestimating quantities can lead to wastage due to expired medicines, while underestimating can result in stockouts that compromise patient care. Advanced forecasting tools and historical data are often employed to refine the accuracy of these estimates, ensuring that the quantities specified align closely with actual demand (Yadav, 2015). In resource-constrained settings, such as in many parts of Ghana, this precision is particularly important to maximize the efficiency of limited healthcare budgets.

After specifying the medicines and quantities, the next step in the procurement process involves collaborative sourcing, where potential suppliers are identified, and their capacity to meet the specified needs is assessed. The detailed specifications developed in this stage provide the basis for evaluating supplier offers, ensuring that the medicines procured meet the required standards of quality and are available in the necessary quantities. This seamless transition from specification to sourcing underscores the interconnected nature of the procurement cycle, where each step builds on the previous one to ensure that the overall process is efficient, cost-effective, and aligned with the healthcare system's goals (World Bank, 2020).

2.2.5.3 Collaborative Sourcing

Collaborative sourcing is a critical phase in the Medicines Pooled Procurement Process Cycle, where multiple healthcare entities work together to identify and select suppliers who can meet the specified needs of the group. This stage involves joint efforts to gather and assess information about potential suppliers, including their capacity, reliability, quality standards, and pricing structures (Burnett, 2014). Collaborative sourcing is particularly advantageous in pooled procurement as it allows participating entities to combine their expertise and resources to negotiate better terms and ensure that the selected suppliers can deliver the required medicines in the specified quantities. The success of collaborative sourcing hinges on the ability of the involved entities to work cohesively, share relevant data, and reach a consensus on supplier selection (Moore et al., 2011).

One of the primary benefits of collaborative sourcing is the enhanced bargaining power it provides to the participating entities. When healthcare organizations or countries collaborate in sourcing, they present a unified front to suppliers, which often results in more favorable pricing and contract terms than they could achieve individually (Nkunda et al., 2023). This approach also improves access to high-quality medicines by enabling the group to leverage

collective knowledge and experience in assessing supplier capabilities and ensuring compliance with international quality standards (Pillay, 2015). Collaborative sourcing has been successfully implemented in various regional procurement initiatives, such as the African Union's initiative for joint procurement of antiretroviral drugs, where multiple countries collaborate to source essential medicines, achieving significant cost savings and improved supply chain efficiency (Perehudoff et al., 2021).

However, collaborative sourcing presents challenges, particularly in terms of coordination and alignment among participating entities. Differences in procurement policies, priorities, and legal frameworks can complicate the sourcing process, requiring extensive negotiation and compromise to reach agreements that satisfy all parties involved (Lebon, 2017). Additionally, the success of collaborative sourcing depends on effective communication and transparency among the entities, as well as robust governance structures to manage potential conflicts and ensure that the collective interests of the group are prioritized. These challenges highlight the importance of strategic planning and strong leadership in facilitating successful collaborative sourcing initiatives (Perehudoff et al., 2021).

2.2.5.4 Collect Supplier Information

Collecting supplier information is a pivotal step in the Medicines Pooled Procurement Process Cycle, where detailed data about potential suppliers are gathered to assess their suitability and capacity to meet the procurement requirements. This step involves evaluating the suppliers' qualifications, production capabilities, financial stability, past performance, and adherence to quality standards (Nair et al., 2015). In the context of pooled procurement, this process is particularly important as it ensures that the selected suppliers can reliably fulfill large orders across multiple entities or countries. The information collected during this phase forms the basis for making informed decisions during the supplier selection process and helps to mitigate

risks associated with procurement, such as delays, substandard products, or supply chain disruptions (Cousins et al., 2008).

The process of collecting supplier information typically includes a thorough review of the supplier's credentials, such as certifications, regulatory approvals, and compliance with international standards like Good Manufacturing Practices (GMP) (Hassan, 2023). Additionally, site visits, audits, and third-party assessments may be conducted to verify the accuracy of the information provided and to evaluate the supplier's operational capabilities. In the context of medicines procurement, it is crucial to ensure that suppliers have the capacity to produce and deliver high-quality medicines consistently and within the required timelines (Zhu et al., 2012). For instance, in many international procurement initiatives, such as those led by the Global Fund, stringent criteria are applied during the supplier information collection phase to ensure that only qualified suppliers are considered (Global Fund, 2018).

Collecting supplier information is not just a one-time activity but an ongoing process throughout the procurement cycle. Continuous monitoring and updating of supplier information are necessary to adapt to changing market conditions, supplier performance, and any emerging risks (Gunasekaran & Ngai, 2004). This dynamic approach allows procurement entities to maintain a robust supplier base that is capable of meeting evolving needs and to ensure that the procurement process remains resilient and responsive to challenges. The detailed and accurate information collected during this phase ultimately facilitates the next steps in the procurement process, including the evaluation of supplier offers and the negotiation of contracts, ensuring that the selected suppliers align with the procurement objectives and standards (Monczka et al., 2021).

2.2.5.5 Evaluate Supplier Offers

Evaluating supplier offers is a critical step in the Medicines Pooled Procurement Process Cycle, where the collected supplier information is used to assess the proposals submitted by potential suppliers. This evaluation process involves comparing the offers against the predefined criteria, such as price, quality, delivery timelines, and compliance with regulatory standards (Handfield et al., 2011). The goal is to select the supplier that provides the best value for the pooled procurement entities, balancing cost-effectiveness with the assurance of high-quality medicines. In many cases, the evaluation process also includes a thorough review of the suppliers' past performance and their ability to meet the specific needs of the procurement (Hartmann et al., 2012).

The evaluation of supplier offers often involves a multi-criteria analysis, where various factors are weighted according to their importance in the procurement decision. For instance, in the procurement of essential medicines, the quality and reliability of the supplier may be prioritized over cost, given the critical nature of the products involved (Kotula, 2015). This approach ensures that the selected suppliers not only offer competitive pricing but also meet the stringent quality and delivery standards required in the healthcare sector. Tools such as the Analytical Hierarchy Process (AHP) or weighted scoring models are commonly used to systematically evaluate and compare the offers, facilitating a more objective and transparent decision-making process (Cousins et al., 2008).

After evaluating the offers, the next step in the procurement cycle is to negotiate terms and prices with the selected suppliers. The insights gained during the evaluation phase provide the basis for these negotiations, ensuring that the terms agreed upon are aligned with the procurement objectives and the specific needs of the entities involved. This transition from evaluation to negotiation underscores the importance of a thorough and well-documented

evaluation process, as it directly impacts the effectiveness of the subsequent negotiations and the overall success of the procurement (Yu and Wong, 2015).

2.2.5.6 Negotiate Terms and Prices

Negotiating terms and prices is a crucial stage in the Medicines Pooled Procurement Process Cycle, where the selected suppliers and procurement entities engage in discussions to finalize the conditions under which the medicines will be purchased. This phase involves detailed negotiations on various aspects of the contract, including pricing, payment terms, delivery schedules, quality assurance, and penalties for non-compliance (Cousins et al., 2018). The goal is to reach an agreement that aligns with the procurement objectives while ensuring that both parties' interests are adequately protected. Effective negotiation is essential to secure favorable terms that enhance the value of the procurement and ensure the consistent supply of high-quality medicines.

During negotiations, procurement entities typically leverage the information gathered during the evaluation phase to strengthen their position. Knowledge of market prices, supplier capabilities, and historical performance data provides a strong foundation for negotiating better terms (Tassabehji & Moorhouse, 2008). This phase also allows procurement teams to address any concerns or clarifications regarding the supplier's offer, ensuring that all aspects of the contract are clear and mutually agreed upon. In pooled procurement, where multiple entities are involved, the negotiation process can be more complex, requiring careful coordination and consensus-building among all parties to ensure that the final agreement meets the collective needs (Ward, 2016).

Negotiations also often include discussions on risk management provisions, such as warranties, penalties for late delivery, and mechanisms for handling disputes. These provisions are critical

in ensuring that the procurement process remains robust and that any potential risks are mitigated effectively (Monczka et al., 2021). The finalization of these terms marks a significant milestone in the procurement process, as it sets the stage for the subsequent steps, including the issuance of purchase orders and the management of supplier relationships. A successful negotiation ensures that the procurement entities secure the best possible deal, optimizing both cost and quality in the procurement of medicines.

2.2.5.7 Issue Purchase Orders

Issuing purchase orders is a critical step in the Medicines Pooled Procurement Process Cycle, marking the formalization of the procurement agreement between the procurement entities and the selected suppliers. This step involves the creation and distribution of purchase orders (POs) that detail the specific medicines to be supplied, the agreed quantities, delivery schedules, pricing, and payment terms (Monczka et al., 2021). The purchase order serves as a legally binding document that confirms the supplier's obligations and the expectations of the procurement entities. It is essential to ensure that the POs are accurate and align with the terms negotiated during the preceding phase to avoid any discrepancies or misunderstandings that could disrupt the supply chain.

Purchase orders must be meticulously prepared, ensuring that all details, such as product specifications, quantities, and delivery locations, are correctly documented. This accuracy is crucial in pooled procurement, where multiple entities are involved, and the complexity of managing large orders across different regions can increase the risk of errors (Glock & Ries, 2013). Inaccurate or incomplete POs can lead to delays in delivery, incorrect shipments, and potential conflicts with suppliers. Therefore, procurement teams often employ standardized templates and verification processes to ensure that each purchase order meets the necessary standards before issuance (Monczka et al., 2021).

After the purchase orders are issued, they are typically sent to the suppliers and relevant internal departments, such as finance and logistics, to initiate the fulfillment process. This step establishes the formal communication between the procurement entity and the supplier, triggering the supplier's obligation to deliver the specified medicines according to the agreed terms (Ward, 2016). Effective management of this process is crucial to maintaining the flow of goods and ensuring that the medicines are delivered on time and in the correct quantities. Any issues or discrepancies that arise during this phase can be addressed through the contractual mechanisms established during the negotiation phase, ensuring that the procurement process remains on track.

2.2.5.8 Monitor Order Progress

Monitoring order progress is a vital component of the Medicines Pooled Procurement Process Cycle, ensuring that the procurement process remains on track from the issuance of purchase orders through to the final delivery of goods. This step involves continuous oversight of the supplier's fulfillment activities, including production, packaging, shipping, and delivery schedules (Handfield & Nichols, 2002). Effective monitoring helps to identify and address potential delays or issues that could impact the timely receipt of medicines, thereby minimizing disruptions in the supply chain. It is particularly crucial in pooled procurement scenarios, where large quantities of medicines are sourced for multiple entities, and any delay can have widespread consequences.

To effectively monitor order progress, procurement teams often use tracking systems and communication tools that provide real-time updates on the status of orders (Gunasekaran & Ngai, 2004). These systems can track the movement of goods from the supplier's facility to the final delivery points, alerting procurement managers to any deviations from the planned schedule. Regular communication with suppliers is also essential to ensure that any issues, such

as production delays or logistical challenges, are promptly addressed (Monczka et al., 2021). In the context of pooled procurement, where coordination among multiple entities is required, centralized tracking systems are particularly useful in maintaining transparency and ensuring that all parties are informed of the order's progress.

Another critical aspect of monitoring order progress is managing potential risks and implementing contingency plans. Delays in delivery, quality issues, or logistical challenges can arise at any point in the supply chain, and having a robust monitoring system in place allows procurement teams to respond quickly to such challenges (Christopher & Peck, 2004). For example, if a shipment is delayed due to unforeseen circumstances, alternative arrangements can be made to prevent stockouts at healthcare facilities. This proactive approach to monitoring ensures that the procurement process remains resilient and that the supply of essential medicines is maintained without interruption.

2.2.5.9 Receive and Inspect Medicines

Receiving and inspecting medicines is a critical stage in the Medicines Pooled Procurement Process Cycle, where the procured goods are physically received by the healthcare facilities or central warehouses and undergo thorough inspection to ensure they meet the specified standards (Monczka et al., 2021). This step is essential to verify that the medicines delivered align with the specifications outlined in the purchase orders, including the correct quantities, quality, packaging, and labeling. Proper inspection helps to detect any discrepancies, such as incorrect dosages, damaged goods, or expired products, which could compromise patient safety or lead to operational inefficiencies.

The inspection process typically involves multiple checks, including visual inspections, verification of batch numbers, and quality testing, depending on the nature of the medicines

being received (WHO, 2016). For instance, healthcare facilities may perform basic inspections, while more comprehensive quality assurance testing might be conducted at specialized laboratories to ensure that the medicines meet national or international standards (Rasheed & Wang, 2013). In Ghana, for example, the Food and Drugs Authority (FDA) is responsible for ensuring that all imported medicines meet the required quality standards before they are distributed to healthcare facilities (Ministry of Health, Ghana, 2021). Such regulatory oversight is crucial to maintaining the integrity of the supply chain and safeguarding public health.

If any issues are identified during the inspection, procurement teams must promptly address them with the supplier, which may involve returning the faulty goods, requesting replacements, or negotiating refunds or discounts (Narasimhan et al., 2006). This step ensures that only medicines that meet the required standards are accepted into the healthcare system, thereby minimizing the risk of adverse effects on patients and reducing potential wastage of resources. The thoroughness of the receiving and inspection process is integral to the success of the entire procurement cycle, as it directly impacts the quality and safety of the medicines provided to the public.

2.2.5.10 Distribute Medicines

Distributing medicines is a crucial phase in the Medicines Pooled Procurement Process Cycle, where the inspected and approved medicines are transported from central warehouses or receiving points to various healthcare facilities across the region or country (Monczka et al., 2021). This step ensures that the medicines reach the end-users—patients and healthcare providers—in a timely and efficient manner. The effectiveness of this distribution process is essential for maintaining the continuity of care, particularly in settings where timely access to medicines can significantly impact patient outcomes. In Ghana, the distribution of medicines involves a coordinated effort between the Ministry of Health, regional health offices, and

various logistics providers to ensure that medicines are delivered efficiently to both urban and rural healthcare facilities (Ministry of Health, Ghana, 2021).

The distribution process must be carefully managed to maintain the quality and integrity of the medicines throughout the supply chain. This involves ensuring that appropriate storage conditions, such as temperature control, are maintained during transportation, especially for temperature-sensitive medicines like vaccines and certain biologics (WHO, 2016). Logistics challenges, such as poor infrastructure or inadequate transportation networks, can pose significant risks to the distribution process, particularly in remote or hard-to-reach areas (Kaur and Singh, 2019). To address these challenges, many healthcare systems employ a mix of public and private logistics services, as well as innovative solutions such as drone delivery in remote areas, to ensure that medicines are delivered safely and on time.

Another important aspect of the distribution process is the tracking and monitoring of shipments to ensure that medicines reach their intended destinations without loss or theft. Implementing robust tracking systems, such as barcoding and GPS tracking, helps to maintain visibility throughout the distribution process, allowing procurement teams to monitor the movement of medicines in real-time and respond quickly to any issues that arise (Gunasekaran & Ngai, 2004). Effective distribution also involves accurate record-keeping and reporting, which are essential for maintaining accountability and ensuring that the distribution process aligns with the planned procurement and inventory management strategies.

2.2.5.11 Make Payments

Making payments is a critical step in the Medicines Pooled Procurement Process Cycle, where financial transactions are completed based on the agreed terms and conditions outlined in the purchase orders and contracts. This phase involves the procurement entities fulfilling their

financial obligations to the suppliers after the successful delivery and inspection of medicines (Ward, 2016). Timely and accurate payment is essential not only for maintaining good relationships with suppliers but also for ensuring the continued flow of goods and services. In the context of pooled procurement, where multiple entities are involved, the payment process can be complex, requiring coordination among different financial departments and adherence to the terms negotiated during the procurement process (Cousins et al., 2008).

The payment process typically begins after the medicines have been received, inspected, and confirmed to meet the required standards. Procurement teams must ensure that all relevant documentation, such as delivery notes, inspection reports, and invoices, are reviewed and matched to the original purchase orders before payments are authorized (Ward, 2016). This matching process helps to verify that the quantities and quality of medicines delivered align with the contract terms, thereby preventing overpayments or payments for substandard goods. In pooled procurement scenarios, where payments may be made on behalf of multiple entities, clear communication and documentation are crucial to avoid discrepancies and ensure that all parties fulfill their financial responsibilities.

Managing the payment process effectively also involves setting up appropriate payment schedules and methods that align with the supplier's requirements and the procurement entity’s cash flow. Payment terms can vary, ranging from upfront payments to installments or payments upon delivery, and must be clearly defined during the negotiation phase (Handfield et al., 2011). In some cases, particularly in international procurement, additional considerations such as currency exchange rates, international banking fees, and payment security may need to be addressed to ensure smooth transactions (Ford et al., 2011). The successful completion of this step not only finalizes the procurement process but also sets the stage for future procurement activities by building trust and credibility with suppliers.

2.2.5.12 Review and Evaluate Procurement Outcomes

Reviewing and evaluating procurement outcomes is the final step in the Medicines Pooled Procurement Process Cycle, where the entire procurement process is assessed to determine its effectiveness, efficiency, and impact. This evaluation involves analyzing whether the procurement objectives were met, such as securing the required medicines at the agreed prices, ensuring timely delivery, and maintaining the expected quality standards (Fazekas and Blum, 2021). The review process helps to identify any gaps or issues that occurred during the procurement cycle, providing valuable insights that can be used to improve future procurement activities.

The evaluation typically includes a comprehensive assessment of key performance indicators (KPIs) related to cost savings, supplier performance, delivery timelines, and compliance with contractual terms (Cousins et al., 2008). In pooled procurement settings, where multiple entities are involved, it is essential to gather feedback from all participants to understand the challenges and successes experienced throughout the process. This feedback can highlight areas where the procurement strategy was effective and areas where adjustments may be needed. For example, if delays were encountered, the review might explore whether these were due to supplier issues, logistical challenges, or internal inefficiencies (Hartmann et al., 2012).

The review and evaluation process also considers the impact of the procurement on the broader healthcare system, including the availability of medicines at healthcare facilities and the overall satisfaction of the end-users—healthcare providers and patients (Chowdhury, 2021). This step is crucial for ensuring that the procurement process not only meets immediate needs but also contributes to long-term improvements in healthcare delivery. Lessons learned from the evaluation are documented and integrated into future procurement planning, helping to refine

procurement strategies, improve supplier relationships, and enhance the overall effectiveness of the pooled procurement system (Cousins et al., 2008).

In addition to internal assessments, external audits or third-party evaluations may be conducted to provide an independent perspective on the procurement outcomes (Gunasekaran & Ngai, 2004). These audits can verify the accuracy of the procurement records, ensure compliance with regulations, and offer recommendations for further improvement. The continuous review and evaluation of procurement outcomes are vital for maintaining a high-performing procurement system that effectively supports the healthcare sector's goals.

2.2.6 Various Medicines Pooled Procurement Programmes (PPPs) in Ghana

Medicines Pooled Procurement Programmes (PPPs) are integral to the healthcare system in Ghana, facilitating the efficient procurement and distribution of medicines across various healthcare networks. These programmes allow multiple healthcare entities to pool their resources, enabling them to secure better prices, ensure consistent access to essential medicines, and enhance the overall efficiency of procurement processes. Several key pooled procurement entities operate within Ghana, each serving different health networks and playing a vital role in the country’s healthcare landscape. Among these entities are the Ghana Adventist Central Medical Store, the National Catholic Health Service Pooled Procurement, the Pentecost Health Service Pooled Procurement Programme, and the Ministry of Health Framework Contract.

- **Ghana Adventist Central Medical Store**

The Ghana Adventist Central Medical Store serves as the central procurement hub for the Adventist health facilities in Ghana. This pooled procurement entity was established to address the challenges faced by individual Adventist healthcare institutions in procuring medicines

independently, which often resulted in higher costs, inconsistent supply, and quality issues (Ghana Adventist Health Services, 2019). The Ghana Adventist Central Medical Store aggregates the demand from various Adventist hospitals and clinics, enabling these institutions to leverage their collective purchasing power to negotiate better prices with suppliers and secure bulk purchases. This approach not only reduces procurement costs but also ensures that all participating facilities have access to the essential medicines required to provide quality healthcare.

The centralized procurement model adopted by the Ghana Adventist Central Medical Store offers several advantages. It allows for better oversight of the supply chain, reducing the risk of stockouts and ensuring that medicines are distributed equitably across all participating facilities (Ghana Adventist Health Services, 2019). Additionally, the central medical store is responsible for conducting thorough evaluations of suppliers and products before making purchases, which helps to standardize the quality of medicines procured. This centralized approach also facilitates more efficient inventory management, as the medical store can monitor stock levels across all facilities and make timely decisions about reordering and distribution.

However, the centralized nature of the Ghana Adventist Central Medical Store also presents certain challenges. Maintaining consistent communication between the central store and individual health facilities is crucial to ensuring that the specific needs of each facility are met. Logistical challenges, such as coordinating the distribution of medicines across various regions, also require careful planning and execution. Despite these challenges, the Ghana Adventist Central Medical Store remains a vital component of the Adventist health network in Ghana, contributing significantly to the overall efficiency and effectiveness of healthcare delivery within this network.

- **National Catholic Health Service Pooled Procurement**

The National Catholic Health Service Pooled Procurement is one of the most extensive and well-organized pooled procurement programmes in Ghana. It serves the numerous health facilities operated by the Catholic Church, providing a centralized procurement service that addresses the fragmented and inefficient procurement practices that previously existed within the Catholic health network (National Catholic Health Service, 2020). The pooled procurement programme enables Catholic health facilities to consolidate their purchasing power, allowing them to secure lower prices and more favorable terms from suppliers. This consolidation is particularly beneficial given the extensive network of hospitals, clinics, and pharmacies under the Catholic Health Service, which require a consistent and reliable supply of essential medicines.

The National Catholic Health Service Pooled Procurement is characterized by its emphasis on transparency, accountability, and ethical procurement practices, reflecting the Church's broader mission of providing compassionate and equitable healthcare (National Catholic Health Service, 2020). The programme's centralized approach allows the Catholic Health Service to engage in long-term contracts with suppliers, which helps stabilize supply chains and ensures a steady flow of essential medicines to all participating facilities. These long-term contracts also contribute to cost savings, as suppliers are more likely to offer discounts for bulk purchases and extended agreements.

A key advantage of the National Catholic Health Service Pooled Procurement is its ability to maintain strict quality control standards. The centralized procurement process enables the Catholic Health Service to closely monitor the quality of medicines being purchased, ensuring that all products meet the necessary standards before they are distributed to healthcare facilities. This focus on quality is critical in maintaining the trust of the communities served by the

Catholic health network. However, like other pooled procurement programmes, the National Catholic Health Service faces challenges related to coordinating the diverse needs of its many facilities and managing the logistics of distributing medicines across a wide geographic area.

- **Pentecost Health Service Pooled Procurement Programme**

The Pentecost Health Service Pooled Procurement Programme was developed to address the procurement challenges faced by healthcare facilities operated by the Church of Pentecost in Ghana. Before the establishment of this programme, Pentecost healthcare institutions struggled with higher procurement costs, inconsistent supply, and varying quality of medicines, which affected their ability to provide reliable healthcare services (Church of Pentecost Health Services, 2018). The pooled procurement model allows these institutions to benefit from collective purchasing power, enabling them to obtain medicines at more competitive prices and with greater consistency.

The Pentecost Health Service Pooled Procurement Programme emphasizes collaboration and shared responsibility among participating institutions. This programme fosters open communication and coordination between the central procurement office and individual health facilities, ensuring that the specific needs of each institution are considered during the procurement process (Church of Pentecost Health Services, 2018). This collaborative approach enhances the efficiency of the procurement process and strengthens the sense of community and shared mission among the Pentecost healthcare providers.

One of the strengths of the Pentecost Health Service Pooled Procurement Programme is its focus on building long-term relationships with suppliers. The programme prioritizes working with suppliers who share its commitment to ethical practices and high-quality products, which helps to ensure that the medicines procured meet the stringent standards required by the Church

of Pentecost's healthcare institutions. This long-term relationship-building also helps to stabilize supply chains and reduce the risk of stockouts. However, the programme faces ongoing challenges, such as maintaining a consistent supply during periods of high demand and navigating the complexities of procurement regulations.

- **Ministry of Health Framework Contract**

The Ministry of Health Framework Contract is a government-led pooled procurement initiative that plays a central role in the procurement of medicines and medical supplies for Ghana's public health sector. This framework contract is designed to streamline the procurement process across various government healthcare facilities, allowing the Ministry of Health to negotiate bulk contracts with suppliers on behalf of all participating entities (Ministry of Health, Ghana, 2021). The framework contract covers a wide range of medicines and medical supplies, ensuring that public healthcare facilities across the country have access to the essential products needed to provide comprehensive care to the population.

The centralized procurement process under the Ministry of Health Framework Contract allows the Ministry to leverage its purchasing power to secure favorable terms from suppliers, reducing the overall cost of medicines for the public healthcare system (Ministry of Health, Ghana, 2021). Additionally, the framework contract helps to standardize the procurement process across all government health facilities, ensuring that medicines are procured consistently and in compliance with national standards. This standardization is particularly important in maintaining the quality and safety of medicines distributed to public healthcare facilities.

The Ministry of Health Framework Contract also provides a stable and reliable supply of medicines to public healthcare facilities. The long-term contracts negotiated under this

framework provide suppliers with the assurance of steady demand, which can lead to more efficient production and distribution processes (UNICEF, 2019). However, the framework contract faces challenges, including managing the logistics of distributing medicines across the country and addressing the diverse needs of different healthcare facilities. Additionally, maintaining transparency and accountability in the procurement process is an ongoing priority, as the scale of the framework contract presents opportunities for corruption and inefficiency. Despite these challenges, the Ministry of Health Framework Contract remains a critical component of Ghana's public health system, ensuring that essential medicines are available to those who need them.

2.2.7 Enabling factors for setting up Medicine Pooled Procurement Programs in Ghana Healthcare Institutions

Establishing effective Medicine Pooled Procurement Programs in Ghana's healthcare institutions requires a comprehensive set of enabling factors that support the efficient, transparent, and sustainable operation of these programs. Key factors include a strong legal and regulatory framework that provides the necessary guidelines and oversight; political will and government commitment to drive and sustain the initiative; an efficient supply chain infrastructure to ensure timely distribution and availability of medicines; financial sustainability and robust funding mechanisms to secure the resources needed for procurement; effective governance and leadership to manage and coordinate activities; and active stakeholder engagement and collaboration to align the interests of all parties involved and ensure the program's success. These factors collectively create a conducive environment for implementing and maintaining successful pooled procurement programs that can improve access to essential medicines in Ghana.

2.2.7.1 Strong Legal and Regulatory Framework

A strong legal and regulatory framework is fundamental to the successful establishment and operation of Medicine Pooled Procurement Programs (PPPs) in Ghana's healthcare institutions. Such a framework provides the necessary foundation for ensuring that the procurement process is conducted transparently, ethically, and efficiently. It establishes clear rules and guidelines that govern the activities of all stakeholders involved, from the government and procurement agencies to suppliers and healthcare providers. A robust legal framework helps prevent corruption, ensures compliance with international standards, and protects the interests of both the public and the entities involved in the procurement process (Thai, 2017). In Ghana, the Public Procurement Act, 2003 (Act 663), as amended, serves as the cornerstone of public procurement regulations, outlining the procedures and standards for public procurement, including pooled procurement in the healthcare sector (Ministry of Health, Ghana, 2021).

The Public Procurement Act, 2003, has been instrumental in regulating procurement practices across various sectors in Ghana, including healthcare. It sets out the principles of transparency, accountability, and fairness that must be adhered to in all procurement activities. These principles are crucial for pooled procurement programs, which involve the collective purchasing of medicines and medical supplies by multiple healthcare institutions. The Act mandates competitive bidding processes, which are essential for ensuring that the best value for money is achieved in pooled procurement. Furthermore, the Act provides mechanisms for addressing disputes and ensuring compliance, which are vital for maintaining the integrity of the procurement process (Public Procurement Authority, Ghana, 2018). However, the effectiveness of this legal framework depends on the capacity of institutions to enforce it, as well as the willingness of stakeholders to comply with the established rules and regulations.

In addition to the Public Procurement Act, international regulations and standards also play a significant role in shaping the legal framework for pooled procurement in Ghana. Compliance with international standards, such as the World Health Organization's (WHO) Good Manufacturing Practices (GMP) and Good Distribution Practices (GDP), is essential for ensuring the quality and safety of medicines procured through pooled programs (WHO, 2017). These standards provide guidelines for the manufacturing, storage, and distribution of medicines, ensuring that they meet the required quality specifications and are safe for consumption. In the context of pooled procurement, adherence to these standards is critical for maintaining the credibility of the procurement process and ensuring that the medicines supplied meet the necessary quality benchmarks (Hassan, 2023).

The legal framework for pooled procurement in Ghana is also influenced by regional and international trade agreements. Ghana's participation in the Economic Community of West African States (ECOWAS) and other regional blocs has implications for its procurement practices, particularly in the context of cross-border pooled procurement initiatives. These agreements facilitate the free movement of goods and services across member states, which can enhance the efficiency and cost-effectiveness of pooled procurement programs (ECOWAS Commission, 2016). However, they also require harmonization of regulations and standards across member states, which can be challenging due to differences in legal and regulatory frameworks. For Ghana, aligning its legal framework with regional and international standards is crucial for the successful implementation of pooled procurement programs that involve multiple countries or entities.

Despite the existence of a comprehensive legal framework, challenges remain in the implementation and enforcement of procurement regulations in Ghana. Issues such as corruption, lack of transparency, and weak institutional capacity can undermine the

effectiveness of the legal framework, leading to inefficiencies and mismanagement in the procurement process (Transparency International, 2019). Strengthening the capacity of regulatory institutions, improving transparency mechanisms, and fostering a culture of compliance among stakeholders are essential steps toward addressing these challenges. Moreover, continuous monitoring and evaluation of the legal framework are necessary to ensure that it remains responsive to the evolving needs of the healthcare sector and is capable of supporting the successful operation of pooled procurement programs in Ghana (World Bank, 2020).

2.2.7.2 Political Will and Government Commitment

Political will and government commitment are crucial determinants of the success of Medicine Pooled Procurement Programs (PPPs) in Ghana's healthcare sector. These factors drive the prioritization of healthcare in the national agenda and ensure that necessary resources and support are allocated to establish and maintain effective procurement systems. Political will refers to the genuine intent and readiness of government leaders to pursue and implement policies that promote efficient and transparent procurement practices, while government commitment involves the sustained effort and dedication to ensuring these policies are translated into action (Brinkerhoff, 2010). In the context of pooled procurement, the Ghanaian government’s role is pivotal in mobilizing stakeholders, enacting supportive legislation, and providing the financial and institutional support required to build and sustain robust procurement mechanisms.

A key aspect of political will is the government's ability to recognize and address the systemic challenges within the healthcare procurement system. In Ghana, the government has demonstrated its commitment to improving healthcare procurement through various policy initiatives and reforms. The introduction of the National Health Insurance Scheme (NHIS) in

2003 is one such example, where the government's commitment to providing affordable healthcare led to increased demand for medicines and, subsequently, the need for more efficient procurement systems (Ministry of Health, Ghana, 2021). The government's active role in these initiatives underscores the importance of political leadership in driving healthcare reforms and ensuring that procurement processes are aligned with national health goals.

Government commitment is also evident in the allocation of resources and the establishment of institutions dedicated to overseeing procurement activities. In Ghana, the establishment of the Public Procurement Authority (PPA) and the Central Medical Stores (CMS) reflects the government's commitment to enhancing procurement efficiency and transparency (Public Procurement Authority, Ghana, 2018). These institutions play a critical role in ensuring that procurement activities, including pooled procurement, are conducted in accordance with established regulations and standards. The government's commitment to these institutions is crucial, as it provides the necessary oversight and accountability mechanisms to prevent corruption and ensure that public resources are used effectively (WHO, 2017).

Furthermore, political will and government commitment are essential for fostering collaboration among various stakeholders involved in pooled procurement. In Ghana, effective pooled procurement programs require coordination between different levels of government, healthcare providers, and international partners. The government's role in facilitating this collaboration is vital, as it helps to align the interests of all parties involved and ensures that pooled procurement initiatives are implemented smoothly (Wang and Zahur, 2023). For example, the government's engagement with international donors and organizations has been instrumental in securing technical and financial support for healthcare procurement initiatives, including pooled procurement programs.

However, the sustainability of government commitment remains a challenge. Political changes, such as shifts in leadership or changes in government priorities, can disrupt the continuity of procurement policies and undermine the progress made in establishing pooled procurement systems (Labonté and Stuckler, 2016). In Ghana, maintaining consistent political will across different administrations is essential for ensuring that pooled procurement programs are not only initiated but also sustained over time. This requires a long-term commitment from the government to uphold procurement reforms and to support the institutions responsible for implementing these programs.

The success of pooled procurement in Ghana is closely tied to the government's ability to demonstrate unwavering political will and commitment. This includes not only initiating reforms and allocating resources but also maintaining a stable and supportive environment for procurement activities. Ensuring that pooled procurement programs are prioritized at the highest levels of government and that there is consistent support for these initiatives is essential for their long-term success (Kaufmann et al., 2010). The Ghanaian government's ongoing commitment to healthcare procurement reform will be crucial in realizing the full potential of pooled procurement programs and in achieving better health outcomes for the population.

2.2.7.3 Efficient Supply Chain Infrastructure

An efficient supply chain infrastructure is crucial for the successful implementation of Medicine Pooled Procurement Programs (PPPs) in Ghana's healthcare system. This infrastructure encompasses all the processes, systems, and networks involved in the procurement, storage, distribution, and delivery of medicines from suppliers to healthcare facilities. The effectiveness of pooled procurement depends heavily on the ability of the supply chain to ensure that medicines are delivered to their intended destinations in a timely, cost-effective, and reliable manner (Sodhi et al., 2012). In Ghana, the development and maintenance

of an efficient supply chain are vital for ensuring that the benefits of pooled procurement—such as cost savings, improved access to medicines, and reduced stockouts—are fully realized.

One of the key components of an efficient supply chain infrastructure is the ability to manage inventory effectively. In the context of pooled procurement, this involves accurately forecasting demand, managing stock levels, and ensuring that there is sufficient storage capacity to handle large volumes of medicines (Gunasekaran & Ngai, 2004). In Ghana, the Central Medical Stores (CMS) plays a pivotal role in managing the national inventory of medicines and ensuring that these are distributed efficiently to regional and district health facilities. The use of advanced inventory management systems, such as the Ghana Integrated Logistics Management Information System (GhiLMIS), has been instrumental in improving the accuracy and efficiency of inventory management in the country (USAID, 2020). These systems allow for real-time tracking of stock levels, helping to prevent stockouts and overstocking, and ensuring that medicines are available when and where they are needed.

Logistics and transportation are also critical elements of the supply chain infrastructure. The ability to move medicines quickly and safely from central warehouses to healthcare facilities is essential for maintaining the effectiveness of pooled procurement programs (Christopher & Peck, 2004). In Ghana, transportation challenges such as poor road infrastructure, especially in rural areas, can pose significant barriers to the efficient distribution of medicines (Ministry of Health, Ghana, 2021). To address these challenges, the Ghanaian government and its partners have implemented various strategies, including the use of both public and private logistics providers, as well as innovative approaches such as drone delivery for remote areas. These efforts have been crucial in enhancing the reliability of the supply chain and ensuring that medicines reach even the most inaccessible parts of the country.

The cold chain system, which ensures that temperature-sensitive medicines such as vaccines are stored and transported within required temperature ranges, is another vital component of the supply chain infrastructure (Yadav, 2015). Maintaining an efficient cold chain is critical for the success of pooled procurement programs that involve the purchase of such medicines. In Ghana, the Expanded Programme on Immunization (EPI) has been a key player in strengthening the cold chain infrastructure, ensuring that vaccines are stored and transported under optimal conditions (WHO, 2017). The integration of cold chain management into the broader supply chain infrastructure is essential for maintaining the potency and safety of vaccines and other temperature-sensitive products throughout the distribution process.

Effective supply chain infrastructure also requires robust systems for tracking and monitoring the flow of medicines throughout the procurement process. This includes the use of information technology (IT) systems to capture data on every stage of the supply chain, from procurement to final delivery (Gunasekaran & Ngai, 2004). In Ghana, the adoption of GhiLMIS has significantly improved the visibility and accountability of the supply chain, enabling stakeholders to monitor the status of orders, track shipments, and manage inventories more effectively (USAID, 2020). Such systems are critical for identifying bottlenecks, optimizing logistics, and ensuring that the supply chain operates smoothly and efficiently.

2.2.7.4 Financial Sustainability and Funding Mechanisms

Financial sustainability and robust funding mechanisms are essential for the continuity and success of Medicine Pooled Procurement Programs (PPPs) in Ghana's healthcare sector. The ability of these programs to function effectively relies heavily on the consistent availability of financial resources to cover the costs associated with procuring, storing, and distributing medicines across various healthcare facilities. In the context of Ghana, where healthcare funding is often constrained, the establishment of reliable and diversified funding sources is

critical to sustaining these procurement initiatives and ensuring that essential medicines are accessible across the country.

One primary source of funding for pooled procurement programs in Ghana is government budget allocations. The government's financial commitment to healthcare procurement is crucial for ensuring the stability of these programs. However, relying solely on government funding presents risks, particularly during economic downturns or periods of fiscal austerity when healthcare budgets may be cut (Fenny et al., 2018). To mitigate these risks, it is necessary to diversify funding sources. International donors, development partners, and non-governmental organizations (NGOs) play a significant role in supplementing government funding. Programs like the Global Fund and Gavi, the Vaccine Alliance, have been instrumental in providing financial support for medicine procurement in Ghana, particularly for essential medicines and vaccines, helping to alleviate the financial burden on the government (Global Fund, 2019).

In addition to external funding, cost-sharing arrangements among participating entities in pooled procurement programs are vital for financial sustainability. These arrangements involve healthcare institutions contributing to the program's financial pool based on their specific needs and capacities, thereby creating a more sustainable funding model. Cost-sharing mechanisms not only distribute the financial burden more equitably among the entities involved but also foster a sense of ownership and accountability for the program's success (Gelders et al., 2006). This approach ensures that all participating institutions have a vested interest in the program's effectiveness and helps to stabilize funding by reducing dependence on a single source.

Revolving funds represent another strategy to ensure the financial sustainability of pooled procurement programs. A revolving fund operates by continuously replenishing financial resources through the sale of procured medicines, with the revenues generated reinvested into

the procurement cycle (Owusu-Sekyere and Bagah, 2014). This self-sustaining model has been successfully implemented in various countries, providing a steady flow of funds to cover the costs of future procurement cycles. In Ghana, establishing revolving funds within healthcare facilities that participate in pooled procurement could enhance the program's financial stability. These funds would allow the programs to continue operating without relying exclusively on external donors or fluctuating government budgets (Ministry of Health, Ghana, 2021).

Furthermore, the effectiveness of pooled procurement programs depends on the financial management and accountability systems in place. Transparent financial management practices, such as regular audits, accurate record-keeping, and timely financial reporting, are crucial for ensuring that funds are used efficiently and effectively (Smith et al., 2012). Strengthening the financial management capacities of institutions involved in pooled procurement is necessary to prevent mismanagement and ensure that resources are allocated appropriately. Effective financial governance also plays a key role in building and maintaining trust among stakeholders, including international donors and development partners, who need assurance that their contributions are being used responsibly and in line with the program's objectives.

Finally, the integration of innovative financial tools and mechanisms can further strengthen the financial sustainability of pooled procurement programs. For example, the use of financial instruments such as social impact bonds or blended finance, which combines public and private capital, could provide additional funding streams to support procurement activities. These instruments not only attract private sector investment but also align financial incentives with health outcomes, ensuring that funding is directed toward initiatives that demonstrate measurable impact (McIntyre & Meheus, 2014). Exploring and adopting such innovative funding mechanisms can provide Ghana's pooled procurement programs with the financial

resilience needed to navigate economic challenges and continue delivering essential medicines to the population.

2.2.7.5 Effective Governance and Leadership

Effective governance and leadership are critical components in the successful implementation and sustainability of Medicine Pooled Procurement Programs (PPPs) in Ghana's healthcare system. Governance refers to the structures, policies, and processes that ensure accountability, transparency, and responsiveness within the procurement system, while leadership involves the strategic direction and decision-making necessary to guide these programs toward achieving their goals (Phillips et al., 2012). In the context of pooled procurement, strong governance and leadership are essential for coordinating the activities of multiple stakeholders, managing risks, and ensuring that the procurement process is aligned with national health priorities.

A well-established governance framework provides the necessary oversight to ensure that pooled procurement activities are conducted in a transparent and accountable manner. This includes the establishment of clear roles and responsibilities for all stakeholders involved, including government agencies, healthcare providers, and procurement officers (Kaufmann et al., 2010). In Ghana, the Public Procurement Authority (PPA) plays a central role in overseeing public procurement activities, including those related to pooled procurement programs. The PPA is responsible for ensuring compliance with procurement laws and regulations, conducting audits, and addressing any irregularities that may arise (Public Procurement Authority, Ghana, 2018). Effective governance requires that these oversight mechanisms are robust and independent, capable of holding all parties accountable and maintaining the integrity of the procurement process.

Leadership in pooled procurement involves setting the strategic vision for the program, making critical decisions, and mobilizing resources to achieve the desired outcomes. Strong leadership is necessary to navigate the complexities of pooled procurement, such as managing the interests of diverse stakeholders, addressing logistical challenges, and ensuring that the procurement process is responsive to the changing needs of the healthcare system (Pyone et al., 2017). In Ghana, leadership within pooled procurement programs is often provided by senior officials within the Ministry of Health, who are responsible for coordinating with various partners, including international donors, regional health offices, and healthcare providers. These leaders must have a deep understanding of the healthcare landscape, as well as the ability to make informed decisions that balance cost, quality, and accessibility (Smith et al., 2012).

One of the challenges in ensuring effective governance and leadership in pooled procurement is the potential for conflicts of interest and corruption. In many cases, the concentration of power and resources within a single entity can create opportunities for unethical behavior, which can undermine the effectiveness of the procurement program (Transparency International, 2019). To address these risks, it is essential to implement strong checks and balances, such as regular audits, whistleblower protections, and independent oversight committees. Additionally, promoting a culture of integrity and ethical behavior within the procurement system is crucial for preventing corruption and ensuring that procurement activities are conducted in the best interest of the public (World Bank, 2020).

Effective governance and leadership also involve fostering collaboration and coordination among all stakeholders involved in the pooled procurement process. This includes ensuring that there is clear communication between government agencies, healthcare providers, and suppliers, as well as promoting active engagement with civil society and other external partners (Fenny et al., 2018). In Ghana, successful pooled procurement programs have benefited from

strong partnerships between the government, international donors, and non-governmental organizations, which have provided technical expertise, financial support, and logistical assistance. These partnerships are essential for building the capacity of the procurement system and ensuring that it is responsive to the needs of the healthcare system.

Further, effective governance and leadership require a commitment to continuous improvement. This involves regularly reviewing and updating procurement policies and practices to reflect changes in the healthcare environment, as well as investing in capacity building and professional development for procurement officers and other key stakeholders (Phillips et al., 2012). In Ghana, initiatives such as training programs for procurement professionals and the development of standardized procurement guidelines have been instrumental in strengthening the governance and leadership of pooled procurement programs. These efforts help to ensure that the procurement system remains effective, efficient, and capable of delivering high-quality medicines to the population.

2.2.7.6 Stakeholder Engagement and Collaboration

Stakeholder engagement and collaboration are crucial for the success of Medicine Pooled Procurement Programs (PPPs) in Ghana's healthcare system. These elements ensure that all relevant parties—including government agencies, healthcare providers, suppliers, international donors, and the communities served—are actively involved in the procurement process. Engaging stakeholders effectively leads to better alignment of goals, enhanced transparency, and increased accountability, which are essential for the smooth functioning of pooled procurement initiatives (Schillemans & Bjurstrøm, 2020). In Ghana, where the healthcare system is complex and multifaceted, fostering strong collaboration among stakeholders is particularly important for overcoming challenges related to resource allocation, logistics, and the equitable distribution of medicines.

One of the key benefits of stakeholder engagement is the ability to leverage the diverse expertise and resources of different parties involved in pooled procurement. For instance, the Ministry of Health may provide strategic oversight and policy direction, while international donors such as the Global Fund or Gavi, the Vaccine Alliance, contribute financial resources and technical expertise (Global Fund, 2019). Healthcare providers, on the other hand, offer insights into the practical needs and challenges faced at the facility level, ensuring that the medicines procured are both necessary and suitable for the local context. Effective collaboration between these stakeholders helps to create a procurement system that is more responsive to the actual needs of the healthcare sector, reducing the risk of inefficiencies or misaligned priorities.

Moreover, active stakeholder engagement facilitates transparency and trust in the procurement process. When stakeholders are involved in decision-making and are kept informed about the progress and challenges of the procurement program, it reduces the likelihood of misunderstandings and conflicts (Freeman et al., 2007). In Ghana, ensuring that stakeholders have access to accurate and timely information about procurement activities helps to build confidence in the system and encourages continued collaboration. For example, regular meetings, consultations, and reporting mechanisms can be used to keep all parties informed and engaged throughout the procurement cycle (Ministry of Health, Ghana, 2021). This transparency is particularly important in pooled procurement, where the complexity of managing contributions and expectations from multiple entities can lead to disputes if not handled carefully.

Stakeholder engagement also plays a critical role in fostering innovation and problem-solving within pooled procurement programs. Collaborative efforts often bring together a wide range of perspectives and ideas, leading to innovative solutions to common challenges (Bryson et al.,

2015). In the context of Ghana's healthcare system, for example, collaboration between government agencies and private sector logistics providers has led to the development of new distribution strategies, such as the use of drones to deliver medicines to remote areas (Ministry of Health, Ghana, 2021). These innovations not only improve the efficiency of the procurement process but also enhance access to essential medicines in underserved regions, demonstrating the value of collaborative approaches.

Another important aspect of stakeholder engagement is the involvement of the communities served by the procurement program. Ensuring that the voices of patients and community members are heard in the procurement process helps to align the program's objectives with the health needs of the population (Alemanno, 2015). In Ghana, engaging communities in the planning and evaluation of pooled procurement programs can lead to more equitable and effective healthcare delivery, as it allows for the identification and prioritization of local health concerns. This community involvement also fosters a sense of ownership and accountability, which is essential for the long-term sustainability of the procurement program.

However, achieving effective stakeholder engagement and collaboration is not without its challenges. Differences in priorities, power dynamics, and communication barriers can hinder collaborative efforts and lead to conflicts (Ansell & Gash, 2008). In Ghana, addressing these challenges requires strong leadership, clear communication strategies, and the establishment of formal mechanisms for dispute resolution and consensus-building. Additionally, continuous efforts to build and maintain trust among stakeholders are crucial for ensuring that collaboration remains productive and that the pooled procurement program can achieve its intended outcomes.

2.2.8 Benefits of Medicines Pooled Procurement Programs in Healthcare Delivery in Ghana

Medicines Pooled Procurement Programs (PPPs) offer significant benefits to healthcare delivery in Ghana by enhancing the efficiency, affordability, and reliability of medicine supply chains. These programs leverage collective purchasing power, enabling healthcare institutions to achieve cost savings through economies of scale and negotiate better terms with suppliers (Yadav, 2015). Additionally, pooled procurement improves access to essential medicines, ensures consistent quality and safety, streamlines procurement processes, and reduces stockouts and shortages. Ultimately, these benefits contribute to improved health outcomes across the population, making PPPs a critical strategy for strengthening Ghana's healthcare system.

2.2.8.1 Cost Savings through Economies of Scale

Cost savings through economies of scale is a significant benefit of Medicines Pooled Procurement Programs (PPPs) in Ghana's healthcare system. Economies of scale occur when procurement volumes increase, leading to a reduction in the per-unit cost of goods, which allows healthcare institutions to purchase medicines at lower prices than they could achieve individually (Burnett, 2014). When multiple healthcare facilities or entire regions collaborate in pooled procurement, their collective purchasing power enables them to negotiate more favorable terms with suppliers. This collective approach not only reduces costs but also improves the overall efficiency of the procurement process, ensuring that resources are used more effectively within the healthcare system.

The financial impact of cost savings through economies of scale is particularly critical in resource-limited settings such as Ghana. Healthcare facilities in Ghana often face budgetary constraints that limit their ability to purchase essential medicines, leading to gaps in treatment

availability (Mahendran, 2017). When these facilities participate in pooled procurement programs, they can access medicines at significantly reduced prices. This price reduction allows the savings to be reallocated to other areas of need, such as improving healthcare infrastructure, expanding services, or purchasing additional supplies. The ability to stretch limited financial resources further enhances the overall capacity of the healthcare system to meet the needs of the population.

Beyond the direct reduction in medicine costs, pooled procurement also results in cost savings across other components of the supply chain, including logistics and distribution. Procuring medicines in bulk can lead to lower transportation and storage costs, as centralized distribution networks can manage larger volumes more efficiently (Sodhi & Tang, 2012). For instance, when medicines are delivered to a central warehouse before being distributed to various healthcare facilities, economies of scale in logistics reduce the per-unit cost of distribution. This efficiency not only lowers overall procurement costs but also ensures a more reliable and timely delivery of medicines, reducing the risk of stockouts and interruptions in patient care.

The effect of economies of scale is particularly pronounced in the procurement of high-cost medicines, such as those used to treat chronic illnesses or rare diseases. Individual healthcare facilities may struggle to afford these medicines due to their high prices, but pooled procurement allows for bulk purchasing, which often results in substantial discounts from suppliers (Mills, 2012). This dynamic has been observed in global health initiatives such as the procurement of antiretroviral drugs for HIV/AIDS treatment, where pooled procurement has significantly reduced the cost of these life-saving medicines. Similar strategies can be applied in Ghana, where pooled procurement can make expensive treatments more accessible to patients who need them.

However, achieving cost savings through economies of scale in pooled procurement requires careful coordination and effective management. Participating healthcare facilities must collaborate closely to accurately forecast their medicine needs, negotiate effectively with suppliers, and manage the distribution process efficiently (Wouters et al., 2017). In Ghana, this has led to the establishment of centralized procurement entities, such as the Ministry of Health's framework contract system, which coordinates procurement activities across the country's healthcare facilities (Ministry of Health, Ghana, 2021). These centralized systems play a critical role in aligning the efforts of various entities, ensuring that pooled procurement achieves maximum cost savings while maintaining the quality and availability of medicines.

Furthermore, the success of pooled procurement programs in achieving economies of scale depends on the stability and predictability of funding sources. Consistent funding enables healthcare facilities to participate in pooled procurement regularly, maintaining the volume of purchases necessary to achieve significant cost savings (Gelders et al., 2006). Inconsistent funding, on the other hand, can disrupt procurement cycles, reducing the potential benefits of economies of scale. Therefore, securing reliable financial support, whether through government budgets, international donors, or cost-sharing arrangements, is essential for the sustainability of pooled procurement programs in Ghana.

The strategic use of pooled procurement to leverage economies of scale has the potential to transform the procurement landscape in Ghana, making essential medicines more affordable and accessible to the population. As healthcare facilities continue to collaborate and pool their resources, the cumulative cost savings can significantly strengthen the overall healthcare system, improving outcomes for patients across the country.

2.2.8.2 Improved Access to Essential Medicines

Improved access to essential medicines is a critical benefit of Medicines Pooled Procurement Programs (PPPs) in Ghana's healthcare delivery system. Access to essential medicines is a fundamental component of healthcare, ensuring that patients receive the treatments they need in a timely and reliable manner. Pooled procurement programs facilitate this access by consolidating the purchasing power of multiple healthcare institutions, enabling them to secure a consistent and affordable supply of essential medicines (Gholami et al., 2024). This approach addresses many of the barriers to medicine availability that individual facilities might face, such as limited financial resources, inadequate supply chains, and the challenges of negotiating favorable terms with suppliers.

One of the primary ways pooled procurement improves access is by stabilizing the supply of essential medicines across participating healthcare facilities. When procurement is conducted on a larger scale, it allows for more accurate demand forecasting and bulk purchasing, which reduces the likelihood of stockouts and ensures a continuous supply of medicines (Bigdeli et al., 2014). In Ghana, where sporadic shortages of essential medicines have been a persistent challenge, pooled procurement helps to mitigate these shortages by ensuring that healthcare facilities are better stocked and prepared to meet patient needs. The centralized nature of these programs also enables more effective inventory management, which is crucial for maintaining consistent access to medicines across different regions and healthcare providers.

Another significant advantage of pooled procurement is the ability to reach remote and underserved areas, where access to medicines is often limited. In many parts of Ghana, rural and remote communities face significant barriers to accessing healthcare, including difficulties in obtaining essential medicines due to logistical challenges and the high cost of distribution (Yadav, 2015). Pooled procurement programs can address these issues by coordinating the

distribution of medicines more efficiently and ensuring that even the most remote healthcare facilities receive regular supplies. For example, through coordinated efforts and economies of scale, the Ministry of Health can extend its distribution networks to cover more remote areas, thereby improving the overall accessibility of essential medicines to populations that would otherwise be underserved.

Moreover, pooled procurement programs play a crucial role in ensuring the availability of a broader range of essential medicines. In many cases, smaller healthcare facilities or those with limited budgets may struggle to procure less common or more expensive medicines, leading to gaps in treatment options for patients (Awindaogo, 2018). However, when procurement is pooled, the combined purchasing power allows these facilities to access a wider variety of medicines, including those that may be less commonly needed but are still essential for certain conditions. This expanded access is particularly important for treating chronic diseases, rare conditions, and emergencies, where specific medicines may be crucial for patient outcomes.

The impact of pooled procurement on improving access to essential medicines is also reflected in its ability to reduce the inequities in medicine availability between different regions and healthcare providers. In Ghana, disparities in access to medicines have been a significant issue, with rural areas and smaller healthcare facilities often facing more significant challenges in obtaining the medicines they need (Bigdeli et al., 2014). Pooled procurement helps to level the playing field by ensuring that all participating facilities, regardless of size or location, have access to the same quality and range of medicines. This equitable distribution of resources contributes to more consistent and fair healthcare delivery across the country, ultimately leading to better health outcomes for all segments of the population.

Additionally, pooled procurement programs support the broader goals of public health by enabling the efficient and timely distribution of medicines during public health emergencies or

outbreaks. The ability to rapidly mobilize resources and distribute medicines across a network of healthcare facilities is critical in responding to health crises, where delays in treatment can have severe consequences (Vogler et al., 2014). In such scenarios, pooled procurement provides a mechanism for ensuring that essential medicines are available where and when they are needed most, thus enhancing the healthcare system's resilience and capacity to respond to emergencies.

2.2.8.3 Enhanced Quality and Safety of Medicines

Enhanced quality and safety of medicines are crucial benefits of Medicines Pooled Procurement Programs (PPPs) in healthcare delivery, particularly in a developing country context like Ghana. The quality and safety of medicines are paramount to achieving effective treatment outcomes and maintaining public trust in the healthcare system. Pooled procurement programs contribute significantly to ensuring that the medicines procured meet stringent quality standards and are safe for patient use (Vogler et al., 2014). By centralizing procurement and implementing rigorous quality control measures, these programs help to mitigate the risks associated with substandard or counterfeit medicines, which have been a persistent problem in many low- and middle-income countries.

One of the primary ways pooled procurement enhances the quality and safety of medicines is through the establishment of centralized and standardized procurement processes. In Ghana, pooled procurement programs often involve the Ministry of Health or other central bodies that set strict criteria for selecting suppliers and conducting quality assessments (Ministry of Health, Ghana, 2021). This centralization allows for more consistent application of quality standards across all participating healthcare facilities, reducing the variability in medicine quality that can occur when facilities procure medicines independently. By ensuring that all medicines are

sourced from reputable suppliers who comply with international quality standards, pooled procurement programs help to safeguard the integrity of the medicine supply chain.

In addition to centralized procurement processes, pooled procurement programs often include rigorous pre-qualification and post-market surveillance mechanisms to monitor the quality and safety of medicines throughout their lifecycle. Pre-qualification involves a thorough evaluation of suppliers' manufacturing practices, quality control processes, and adherence to Good Manufacturing Practices (GMP) before they are allowed to participate in the procurement program (WHO, 2017). This evaluation helps to ensure that only suppliers who meet the highest standards of quality are selected. Post-market surveillance, on the other hand, involves ongoing monitoring of the medicines after they have been distributed to healthcare facilities, including checks for product efficacy, safety, and compliance with storage conditions (Rägo & Santoso, 2008). These combined efforts are crucial for detecting and addressing any issues related to medicine quality and safety, thereby protecting patients from potential harm.

Another significant benefit of pooled procurement is its ability to exert greater control over the entire supply chain, from manufacturing to distribution. Pooled procurement programs often negotiate contracts that include stringent quality control requirements, such as regular audits of manufacturing facilities and adherence to specific storage and transportation conditions (Taylor et al., 2001). This level of oversight ensures that medicines maintain their quality throughout the supply chain, reducing the risk of degradation or contamination during transit. For example, in the procurement of vaccines, maintaining the cold chain is critical to preserving their efficacy. Pooled procurement programs can ensure that suppliers adhere to the necessary cold chain requirements, which might be more challenging for individual facilities to enforce on their own.

Moreover, pooled procurement programs contribute to the detection and prevention of counterfeit medicines, which pose a significant threat to public health. Counterfeit medicines often contain incorrect dosages, harmful substances, or no active ingredients at all, leading to treatment failures and potentially fatal outcomes (Newton et al., 2010). The centralized nature of pooled procurement allows for more stringent verification processes, including the use of authentication technologies and traceability systems that help to identify and eliminate counterfeit products from the supply chain. In Ghana, efforts to enhance the traceability of medicines through technologies such as barcoding and serialization have been integrated into pooled procurement initiatives, further ensuring that only genuine and safe medicines reach patients (Ministry of Health, Ghana, 2021).

Finally, the enhanced quality and safety of medicines achieved through pooled procurement have broader implications for public health. Ensuring that patients receive high-quality, safe medicines improves treatment outcomes and reduces the incidence of adverse drug reactions, which can lead to additional healthcare costs and undermine confidence in the healthcare system (Mackey & Liang, 2011). Furthermore, by reducing the prevalence of substandard and counterfeit medicines, pooled procurement programs help to protect the population from the dangers associated with these products, contributing to overall health system resilience and the achievement of public health goals.

2.2.8.4 Streamlined Procurement Processes

Streamlined procurement processes are a vital advantage of Medicines Pooled Procurement Programs (PPPs) in Ghana, contributing to more efficient and effective management of medicine supply chains. Streamlining refers to the simplification and optimization of procurement activities, reducing redundancy, cutting down on delays, and ensuring that resources are used efficiently. In a healthcare system where resources are often limited and the

demand for essential medicines is high, optimizing procurement processes is crucial for ensuring timely access to medicines and reducing operational costs (Lugada et al., 2022).

Pooled procurement centralizes the procurement activities of multiple healthcare facilities, creating a unified approach to purchasing medicines. This centralization eliminates the need for individual facilities to negotiate and manage procurement independently, which can be time-consuming and less effective. Instead, a centralized entity, such as the Ministry of Health in Ghana, coordinates the procurement activities, which leads to a more organized and efficient process. Centralized procurement allows for the consolidation of orders, better planning, and more strategic negotiations with suppliers, all of which contribute to a smoother and faster procurement cycle (Yadav, 2015).

The standardization of procurement procedures under pooled procurement programs is another key factor in streamlining the process. Standardized procedures ensure that all participating facilities follow the same protocols for ordering, quality control, and contract management. This uniformity reduces the likelihood of errors, miscommunication, and delays that can occur when different facilities use varied methods and systems for procurement (Saeed et al, 2018). For example, standardized tendering processes mean that all suppliers are evaluated against the same criteria, which simplifies the selection process and ensures that only qualified suppliers are chosen. This approach not only speeds up procurement but also enhances transparency and accountability, as all stakeholders adhere to the same rules and expectations.

Moreover, streamlined procurement processes enable better forecasting and planning. With a centralized approach, procurement entities can aggregate data from multiple facilities to predict demand more accurately and plan purchases accordingly. Accurate demand forecasting is critical in avoiding overstocking or stockouts, both of which can lead to significant inefficiencies and wastage (Caldwell et al., 2005). In Ghana, pooled procurement programs

have been instrumental in improving the accuracy of demand forecasts, allowing for more precise ordering of medicines and reducing the risk of shortages or excess inventory. This level of planning also facilitates better budgeting and financial management, as procurement costs can be predicted and controlled more effectively.

Information technology (IT) systems play a significant role in streamlining procurement processes under pooled procurement programs. Advanced procurement software and logistics management systems provide real-time data on inventory levels, order status, and supplier performance, which are essential for making informed decisions and managing the procurement process efficiently (Gunasekaran & Ngai, 2004). In Ghana, the implementation of systems like the Ghana Integrated Logistics Management Information System (GhiLMIS) has significantly improved the coordination and transparency of procurement activities across the healthcare system. These IT systems reduce manual errors, automate routine tasks, and provide valuable insights that help procurement managers optimize the entire process from start to finish.

Another important aspect of streamlined procurement processes is the reduction of administrative burdens. In decentralized procurement systems, each facility typically handles its own procurement-related paperwork, approvals, and compliance checks, leading to a significant administrative load. Pooled procurement programs reduce this burden by centralizing these tasks, allowing healthcare providers to focus more on patient care rather than on administrative duties (Burnett, 2014). Centralized documentation and compliance management also ensure that all legal and regulatory requirements are met consistently, further reducing the risk of delays due to bureaucratic hurdles.

The combination of centralized coordination, standardized procedures, improved forecasting, and advanced IT systems creates a highly efficient procurement environment. This streamlined

approach not only accelerates the procurement process but also ensures that the entire supply chain operates more smoothly, from supplier selection to final delivery of medicines to healthcare facilities. The efficiencies gained through streamlined procurement processes are crucial for maintaining a reliable supply of essential medicines in Ghana, ultimately leading to better health outcomes for the population.

2.2.8.5 Increased Bargaining Power with Suppliers

Increased bargaining power with suppliers is a significant advantage of Medicines Pooled Procurement Programs (PPPs) in Ghana, enhancing the ability of healthcare institutions to negotiate better terms, prices, and conditions. When multiple healthcare facilities or regions combine their purchasing needs, they create a larger, more attractive contract for suppliers, which strengthens their position during negotiations (Clemens & Kremer, 2016). This collective bargaining power allows procurement entities to secure more favorable deals, including lower prices, better payment terms, and improved delivery schedules, all of which contribute to more efficient and cost-effective procurement.

The scale of pooled procurement creates a substantial demand that suppliers are keen to fulfill, making them more likely to offer discounts or other incentives to win the contract. For instance, in Ghana, when the Ministry of Health coordinates pooled procurement for essential medicines, the aggregated demand from numerous healthcare facilities represents a significant portion of the market (Burnett, 2014). Suppliers, recognizing the opportunity to secure a large and stable contract, are more willing to negotiate terms that are favorable to the procurement entity. This dynamic is particularly beneficial in a competitive market, where suppliers are vying for business, and pooled procurement gives the buyer an advantage in these negotiations.

Another critical aspect of increased bargaining power is the ability to set higher quality standards and enforce compliance among suppliers. When procurement is conducted on an individual basis, smaller healthcare facilities may lack the leverage to demand stringent quality controls or to negotiate penalties for non-compliance. However, pooled procurement consolidates the purchasing power of multiple entities, allowing the procurement body to insist on higher quality standards and to ensure that suppliers adhere to these standards consistently (Caldwell et al., 2005). This leverage is crucial in maintaining the integrity of the supply chain, ensuring that only high-quality, safe medicines are procured and distributed to patients across the country.

Increased bargaining power also extends to negotiating favorable payment terms and delivery schedules. With a more substantial contract on the table, procurement entities can negotiate terms that better align with their financial and logistical needs. For example, they might secure extended payment periods, allowing healthcare facilities to manage cash flow more effectively, or negotiate staggered deliveries to align with storage capacities and reduce the risk of overstocking or wastage (Wan and Beil, 2009). These negotiations are particularly important in resource-constrained environments like Ghana, where managing financial and logistical challenges is critical to the successful implementation of procurement programs.

Furthermore, pooled procurement enhances the ability to negotiate value-added services from suppliers, such as training, technical support, or assistance with supply chain management. Suppliers, eager to secure large contracts, may offer additional services that can improve the overall efficiency and effectiveness of the procurement process. For instance, suppliers might provide training for healthcare workers on the proper use and handling of specific medicines or offer logistical support to ensure timely and secure delivery of products to remote areas (Aagaard and Gertsen, 2011). These value-added services not only enhance the immediate

procurement process but also contribute to long-term capacity building within the healthcare system.

The increased bargaining power afforded by pooled procurement has broader implications for the sustainability and resilience of the healthcare system in Ghana. By securing better deals with suppliers, pooled procurement programs can stretch limited financial resources further, allowing for the procurement of more medicines or the allocation of funds to other critical areas of the healthcare system (Yadav, 2015). Additionally, the ability to enforce higher quality standards and secure value-added services contributes to a more robust and reliable supply chain, ensuring that patients receive the highest quality care possible. This enhanced bargaining power, therefore, plays a crucial role in strengthening the overall effectiveness and sustainability of the healthcare system in Ghana.

2.2.8.6 Reduction in Stockouts and Shortages

The reduction in stockouts and shortages is a critical benefit of Medicines Pooled Procurement Programs (PPPs) in healthcare delivery, particularly in resource-constrained settings like Ghana. Stockouts and shortages of essential medicines can severely disrupt healthcare services, leading to treatment interruptions, increased morbidity, and even mortality. Pooled procurement programs mitigate these risks by improving the planning, coordination, and management of medicine supplies across multiple healthcare facilities (Yadav, 2015). Through the consolidation of procurement activities, these programs enhance the ability to maintain consistent stock levels, ensuring that essential medicines are always available when needed.

One of the primary ways pooled procurement reduces stockouts is through improved demand forecasting. Accurate demand forecasting is essential for ensuring that the right quantities of medicines are procured and distributed to healthcare facilities. In a pooled procurement system,

data on medicine usage from multiple facilities is aggregated and analyzed, allowing for more accurate predictions of future needs (Bigdeli et al., 2014). This comprehensive approach to forecasting helps to prevent both under- and overstocking, reducing the likelihood of stockouts caused by inadequate supply and minimizing wastage due to excess inventory. In Ghana, the implementation of pooled procurement programs has been instrumental in improving the accuracy of demand forecasting, leading to more efficient inventory management and a reduction in stockouts.

Centralized procurement processes also play a significant role in reducing shortages. By coordinating the procurement activities of multiple healthcare facilities, pooled procurement programs can optimize the entire supply chain, from ordering to distribution (Burnett, 2014). Centralized procurement allows for bulk purchasing, which not only reduces costs but also ensures that medicines are available in sufficient quantities to meet the needs of all participating facilities. This approach reduces the risk of individual facilities running out of stock due to delays in ordering or receiving supplies. Additionally, centralized distribution systems enable more efficient allocation of medicines, ensuring that they are distributed equitably based on actual needs and consumption patterns.

Another critical factor in reducing stockouts is the ability of pooled procurement programs to negotiate more favorable terms with suppliers, including reliable delivery schedules and contingency plans for emergencies. When procurement is conducted on a larger scale, suppliers are more likely to commit to timely deliveries and to establish mechanisms for addressing supply disruptions (Caldwell et al., 2005). For example, suppliers may agree to maintain buffer stocks or to expedite shipments in the event of unexpected demand spikes or supply chain interruptions. These arrangements help to ensure that healthcare facilities have a steady and reliable supply of medicines, even in the face of unforeseen challenges.

Pooled procurement also enhances the capacity to monitor and respond to potential stockouts. Centralized procurement systems often include sophisticated tracking and reporting tools that provide real-time data on inventory levels, order status, and supply chain performance (Gunasekaran & Ngai, 2004). In Ghana, the adoption of such systems has enabled procurement managers to monitor stock levels across multiple facilities, identify potential shortages before they occur, and take corrective action to prevent stockouts. This proactive approach to inventory management is essential for maintaining continuous access to essential medicines and for ensuring that healthcare services are not disrupted due to supply shortages.

Moreover, the reduction in stockouts and shortages through pooled procurement has broader implications for public health. Consistent access to essential medicines is vital for the effective management of chronic diseases, the prevention of disease outbreaks, and the overall improvement of health outcomes (Vogler, 2014). In Ghana, where the burden of both communicable and non-communicable diseases is high, ensuring that medicines are always available is critical for achieving national health goals and for improving the quality of life for the population. Pooled procurement programs contribute to this goal by creating a more resilient and reliable supply chain, capable of meeting the healthcare needs of the population even in the face of challenges such as supply chain disruptions or increased demand

2.2.8.7 Improved Health Outcomes for the Population

Improved health outcomes for the population is the ultimate goal of any healthcare intervention, and Medicines Pooled Procurement Programs (PPPs) play a significant role in achieving this objective. The benefits of pooled procurement extend beyond cost savings and operational efficiencies to directly impact patient care and overall public health. When essential medicines are consistently available and affordable, healthcare providers can deliver timely and effective treatments, which leads to better health outcomes for individuals and

communities (Yadav, 2015). In Ghana, where access to essential medicines has been a persistent challenge, pooled procurement programs contribute significantly to the enhancement of healthcare quality and the reduction of disease burden.

One of the most direct ways pooled procurement improves health outcomes is through the increased availability of essential medicines. When medicines are reliably available at healthcare facilities, patients can receive the necessary treatments without delays, which is crucial for managing chronic diseases, treating infections, and conducting routine medical procedures (Bigdeli et al., 2014). For example, in managing chronic conditions such as diabetes or hypertension, consistent access to medications is vital to prevent complications and improve quality of life. Pooled procurement helps to ensure that these medications are available in the required quantities, thus supporting continuous and effective patient care.

Furthermore, the affordability of medicines through pooled procurement has a profound impact on health outcomes. High medicine costs can be a significant barrier to access, particularly in low-income communities where financial constraints limit individuals' ability to afford necessary treatments (Awindaogo, 2018). By leveraging economies of scale, pooled procurement programs reduce the price of medicines, making them more affordable for both healthcare facilities and patients. This increased affordability enables more widespread access to treatments, leading to earlier intervention and better management of health conditions. In Ghana, the reduction in medicine prices through pooled procurement has been instrumental in improving access to life-saving drugs, thereby enhancing overall public health.

Quality and safety of medicines are also crucial factors in achieving improved health outcomes. Pooled procurement programs ensure that medicines meet rigorous quality standards, reducing the risks associated with substandard or counterfeit drugs, which can lead to treatment failures and adverse health effects (Newton et al., 2010). Ensuring the availability of high-quality

medicines is essential for the effective treatment of diseases and for maintaining patient trust in the healthcare system. In Ghana, the emphasis on quality control within pooled procurement programs has been key to ensuring that patients receive safe and effective medications, which is fundamental to achieving positive health outcomes.

The reliability of medicine supply chains under pooled procurement also supports public health interventions during emergencies, such as disease outbreaks or natural disasters. In such scenarios, the ability to rapidly deploy medicines to affected areas can mitigate the spread of disease and manage health crises more effectively (Vogler et al., 2014). For example, during outbreaks of infectious diseases, pooled procurement can facilitate the swift distribution of vaccines or antiviral medications, crucial for controlling the spread of the infection and reducing morbidity and mortality rates. The enhanced coordination and planning capabilities of pooled procurement programs ensure that healthcare facilities are better prepared to respond to public health emergencies, thus protecting the health and wellbeing of the population.

Moreover, pooled procurement supports comprehensive public health strategies by ensuring that a wide range of medicines is available to address various health needs. This is particularly important for implementing integrated health programs that tackle multiple health issues simultaneously, such as maternal and child health, infectious diseases, and non-communicable diseases (Mills, 2012). In Ghana, pooled procurement has enabled the integration of such programs by ensuring that all necessary medicines are available and accessible across the healthcare system. This integrated approach not only improves individual health outcomes but also enhances the overall effectiveness of the healthcare system in managing the diverse health needs of the population.

2.2.9 Key Players in Medicines Pooled Procurement Programmes (PPPs)

Key players in Medicines Pooled Procurement Programmes (PPPs) are essential to the successful implementation, coordination, and management of these initiatives. These stakeholders include government bodies, international organizations, healthcare providers, and private sector entities, each playing a critical role in ensuring that the procurement process is efficient, transparent, and aligned with public health goals (Burnett, 2014). Understanding the roles and responsibilities of these key players is crucial for optimizing the functioning of pooled procurement programs and ensuring that they effectively meet the needs of the healthcare system.

Government agencies, particularly the Ministry of Health, are central to the operation of PPPs in Ghana. The Ministry of Health is responsible for setting the overall policy framework, establishing procurement guidelines, and coordinating the activities of various stakeholders involved in the procurement process (Ministry of Health, Ghana, 2021). This coordination includes aggregating the demand from different healthcare facilities, negotiating contracts with suppliers, and overseeing the distribution of medicines. The Ministry also plays a crucial role in ensuring compliance with national and international regulations, maintaining quality control standards, and addressing any issues that arise during the procurement process. In Ghana, the Ministry of Health's leadership is vital for aligning the objectives of pooled procurement with the broader goals of the national healthcare system.

International organizations and development partners are also key players in PPPs, providing financial support, technical expertise, and capacity building. Organizations such as the World Health Organization (WHO), the Global Fund, and Gavi, the Vaccine Alliance, contribute significantly to the success of pooled procurement programs in low- and middle-income countries, including Ghana (Global Fund, 2019). These organizations often fund large portions

of the procurement budget, especially for essential medicines and vaccines, and provide technical assistance in areas such as supply chain management, quality assurance, and procurement planning. Their involvement ensures that procurement programs are sustainable and that they adhere to international best practices. Moreover, international organizations facilitate the sharing of knowledge and experience across countries, helping to improve the effectiveness of pooled procurement initiatives globally.

Healthcare providers, including hospitals, clinics, and pharmacies, are directly involved in the implementation of PPPs, as they are the end-users of the medicines procured through these programs. Their role is to accurately forecast their medicine needs, ensure timely and proper storage of the medicines, and provide feedback on the quality and effectiveness of the medicines received (Awindaogo, 2018). In Ghana, healthcare providers are crucial in providing real-time data on medicine usage and stock levels, which informs the demand aggregation and procurement processes. Their involvement is essential for ensuring that the medicines procured meet the actual needs of the population and that they are distributed equitably across different regions and healthcare facilities.

Private sector entities, including pharmaceutical manufacturers and distributors, are key players in the supply side of PPPs. These companies are responsible for producing and delivering the medicines procured through pooled procurement programs. Their role extends beyond merely supplying products; they also participate in negotiations, quality assurance processes, and sometimes even in capacity-building initiatives (Caldwell et al., 2005). For instance, in Ghana, pharmaceutical companies that participate in pooled procurement must comply with stringent quality standards and regulatory requirements set by the Ministry of Health and international organizations. Their cooperation is vital for maintaining a reliable

supply chain and ensuring that high-quality medicines are consistently available to the healthcare system.

Regulatory bodies, such as the Food and Drugs Authority (FDA) in Ghana, play a critical role in ensuring that the medicines procured through PPPs meet the required safety and quality standards. The FDA is responsible for conducting inspections, testing medicines, and approving suppliers based on their compliance with Good Manufacturing Practices (GMP) and other regulatory standards (Rägo & Santoso, 2008). The involvement of regulatory bodies is crucial for preventing the entry of substandard or counterfeit medicines into the supply chain, which is a significant concern in many low- and middle-income countries. In Ghana, the FDA's active role in monitoring and regulating the procurement process helps to safeguard public health and maintain the integrity of the healthcare system.

2.2.10 The role of Ministry of Health in Medicines PPPs in Ghana

The Ministry of Health in Ghana is a pivotal entity in the successful implementation and management of Medicines Pooled Procurement Programs (PPPs). It functions as the central authority responsible for coordinating procurement activities across the public healthcare system, ensuring that the procurement process aligns with national health priorities and that essential medicines are consistently available across the country. The Ministry's involvement ensures that these programs operate within a framework of transparency, efficiency, and accountability, which are crucial for meeting the healthcare needs of the population (Ministry of Health, Ghana, 2021).

One of the core responsibilities of the Ministry of Health is to aggregate the demand for medicines from various healthcare facilities throughout the country. This task involves collecting and analyzing data on medicine consumption, forecasting future needs, and

consolidating orders to leverage economies of scale. The process of demand aggregation is critical for negotiating better prices and terms with suppliers, making medicines more affordable and accessible (Domfeh, 2021). The Ministry's role in coordinating these activities is central to the effectiveness of pooled procurement programs, as it ensures that all public healthcare facilities receive the necessary medicines in a timely and cost-effective manner.

The Ministry of Health also plays a crucial role in establishing and enforcing procurement policies and guidelines, which are integral to the operation of pooled procurement programs. The Public Procurement Act, 2003 (Act 663), as amended, provides the legal framework within which these procurement activities are conducted (Public Procurement Authority, Ghana, 2018). This Act outlines the procedures for supplier selection, tendering processes, contract management, and quality assurance, ensuring that procurement activities adhere to national and international standards. The Ministry is responsible for ensuring compliance with this legal framework, which includes verifying that all suppliers meet stringent quality control standards and that the procurement process is transparent and free from corruption. The enforcement of the Public Procurement Act is essential for maintaining the integrity of the procurement process and for protecting the public health system from the risks associated with substandard or counterfeit medicines.

Beyond policy-making, the Ministry of Health is instrumental in coordinating the logistics and distribution of medicines procured through pooled procurement programs. This includes overseeing the storage, transportation, and delivery of medicines to healthcare facilities across Ghana. The Ministry works closely with regional health administrations and logistics partners to ensure that medicines are distributed efficiently, reaching even the most remote areas (Yadav, 2015). Effective logistical coordination is vital in a country where geographic and infrastructural challenges can hinder the distribution process. The Ministry's oversight ensures

that these challenges are addressed, and that medicines are delivered where they are needed most, thereby preventing stockouts and ensuring continuous access to essential medicines.

Financial management and accountability are other critical aspects of the Ministry of Health's role in pooled procurement. The Ministry is responsible for budgeting and financial planning for these programs, ensuring that funds are allocated appropriately and that expenditures are monitored and controlled (Smith et al., 2012). This financial oversight is crucial for the sustainability of pooled procurement programs, as it ensures that resources are used efficiently and that there is transparency in the use of public funds. In addition, the Ministry's financial management practices are essential for securing funding from international donors and development partners, who require assurance that their contributions are being used effectively to support public health initiatives in Ghana.

The Ministry of Health also serves as the primary liaison between the government and other key stakeholders involved in pooled procurement, including international organizations, non-governmental organizations (NGOs), and private sector partners. This role involves facilitating communication, fostering collaboration, and ensuring that all stakeholders are aligned with the goals of the pooled procurement program (Caldwell et al., 2005). The Ministry's ability to coordinate these diverse partners is vital for the success of pooled procurement programs, as it ensures that all aspects of the procurement process are integrated and that the program is responsive to the evolving needs of the healthcare system. The Ministry's leadership in this area has been crucial in building the partnerships necessary to support and sustain pooled procurement initiatives in Ghana.

2.2.11 Role of International Organizations and Donor Agencies in PPPs

International organizations and donor agencies play a pivotal role in the success and sustainability of Medicines Pooled Procurement Programs (PPPs) in Ghana. These entities provide essential financial resources, technical expertise, and strategic support that enable the implementation and scaling of pooled procurement initiatives. Their involvement is critical in bridging the gaps that often exist in resource-constrained settings, ensuring that essential medicines are available, affordable, and accessible to the population (WHO, 2017). The collaboration between the Ghanaian government and these international partners has been instrumental in strengthening the country's healthcare procurement system, particularly in managing large-scale procurement operations and maintaining high standards of quality and efficiency.

One of the primary contributions of international organizations and donor agencies to pooled procurement programs in Ghana is the provision of financial support. Agencies such as the Global Fund, Gavi, the Vaccine Alliance, and the World Bank have been significant contributors to the funding of pooled procurement initiatives, especially for high-cost medicines and vaccines (Global Fund, 2019). These funds are critical in supplementing the limited domestic resources available for healthcare procurement, enabling the Ghanaian government to purchase essential medicines at a scale that would otherwise be unaffordable. For example, the Global Fund has been a major funder of antiretroviral drugs for HIV/AIDS treatment in Ghana, helping to ensure that these life-saving medicines are available to those who need them most. The financial support from these agencies not only increases the availability of essential medicines but also allows for more strategic and cost-effective procurement practices.

In addition to financial support, international organizations provide valuable technical expertise that enhances the effectiveness of pooled procurement programs. Organizations like the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) offer guidance on best practices in procurement, quality assurance, and supply chain management (Yadav, 2015). This technical assistance is crucial in ensuring that pooled procurement programs adhere to international standards and operate efficiently. For instance, WHO provides frameworks for Good Manufacturing Practices (GMP) and quality control, which are essential for maintaining the safety and efficacy of medicines procured through pooled procurement. In Ghana, the adoption of these international standards has helped to improve the quality of medicines and reduce the risks associated with substandard or counterfeit products entering the supply chain.

Capacity building is another critical area where international organizations and donor agencies contribute to pooled procurement programs. These entities often fund and facilitate training programs for local procurement officials, healthcare workers, and supply chain managers, helping to build the necessary skills and knowledge to manage complex procurement operations effectively (Philips et al., 2012). Capacity-building initiatives ensure that local stakeholders are equipped with the tools and expertise needed to sustain pooled procurement programs over the long term. In Ghana, training programs supported by agencies like Gavi and the World Bank have enhanced the capabilities of the Ministry of Health and other local institutions, enabling them to manage procurement processes more effectively and to respond to emerging challenges in the healthcare sector.

Moreover, international organizations and donor agencies play a crucial role in fostering partnerships and collaboration among various stakeholders involved in pooled procurement. These entities often act as intermediaries, bringing together governments, non-governmental

organizations (NGOs), private sector partners, and other international donors to coordinate efforts and align objectives (Burnett, 2014). In Ghana, such partnerships have been essential in creating a cohesive approach to pooled procurement, where all parties work towards common goals of improving access to medicines and strengthening the healthcare system. For example, collaborations between the Ghanaian government, the Global Fund, and pharmaceutical companies have led to more effective procurement strategies, including bulk purchasing and negotiated pricing, which have resulted in significant cost savings and improved access to essential medicines.

Finally, international organizations and donor agencies contribute to the monitoring and evaluation of pooled procurement programs, ensuring that these initiatives achieve their intended outcomes and remain accountable to stakeholders. These agencies often fund and support the development of monitoring frameworks and tools that track the performance of procurement programs, assess the quality of medicines, and identify areas for improvement (Smith et al., 2012). In Ghana, the involvement of international organizations in monitoring and evaluation has been crucial for maintaining the integrity of pooled procurement programs and for making data-driven decisions that enhance the effectiveness of these initiatives. This ongoing oversight helps to ensure that pooled procurement programs continue to meet the needs of the population and that they adapt to changing circumstances in the healthcare landscape.

2.2.12 Implementation Challenges of Medicines Pooled Procurement Programs in Ghana

Implementing Medicines Pooled Procurement Programs (PPPs) in Ghana presents several challenges, despite the potential benefits these programs offer in improving access to essential medicines and reducing costs. These challenges are multifaceted, involving issues related to governance, infrastructure, financial sustainability, and stakeholder coordination. Addressing

these challenges is crucial for the successful operation of pooled procurement programs and for maximizing their impact on the healthcare system (Yadav, 2015).

One of the primary challenges in implementing pooled procurement programs in Ghana is the complexity of coordinating multiple stakeholders with diverse interests and priorities. Pooled procurement involves various actors, including government agencies, healthcare providers, suppliers, and international donors, each with their own objectives and constraints (Burnett, 2014). Achieving consensus among these stakeholders can be difficult, particularly when there are differing opinions on procurement strategies, supplier selection, and quality standards. For example, healthcare providers may prioritize the timely availability of medicines, while suppliers may focus on profitability, and donors may emphasize cost-effectiveness and adherence to international standards. The Ministry of Health plays a critical role in mediating these interests and ensuring that the procurement process remains aligned with national health priorities, but balancing these competing demands remains a significant challenge.

Another significant challenge is the existing infrastructure and logistical constraints in Ghana. The country's healthcare infrastructure, particularly in rural and remote areas, often lacks the capacity to support the efficient distribution and storage of medicines procured through pooled procurement programs (Pyone et al., 2017). Poor road networks, limited storage facilities, and inadequate transportation systems can lead to delays in the delivery of medicines, resulting in stockouts and interruptions in patient care. Furthermore, the lack of reliable electricity in some regions can compromise the storage of temperature-sensitive medicines, such as vaccines, which require cold chain facilities. Addressing these infrastructure and logistical challenges requires substantial investment and coordinated efforts between the government and international partners.

Financial sustainability is another critical challenge facing pooled procurement programs in Ghana. While these programs can generate cost savings through economies of scale, they also require significant upfront investment and ongoing financial support to maintain operations (Smith et al., 2012). Securing consistent funding for pooled procurement initiatives can be difficult, particularly in a context where government budgets are constrained and dependent on external donor funding. Fluctuations in donor contributions and changes in government priorities can lead to funding gaps, jeopardizing the continuity and effectiveness of procurement programs. Ensuring financial sustainability requires a stable and diversified funding base, as well as effective financial management practices to optimize the use of available resources.

The regulatory environment in Ghana also poses challenges to the implementation of pooled procurement programs. While the Public Procurement Act, 2003 (Act 663), provides a legal framework for procurement activities, enforcement of these regulations can be inconsistent (Public Procurement Authority, Ghana, 2018). Weak regulatory oversight can lead to non-compliance with procurement standards, including issues related to transparency, accountability, and quality control. The presence of counterfeit or substandard medicines in the supply chain is a significant concern, particularly when procurement processes are not rigorously monitored. Strengthening regulatory enforcement and ensuring adherence to quality standards are essential for maintaining the integrity of pooled procurement programs and protecting public health.

Capacity constraints within the institutions responsible for managing pooled procurement programs further exacerbate these challenges. Effective implementation of pooled procurement requires skilled personnel who are knowledgeable in procurement practices, supply chain management, and financial oversight (Caldwell et al., 2005). However, in Ghana, there is often

a shortage of trained professionals in these areas, particularly at the regional and district levels. This skills gap can lead to inefficiencies in the procurement process, such as delays in order processing, poor contract management, and inadequate monitoring of supplier performance. Building the capacity of procurement officials and healthcare workers is critical for overcoming these challenges and ensuring the successful operation of pooled procurement programs.

Lastly, political and economic instability can significantly impact the implementation of pooled procurement programs in Ghana. Changes in government, shifts in policy, and economic downturns can disrupt procurement activities, leading to uncertainty and delays in the delivery of essential medicines (Domfeh, 2021). Additionally, corruption and lack of transparency in the procurement process can undermine the effectiveness of pooled procurement programs, eroding trust among stakeholders and compromising the quality of medicines. Addressing these challenges requires strong governance, political commitment, and ongoing efforts to enhance transparency and accountability in the procurement process.

2.2.13 Integration of Pooled Procurement Programs in National Health Strategies

Integrating Medicines Pooled Procurement Programs (PPPs) into national health strategies is crucial for maximizing their impact on public health outcomes and ensuring their sustainability within the broader healthcare system. Effective integration involves aligning the objectives of pooled procurement programs with national health policies, goals, and priorities established by the government. In Ghana, where the healthcare system faces challenges such as limited resources, inequitable access to medicines, and varying quality of care, strategically incorporating pooled procurement into national health frameworks is vital for addressing these issues and enhancing overall healthcare delivery (Smith et al., 2012).

A critical aspect of integrating pooled procurement programs into national health strategies is ensuring alignment with Ghana's broader healthcare goals, such as universal health coverage (UHC) and the Sustainable Development Goals (SDGs). Pooled procurement contributes to achieving UHC by making essential medicines more affordable and accessible, thereby reducing out-of-pocket expenses for patients and improving equity in healthcare access (Yadav, 2015). In Ghana, the Ministry of Health has recognized the importance of aligning pooled procurement initiatives with the national agenda for UHC, as outlined in the National Health Policy and the Ghana Shared Growth and Development Agenda (GSGDA). This alignment ensures that pooled procurement programs are not implemented in isolation but are part of a cohesive strategy to improve healthcare access and outcomes across the country.

The integration of pooled procurement programs with the National Health Insurance Scheme (NHIS) is another crucial component of Ghana's national health strategy. The NHIS aims to provide financial risk protection and improve access to healthcare services, including essential medicines, for all Ghanaians (Andoh-Adjei, 2021). Pooled procurement programs can significantly support the NHIS by reducing the cost of medicines, thereby enabling the scheme to cover a broader range of essential medicines within its benefits package. Moreover, the NHIS can leverage pooled procurement to negotiate better prices and terms with suppliers, further enhancing the financial sustainability of the scheme. The integration of pooled procurement with NHIS not only strengthens the scheme's capacity to provide essential medicines but also contributes to the overall goal of achieving UHC in Ghana.

Incorporating pooled procurement into the national healthcare financing and budgeting processes is essential to ensure that these programs are adequately funded and sustainable. The collaboration between the Ministry of Health and the Ministry of Finance is critical in allocating budgetary resources for pooled procurement, ensuring that these programs are

financially sustainable and contribute to the efficient use of public funds (Burnett, 2014). In Ghana, the inclusion of pooled procurement in the national health budget facilitates the mobilization of additional resources from international donors and development partners, who often require that their contributions be integrated into a well-coordinated national health strategy. This financial integration helps secure consistent funding, reducing reliance on external donors and enhancing the long-term viability of pooled procurement programs.

Strong governance and institutional frameworks are also necessary for the successful integration of pooled procurement into national health strategies. Effective governance ensures that pooled procurement is managed transparently and efficiently, with clear accountability mechanisms in place (Huff-Rousselle, 2012). In Ghana, the Ministry of Health plays a central role in overseeing pooled procurement programs, ensuring that they are implemented in accordance with national policies and that they adhere to established procurement guidelines and standards. The integration of pooled procurement into the national health strategy also involves establishing inter-ministerial coordination mechanisms, facilitating collaboration between different government agencies, such as the Ministry of Health, the Ministry of Finance, and the Public Procurement Authority. These mechanisms are essential for ensuring that pooled procurement is well-coordinated and that it contributes to the achievement of national health objectives, including those of the NHIS.

Capacity building is another crucial factor in the successful integration of pooled procurement into national health strategies. Strengthening the capacity of healthcare institutions and personnel involved in procurement is essential for ensuring that pooled procurement programs are implemented effectively and that they deliver the desired outcomes (Parmaksiz et al., 2023). In Ghana, capacity-building efforts have focused on enhancing the skills and knowledge of procurement officials, healthcare workers, and supply chain managers, ensuring that they are

equipped to manage the complexities of pooled procurement. These efforts have been supported by international organizations such as the World Health Organization (WHO) and the World Bank, which have provided technical assistance and training programs aimed at building local capacity. Integrating these capacity-building initiatives into the national health strategy ensures that Ghana's pooled procurement programs are sustainable and capable of meeting the evolving needs of the healthcare system.

Further, the integration of pooled procurement into national health strategies must include mechanisms for continuous monitoring, evaluation, and adaptation. Regular monitoring and evaluation (M&E) allow policymakers to assess the effectiveness of pooled procurement programs, identify areas for improvement, and make necessary adjustments to enhance their impact (Smith et al., 2012; Domfeh, 2021). In Ghana, M&E systems have been established to track the performance of pooled procurement programs, ensuring that they align with national health goals and that they are responsive to changing health needs and priorities. These systems provide valuable data that inform decision-making and ensure that pooled procurement programs remain relevant and effective in the context of the broader national health strategy, including their integration with the NHIS.

2.2.14 Economic Impact of Pooled Procurement Programs in Ghana

The economic impact of Medicines Pooled Procurement Programs (PPPs) in Ghana is profound, influencing both the macroeconomic landscape and the healthcare sector's financial efficiency. These programs contribute significantly to reducing healthcare costs, optimizing resource allocation, and promoting economic stability by ensuring the efficient procurement and distribution of essential medicines. In a country like Ghana, where healthcare budgets are limited and the demand for affordable medicines is high, the economic benefits of pooled

procurement are crucial for achieving long-term sustainability and improving public health outcomes (Parmaksiz et al., 2023).

One of the most significant economic benefits of pooled procurement programs is the cost savings achieved through economies of scale. When multiple healthcare facilities or regions pool their purchasing power, they can negotiate lower prices for medicines, reducing the overall cost of procurement (Parmaksiz et al., 2023; Domfeh, 2021). In Ghana, this approach has enabled the Ministry of Health to secure essential medicines at significantly reduced prices, freeing up resources that can be redirected to other critical areas of the healthcare system. For instance, the cost savings achieved through pooled procurement can be used to invest in healthcare infrastructure, expand access to healthcare services, or fund public health initiatives. The reduction in medicine prices also lowers the financial burden on patients, improving access to affordable healthcare and contributing to overall economic stability.

Pooled procurement programs also enhance the financial efficiency of the healthcare sector by reducing wastage and improving inventory management. Through centralized procurement and better demand forecasting, healthcare facilities can order the right quantities of medicines, minimizing the risk of overstocking or stockouts (Yadav, 2015; Huff-Rousselle, 2012). This efficient management of resources leads to significant cost savings, as it reduces the need for emergency purchases, which are often more expensive, and prevents the wastage of expired or unused medicines. In Ghana, the implementation of pooled procurement has helped to streamline the supply chain, ensuring that medicines are available when and where they are needed, without incurring unnecessary costs. This efficiency is critical for maintaining the financial sustainability of the healthcare system, particularly in a resource-constrained environment.

The economic impact of pooled procurement extends beyond the healthcare sector, influencing broader macroeconomic factors such as employment, local production, and trade. By negotiating large contracts, pooled procurement programs can create opportunities for local pharmaceutical companies to participate in the supply chain, fostering the growth of the domestic pharmaceutical industry (Mackintosh et al., 2015). In Ghana, this has led to increased production capacity and job creation within the pharmaceutical sector, contributing to economic development and reducing dependence on imported medicines. Moreover, the ability to secure medicines at lower prices can positively impact the balance of payments, as it reduces the amount of foreign exchange needed to import medicines, thereby strengthening the country's economic position.

Pooled procurement programs also have a stabilizing effect on the economy by ensuring a consistent and reliable supply of essential medicines, which is critical for maintaining public health and preventing economic disruptions caused by health crises. The availability of medicines is crucial for preventing and managing disease outbreaks, which can have severe economic consequences if not controlled effectively (Smith et al., 2012). In Ghana, the integration of pooled procurement into national health strategies has helped to build a more resilient healthcare system, capable of responding to public health emergencies and minimizing their economic impact. For example, during the COVID-19 pandemic, the ability to rapidly procure and distribute medicines and medical supplies through pooled procurement mechanisms was essential for mitigating the pandemic's impact on the economy and public health.

Additionally, the economic impact of pooled procurement programs in Ghana is reflected in the increased access to healthcare services and the improved health outcomes that result from the availability of affordable medicines. When essential medicines are accessible to a larger

portion of the population, the overall health of the workforce improves, leading to increased productivity and economic growth (Mills, 2012). Healthier populations are better able to contribute to the economy, reducing absenteeism and enhancing the quality of labor. In Ghana, the cost savings and efficiencies gained through pooled procurement have enabled the government to provide more comprehensive healthcare services, supporting the country's broader economic development goals and improving the quality of life for its citizens.

2.3 Theories

2.3.1 Institutional Theory

Institutional theory, a foundational concept in organizational studies, was significantly advanced by scholars such as Philip Selznick, John W. Meyer, Brian Rowan, and Paul J. DiMaggio. The theory emphasizes the powerful influence of institutions—comprising rules, norms, and routines—on the behavior, structures, and practices of organizations (Meyer and Rowan, 1977). Institutions, according to this theory, are not just formal structures but socially constructed systems that exert a profound impact on organizations, driving them to adopt certain practices to gain legitimacy, stability, and survival within their environments (Scott, 2013). The central premise of institutional theory is that organizations conform to these institutional pressures to enhance their legitimacy and acceptance within the broader social and cultural contexts in which they operate.

Institutional theory posits that organizations are embedded within a broader institutional environment that includes cultural-cognitive, normative, and regulative elements, which together shape organizational behavior (DiMaggio and Powell, 2000). The cultural-cognitive aspect involves the shared beliefs and values that guide organizational action, while the

normative dimension refers to the norms and expectations that dictate appropriate behavior. The regulative element involves formal rules, laws, and regulations that organizations must comply with. These three pillars of institutional theory interact to create a stable framework within which organizations operate, influencing their decision-making processes and strategic choices. This theory asserts that organizations are not solely driven by efficiency or market pressures but are also motivated by the need to align with institutional expectations to maintain legitimacy.

The theory further explains that organizations often adopt structures and practices that are widely accepted within their institutional environments, a process known as isomorphism (Amenta and Ramsey, 2010). Isomorphism can take three forms: coercive, mimetic, and normative. Coercive isomorphism occurs when organizations are pressured to conform to legal or regulatory requirements, often enforced by the state or other authoritative bodies (Othman et al., 2011). Mimetic isomorphism arises in situations of uncertainty, where organizations model themselves on other successful organizations in their field (Martínez-Ferrero and García-Sánchez, 2017). Normative isomorphism results from professionalization, where organizations adopt practices based on widely accepted norms and standards established by professional bodies or industry associations. These processes lead organizations to become more similar to each other, not necessarily because it enhances efficiency, but because it aligns them with the expectations of the institutional environment (Krajnović, 2018).

In the context of pooled procurement, institutional theory provides a robust framework for understanding how healthcare institutions in Ghana adopt pooled procurement practices in response to institutional pressures. These pressures are not merely external but are embedded within the regulatory frameworks, professional norms, and cultural expectations that shape the healthcare system. For instance, international organizations such as the World Health

Organization (WHO) exert significant influence on Ghana's healthcare institutions, advocating for pooled procurement as a strategy to improve access to essential medicines (WHO, 2017). The WHO's guidelines and recommendations create a normative environment that encourages healthcare institutions to adopt pooled procurement practices to align with global standards of best practice.

Furthermore, the Ghanaian government, through its regulatory bodies such as the Ministry of Health and the Public Procurement Authority, enforces coercive pressures by mandating the adoption of pooled procurement practices. These regulations are not optional but are embedded in the legal and policy frameworks governing public procurement in the healthcare sector (Public Procurement Authority, Ghana, 2018). Healthcare institutions are required to conform to these regulations to avoid penalties and to ensure they are eligible for government funding and support. This regulatory environment compels healthcare institutions to integrate pooled procurement into their operational practices, thereby institutionalizing these practices across the healthcare sector.

Mimetic isomorphism also plays a critical role in the adoption of pooled procurement practices within Ghana's healthcare institutions. In contexts of uncertainty or when there is a perceived need to enhance legitimacy, healthcare institutions tend to model their practices on those of other successful institutions, particularly those that have established a track record of effective procurement (Scott, 2013; Martínez-Ferrero and García-Sánchez, 2017). This mimetic behavior is evident in the way smaller or less resourced healthcare institutions in Ghana adopt pooled procurement practices that have been successfully implemented by larger institutions or those with international partnerships. The diffusion of these practices through mimetic isomorphism contributes to the widespread adoption of pooled procurement across the healthcare sector.

Institutional theory also explains the role of normative isomorphism in the standardization of procurement practices across Ghana's healthcare sector. Professional bodies, industry associations, and international development partners often set procurement standards and guidelines that healthcare institutions are expected to follow (Krajnović, 2018; Meyer & Rowan, 1977). These standards create a normative framework that shapes the behavior of healthcare institutions, driving them to adopt pooled procurement practices that align with professional expectations and best practices. For example, the adoption of WHO-recommended procurement guidelines by healthcare institutions in Ghana reflects the influence of normative pressures in shaping procurement practices. The alignment with these guidelines not only enhances the legitimacy of the institutions but also improves the efficiency and effectiveness of procurement processes.

Despite its extensive application, institutional theory has faced criticism from scholars who argue that it overemphasizes the role of external pressures in shaping organizational behavior while underestimating the capacity of organizations to exercise agency and resist these pressures. Oliver (1991) contends that organizations are not merely passive recipients of institutional pressures but are capable of strategic responses, including defiance, manipulation, and negotiation, to align institutional demands with their interests. This critique highlights the need to consider the role of agency within institutional theory, particularly in contexts where organizations face conflicting institutional pressures. Another critique by Hirsch (1997) suggests that institutional theory tends to focus on isomorphism and neglects the diversity and complexity within organizational fields. Hirsch argues that this focus on similarity oversimplifies the dynamics of organizational behavior and fails to account for the variation in organizational responses to institutional pressures.

Supporters of institutional theory, such as Scott (2013), argue that the theory provides a comprehensive framework for understanding the complex interactions between organizations and their institutional environments. Scott asserts that institutional theory is particularly valuable in explaining how organizations navigate the pressures and expectations imposed by their environments, especially in highly regulated sectors such as healthcare. The theory's ability to account for the persistence of certain organizational practices, even in the face of changing market conditions or technological advancements, underscores its relevance in studying organizational behaviour (Krajnović, 2018). For instance, the persistence of traditional procurement practices in some healthcare institutions in Ghana, despite the availability of more efficient alternatives, can be attributed to the institutionalized nature of these practices.

The strength of institutional theory lies in its application to the study of pooled procurement in healthcare. The theory's emphasis on legitimacy and conformity to institutional norms provides a clear explanation for why healthcare institutions in Ghana adopt pooled procurement practices, even when alternative approaches may exist. The theory highlights the role of international organizations, government regulations, and professional bodies in shaping procurement practices, offering a comprehensive understanding of the factors driving the adoption of pooled procurement in the healthcare sector. This perspective is particularly relevant in the Ghanaian context, where institutional pressures are deeply embedded in the regulatory and professional frameworks that govern the healthcare system (Meyer & Rowan, 1977; DiMaggio & Powell, 1983).

Institutional theory's focus on the institutionalization of practices offers valuable insights into how pooled procurement can become an integral part of Ghana's healthcare system. The theory explains how procurement practices, once adopted, become deeply embedded within

organizational structures and routines, influencing procurement strategies for years to come. This institutionalization process ensures that pooled procurement practices are not merely short-term solutions but become a sustainable and enduring component of the healthcare system, contributing to the overall improvement of healthcare delivery in Ghana (Scott, 2013).

2.3.2 Resource-Based View (RBV) Theory

The Resource-Based View (RBV) theory, originally conceptualized by Edith Penrose and later advanced by scholars such as Jay Barney, is a cornerstone in strategic management that emphasizes the role of an organization's internal resources in achieving and sustaining competitive advantage. According to RBV, organizations are essentially unique bundles of resources and capabilities that determine their competitive positioning within the market (Barney, 1991). For a resource to provide a sustainable competitive advantage, it must possess four key attributes: it must be valuable, rare, inimitable, and non-substitutable (VRIN) (Barney, 1991; Peteraf, 1993). The theory suggests that organizations should focus on harnessing their internal strengths and deploying these unique resources strategically to outmaneuver competitors and achieve long-term success.

RBV theory categorizes resources into tangible and intangible assets that an organization controls, which are used to develop and implement strategies that improve efficiency and effectiveness (Wernerfelt, 1984; Grant, 1996). Tangible resources include physical assets such as technology, infrastructure, and financial capital, while intangible resources encompass brand reputation, intellectual property, knowledge, and organizational culture. The heterogeneity of resources across organizations is a central premise of RBV, as it explains why some organizations outperform others. When resources are difficult to replicate or substitute, they create a sustained competitive advantage, allowing organizations to maintain superior performance over time (Kraaijenbrink et al., 2010; Barney et al., 2021).

Capabilities, as defined within RBV, refer to an organization's ability to effectively utilize its resources. These capabilities are the processes and routines that enable an organization to deploy its resources in ways that maximize value creation and sustain competitive advantage (Teece et al., 2005). For example, in the healthcare sector, an institution's capability to manage its supply chain efficiently can be a critical factor in reducing costs and enhancing service quality. RBV posits that the mere possession of resources is not sufficient; rather, it is the organization's ability to combine and leverage these resources through its capabilities that drives strategic success (Madhani, 2010; Sirmon, Hitt, & Ireland, 2007). This perspective highlights the importance of developing and refining organizational capabilities to sustain competitive advantage.

In the context of pooled procurement programs in healthcare, RBV provides a compelling framework for understanding how healthcare institutions in Ghana can leverage their internal resources and capabilities to optimize procurement processes. Pooled procurement is a complex and resource-intensive operation that requires significant investments in skilled personnel, robust information systems, and effective management practices. According to RBV, healthcare institutions that possess these unique resources and capabilities are better positioned to implement pooled procurement successfully, leading to cost savings, improved access to medicines, and enhanced service delivery (Barney, 2021; Pisano, 2015). For instance, healthcare institutions with advanced information systems can achieve more accurate demand forecasting, efficient inventory management, and better coordination with suppliers, thereby reducing procurement costs and improving operational efficiency (Ray et al., 2004).

RBV also explains the variability in outcomes of pooled procurement programs across different healthcare institutions in Ghana. Institutions that have developed specialized procurement teams, strong relationships with suppliers, or proprietary technologies are more likely to

achieve superior results from pooled procurement initiatives compared to institutions that lack these resources (Newbert, 2007; Barney, 2021). In Ghana, healthcare institutions with established procurement departments and access to advanced supply chain management tools can more effectively participate in pooled procurement initiatives, realizing greater efficiencies in the procurement of essential medicines. The RBV framework thus underscores the importance of building and maintaining unique resources and capabilities as a critical determinant of the success of pooled procurement programs in the healthcare sector (Kozlenkova et al., 2014).

Intangible resources, such as organizational reputation and trust, are particularly significant in pooled procurement programs, as highlighted by RBV. In the healthcare sector, reputation plays a crucial role in establishing trust with suppliers, donors, and other stakeholders involved in procurement processes (Ray et al., 2004). Healthcare institutions with a strong reputation for reliability and integrity are more likely to secure favorable terms with suppliers and attract support from international donors. In the context of Ghana, institutions that have built a reputation for effective procurement management are often preferred partners in pooled procurement initiatives, which leads to better outcomes in terms of cost savings, quality of medicines, and timely delivery. RBV emphasizes that these intangible resources, while not easily quantifiable, are essential for the long-term success of pooled procurement programs and provide a significant competitive advantage in the healthcare market (Peteraf & Barney, 2003).

Critics of RBV argue that it places too much emphasis on internal resources and capabilities, while potentially neglecting the influence of external factors such as market dynamics, competition, and regulatory changes. Priem and Butler (2001) critique RBV for its lack of consideration of how changes in the external environment can impact an organization's resources and capabilities. In the context of pooled procurement in healthcare, external factors

such as government policies, donor requirements, and global market conditions play a significant role in shaping procurement outcomes. Furthermore, the theory's focus on the VRIN criteria has been criticized for being overly restrictive, potentially limiting the identification of resources that contribute to competitive advantage in more nuanced or context-specific ways (Kraaijenbrink et al, 2010). This critique is particularly relevant in dynamic and rapidly changing environments, where the ability to adapt and innovate may be as important as the possession of VRIN resources.

Despite these critiques, proponents of RBV, such as Peteraf (1993) and Barney et al. (2021), argue that the theory provides a robust and comprehensive framework for understanding how organizations achieve and sustain competitive advantage through strategic management of resources. They contend that RBV's focus on the value, rarity, inimitability, and non-substitutability of resources offers a clear and actionable guide for organizations seeking to build and maintain a competitive edge. This perspective is particularly valuable in the healthcare sector, where institutions must continuously innovate and adapt to changing circumstances while leveraging their unique strengths to optimize procurement processes (Teece, 2005; Sirmon et al., 2007).

The strength of RBV theory is particularly evident in its application to pooled procurement in healthcare. The theory's emphasis on the strategic management of resources and capabilities aligns closely with the goals of pooled procurement programs, which aim to maximize efficiency and effectiveness in the procurement of essential medicines. By focusing on the development and deployment of unique resources, such as skilled procurement teams, advanced information systems, and strong supplier relationships, healthcare institutions in Ghana can achieve significant improvements in procurement outcomes (Kozlenkova et al., 2014; Barney, 2021). RBV provides a valuable lens through which to understand the factors

that contribute to the success of pooled procurement programs, offering insights that are directly applicable to the challenges and opportunities faced by healthcare institutions in Ghana.

The application of RBV in the context of pooled procurement in Ghana underscores the critical role of unique organizational resources and capabilities in achieving successful outcomes. Healthcare institutions with strong procurement teams, established supplier networks, and effective management practices are more likely to excel in pooled procurement initiatives. For instance, institutions that have invested in building robust information systems are better equipped to manage the complexities of pooled procurement, from demand forecasting to inventory management (Teece, 2014; Sirmon et al., 2011). These capabilities enable institutions to optimize procurement processes, reduce costs, and ensure the timely delivery of high-quality medicines, thereby enhancing the overall efficiency and effectiveness of the healthcare system.

Moreover, RBV highlights the importance of continuous investment in and development of these resources and capabilities to sustain long-term success in pooled procurement. As the healthcare landscape evolves, institutions must adapt by refining their capabilities, adopting new technologies, and enhancing their strategic partnerships. For example, the integration of digital platforms and data analytics into procurement processes can significantly enhance the ability of healthcare institutions to manage pooled procurement more effectively (Madhani, 2010; Pisano, 2015). The application of the principles of RBV will enable healthcare institutions in Ghana to not only achieve immediate gains in procurement efficiency but also build a sustainable competitive advantage that positions them for long-term success in the dynamic and challenging healthcare environment.

2.3.3 Public Goods Theory

Public Goods Theory, rooted in the field of economics, was primarily developed by Paul Samuelson in the mid-20th century. The theory addresses the unique characteristics of public goods, which are defined as goods that are non-excludable and non-rivalrous. Non-excludability means that once a public good is provided, it is impossible or highly impractical to exclude individuals from using it. Non-rivalrousness implies that one person's use of the good does not diminish its availability for others (Samuelson, 1954). Public goods, therefore, stand in contrast to private goods, which are both excludable and rivalrous. The theory has significant implications for understanding the provision and management of goods that serve the public interest, particularly in sectors such as healthcare, where the accessibility and quality of essential services like medicines are of paramount importance.

Public Goods Theory posits that because public goods are non-excludable and non-rivalrous, they are often underprovided in a free market, as there is little financial incentive for private entities to produce them (Musgrave and Musgrave, 1959). This underprovision is due to the "free rider" problem, where individuals or organizations can benefit from the good without contributing to its cost, leading to market failure. In the absence of intervention, the market fails to supply the optimal quantity of public goods, necessitating government involvement to ensure their adequate provision. This involvement often comes in the form of direct government provision, subsidies, or regulation, aiming to correct the market failure and ensure that public goods are available to all members of society (Stiglitz, 1989).

The theory also explains the challenges associated with the funding and distribution of public goods. Since public goods benefit everyone, there is a collective action problem where individual entities might be reluctant to bear the costs, hoping others will pay instead (Olson, 1965). In healthcare, this is evident in the provision of essential medicines, where the cost

burden is often high, and the benefits are widespread. Governments and international organizations typically step in to fund and manage these goods, ensuring that they are distributed equitably. The equitable distribution of public goods, particularly in healthcare, is a central concern, as it directly impacts public health outcomes and the overall well-being of the population (Kaul, Grunberg, & Stern, 1999).

In the context of pooled procurement, Public Goods Theory provides a crucial framework for understanding the collective management and distribution of essential medicines. Medicines, especially those used in public health interventions like vaccines, antibiotics, and antiretrovirals, can be considered public goods because they contribute to the health of the entire population, preventing the spread of diseases and improving overall public health (Moon, 2013). Pooled procurement in healthcare can be seen as a collective action aimed at managing these public goods more effectively. By pooling resources, healthcare institutions can overcome the free rider problem, ensuring that essential medicines are procured in sufficient quantities and distributed equitably across the population. This collective approach aligns with the principles of Public Goods Theory, which advocates for shared responsibility in the provision and management of public goods to maximize social welfare (Smith, 2003).

The application of Public Goods Theory to pooled procurement also highlights the role of government and international organizations in ensuring the effective provision of essential medicines. In Ghana, the Ministry of Health, in collaboration with international donors and organizations such as the World Health Organization (WHO), plays a central role in the pooled procurement of medicines, ensuring that these public goods are available to all citizens, regardless of their ability to pay (WHO, 2017). The theory supports the argument that government intervention is necessary to correct the market failure associated with the provision of public goods like medicines. By coordinating pooled procurement initiatives, the

government ensures that the benefits of these public goods are widely shared, contributing to improved health outcomes and reduced health disparities (Stiglitz, 2000).

Moreover, Public Goods Theory underscores the importance of international cooperation in the provision of medicines as global public goods. The concept of global public goods extends the traditional notion of public goods to a global scale, recognizing that the benefits of certain goods, such as vaccines and treatments for infectious diseases, transcend national borders (Kaul et al., 1999). In this context, pooled procurement initiatives are not only about addressing national needs but also about contributing to global health security. For example, during the COVID-19 pandemic, international pooled procurement mechanisms, such as the COVAX initiative, were critical in ensuring equitable access to vaccines worldwide, particularly for low- and middle-income countries like Ghana (Usher, 2020). This global approach to pooled procurement reflects the principles of Public Goods Theory, emphasizing the need for collective action and shared responsibility in managing global public health challenges.

Critics of Public Goods Theory argue that it can oversimplify the complexities of public good provision, particularly in contexts where the delineation between public and private goods is not clear-cut. Anderson et al. (2004) critiques the theory for not adequately addressing the role of private markets and public-private partnerships in the provision of goods that have both public and private characteristics. In the healthcare sector, for instance, while medicines can be seen as public goods, their production and distribution often involve private entities, creating a hybrid model where both public and private interests must be managed. This critique suggests that Public Goods Theory might not fully capture the nuances of modern healthcare procurement, where the boundaries between public and private responsibilities are increasingly blurred (Cornes and Sandler, 1996).

Another critique, as pointed out by Ostrom (1990), is that Public Goods Theory tends to emphasize top-down government intervention without sufficiently considering the potential for local communities and decentralized actors to manage public goods effectively. Ostrom's work on the governance of common-pool resources challenges the idea that only centralized authorities can manage public goods efficiently, arguing instead for a polycentric approach that involves multiple stakeholders, including local communities, in the decision-making process. In the context of pooled procurement, this critique is relevant as it highlights the importance of involving local healthcare providers and communities in the planning and implementation of procurement initiatives to ensure they meet the specific needs of the populations they serve.

Supporters of Public Goods Theory, such as Stiglitz (2000) and Kaul et al. (1999), argue that the theory provides a solid foundation for understanding the collective action required to provide goods that benefit society as a whole. Stiglitz emphasizes the importance of government intervention in ensuring that public goods are provided at levels that meet societal needs, particularly in sectors like healthcare, where market mechanisms alone are insufficient. Public Goods Theory's emphasis on equity and social welfare aligns with the goals of public health systems, which aim to provide essential services and goods, like medicines, to all citizens, regardless of their socio-economic status. In this light, the theory is highly relevant to understanding the dynamics of pooled procurement, where the goal is to maximize social welfare through the collective purchasing and distribution of essential medicines (Smith, 2003).

The strength of Public Goods Theory in the context of pooled procurement lies in its ability to explain the necessity of collective action and government intervention in managing the provision of essential medicines. The theory's focus on non-excludability and non-rivalrousness aligns with the nature of medicines as public goods, particularly in the context of

public health emergencies where the widespread availability of medicines is crucial for controlling disease outbreaks (Moon, 2013). In Ghana, the application of Public Goods Theory to pooled procurement highlights the role of government and international partners in ensuring that medicines are distributed equitably, addressing both the free rider problem and the underprovision that characterizes markets for public goods.

Expanding on this application, Public Goods Theory provides a framework for understanding how pooled procurement can be leveraged to address the inequities in access to essential medicines. In Ghana, where resource constraints and regional disparities often limit access to healthcare, pooled procurement can serve as a mechanism to ensure that all regions have equitable access to high-quality medicines (Usher, 2020). Treating medicines as public goods and utilizing pooled procurement can help Ghanaian government to better allocate resources, reduce costs, and improve the overall efficiency of the healthcare system. This approach not only aligns with the principles of Public Goods Theory but also addresses the broader goals of social justice and equity in healthcare provision.

Furthermore, Public Goods Theory supports the integration of pooled procurement into national and global health strategies. If essential medicines are viewed as public goods, policymakers can design procurement strategies that prioritize public health outcomes over market-driven profits. This perspective is particularly relevant in the context of global health initiatives, where pooled procurement can help to mitigate the disparities in medicine access between high-income and low-income countries. In Ghana, the adoption of pooled procurement strategies based on Public Goods Theory can enhance the country's ability to respond to public health crises, improve health outcomes, and contribute to global efforts to ensure equitable access to life-saving medicines (Kaul et al., 1999; Moon, 2013).

2.4 Empirical Review

A thorough review of existing literature on Medicines Pooled Procurement Programs (PPPs) in healthcare reveals several empirical studies that offer valuable insights into the efficiency, effectiveness, and broader impacts of PPPs. One notable study by Moon et al. (2011) examined the impact of pooled procurement on the availability and affordability of antiretroviral (ARV) medicines in Sub-Saharan Africa. Utilizing a mixed-methods approach, the study combined quantitative data analysis of procurement prices with qualitative interviews with key stakeholders. The findings highlighted that pooled procurement significantly reduced ARV costs, increased availability, and improved the bargaining power of purchasing entities. However, this study primarily focused on ARVs and did not address other essential medicines, nor did it assess the efficiency and effectiveness of these programs in broader contexts such as Ghana. The current research will address these gaps by assessing the efficiency and effectiveness of PPPs across a wider range of essential medicines in Ghana. Additionally, the connection between Moon et al.'s findings and this study lies in exploring the broader application of pooled procurement beyond ARVs to encompass a more comprehensive set of pharmaceuticals.

Yadav (2015) conducted an analysis of the efficiency of pooled procurement mechanisms in low- and middle-income countries (LMICs), with a focus on the supply chain of essential medicines. Employing a case study methodology, Yadav’s research identified that pooled procurement improved supply chain efficiency and reduced costs but faced challenges related to governance, transparency, and coordination among participating entities. While Yadav’s study provides a foundation for understanding the efficiency of pooled procurement, it did not explore the enabling factors necessary for setting up successful PPPs, particularly in Ghana. This research will build on Yadav's findings by identifying and evaluating these enabling factors within the Ghanaian context, thereby providing a more localized understanding of what

drives the success of PPPs in Ghana. The connection between Yadav's study and Moon et al. (2011) is evident in the focus on improving procurement efficiency, with this study further expanding on the factors that enable such improvements.

Cameron et al. (2009) investigated the impact of pooled procurement on medicine prices in the Eastern Caribbean through a quantitative analysis of procurement data before and after the implementation of pooled procurement. The study revealed substantial cost savings and improved access to essential medicines but raised concerns about the long-term sustainability of these initiatives, particularly regarding quality control and delivery timelines. The present research will address this sustainability gap by examining the long-term sustainability and scalability of PPPs in Ghana's healthcare system. Cameron et al.'s focus on sustainability aligns with Yadav's findings on efficiency, suggesting a critical need to explore both short-term efficiency and long-term sustainability, which this study will address within the Ghanaian context.

A relevant study by Domfeh (2021) explored the efficiency and challenges of the pooled procurement program (PPP) among National Catholic Health Service (NCHS) members, using stakeholder theory as a framework. The study utilized a qualitative research approach, relying on a multiple case study design to conduct 20 in-depth interviews with respondents working within the health facilities and the secretariat of the NCHS. The findings established that the PPP improved accessibility, quality, availability, and ensured solidarity between health facilities within the NCHS, leading to efficient PPP management. The study also reported a 30% reduction in the average cost of medicines in the first three years of the program's inception. However, the study identified several challenges, including inadequate consultation between the health facilities and the secretariat, inadequate physical infrastructure, poor internet accessibility, and limited coverage of the PPP. The research also noted that prompt payments from the National Health Insurance Scheme (NHIS) could further drive down costs.

This research will extend Domfeh's findings by exploring how these challenges impact the broader healthcare system in Ghana, particularly in terms of the accessibility and availability of essential medicines. The connection between Domfeh's study and the others lies in the focus on both efficiency and the critical challenges that need to be addressed to sustain PPPs in healthcare.

Waning et al. (2010) assessed the effectiveness of pooled procurement in reducing the price variability of essential medicines in low-income countries. The cross-sectional study revealed that pooled procurement decreased price variability and increased price transparency. However, the study did not explore the broader impacts on healthcare delivery and patient outcomes, nor did it consider the specific challenges faced by countries like Ghana. The current research will address these limitations by exploring the challenges, limitations, and risks associated with PPPs in Ghana, as well as assessing the impact of these programs on the quality and safety of medicines procured. The findings of Waning et al. resonate with those of Moon et al. and Cameron et al., particularly in their emphasis on cost and price stability, but this study will expand the scope to include broader healthcare impacts.

Sridhar and Batniji (2008) examined the political economy of pooled procurement in global health initiatives, focusing on how power dynamics and political interests shape procurement outcomes. Using a mixed-methods approach, they found that political interests often lead to suboptimal procurement decisions, calling for further research on how local political contexts influence PPPs at the national level. This study will address that gap by analyzing the influence of Ghana's political environment on the success and challenges of PPPs, particularly in terms of accessibility and quality. Sridhar and Batniji's emphasis on political factors connects with Domfeh's discussion on governance, highlighting the complex interplay between local and international forces in shaping PPP outcomes.

Smith et al. (2012) investigated the role of technological innovations in enhancing the efficiency of pooled procurement programs. Their case study approach revealed that digital platforms and information systems significantly improved procurement efficiency and reduced lead times. However, their research was geographically limited to Southeast Asia, leaving questions about the applicability of these findings to Africa, particularly Ghana. This research will extend the analysis by exploring the application of technological innovations in Ghana's pooled procurement programs and their impact on efficiency and scalability. Smith et al.'s findings align with Yadav's study on efficiency, but this research will specifically address the technological gaps in Ghana.

Vialle-Valentin et al. (2015) conducted an empirical study on the effectiveness of pooled procurement in improving access to essential medicines in Francophone Africa. Using a cross-sectional survey design, the authors collected data from multiple countries and analyzed the impact of pooled procurement on medicine availability. The study found that pooled procurement significantly improved access to medicines, particularly in remote and underserved areas. However, the authors noted that the success of these initiatives was highly dependent on the capacity of local health systems to manage and distribute the medicines. This study will build on these findings by examining the capacity challenges faced by Ghana's healthcare system in managing pooled procurement programs. The connection between Vialle-Valentin et al.'s study and those of Domfeh and Yadav lies in the critical role of local capacity in ensuring the success of PPPs.

Finally, Sekhri et al. (2011) explored the cost-effectiveness of pooled procurement in the procurement of vaccines in low- and middle-income countries. The authors used a cost-effectiveness analysis framework, comparing the costs and outcomes of pooled procurement with other procurement models. The study found that pooled procurement was more cost-effective, particularly in reducing procurement costs and improving vaccine coverage.

However, the study primarily focused on vaccines and did not explore the implications for other types of medicines. This research will expand the scope by analyzing the cost-effectiveness of pooled procurement for a broader range of essential medicines in Ghana, thereby providing a more comprehensive assessment of the economic impact of PPPs.

2.5 Chapter Summary

This chapter has provided a complete review of key concepts, theories, and empirical studies related to Medicines Pooled Procurement Programs (PPPs) within the Ghanaian healthcare system. The concept review covered the foundational principles of procurement in healthcare organizations, detailing common procurement methods such as open tendering, restricted tendering, direct procurement, framework agreements, and pooled procurement, among others. It further explored the specifics of Medicines Pooled Procurement in Ghana, including the various levels of pooled procurement and the detailed process cycle from identifying medicine needs to reviewing procurement outcomes. The chapter also examined enabling factors crucial for setting up effective PPPs in Ghana, such as a strong legal framework, political will, efficient supply chain infrastructure, and stakeholder collaboration. Additionally, the benefits and challenges of PPPs, including their impact on cost savings, access to essential medicines, and the quality and safety of procured medicines, were discussed. The theoretical review applied Institutional Theory, Resource-Based View Theory, and Public Goods Theory to understand the dynamics of PPPs in the healthcare sector. The empirical review synthesized findings from several key studies, identifying gaps in the literature, particularly in areas like sustainability, governance, and local capacity, and highlighted how this research will contribute to filling these gaps.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This methodology chapter constitutes the procedural framework within which a researcher conducts a study. This part describes the research methods to be used in the study and how it will be done to achieve the objective of the study. In light of that, the chapter presents the research philosophy, research approach, research design, target population, sample techniques, sample units, and size for the research. In furtherance of the above, it also discusses the sources of data, data collection methods, and data analysis.

3.2 Research Philosophy

This research uses interpretivism research based on the belief that reality is about meaning and relationships that are created through human experience and interaction. Interpretivism shows that the social world cannot be understood only from an objective point of view. Moreover, it requires a deeper exploration of the contexts that people relate to their experiences and actions. This perspective is particularly useful for studies that seek to understand social processes, because it allows researchers to describe the perspectives of multiple actors in the health care system. Walsham (2006) notes that interpretivism helps to better understand the social context by capturing individual perspectives, which is important in analyzing how and why some PPP strategies succeed or fail in healthcare in Ghana.

This philosophy is appropriate for this study because it is important to explore stakeholders' knowledge, meaning, and dynamic organization that influence the implementation and effectiveness of PPPs. Interpretivism enables the study to focus on the personal and social aspects of the medical system in Ghana, revealing that an objective perspective can be overlooked in many ways. This philosophy also allows for understanding from different

perspectives, such as doctors, healthcare officials, and procurement managers. As Creswell and Poth (2016) argue, interpretivism research is important in contexts where understanding participants' interactions and lived experiences can reveal negative feedback, especially when evaluating policy in complex tasks. In the case of PPPs in Ghana, this strategy will address the many challenges and benefits faced by stakeholders, providing a broader and broader understanding of the PPP process.

3.3 Research Approach

This study uses an inductive research approach suitable for exploring and generating insights from specific visions and patterns of pharmaceutical pooled procurement programs (PPPs) in Ghana. Inductive begins with the collection of specific data, often through interviews or focus groups, and then moves to identifying broad themes or theories based on the analysis of that data (Liu, 2016). In contrast to the deductive approach, which tests existing theories, the inductive approach is useful for studies that aim to generate new understanding in under-researched areas, such as healthcare procurement in PPPs. Thomas (2006) stated that an inductive approach allows researchers to capture participants' perspectives, generating a deeper understanding of complex social phenomena. This aligns with the aim of the study to explore stakeholders' experiences, challenges and perceptions of PPPs in Ghana.

Using an inductive approach allowed this research to generate patterns and themes directly from the data without the need for a previous theoretical framework. This is especially valuable for understanding different stakeholders' perceptions of PPPs, allowing the researcher to identify emerging trends that may reveal insights into both the success of these programs and the challenges in healthcare contexts. According to Braun and Clarke (2006), a flexible approach allows for flexibility in thematic analysis, and supports a concise interpretation that is closely related to the data. This approach is useful in evaluating PPPs in Ghana because it

provides an empirical framework to understand their operational complexity, impact, and potential development from the people's perspective.

3.4 Research design

The research design provides structure for the whole research. Research design is the researcher's strategy for conducting research (Babbie, 2020). The design describes a research strategy that proceeds from a philosophical framework through study design and data collection. Creswell (2013) acknowledged that study design selection depends on data, time, space, cost, and ethics.

The researcher believes that qualitative research design can help achieve the objective of the study. This study adopts a qualitative research design to evaluate pooled procurement programs (PPPs) in Ghana. Qualitative research is particularly useful for exploring complex, contextual phenomena and understanding the experiences of stakeholders involved in PPP. Unlike quantitative methods, which involve quantitative data and statistical analysis, qualitative research allows for in-depth exploration of participants' perceptions, motivations, and behaviors (Creswell & Poth, 2016).

The qualitative rationale enables the study to produce the rich and detailed perspectives that can be used to understand the multifaceted aspects of PPPs. Qualitative methods support examination of the complex dynamics of Ghana's health care system, thereby providing a complete picture of how PPPs operate and their impact on health care delivery (Huberman, 2014). This process is necessary to identify key factors for the success and challenges of PPPs, which may not be easy to measure.

Moreover, qualitative research helps the study to generate knowledge that is directly relevant to the specific situation in Ghana. This local understanding is key to developing recommendations that effectively address the unique needs and circumstances of health

stakeholders in Ghana. According to Corbin and Strauss (2015), qualitative research allows researchers to explore the lived experiences of individuals to identify how cultural meaning is created rather than causal factors. Such an approach is appropriate for this study, as it aims to provide insightful and empirical insights from the stakeholders in pooled procurement programs. Lodico et al. (2010) added that, qualitative research focuses on the perceptions of the participants, creating meaning and understanding different perspectives.

3.5 Population

A collection of people or things that share one or more characteristics is referred to as a population. Data are gathered from populations in order to conduct analyses on the information obtained from them. As such, the population of research must meet the study criteria and must possess the relevant information or data that the researcher seeks to acquire. The target population for this study consists of various pooled procurement programs in Ghana, including the Ghana Adventist Central Medical Store, the National Catholic Health Service Pooled Procurement, the Pentecost Health Service Pooled Procurement Programme, and the Ministry of Health (MoH) Framework Contract. Departments involved in the study include procurement, finance, logistics, administration, pharmacy, policy planning, monitoring and evaluation, IT, warehouse management, and health service delivery. This target population is chosen because, representatives from such a class of people possess the understanding, as they are dealing with day-to-day challenges that are related to the execution of the PPPs.

3.6 Sampling Technique and Sample Size

In qualitative studies, the ideal sampling approach is non-probabilistic sampling, which includes convenience, voluntary response, purposive, snowball, and quota sampling. For this study, purposive sampling has been considered as the appropriate sampling technique.

According to Kothari (2004), purposive sampling is employed in qualitative research when the researcher needs precise information about a particular phenomenon rather than drawing statistical judgments or when the population is limited and specialized. The targeted departments include procurement, finance, logistics, administration, pharmacy, policy planning, monitoring and evaluation, IT, warehouse management, and health service delivery. Therefore, as part of obtaining data for the study, the researcher employs both purposive and convenience sampling to select a sample of 25 individuals from these departments to represent the population in the event whereby constraints limit the ability of the researcher to access the entire population. This sample ensures that the study gathers relevant and detailed information from individuals with more insight into the operations, challenges, and impacts of pooled procurement programs in Ghana. Hence, the selection of the interview participants is based on both purposeful and convenience methods.

3.7 Research Instrument

The research tools for this study are interviews and document analysis, which were chosen to collect information on the evaluation of PPPs in Ghana. Interviews are an important part of qualitative research to gain personal understanding by allowing participants to share their thoughts and experiences of PPPs. This type of primary data collection is suitable for explaining the concept of the study, facilitating an in-depth discussion that reflects the views of the participants directly or indirectly through interviews.

In addition to interviews, document review will be use to analyse secondary data from publicly available sources such as policy statements, procurement procedures, and assessment activities and other reports. This approach will supplement the interview data by combining the authenticity of the findings with the multi-organizational context and data triangulation. Document analysis is a good method of data analysis to analyze the communication, policies,

and procedures in the organization (McDonald and Rogers, 2014). This type of document analysis provides access to important data and information by reducing bias and focusing on facts rather than opinions or theories. A combination of interviews and document analysis supports cross-verification of data and enriching the overall analysis of PPPs in the Ghanaian health context.

3.8 Data Collection Procedures

Data for this study is collected through semi-structured interviews conducted to gain in-depth perspectives from participants in a Pooled Procurement Program (PPP) in Ghana. All sessions will be held in a quiet environment to minimize distractions and will last approximately 30-45 minutes to give participants ample time to discuss their key perspectives on key PPP issues. Prior to the interview, participants will be informed of the purpose of the study and confidentiality will be assured to ensure honest responses.

All interview sessions will be audio-recorded to ensure the accuracy of all responses. Recordings will be transcribed after the interview session, and the full text will be obtained for further analysis. During the interview, the researcher will adhere to the guidelines, ensured consistency throughout the interview, and provided flexibility to find out more if residual risks arise. This flexible approach facilitates the collection of detailed data, supporting the analysis of stakeholders' views and experiences on PPPs.

3.9 Data Analysis

The study will adopt a thematic technique to manually analyze the data that is collected from the interview session. According to Braun and Clarke (2006), thematic analysis involves various stages which include describing, identifying and interpreting patterns (themes) in interview data. In order to facilitate the analysis of patterns, this study will use the content from

related documents to conduct the coding process. Each theme will reveal recurring patterns or themes found in the data that will guide data organization and interpretation.

The interview data will be coded and categorized using Excel to develop preliminary content. According to Silver and Lewins (2014), this process includes capturing, organizing, extracting, and coding data to obtain consensus about PPPs. To be rigorous, data triangulation will be use to confirm the findings from different sources with mixed data, which helps to reduce bias to increase data reliability (Lodico et al., 2006). Braun and Clarke (2006) present a six-step strategy for theme analysis that is particularly beneficial. Researchers will utilize the framework to undertake thematic analysis.

3.1 Steps for Conducting Thematic Analysis

Step 1	Get yourself acquainted with the data.
Step 2	Create the initial codes.
Step 3	Look for themes.
Step 4	Review themes
Step 5	Define themes
Step 6	Write-up

Braun and Clarke's six-phase framework for doing a thematic analysis

3.10 Ethical Consideration

In carrying out this study, the highest possible ethical standards will be observed. This section upholds the integrity concerning data gathering. The study will fully acknowledge the works of others used in the study. For ethical reasons, respondents will not be coerced into answering interview questions; they will do so on a free-will basis. Again, the data will not be collected undercover, as permission will be obtained from the head of the procurement department of the various health facilities under study. The individual identity of respondents will not be requested by the researcher. Information collected from the study will only be used for

academic purposes but not unauthorized publication. Confidentiality will also be upheld at its highest level in this study.

CHAPTER FOUR

ANALYSIS AND RESULTS

4.1 Introduction

This chapter presents the analysis and results of the study on the effectiveness and impact of Medicines Pooled Procurement Programmes (PPPs) in Ghana, focusing on the Catholic Health Service Trust (CHST), Ghana Adventist Health Services (GAHS), and Med4All. The findings are based on qualitative data collected from semi-structured interviews with key informants responsible for procurement and medicine management within these programmes. Thematic analysis was used to identify and develop themes in relation to the six research objectives. The results are presented thematically, with separate sections for each programme, covering efficiency, effectiveness, enabling factors, challenges, medicine availability, sustainability, and quality assurance. A comparative discussion follows, highlighting differences and similarities across the three models.

4.1 The Efficiency and Effectiveness of the PPP in Ghana

This section presents a comparative analysis of the efficiency and effectiveness of Medicines Pooled Procurement Programmes (PPPs) within the three main faith-based health service providers in Ghana: The Catholic Health Service Trust (CHST), the Ghana Adventist Health Services (GAHS), and Med4All. The analysis is based on qualitative data derived from key informants across these programmes, including facility managers, procurement officers, and central programme coordinators. Each programme was assessed independently according to its operational structure, procurement processes, fulfillment rates, delivery timelines, and administrative efficiency. The findings are organized thematically to reflect the distinct models of each PPP centralized redistribution (GAHS),

federated pooled tendering (CHST), and digital platform-based procurement (Med4All) and to highlight variations in their implementation and performance outcomes. The diagram below illustrates the effectiveness as well as the efficiency of PPP across the three programs under study.

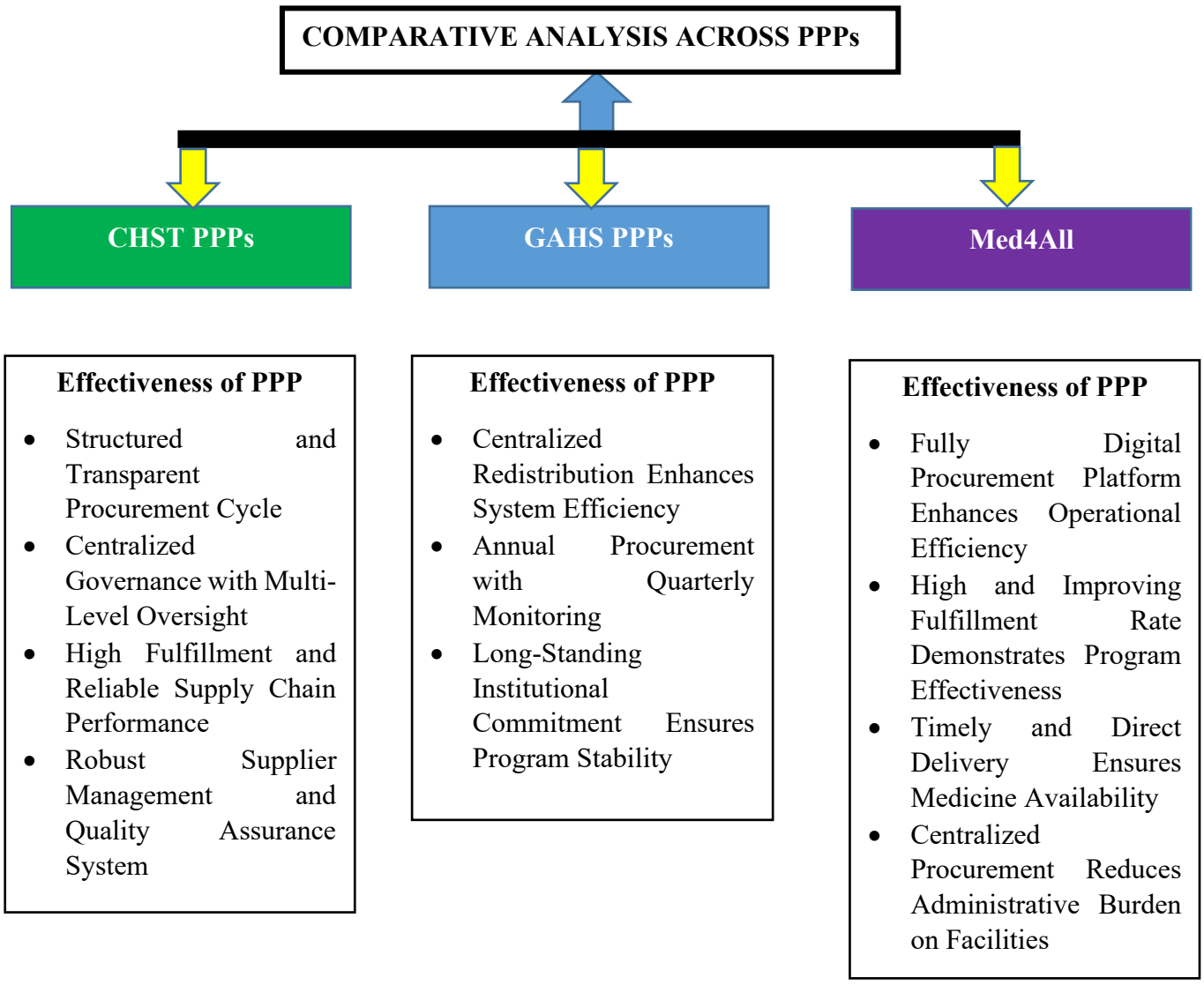

Fig 4.1: Comparative Analysis of PPPs Across 3 Main Programs

4.1.1 Effectiveness of PPP at Catholic Health Service Trust

As part of the analysis, the study sought to assess the effectiveness of the Medicines Pooled Procurement Programme (PPP) within the Catholic Health Service Trust (CHST), based on data collected from key informants at both facility and central levels. The interviews explored

the operational structure, procurement processes, supply reliability, and quality assurance mechanisms that define the CHST model. Four core themes emerged from the data: a structured and transparent procurement cycle, centralized governance with multi-level oversight, high fulfillment and reliable supply chain performance, and a robust supplier management and quality assurance system. These themes reflect the formalized and coordinated nature of the CHST PPP, highlighting how institutional policies, systematic planning, and accountability contribute to its overall effectiveness in ensuring consistent access to essential medicines across its network. The following section presents the findings in detail, supported by direct respondent accounts.

Theme 1: Structured and Transparent Procurement Cycle

The Catholic Health Service Trust (CHST) operates a highly structured and transparent procurement cycle, which forms the foundation of its efficiency and effectiveness. The process is systematically timed and coordinated across all member facilities, ensuring predictability and consistency in medicine supply. The annual cycle begins months in advance, with facilities submitting consumption data that is aggregated to inform tender preparation. This formalized timeline allows for strategic planning and minimizes procurement delays.

As the Deputy Chief Procurement Manager and Head of Procurement at St. Dominic Catholic Hospital noted:

"At the middle of the preceding year... the PPP has requested us to provide them with consumption data for the entire year 2024... This data is pulled together from all the Catholic hospitals."

This quote underscores the centralized and synchronized nature of the system. By collecting historical usage data from all facilities, CHST ensures that procurement volumes are demand-

driven, reducing both overstocking and stockouts. The aggregation of data enhances transparency and allows for accurate forecasting.

Another key informant, the Manager of the Food and Medicine Procurement Program at CHST, emphasized the inclusive nature of the process:

"We write letters to all the institutions requesting from them things that they might need as to tender for the 2026 procurement cycle, which are not on the existing list that we are procuring. So, we get all manner of feedback from the facilities."

This statement reveals that the system is not rigid; it incorporates facility-level input for new items, demonstrating responsiveness and adaptability. The structured engagement with facilities ensures that the procurement list remains relevant and comprehensive, reinforcing the program's operational effectiveness.

Theme 2: Structured and Transparent Procurement Cycle

The CHST PPP is underpinned by a robust governance framework that ensures accountability and strategic oversight at multiple levels. This multi-tiered structure facilitates coordination between central management and individual facilities, ensuring that decisions are both informed and aligned with institutional policies.

The Manager of the Food and Medicine Procurement Program at CHST explained:

"The structure of the program is that the grassroots, we have the health facilities who patronize the program... Then we have a program secretariat, which is managed by a manager and the manager is supported by procurement and account staff. The secretariat has a board that also pretends over it."

This quote illustrates a clear chain of command, with the secretariat serving as the operational hub and the board providing strategic direction. The hierarchical design ensures that procurement activities are monitored and guided at the highest level.

Similarly, the Deputy Chief Procurement Manager at St. Dominic Catholic Hospital highlighted internal governance:

"We have an entity standard committee. Okay. It is chaired by the deputy administrator with the instruction of the administrator... Everything that pertains to PPP is routed through the entity standard committee for his knowledge and then it is resolved from the CHST."

This reveals a dual governance model both central and facility-based ensuring compliance and transparency. The involvement of senior administrators in procurement decisions reinforces accountability and institutional ownership of the PPP.

Theme 3: High Fulfillment and Reliable Supply Chain Performance

The Catholic Health Service Trust's pooled procurement programme demonstrates a high level of operational effectiveness, particularly in the fulfillment of medicine orders and the reliability of its supply chain. This performance is a critical indicator of the program's success in ensuring that member facilities receive the essential medicines they require in a timely and consistent manner. The procurement model, anchored in centralized demand aggregation and competitive tendering, has yielded strong delivery outcomes, with a fulfillment rate of between 90% and 95% of all items put out for tender. This level of performance reflects not only the efficiency of the procurement process but also the program's ability to maintain strong supplier commitments and manage logistics effectively across a geographically dispersed network of over 250 facilities.

"The program is able to achieve... a minimum of 90% of all the products that they put out for tender. Sometimes 95%, award a very significant volume of the list of items that are on the

national list of the program." (Manager, Food and Medicine Procurement Program, Catholic Health Service Trust)

This fulfillment rate underscores the program's capacity to secure supplier commitments for the vast majority of needed items, minimizing procurement gaps and ensuring that facilities can plan their inventory with confidence. The high rate is particularly significant given the scale and diversity of the Catholic health network, which includes hospitals and clinics in both urban and rural settings. It reflects a well-functioning procurement cycle where demand forecasting, tendering, and supplier selection are systematically coordinated.

"I would say the majority of the times we get the items... On average, within a week we get it." (Head of Pharmacy, Holy Family Catholic Hospital, Nkawkaw)

The timeliness of deliveries further reinforces the reliability of the supply chain. A one-week average delivery time indicates a responsive and efficient distribution system that significantly reduces stockout risks and supports uninterrupted patient care. This rapid turnaround is essential in a healthcare context where delays in medicine availability can directly compromise treatment outcomes. The combination of high fulfillment and prompt delivery illustrates a well-coordinated system that aligns procurement outcomes with actual medicine availability at the facility level.

Theme 4: Robust Supplier Management and Quality Assurance System

The effectiveness of the CHST PPP is further enhanced by a comprehensive supplier management and quality assurance framework that ensures both reliability and safety in medicine procurement. The programme does not merely focus on cost and availability but integrates rigorous vetting and monitoring mechanisms to uphold product quality and supplier accountability. This systematic approach begins at the prequalification stage, where potential

suppliers undergo detailed scrutiny to ensure they meet operational, regulatory, and quality standards.

"During our prequalification, we make our processes very robust in selecting the suppliers. We visit their facilities... inspect, familiarize ourselves with their processes, check their conditions."

(Manager, Food and Medicine Procurement Program, Catholic Health Service Trust)

This hands-on evaluation ensures that only capable and compliant suppliers are included in the tender process, reducing the risk of poor performance or substandard products. The inclusion of site visits and process verification reflects a proactive commitment to quality beyond mere documentation. It demonstrates a risk-informed approach to supplier selection that prioritizes long-term reliability over short-term cost savings.

"During the tender evaluation, we rank the awardees in first, second, and third positions. In times like that, we fall on the second or the third suppliers... to honor the orders that the first supplier has not been able to supply." (Manager, Food and Medicine Procurement Program, Catholic Health Service Trust)

This tiered ranking system serves as a critical contingency mechanism that enhances supply chain resilience. By having backup suppliers pre-identified and contractually ready, the programme can maintain medicine availability even when primary suppliers face logistical or financial challenges. This structured approach to supplier management not only mitigates supply disruptions but also fosters a performance-based environment where suppliers are incentivized to meet their obligations. Together, these mechanisms demonstrate a mature, institutionally embedded procurement model that balances efficiency with accountability and patient safety.

4.1.2 Effectiveness of PPP at Ghana Adventist Health Service

As part of the assessment of the effectiveness of pooled procurement in Ghana, this section examines the performance of the Ghana Adventist Health Services (GAHS) through its Central Medical Stores system. The analysis focuses on three key themes that reflect the program's operational strengths: centralized redistribution as a mechanism for enhancing system efficiency, structured annual procurement complemented by quarterly monitoring, and a long-standing institutional commitment that has ensured continuity and stability over nearly four decades. Drawing on insights from programme managers and facility-level personnel, the findings highlight how GAHS has maintained a consistent supply of essential medicines across its network through a vertically integrated model, institutional policy enforcement, and routine oversight. The following discussion presents evidence on how these factors collectively contribute to the program's effectiveness in supporting healthcare delivery within the Adventist health system.

Theme 1: Centralized Redistribution Enhances System Efficiency

The Ghana Adventist Health Services (GAHS) operates a vertically integrated procurement model centered on the Central Medical Stores, a system designed to address critical human resource constraints while ensuring consistent medicine availability across its network. This centralized redistribution mechanism emerged from a practical need: the scarcity of pharmacists within the system, which made decentralized procurement unfeasible. By consolidating procurement and inventory management at a central hub, GAHS ensures that even facilities without dedicated pharmacy expertise can access quality-assured medicines in a timely manner. This model not only streamlines supply chain operations but also enhances accountability and reduces duplication of efforts across facilities.

As the Manager of the Central Medical Stores, Ghana Adventist Health Services, hinted that: *"The main motivation was that there was only one pharmacist, and for that matter, we needed*

that system to work very well so that we would get quality medications at any of those facilities."

This statement underscores the foundational rationale for the program's design. The severe shortage of pharmacists across multiple facilities necessitated a centralized solution that could guarantee quality control and efficient distribution without requiring each facility to maintain its own specialized staff. The decision to centralize was not merely logistical but a strategic response to systemic human resource limitations.

He further hinted that:

"He set up the Central Medical Stores, wherever he would stock all the drugs, then redistribute it to all the various facilities."

This highlights the operational core of the GAHS model: a single point of procurement and storage from which medicines are systematically redistributed. This approach eliminates the inefficiencies associated with individual facility-level tendering and ensures uniformity in medicine quality and pricing. The success of this model lies in its ability to leverage economies of scale while maintaining a direct, reliable supply line to even the most remote facilities.

Theme 2: Annual Procurement with Quarterly Monitoring

The effectiveness of the GAHS PPP is reinforced by a structured operational cycle that combines annual procurement planning with regular, on-site monitoring. This dual approach ensures both strategic foresight and continuous quality oversight, enabling the program to maintain supply chain integrity and respond promptly to emerging issues. The annual procurement cycle allows for comprehensive demand forecasting and supplier engagement, while quarterly monitoring visits provide a mechanism for real-time assessment of medicine storage, inventory management, and compliance with program standards.

The Manager of the Central Medical Stores, Ghana Adventist Health Services, hinted that: *"We go on monitoring almost every quarter to see how those drugs are being stored, what is happening to our drugs."*

This reveals a proactive and hands-on supervisory framework that goes beyond mere documentation. The emphasis on physical site visits indicates a commitment to verifying conditions at the facility level, ensuring that medicines are stored under appropriate conditions to maintain their efficacy and safety.

He further hinted that:

"We do a lot of monitoring. We go there personally to also give support to our various facilities as well."

This demonstrates that the monitoring function is not only evaluative but also supportive. The secretariat does not merely audit; it engages with facilities to resolve challenges, provide guidance, and strengthen local capacity. This supportive oversight fosters trust and collaboration, reinforcing the program's effectiveness and ensuring that quality assurance is an ongoing, dynamic process rather than a one-time compliance exercise.

Theme 3: Long-Standing Institutional Commitment Ensures Program Stability

The enduring success of the GAHS PPP can be attributed to nearly four decades of institutional continuity and unwavering organizational commitment. Unlike newer or pilot-based procurement initiatives, the GAHS model has evolved into a deeply embedded system, sustained by consistent policy enforcement and leadership support. Its longevity is a testament to its adaptability and relevance within the Adventist health system, providing a stable framework that has weathered economic fluctuations and operational challenges.

The Manager of the Central Medical Stores, Ghana Adventist Health Services, hinted that: *"The program has been in place for the past, oh, is it 40, close to 40 years?"*

This remark, though casually phrased, carries significant weight. A nearly 40-year history indicates institutional maturity and resilience. It reflects a long-term investment in a proven model, allowing for the development of trust, standardized procedures, and deep organizational knowledge that newer programs may lack.

He further hinted that:

"This time around, the board is very serious with this, and we are doing a lot, a lot. And I think that with the policies that have been put in place and the strategies, we'll be able to sustain it. And I know it's going to exist for a very long time. It's very sustainable."

This statement confirms that the program is not only surviving but actively being strengthened. The renewed focus from the board, coupled with strategic policy development, signals a forward-looking commitment to sustainability. The confidence expressed in the program's future suggests that it is perceived not as a temporary intervention but as a core component of GAHS's healthcare delivery infrastructure. This level of institutional buy-in is a critical factor in the program's continued effectiveness and resilience.

4.1.3 Effectiveness of PPP at Med4All

This section examines the effectiveness of the Med4All pooled procurement programme, a digital platform-based initiative that serves faith-based and private health facilities across Ghana. The analysis is based on data from facility managers, accountants, and the program's central secretariat, and focuses on four key themes that reflect the program's operational strengths: the fully digital procurement platform that enhances efficiency, a high and improving fulfillment rate, timely and direct delivery of medicines, and the centralization of procurement

processes that significantly reduces the administrative burden on participating facilities. Unlike the centralized or federated models of CHST and GAHS, Med4All operates as a virtual marketplace, enabling facilities to place electronic orders, compare supplier quotations, and select competitive bids in real time. This digital-first approach streamlines procurement, minimizes delays, and improves transparency. The findings reveal that the programme has achieved an 85% fulfillment rate, with deliveries often made within a week and sometimes as quickly as 24 hours. By managing the entire tender process centrally, Med4All allows facilities to focus on patient care rather than procurement logistics. This section presents a detailed analysis of these themes, using direct respondent accounts to illustrate how Med4All's innovative model contributes to improved medicine availability and healthcare delivery in both urban and rural settings.

Theme 1: Fully Digital Procurement Platform Enhances Operational Efficiency

The Med4All programme distinguishes itself from other pooled procurement models in Ghana through its fully digital procurement platform, which fundamentally transforms the medicine ordering process for participating facilities. Unlike the manual or semi-digital systems used by the Catholic Health Service Trust (CHST) and Ghana Adventist Health Services (GAHS), Med4All operates as an electronic marketplace that enables real-time access to supplier options and pricing. This digital-first approach enhances operational efficiency by minimizing administrative delays, reducing errors associated with manual processing, and providing a transparent, auditable trail of procurement activities. The platform empowers facilities to make informed decisions by allowing them to compare supplier quotations directly, thereby promoting competition and value for money.

The Head of Facility at EP Church Clinic in Dzemeni opined that:

"Yes, so basically if we want to do requisition, the pharmacy technician will have to bring in a list of drugs that the facility needs. And then she will go to the portal and then make her requisitions."

(Head of Facility, EP Church Clinic, Dzemeni)

This statement illustrates the integration of the digital platform into daily operations at the facility level. The process is streamlined and role-specific, with the pharmacy technician initiating the request, ensuring accuracy and accountability. The use of a centralized portal eliminates the need for physical documentation and reduces the risk of miscommunication between departments.

Similarly, the Administrator at Ghana Mission Hospital in Dzodze opined that:

"We enter through electronic, through a platform. Where we go pick the drugs. And we also have access to go to the suppliers and their quotations." (Administrator, Ghana Mission Hospital, Dzodze)

This highlights a key advantage of the Med4All model: supplier transparency. Facilities are not bound to a single supplier or a pre-awarded list but can actively engage with multiple vendors, selecting the most competitive offer. This contrasts sharply with the CHST and GAHS models, where suppliers are centrally selected and facilities have no direct choice. The digital platform thus introduces a market-driven element into pooled procurement, enhancing both efficiency and responsiveness.

Theme 2: High and Improving Fulfillment Rate Demonstrates Program Effectiveness

A critical measure of procurement effectiveness is the extent to which ordered medicines are actually delivered. Med4All has demonstrated a consistently high and improving fulfillment rate, reflecting the program's growing operational maturity and supplier reliability. Starting from an initial fulfillment rate of around 50–60% at inception, the programme has

progressively improved to approximately 85%, with a target of reaching 90% by year-end. This upward trajectory indicates that the programme has successfully addressed early logistical and supplier performance challenges, resulting in greater confidence among participating facilities.

The Medicine Quality Officer & Supply Officer at Med4All opined that:

"Over the years, we've progressed through 70%. Currently, we are at around 85% fulfillment rate. We are hoping to reach 90% by the end of the year." (Medicine Quality Officer & Supply Officer, Med4All Secretariat)

This statement underscores the program's data-driven approach to performance monitoring and improvement. The ability to track fulfillment rates over time allows for targeted interventions, such as supplier performance reviews or contract adjustments, to ensure continuous enhancement of service delivery.

Further supporting this, the Administrator at Ghana Mission Hospital opined that:

"Almost 85%. The one we just placed, we placed almost 100,000 and we have a supplier of 82,000 in that section." (Administrator, Ghana Mission Hospital, Dzodze)

This real-time confirmation from a facility user validates the secretariat's reported figures and demonstrates the tangible impact of high fulfillment on facility operations. With 85% of requested items being supplied, facilities can maintain consistent medicine availability, reducing the need for emergency purchases from the open market and improving patient care continuity.

Theme 3: Timely and Direct Delivery Ensures Medicine Availability

Timeliness of delivery is a crucial factor in determining the practical effectiveness of any procurement system, particularly in healthcare settings where stockouts can directly affect patient outcomes. Med4All's model ensures that medicines are delivered directly to facility

doorsteps, eliminating the need for facilities to arrange transportation or wait for centralized redistribution. This direct-to-facility approach significantly reduces delivery lead times, with most orders arriving within a week and some fulfilled within 24 hours, thereby enhancing medicine availability and reducing supply chain bottlenecks.

The Accountant at Raven Walker Mission Hospital opined that:

"On the average, within one week, you'll be able to have most of the drugs." (Accountant, Raven Walker Mission Hospital)

This indicates a predictable and reliable delivery schedule, which enables facilities to plan their inventory management more effectively. A one-week turnaround is notably faster than the typical timelines reported in the CHST and GAHS systems, where redistribution logistics can cause delays, especially for remote facilities.

Additionally, the Administrator at Ghana Mission Hospital opined that:

"I remember a company deliver within 24 hours." (Administrator, Ghana Mission Hospital, Dzodze)

This exceptional delivery speed highlights the responsiveness of suppliers within the Med4All network. Such rapid fulfillment is particularly valuable in emergency situations or when managing high-demand medicines. The combination of digital ordering and direct supplier-to-facility logistics creates a lean, agile supply chain that outperforms traditional centralized models in terms of speed and accessibility.

Theme 4: Centralized Procurement Reduces Administrative Burden on Facilities

One of the most significant advantages of the Med4All programme is the centralization of the entire procurement process, from tendering to supplier evaluation. Unlike CHST and GAHS, where facilities must manage certain aspects of procurement despite being part of a pooled

system, Med4All assumes full responsibility for supplier engagement. This relieves individual facilities of the administrative complexity and resource demands associated with tender preparation, evaluation, and contract management, allowing them to focus on clinical care and patient service delivery.

The Medicine Quality Officer & Supply Officer at Med4All opined that:

"We also take the entire procurement processes of them because for Med4All, the products have already been, we've already done the procurement side. The suppliers have tendered for their products." (Medicine Quality Officer & Supply Officer, Med4All Secretariat)

This reflects a true pooling of procurement functions, where economies of scale are leveraged not just for cost savings but for operational efficiency. By handling the entire tender process centrally, Med4All ensures that facilities benefit from professional procurement practices without needing in-house expertise.

The Administrator at Ghana Mission Hospital opined that:

"So many companies are there supplying a music lab and you pick the best out of many. That is what makes it very beautiful." (Administrator, Ghana Mission Hospital, Dzodze)

While the phrasing is informal, the sentiment is clear: the system offers choice, competition, and simplicity. The facility does not have to negotiate or evaluate suppliers; instead, it selects from a pre-vetted pool of competitive bids. This hybrid model centralized tendering with decentralized selection combines the benefits of standardization and flexibility, making Med4All a uniquely efficient solution within Ghana's faith-based health procurement landscape.

4.2 The Enabling Factors for Setting up PPPs in Ghana.

This section presents an analysis of the key enabling factors that have facilitated the establishment and operation of Medicines Pooled Procurement Programmes (PPPs) within Ghana's faith-based health service providers. Drawing on data from the Catholic Health Service Trust (CHST), Ghana Adventist Health Services (GAHS), and Med4All, the analysis identifies five critical enablers that underpin the success of these programmes: institutional policy mandate and centralized authority, aggregation of demand for economies of scale, centralized quality assurance and regulatory oversight, financial and operational support for facility sustainability, and digital and administrative efficiency. These factors reflect both structural and strategic elements that have allowed the programmes to overcome common procurement challenges such as high costs, inconsistent supply, and quality concerns. The findings are based on direct accounts from programme managers, facility heads, and procurement officers, providing a comprehensive understanding of how these PPPs were initiated and sustained. The following discussion explores each theme in detail, highlighting commonalities and differences across the three programmes.

Theme 1: Institutional Policy Mandate and Centralized Authority

The establishment of a pooled procurement programme (PPP) in Ghana's faith-based health systems is fundamentally anchored in institutional authority and top-down policy directives. Unlike voluntary or market-driven models, the Catholic Health Service Trust (CHST) and Ghana Adventist Health Services (GAHS) rely on formal mandates from their central governing bodies to ensure universal participation. This institutionalized approach eliminates fragmentation and ensures that all affiliated facilities adhere to a unified procurement framework. The legitimacy conferred by these directives—often issued by church leadership or a national health board—provides the necessary leverage to enforce compliance, even when

individual facilities might prefer alternative procurement channels. This centralized authority is not merely administrative but symbolic, reflecting the hierarchical nature of faith-based health governance where operational decisions are aligned with broader institutional values and strategic direction.

The Head of Pharmacy at Holy Family Catholic Hospital, Nkawkaw (CHST) hinted that:

"It was actually a policy directive that came from the National Catholic Health Service, now referred to as the Catholic Health Service Trust, where they pooled all our data together in order to float one tender on behalf of all Catholic institutions. So it was more of a policy directive."

This statement confirms that participation in the CHST PPP was not a discretionary choice but a compliance requirement. The use of the phrase "policy directive" underscores the formal and binding nature of the decision, which bypassed individual facility autonomy in favor of system-wide coordination. The centralized pooling of consumption data and the issuance of a single tender are operational manifestations of this authority, enabling economies of scale and standardization.

The Manager of the Central Medical Stores at GAHS hinted that:

"The policy is that the central medical stores is the first point of contact for all our facilities. When you need any medication, you send your requisition there..."

This reveals a similar enforcement mechanism within the Adventist system, where the central pharmacy functions as the sole procurement gateway. The policy compels facilities to route all medicine requests through the central hub, reinforcing control and ensuring that procurement remains centralized and coordinated. This structural rigidity is a deliberate design choice to prevent duplication and maintain quality oversight.

The Manager of the Food and Medicine Procurement Program at CHST further highlighted that:

"There is also level of... obligation as it is a program designed by the Ghana College Bishops' Conference. Beyond the gains that the institutions enjoy, there is a need to also comply with the directive of the church."

This quote explicitly links the PPP's legitimacy to ecclesiastical authority. The sense of "obligation" transcends financial or operational benefits, positioning participation as a matter of institutional loyalty and governance. This moral and administrative imperative is a powerful enabler, ensuring high compliance rates and long-term sustainability, even in the face of operational challenges such as payment delays or supplier underperformance. The integration of the PPP into the broader governance framework of the church is thus a critical factor in its successful implementation and continuity.

Theme 2: Aggregation of Demand for Economies of Scale

A central rationale for establishing pooled procurement programmes is the economic advantage derived from aggregating demand across multiple facilities. By consolidating procurement volumes, these programmes significantly enhance their bargaining power, enabling them to negotiate lower prices and secure better contract terms from suppliers. This principle of economies of scale is consistently cited across all three PPPs as a primary motivator for participation. The collective purchasing power of networks comprising dozens or hundreds of facilities allows them to access prices that would be unattainable for individual institutions, particularly smaller or rural clinics with limited procurement volumes. This cost efficiency not only reduces financial burden on facilities but also enhances the affordability of medicines for patients, thereby improving overall healthcare access.

The Deputy Chief Procurement Manager at St. Dominic Catholic Hospital (CHST) hinted that:

"By the fact that we pull all the requirements together from the different hospitals, I think that has given room for prices that are very, very affordable..."

This observation highlights the direct link between demand aggregation and price reduction. The respondent attributes the affordability of medicines to the collective volume of orders, which increases the program's leverage in negotiations. The emphasis on "very, very affordable" suggests a tangible and significant cost advantage, reinforcing the value proposition of the PPP model.

The Procurement Manager at St. Gregory Gallick Hospital (CHST) further emphasized that:

"Given the fact that the volume of the product that is sent to the suppliers to bid is so much, the prices tend to be lower. And therefore, we could benefit from economies of scale."

This statement explicitly names the economic principle at work—economies of scale—and confirms that it is understood and valued by operational staff. The large volume of tenders acts as a magnet for competitive bidding, driving down prices. This competitive environment benefits the programme by ensuring that suppliers offer their best rates to win contracts.

The Manager of the Central Medical Stores at GAHS highlighted that:

"We are also able to get competitive prices, cost-effect, because of the volumes we do. So, we're able to get good prices for our facilities, because we all do procurement."

This reinforces the universality of the scale advantage across different PPP models. Despite GAHS's centralized redistribution model differing from CHST's federated tendering, the underlying economic logic remains the same: aggregated demand leads to lower costs. The ability to achieve "good prices" is directly tied to the collective purchasing power of the network, making aggregation a foundational enabler of financial sustainability and programme attractiveness.

Theme 3: Centralized Quality Assurance and Regulatory Oversight

Ensuring the safety and efficacy of procured medicines is a critical concern in any procurement system, and all three PPPs have institutionalized quality assurance as a core enabling factor. Centralized quality control mechanisms—ranging from in-house testing facilities to formal collaboration with national regulatory agencies—build trust among participating facilities and end-users. These measures mitigate the risk of substandard or counterfeit medicines entering the supply chain, which is a persistent challenge in low-resource settings. By embedding quality checks into the procurement process, PPPs provide a layer of assurance that individual facilities, many of which lack the capacity for independent testing, could not achieve on their own.

The Manager of the Food and Medicine Procurement Program at CHST hinted that:

"We have an in-house quality, we call it a mini lab. It's an analytical test setup... able to undertake certain tests, parameters for good quality medicines."

This reveals a significant investment in internal quality infrastructure. The existence of a "mini lab" allows CHST to conduct preliminary screening of medicines, ensuring that only products meeting basic quality standards are distributed. This capability is particularly valuable for a network of over 250 facilities, many of which are located in remote areas without access to external testing services.

The same CHST Manager further highlighted that:

"Every year, the Food and Drugs Authority is part of the team of evaluators that sits on our tender committee."

This formal collaboration with the FDA elevates the credibility of the procurement process. Having a national regulatory body participate in supplier evaluation ensures that only registered

and compliant products are included in the tender. This integration of regulatory oversight into the procurement cycle is a powerful enabler, as it aligns institutional practices with national health standards and enhances confidence in the system.

The Medicine Quality Officer & Supply Officer at Med4All Secretariat emphasized that:

"The quality is also assured. They know what they are buying from Med4All is of good quality. It has been vetted and registered by the FDA, the products on the platform."

While Med4All does not have an in-house lab, it relies on rigorous pre-vetting and FDA registration as its primary quality assurance mechanism. This demonstrates that even digital platforms can establish trust through regulatory compliance and transparency. The assurance of quality is a key selling point for Med4All, making it an attractive option for facilities concerned about medicine safety. Across all models, the centralization of quality oversight emerges as a critical enabler that supports both operational effectiveness and patient safety.

Theme 4: Financial and Operational Support for Facility Sustainability

The sustainability of facilities within a pooled procurement programme is critically dependent on financial and operational support mechanisms that mitigate cash flow constraints and reduce entry barriers. For many faith-based health facilities, particularly startups or those facing financial distress, the ability to access medicines without upfront capital or with flexible payment terms is a decisive factor in their ability to participate in and benefit from PPPs. The most effective programmes have institutionalized support systems such as supplier guarantees, credit facilities, and deferred payment arrangements that ensure continuity of supply even when facilities cannot pay immediately. These mechanisms not only prevent supplier boycotts but also enable struggling facilities to stabilize their operations and regain financial footing.

The Administrator at Ghana Mission Hospital, Dzodze (Med4All) highlighted that:

"There was financial stress that we have to go through... we have almost all our suppliers, and nobody is ready to supply us. So, when the program came... Med4All has to stand as surety between us and them... we were able to pay all of them through Med4All."

This statement reveals a transformative role of Med4All as a financial guarantor. The facility had reached a point of complete supplier distrust due to outstanding debts, rendering it unable to procure essential medicines. Med4All intervened by acting as a credit bridge, guaranteeing payments to suppliers and restoring the facility's access to medicines. This form of financial rescue is a powerful enabler, particularly for rural and underfunded facilities that are vulnerable to supply chain collapse during financial shortfalls.

The Manager of the Central Medical Stores at GAHS hinted that:

"For any startup, we have the duty to supply them till they stand on their feet. They become very well to do their own thing. So, we support a lot of our facilities."

This reflects a long-standing institutional commitment within GAHS to nurture new facilities by providing medicine supplies on credit until they become financially self-sustaining. This policy reduces the initial capital burden on startups, which would otherwise struggle to purchase stock from the open market. It demonstrates how a centrally managed system can function as a safety net, promoting equity and expansion of healthcare access.

The Accountant at Raven Walker Mission Hospital (Med4All) further emphasized that:

"We were expecting that there would be flexibility in terms of payments... the prices too are very affordable compared to the open market."

This indicates that financial flexibility—combined with lower prices—is a core expectation and benefit of participation. The 60–90-day credit terms offered by Med4All allow facilities to align their payments with NHIS reimbursements, thereby managing cash flow effectively. This

combination of affordability and payment flexibility significantly lowers the financial risk of participation, making the PPP a viable and sustainable option for facilities operating on tight budgets.

Theme 5: Digital and Administrative Efficiency

The integration of digital platforms and streamlined administrative processes is a key enabler that reduces the operational burden on facilities and enhances the overall efficiency of pooled procurement. While CHST and GAHS rely on manual or semi-centralized systems, Med4All exemplifies how digital innovation can transform procurement by automating ordering, supplier selection, and monitoring. This shift not only saves time and reduces errors but also allows facilities—especially those with limited staff—to focus on patient care rather than complex procurement logistics. Even in non-digital models like GAHS, the presence of dedicated internal departments for quality assurance and inventory management serves a similar purpose by centralizing expertise and reducing the workload on individual facilities.

The Medicine Quality Officer & Supply Officer at Med4All Secretariat hinted that:

"We also take the entire procurement processes of them because for Med4All, the products have already been, we've already done the procurement side. The suppliers have tendered for their products."

This statement underscores a fundamental efficiency: facilities do not have to conduct their own tenders. Med4All manages the entire procurement cycle from supplier prequalification to tender evaluation freeing facilities from the administrative complexity of sourcing, evaluating, and contracting suppliers. This centralized handling of procurement is a major operational advantage, particularly for small facilities without dedicated procurement teams.

The Administrator at Ghana Mission Hospital, Dzodze (Med4All) further highlighted that:

"So many companies are there supplying a music lab and you pick the best out of many. That is what makes it very beautiful."

While the phrasing is informal, the sentiment is clear: the digital platform provides choice, competition, and simplicity. Facilities can compare multiple supplier offers in real time, enabling them to select the most competitive bid without additional effort. This hybrid model centralized tendering with decentralized selection combines the benefits of standardization and flexibility, making participation more efficient and transparent.

The Manager of the Central Medical Stores at GAHS emphasized that:

"We have a quality assurance department that takes care of the in-house quality assurance. The drugs that comes in, how we store those drugs and all those things..."

This reveals that even in non-digital systems, administrative efficiency is achieved through institutional specialization. By having a dedicated department for quality assurance, GAHS ensures that all incoming medicines are properly vetted and stored, reducing the need for individual facilities to develop their own systems. This centralization of technical functions whether digital or human-led is a critical enabler that enhances both efficiency and quality across the network.

4.3 Impact of PPPs on the Accessibility and Availability of Essential Medicines

This section presents a thematic analysis of the impact of Medicines Pooled Procurement Programmes (PPPs) on the accessibility and availability of essential medicines within Ghana's faith-based health facilities. Drawing on data from the Catholic Health Service Trust (CHST), Ghana Adventist Health Services (GAHS), and Med4All, the analysis identifies five key themes that reflect how these programmes have transformed medicine supply chains. The findings are based on direct accounts from procurement managers, facility heads, and

programme coordinators, and focus exclusively on outcomes related to medicine availability, stockout reduction, geographic access, delivery reliability, and patient-level accessibility. The discussion highlights both the successes and persistent challenges across the three models, providing a comprehensive understanding of how PPPs contribute to improved healthcare delivery through enhanced medicine access.

Theme 1: Significant Reduction in Medicine Stockouts

The implementation of PPPs has led to a substantial decline in medicine stockouts across participating facilities, ensuring that patients can consistently access required treatments. This outcome is a direct result of reliable supplier performance, centralized procurement planning, and backup supply mechanisms.

The Deputy Chief Procurement Manager at St. Dominic Catholic Hospital (CHST) highlighted that:

"It's been very, very, very successful. I would say, as we speak, we have achieved 99% in Pharmaceuticals, and I think it's all because of the fact that the PPP secretarial suppliers have been able to meet our requirements on time."

This statement indicates an exceptionally high level of supply reliability, with stockouts reduced to near-zero levels. The ability to maintain 99% availability is a critical achievement, particularly in a healthcare context where interruptions in medicine supply can compromise patient care and erode trust in the facility.

Similarly, the Medicine Quality Officer at Med4All Secretariat noted that:

"For our providers now, those who are actively involved in Med4All have the challenge of stockouts. Having medicines to give to their patients is something that has reduced drastically."

This confirms that the reduction in stockouts is not limited to one model but is a shared outcome across different PPP designs. The use of the phrase "reduced drastically" underscores the transformative impact of the programme, especially for facilities that previously struggled with chronic shortages. The centralized coordination of supply, combined with competitive sourcing, has created a more resilient system capable of maintaining consistent medicine availability.

Theme 2: Improved Medicine Availability Through Reliable Supply Chains

PPPs have enhanced the overall availability of essential medicines by establishing dependable supply chains that deliver products on schedule and in full. This reliability allows facilities to plan their inventory with confidence and reduces the need for emergency procurement.

The Head of Pharmacy at Holy Family Catholic Hospital, Nkawkaw (CHST) stated that:

"Availability. We have had to not struggle so much in getting drugs from these suppliers."

This reflects a shift from a reactive, crisis-driven procurement model to a proactive, stable system. The absence of constant struggle indicates that the supply chain is functioning as intended, with suppliers fulfilling orders consistently and facilities no longer facing the uncertainty of delayed or incomplete deliveries.

The Procurement Manager at St. Gregory Gallick Hospital (CHST) added that:

"The reliability of the suppliers also do help... you always get the products."

This reinforces the importance of supplier dependability in ensuring medicine availability. When facilities can trust that their orders will be fulfilled, they can focus on clinical care rather than supply chain management. The consistent delivery of medicines is a foundational element of an effective PPP, and these accounts confirm that both CHST and Med4All have achieved a high degree of supply chain reliability.

Theme 3: Enhanced Accessibility in Rural and Underserved Areas

A major impact of PPPs is the improvement in medicine accessibility for facilities located in remote and underserved regions. By delivering medicines directly to facility doorsteps and ensuring equitable distribution, these programmes have reduced geographic disparities in access.

The Administrator at Ghana Mission Hospital, Dzodze (Med4All) emphasized that:

"We are located in a village, somewhere... for somebody to bypass those facilities, pay a motorbike fee of 30 cities, they will come to the hospital and go back without any medication, I don't think that person will come back again."

This highlights the real-world consequences of poor medicine access in rural areas. Without a reliable supply, patients may make long and costly journeys only to be turned away, leading to a loss of trust in the health system. The Med4All programme has addressed this by ensuring that even remote facilities receive regular deliveries.

The Medicine Quality Officer at Med4All Secretariat confirmed that:

"Over the years, the Ghana community, especially those in the hinterlands, weren't having access to good quality and affordable medicines. So the idea of Med4All came in place to enable these facilities to get easy access to their medications."

This statement reveals the program's intentional design to serve marginalized areas. By removing logistical barriers and ensuring direct delivery, Med4All has made it possible for rural facilities to maintain consistent medicine stocks, thereby improving patient retention and health outcomes.

Theme 4: Direct Delivery to Facility Doorsteps Improves Access

The practice of direct supplier delivery to facility premises has significantly improved accessibility by eliminating the need for facilities to arrange transportation or travel to collect medicines. This reduces operational costs and logistical burdens, particularly for small or understaffed clinics.

The Manager of the Central Medical Stores at GAHS indicated that:

"The fact that the facility doesn't have to move to go and pick their items. So the risk of transporting these items is shifted to their supplier now."

This transfer of logistical responsibility is a critical enabler of accessibility. For facilities without dedicated transport or drivers, the ability to receive medicines on site ensures that supply is not disrupted by vehicle breakdowns or fuel shortages.

The Accountant at Raven Walker Mission Hospital (Med4All) echoed this sentiment:

"Half of the others will be there and the drugs will be supplied at the doorstep when you pick them."

While the phrasing is informal, the meaning is clear: suppliers are responsible for final-mile delivery. This convenience allows facility staff to focus on patient care rather than logistics. The direct delivery model is a common feature across all three PPPs, demonstrating its importance in enhancing operational efficiency and medicine access.

Theme 5: Expansion of Access to Both Insured and Non-Insured Medicines

PPPs have broadened medicine access by covering both National Health Insurance Scheme (NHIS)-covered drugs and non-insured items, ensuring that patients receive comprehensive care regardless of their insurance status.

The Head of Facility at EP Church Clinic, Dzemeni (Med4All) explained that:

"Whether it's being insured or non-insured. Because we don't run the facility just with insurance drugs. But the platform provides that part."

This indicates that the Med4All platform includes a full range of essential medicines, not just those reimbursed by NHIS. This is crucial because many patients require medications that are not covered by insurance, and without access to these drugs, treatment plans may be incomplete or ineffective.

The same respondent further noted:

"Yes, it has helped us in so many ways. Because first and foremost, we are able to get most of the drugs that we need."

This confirms that the programme supports holistic medicine procurement, enabling facilities to serve all patient needs. By including non-insured medicines in the procurement list, PPPs ensure that financial barriers do not limit treatment options, thereby improving the overall quality of care.

4.4 Impact of PPPs on the Quality and Safety of Medicines Procured

This section presents a thematic analysis of the impact of Medicines Pooled Procurement Programmes (PPPs) on the quality and safety of medicines within Ghana's faith-based health facilities. Drawing on data from the Catholic Health Service Trust (CHST), Ghana Adventist Health Services (GAHS), and Med4All, the analysis identifies five distinct themes that reflect how these programmes safeguard medicine integrity from supplier selection to patient use. Unlike the previous objective, which focused on availability and accessibility, this section centers exclusively on quality assurance mechanisms, safety protocols, and stakeholder confidence in medicine standards. The findings are based on direct accounts from procurement managers, pharmacists, and programme coordinators, highlighting both institutional

safeguards and practical challenges. The discussion reveals that while all three PPPs prioritize medicine quality, their approaches vary in scope and rigor, with CHST demonstrating the most comprehensive system.

Theme 1: Multi-Stage Quality Assurance from Supplier Selection to Delivery

The Catholic Health Service Trust (CHST) employs a comprehensive, process-driven approach to quality assurance that spans the entire procurement cycle. This multi-stage system ensures that quality is not an endpoint but an integrated component of every phase, from supplier prequalification to post-delivery monitoring.

The Manager of the Food and Medicine Procurement Program at CHST emphasized that:

"Quality is a process. It's not just end products. It must emanate from the processes."

This statement reflects a systemic understanding of quality, where adherence to good manufacturing practices (GMP) and regulatory compliance are embedded in the procurement framework. By treating quality as a continuous process, CHST ensures that risks are mitigated at every stage, reducing the likelihood of substandard medicines entering the supply chain.

The same respondent further highlighted that:

"Every single item that comes forward for evaluation is verified by the Food and Drugs Authority from their database to ensure that their registrations are intact."

This formal collaboration with the FDA ensures that only legally approved products are included in the tender process. The verification of registration status acts as a critical gatekeeping mechanism, preventing the inclusion of counterfeit or unapproved medicines. This level of scrutiny demonstrates a proactive commitment to regulatory compliance and patient safety.

Theme 2: Supplier Prequalification Through Facility Inspection and Compliance Verification

CHST's PPP includes a rigorous prequalification process that involves physical site visits to supplier facilities, ensuring that only capable and compliant entities are awarded contracts. This hands-on approach enhances the reliability of the supply chain by verifying operational standards before procurement begins.

The Manager of the Food and Medicine Procurement Program at CHST stated that:

"We visit their facilities... inspect, familiarize ourselves with their processes, check their conditions. I mean, ensure that they are CE, GMP compliant."

This practice goes beyond document-based verification, allowing the programme to assess actual production and storage conditions. The emphasis on international standards such as CE and GMP indicates a high threshold for supplier eligibility, which contributes to the overall quality of procured medicines.

The same respondent also noted that:

"We do what we call the visual inspection assessment of the product. We look at packaging integrity. We check the product itself, even though it is registered."

This additional layer of inspection at the point of delivery ensures that medicines meet quality standards upon arrival. Even if a product is FDA-registered, visual checks help detect issues such as damaged packaging or discoloration that could compromise safety. This dual verification system pre-award and post-delivery strengthens the program's ability to maintain consistent medicine quality.

Theme 3: Active Post-Market Surveillance and Rapid Recall Mechanisms

The CHST PPP has established a robust post-market surveillance system that includes quarterly monitoring, random sampling, and immediate quarantine and recall procedures for suspect products. This active monitoring ensures that quality issues are detected and addressed promptly, minimizing patient exposure to potentially harmful medicines.

The Manager of the Food and Medicine Procurement Program at CHST explained that:

"We undertake quarterly monitoring activities... we sample the medicines as has been supplied to the institution."

This regular field-based testing allows for ongoing quality assessment across the network. By collecting samples directly from facilities, the programme can verify that the medicines in use are the same as those originally tendered, preventing substitution or degradation during distribution.

The same respondent further indicated that:

"Once we do the test and we see questionable quality, we immediately quarantine the samples from everywhere within our network... We call for recall of the product from our system."

This rapid response protocol is a critical component of patient safety. The ability to initiate a system-wide quarantine and recall demonstrates a high level of coordination and authority within the network. It ensures that a quality issue in one facility does not compromise the integrity of the entire supply chain.

Theme 4: Internal Quality Assurance for Proper Storage and Handling

The Ghana Adventist Health Services (GAHS) places strong emphasis on the post-procurement phase, ensuring that medicines are stored and handled under appropriate conditions. A

dedicated quality assurance department monitors storage practices to prevent degradation due to environmental factors.

The Manager of the Central Medical Stores at GAHS noted that:

"We have a quality assurance department that takes care of the in-house quality assurance. The drugs that comes in, how we store those drugs and all those things..."

This institutionalized function ensures that quality control extends beyond procurement to include inventory management. Proper storage is essential for maintaining the efficacy of temperature-sensitive medicines, and having a dedicated team responsible for this aspect enhances overall medicine safety.

The same respondent added that:

"We go on monitoring almost every quarter to see how those drugs are being stored, what is happening to our drugs."

These regular site visits allow GAHS to enforce storage standards across its network of facilities. By verifying conditions such as temperature, humidity, and shelf organization, the programme minimizes the risk of medicine spoilage, which is particularly important in facilities without climate-controlled storage.

Theme 5: Field-Based Quality Testing Using Portable Analytical Devices

Med4All employs innovative technology to verify the active ingredients of medicines directly in the field, ensuring that the products delivered match those tendered. This use of the TruScan device represents a cutting-edge approach to quality assurance in a low-resource setting.

The Medicine Quality Officer & Supply Officer at Med4All stated that:

"Periodically, we have a device called the TruScan that is used to assess the active ingredients of the various products on the platform."

This portable spectrometer enables non-destructive testing of medicines without requiring a full laboratory setup. It allows Med4All to conduct random quality checks at facility level, providing a powerful deterrent against substandard or counterfeit products.

The same respondent further explained that:

"Once in a while, we go on field and test the quality of our medicines to ensure that what the suppliers tended initially during the bidding stage is the same as what they are delivering to our providers."

This proactive verification process ensures consistency between the tendered product and the delivered product. By conducting field tests, Med4All closes a critical gap in quality assurance, where suppliers might substitute lower-quality versions after winning a bid. This technological innovation enhances trust in the programme and strengthens medicine safety across the network.

4.5 Challenges and Limitations Associated with Medicines Pooled Procurement Programmes in Ghana

This section presents a thematic analysis of the challenges and limitations encountered in the implementation of Medicines Pooled Procurement Programmes (PPPs) within Ghana's faith-based health systems, specifically the Catholic Health Service Trust (CHST), Ghana Adventist Health Services (GAHS), and Med4All. Drawing on data from key informants including procurement managers, facility heads, and programme coordinators, six core challenges have been identified: persistent facility payment delays, supplier non-performance due to economic volatility, logistical constraints in delivery, fragmented supplier contracts, limited product

coverage on procurement platforms, and technical issues with digital systems. These challenges cut across all three PPP models, though their manifestation and severity vary. The analysis reveals that while PPPs have significantly improved medicine access and quality, their sustainability and efficiency are constrained by systemic financial, operational, and structural barriers. The following discussion explores each theme in depth, using direct respondent accounts to illustrate the real-world complexities of operating a pooled procurement system in a resource-constrained environment.

Theme 1: Persistent Facility Payment Delays and Accumulation of Receivables

A critical challenge undermining the financial sustainability of PPPs is the chronic delay in payments from healthcare facilities to central procurement bodies. This issue is particularly pronounced in systems where facilities rely on National Health Insurance Scheme (NHIS) reimbursements, which are often delayed, thereby disrupting the entire payment chain. When facilities cannot pay on time, the central procurement entity is unable to settle supplier accounts, leading to strained relationships, supply disruptions, and cash flow crises.

One respondent from the Ghana Adventist Health Services (GAHS) noted:

"We have problems with payments. Facilities, we pay in drugs that they have already taken. So, what we do is, that is a major challenge. We have a lot of receivables."

This statement highlights the financial strain caused by outstanding debts. The central medical store operates on a credit system, supplying medicines upfront, but delayed reimbursements from facilities create a liquidity gap. This not only affects the store's ability to procure new stock but also weakens its credibility with suppliers, some of whom have reportedly refused further supply due to unpaid debts.

Another respondent from the Catholic Health Service Trust (CHST) emphasized:

"Are you able to meet the credit timelines? Not always. Because you know our health system is mostly financed by the National Health Insurance Scheme. So when there is a delay in payment from the health insurance, it also delays payment to our suppliers."

This confirms that the root cause is systemic, tied to the broader inefficiencies in public health financing. The cascading effect of NHIS delays creates a domino effect: patients receive care, facilities dispense medicines, but no revenue flows in to sustain procurement. This exposes a fundamental vulnerability in PPPs they are operationally sound but financially fragile when dependent on external reimbursement mechanisms. Without a reliable and timely payment system, even the most efficient procurement model risks collapse.

Theme 2: Supplier Non-Performance Due to Inflation and Currency Fluctuations

Another major challenge is the inability of suppliers to honor tendered prices over the contract period due to macroeconomic instability, particularly inflation and exchange rate volatility. Once a supplier wins a bid, they are contractually bound to supply at the quoted price, which may become unsustainable if the cost of importing raw materials or finished products rises sharply.

A respondent from the Catholic Health Service Trust (CHST) explained:

"The challenges have been situations where inflation issues come in and supplies rise to the PPP secretaries asking for a review of prices... it changes our budget of gear. That has always been a problem."

This indicates that suppliers are forced to request price adjustments mid-contract, which disrupts the financial planning of facilities. The initial tender price is used for forecasting and budgeting, and any deviation undermines fiscal predictability. It also places the secretariat in a difficult position, having to mediate between facilities expecting fixed prices and suppliers facing real cost increases.

The same respondent added:

"When the dollar has gone up... suppliers try to keep the PPP... cannot maintain that old price throughout the year."

This highlights the exposure of the procurement system to foreign exchange fluctuations. Since many medicines are imported, their landed cost is directly tied to the cedi-dollar exchange rate. When the cedi depreciates, suppliers face significant losses if they are compelled to deliver at pre-devaluation prices. This economic pressure leads to supplier fatigue, delayed deliveries, or even refusal to supply, ultimately compromising medicine availability. The challenge underscores the need for flexible pricing mechanisms or risk-sharing arrangements that account for macroeconomic realities while protecting the integrity of the procurement process.

Theme 3: Logistical Constraints and Uneven Supplier Distribution Networks

A significant operational challenge faced by Medicines Pooled Procurement Programmes (PPPs) in Ghana is the logistical difficulty suppliers encounter in delivering medicines to remote and rural facilities. This challenge is particularly acute for suppliers based in Accra, who are required to deliver across the country but often lack the distribution infrastructure to do so efficiently. The economic rationale for delivery breaks down when the cost of transportation exceeds the value of the order, leading to delays, partial deliveries, or outright refusal to supply. This undermines the core promise of PPPs reliable and equitable access to medicines particularly for facilities located far from major urban centers.

The Administrator at Ghana Mission Hospital, Dzodze (Med4All) highlighted this issue:

"The only challenge is the delay in supply from some of the suppliers. Okay. Some of the suppliers, the commodity that is supposed to bring to us is less than even transportation from Accra to Dzodze. It doesn't make sense if you order a medicine that costs less than 2,000 and you buy for a journey of 167 kilometers to Dzodze and then back."

This statement reveals a critical misalignment between procurement design and logistical reality. The supplier is expected to absorb transportation costs that may exceed the profit margin on the order, making delivery economically unviable. This creates a systemic bottleneck where rural facilities, despite being part of a national procurement programme, remain underserved due to poor last-mile logistics.

Similarly, the Accountant at Raven Walker Mission Hospital (Med4All) noted:

"Actually, sometimes, we here in Kumasi, I think most of the supply companies have their mother companies in Accra. So, sometimes, you see that they say you've not received the order or something. That is when sometimes it brings some back and forth."

This indicates a lack of regional distribution hubs, forcing suppliers to make long-distance trips for small orders. The "back and forth" communication suggests confusion, delays, and inefficiency in the supply chain. The absence of decentralized logistics networks means that even facilities in regional cities like Kumasi face supply disruptions. This logistical fragmentation not only affects medicine availability but also increases the administrative burden on facilities, which must constantly follow up on orders. The challenge calls for a rethinking of delivery models, such as regional consolidation of orders or incentivizing suppliers to establish regional branches.

Theme 4: Fragmented Supplier Contracts and Inefficient Supplier Engagement

Another major challenge in the PPP model is the fragmentation of supplier contracts, where individual suppliers are awarded contracts for only one or a few items. This results in a proliferation of supplier relationships for each facility, increasing the complexity, cost, and time required to manage procurement. Instead of dealing with a few comprehensive suppliers, facilities must coordinate with numerous vendors, each responsible for a single product, which undermines the efficiency gains that pooling is intended to achieve.

The Head of Pharmacy at Holy Family Catholic Hospital, Nkawkaw (CHST) explained:

"So dealing with them becomes quite cost ineffective. When one company can just supply about 10 or 15, 20 items. Another one just supplying just one. And they have to spend so much time and resources just waiting for that order."

This quote underscores the operational inefficiency created by fragmented contracting. The administrative burden of placing, tracking, and receiving multiple small orders from different suppliers negates the time and cost savings expected from a pooled system. It also increases the risk of stockouts, as the failure of a single supplier to deliver one item can disrupt the entire supply chain for that product.

The Deputy Chief Procurement Manager at St. Dominic Catholic Hospital (CHST) added:

"GB Pharma will not supply all their products and yet at the next half, they will be the same people who will be awarded the product. It creates a lot of inconveniences and shortages."

This highlights a critical flaw in the supplier evaluation and re-awarding process. Despite a documented history of non-performance, the same supplier is re-contracted, perpetuating supply disruptions. This suggests that performance metrics are not being rigorously applied in tender decisions, possibly due to limited competition or procedural inertia. The persistence of underperforming suppliers weakens the credibility of the procurement system and forces facilities to rely on alternative, often more expensive, sources to fill gaps. To enhance efficiency, PPPs must adopt more strategic contracting approaches, such as bundling items to reduce the number of suppliers and instituting performance-based re-awards.

Theme 5: Limited Product Coverage on Procurement Platforms

A significant limitation affecting the operational efficiency and intended benefits of Medicines Pooled Procurement Programmes (PPPs) is the incomplete coverage of essential medicines and

medical consumables on their procurement lists. Despite the pooling mechanism being designed to centralize and streamline supply, none of the three major programmes CHST, GAHS, or Med4All currently provide access to the full range of products required by participating facilities. This gap forces healthcare institutions to resort to supplementary procurement from the open market, undermining the very purpose of the PPP, which is to eliminate fragmented, costly, and inconsistent purchasing practices.

The Head of Facility at EP Church Clinic, Dzemeni (Med4All), articulated this challenge:

"The challenge so far for us is that most of the drugs, fine, they are coming in alright, based on the drugs. And then because of that, it makes us go to the open market, which we are trying to avoid in the first place."

This statement reveals a fundamental contradiction in the program's impact: while the platform successfully supplies a core list of medicines, it does not eliminate the need for external procurement. The necessity to return to the open market reintroduces the risks of price volatility, inconsistent quality, and administrative burden that the PPP was designed to mitigate. For a small facility with limited staff and financial resources, managing dual procurement systems—formal and informal—creates operational inefficiencies and increases the likelihood of stockouts for non-covered items.

Similarly, the Manager of the Central Medical Stores at GAHS noted:

"We are not even doing up to 20%... So, what are the steps to increase the coverage? So, it's a two-way affair. Both with the supply, the supply and the payments, that is the major problem."

This indicates that the coverage gap is even more severe in the GAHS model, with only a fraction of facility needs met through the centralized system. The respondent identifies a dual causality: supplier limitations and financial constraints. Some products may not be available

from suppliers willing to participate in the programme, while payment delays from facilities reduce the central store's ability to expand its procurement portfolio. This creates a cycle where limited demand due to poor payment compliance discourages supplier engagement, which in turn limits product availability. The exclusion of consumables, which are critical for clinical procedures, further compounds the issue. Until PPPs expand their catalogues to include a comprehensive range of essential medicines and non-medicine items, their ability to function as a true one-stop procurement solution will remain compromised.

Theme 6: Technical and Systemic Issues with Digital Platforms

For digital-based PPPs like Med4All, the reliance on an electronic platform introduces a new category of risk: technical instability and systemic disruptions in the procurement workflow. While digitalization offers advantages in transparency, speed, and accessibility, it also creates vulnerabilities when the technology fails. Technical glitches in the platform can halt the entire ordering process, forcing facilities and the secretariat to revert to manual workarounds, which defeats the purpose of automation and reduces confidence in the system's reliability.

The Medicine Quality Officer & Supply Officer at Med4All Secretariat acknowledged this vulnerability:

"So the challenges for me, the main challenge is the digital platform that we are using to run the program. Once in a while, we have some technical issues that we would then have to follow manual results to ensure that others are being pushed to the suppliers."

This admission is critical: the primary tool meant to enhance efficiency becomes a source of inefficiency when it malfunctions. The need to "follow manual results" indicates a lack of a robust backup system, leading to delays, miscommunication, and increased workload during outages. For facilities in remote areas with limited internet connectivity, even minor platform issues can result in prolonged procurement delays. The fact that the secretariat identifies this

as the “main challenge” underscores its significance in undermining the program’s operational integrity.

The Accountant at Raven Walker Mission Hospital (Med4All) added:

“The only problem, maybe with time, we'll be able to have up to 90–95% of the medications we need.”

While this statement appears optimistic, it implicitly confirms that the current system is incomplete and evolving. The use of “maybe” and “with time” reflects uncertainty about the platform’s future development. It suggests that stakeholders are aware of the limitations and are waiting for improvements rather than operating under a fully functional system. This lack of full confidence in the digital infrastructure can deter full commitment from facilities, especially those that cannot afford procurement interruptions. To ensure sustainability, Med4All must invest in a more stable, user-friendly, and resilient digital platform, coupled with effective technical support and contingency planning. Without this, the promise of digital procurement will remain partially unfulfilled.

4.6 Ensuring the Sustainability and Scalability of Medicines Pooled Procurement Programmes in Ghana

This section presents an analysis of the key strategies and mechanisms that can ensure the long-term sustainability and scalability of Medicines Pooled Procurement Programmes (PPPs) in Ghana, drawing on evidence from the Catholic Health Service Trust (CHST), Ghana Adventist Health Services (GAHS), and Med4All. While the previous section identified challenges to sustainability, this discussion shifts focus to actionable pathways for strengthening and expanding these systems. The findings reveal that sustainability is not an automatic outcome but a deliberate achievement, underpinned by self-financing models, institutional accountability, technological modernization, and strategic expansion. Scalability, meanwhile,

depends on digital infrastructure, stakeholder-driven product inclusion, and national-level coordination. This analysis identifies five robust themes that represent practical and empirically supported approaches to securing the future of PPPs in Ghana's healthcare system, ensuring they remain resilient, efficient, and capable of serving a growing network of facilities.

Theme 1: Institutionalizing Self-Financing Mechanisms to Ensure Financial Autonomy

A critical strategy for ensuring the sustainability of PPPs is the establishment of self-financing models that reduce dependence on external funding and guarantee operational continuity. The Catholic Health Service Trust (CHST) exemplifies this through its administrative levy system, which generates internal revenue to support the program's secretariat. This financial model ensures that the programme remains functional regardless of the fluctuating financial health of individual facilities.

The Manager of the Food and Medicine Procurement Program at CHST explained:

"The program is financed by an administrative levy charged to the suppliers... the program withholds five percent of every supply that the institutions pay to the suppliers. Five percent of it is withheld by the institutions and is remitted to the program secretariat for its run."

This mechanism creates a closed-loop financial system where the programme funds itself through the procurement process. By embedding operational costs into the supply chain, CHST ensures that the secretariat is not reliant on donor support or unpredictable institutional contributions. This model promotes long-term sustainability by decoupling programme funding from the financial volatility of member facilities.

Similarly, Med4All has developed a new business model designed to overcome past financing limitations:

"Okay, for us, as I said, before that, we're having the financing issue, but that issue, we've moved past it. We've been able to identify a financial model together with our partner, CHAC, which we're hopefully rolling out very soon." Medicine Quality Officer & Supply Officer, Med4All Secretariat

This indicates a strategic shift from dependency to self-reliance. By partnering with CHAC and developing a sustainable financial architecture, Med4All is positioning itself for long-term viability. These institutionalized financing mechanisms are essential for ensuring that PPPs can withstand economic shocks and continue to deliver value without external intervention.

Theme 2: Strengthening Institutional Accountability and Payment Compliance

To ensure sustainability, PPPs must enforce strict accountability for financial obligations. Chronic delays in payments from facilities to central procurement bodies are a major threat to supplier relationships and programme continuity. Addressing this requires not just policy, but active enforcement through performance-based incentives and sanctions.

The Manager of the Central Medical Stores at GAHS highlighted a new policy framework:

"This year we've done a lot of, we've done a policy that will be able to mitigate this thing. We've come up with payment thresholds, payment structures for them that we are looking for that it will work out. We have reward schemes. Then we have sanctions as well for people."

This represents a maturation of governance, moving from passive expectation to active enforcement. By linking facility management performance to payment compliance, GAHS is creating a culture of financial responsibility. The introduction of rewards and sanctions ensures that adherence to payment timelines is not optional but a core operational requirement.

The Manager of the Food and Medicine Procurement Program at CHST reinforced this need:

"One of the complaints that I've heard from some of the suppliers is they have very long and delayed payments by some of the institutions, which endangers the program for all of us."

This underscores the collective risk posed by non-compliance. A single facility's failure to pay can jeopardize the entire network's access to medicines. Therefore, institutionalizing accountability is not just a financial imperative but a systemic necessity for sustainability.

Theme 3: Leveraging Digital Infrastructure for Scalable Operations

Scalability is best achieved through the adoption and optimization of digital platforms that streamline procurement, reduce administrative burden, and enable real-time monitoring. Med4All's fully digital model demonstrates how technology can support the expansion of PPPs to a wider network of facilities.

The Head of Facility at EP Church Clinic, Dzemeni, described the process:

"She will go to the portal and then make her requisitions. Then we forward it to the accountant who finalize the payment plans before we send it over."

This seamless workflow allows for rapid onboarding of new facilities and efficient management of a growing network. The electronic platform eliminates the need for physical documentation and enables centralized oversight of procurement across diverse locations. As demand increases, the system can scale horizontally without requiring major structural changes.

The Head of Pharmacy at Holy Family Catholic Hospital, Nkawkaw, emphasized the need for automation:

"So I think to make the program better, I was looking at automating the process. If there was a platform where you can just put in your orders and then it's sent to another site. And then when they also supply, it's also seen in the system."

This indicates a clear demand for digital transformation even in non-digital systems. Automating order placement, tracking, and supplier performance monitoring would reduce errors, improve efficiency, and allow the programme to serve more facilities with the same or fewer resources. The success of Med4All suggests that digital infrastructure is not just an efficiency tool but a strategic imperative for scalability.

Theme 4: Expanding Product Coverage to Enhance Programme Utility and Adoption

A key strategy for scalability is the continuous expansion of the procurement catalogue to include a broader range of essential items, particularly non-drug consumables. Facilities consistently identify the limited product coverage as a major constraint, forcing them to rely on the open market for critical supplies.

The Head of Facility at EP Church Clinic, Dzemeni, requested:

"I was also saying that we also think that we can also have to bring consumables onto the platform as well."

This reflects a widespread need across facilities. Consumables such as gloves, syringes, and laboratory reagents are essential for clinical operations, yet they are often excluded from PPPs. By incorporating these items, programmes can become true one-stop procurement solutions, increasing their value proposition and encouraging broader participation.

The Administrator at Ghana Mission Hospital, Dzodze, echoed this:

"The issue of consumables. We're very grateful if it can be incorporated into the program, that they will supply us with the consumables. It's killing us these days."

This strong language underscores the operational burden caused by the current gap. Expanding the product range not only improves convenience but also ensures that all procured items

benefit from the same quality assurance, competitive pricing, and delivery reliability as medicines. This holistic approach enhances the program's relevance and scalability

Theme 5: Institutionalizing Long-Term Commitment and Strategic Leadership Engagement

The most powerful enabler of sustainability is the deep institutionalization of the PPP within the governance and mission of the parent organization. Both CHST and GAHS benefit from long-standing programmes that are embedded in their operational frameworks and supported by high-level leadership.

The Manager of the Central Medical Stores at GAHS stated:

"This time around, the board is very serious with this, and we are doing a lot, a lot. And I think that with the policies that have been put in place and the strategies, we'll be able to sustain it. And I know it's going to exist for a very long time. It's very sustainable."

This confidence stems from active board engagement and strategic planning. When leadership views the PPP as a core component of healthcare delivery, rather than a logistical add-on, it receives the attention and resources needed for long-term success. Similarly, the CHST programme operates under the authority of the Catholic Bishops' Conference, giving it a level of legitimacy and permanence that external programmes lack. This ecclesiastical mandate ensures continuity across leadership changes and protects the programme from being dismantled due to shifting priorities. Such institutional commitment is the foundation upon which all other sustainability measures are built.

4.7 Comparative Analysis of the Strength and Weakness of the 3 PPPs in Ghana

4.7.1 Comparative Analysis of the Strengths of the Three Main PPPs

4.7.1.1 Strengths of the Catholic Health Service Trust (CHST) PPP

The CHST PPP is distinguished by its scale, institutional mandate, and robust quality assurance mechanisms. It is the largest of the three programmes, with all 54 Catholic hospitals and 198 clinics a total of 252 facilities fully integrated into the system. This extensive network gives CHST significant bargaining power, enabling it to negotiate highly competitive prices. As one respondent noted, the aggregation of demand from such a large pool of high-volume consumers allows the programme to achieve prices that are very affordable compared to the open market.

A major strength is the institutional policy mandate that ensures full participation. The programme was established as a directive from the Catholic Bishops' Conference, making it obligatory for all affiliated facilities. This top-down enforcement ensures high compliance and eliminates the risk of fragmentation. As a result, the programme is able to meet around 70% to 75% of the medicine needs of its network, providing a high degree of supply security.

Another critical advantage is its advanced quality assurance system. The CHST operates an in-house mini-lab that conducts analytical tests on medicines to verify quality. This is complemented by collaboration with the Food and Drugs Authority (FDA), which participates in tender evaluations to verify product registration. The programme also conducts quarterly monitoring and post-market surveillance, with the authority to quarantine and recall suspect products. This multi-layered approach ensures that only high-quality, safe medicines are distributed, building strong trust among participating facilities.

4.7.1.2 Strengths of the Ghana Adventist Health Services (GAHS) PPP

The GAHS PPP, also known as the SDA Central Medical Stores system, is characterized by centralized control, a dedicated warehousing model, and strong institutional ownership. Like CHST, the programme is church-owned and mandated, ensuring that all 32 affiliated hospitals and clinics participate. This institutional backing provides stability and long-term continuity.

The program's centralized warehousing model is a key operational strength. All medicines are procured and stored at the Central Medical Stores, from where they are redistributed to facilities upon requisition. This system allows for tight inventory control, reduced procurement duplication, and consistent quality oversight. The central store also has a dedicated quality assurance department that monitors storage conditions and conducts regular site visits to ensure compliance across the network.

Financially, the programme has a coordinated payment system where facilities pay the central store, which in turn pays suppliers. This structure insulates suppliers from the financial volatility of individual facilities, although it places the burden of receivables on the central store. Despite this challenge, the program's ability to supply new or struggling facilities on credit demonstrates its commitment to institutional support and equity. This capacity to act as a financial buffer enhances the resilience of the entire network.

4.7.1.3 Strengths of the Med4All PPP

Med4All stands out for its digital innovation, transparency, and supplier trust, offering a modern, agile alternative to the more traditional models of CHST and GAHS. Its key strength lies in its fully digital platform, which allows facilities to view supplier quotations, compare prices, and place orders electronically. This real-time access to information enhances transparency and empowers facilities to make informed procurement decisions.

The programme has demonstrated a significant price advantage, with a reported 50% reduction in medicine prices compared to the open market. This affordability is a major draw for facilities seeking to reduce costs. Med4All also conducts annual price comparisons to validate its cost-saving claims, ensuring accountability and trust.

A defining feature is its advanced quality assurance system, which includes the use of TruScan, a portable device for real-time verification of medicine active ingredients. This field-based

testing, combined with post-market surveillance on facility shelves, ensures that the quality of delivered medicines matches those tendered. The programme also guarantees timely payments to suppliers, often settling before the agreed credit period, which has earned it high supplier confidence and reliability.

Finally, Med4All provides capacity-building support in stock and logistics management, helping facilities avoid expiries and stockouts. Its open platform model allows it to aggregate demand from non-Catholic and non-SDA facilities, positioning it as a potential national solution for pooled procurement.

Table 4.1: Summary of Key Strengths of the Three PPPs

STRENGTH DIMENSION	**CATHOLIC HEALTH SERVICE TRUST (CHST)**	**GHANA ADVENTIST HEALTH SERVICES (GAHS)**	**MED4ALL**
Governance & Mandate	Church-mandated; full compliance across 252 facilities	Church-owned; centralized control via Central Medical Stores	Voluntary participation; high uptake due to perceived benefits
Economies of Scale	Largest network; high bargaining power; meets 70–75% of facility needs	Strong aggregation; significant volume for negotiation	Aggregates non-Catholic/SDA facilities; growing scale
Quality Assurance	In-house mini-lab; FDA collaboration; post-market surveillance and recall	Relies on FDA registration; internal QA department; quarterly monitoring	TruScan field testing; real-time post-market surveillance; supplier product verification
Digitalization & Efficiency	Manual requisition; no central digital platform	Manual system; centralized redistribution	Fully digital platform; transparent supplier access; automated ordering

Financial Management	Self-financed via facilities IGF; payment delays from facilities	Centralized payment system; receivables a major challenge	Coordinated payments; early supplier settlement; high supplier trust
Support Services	Structured internal committees; governance oversight	Training for staff; support for new/startup facilities	Stock management training; logistics support; capacity building

4.7.2 Comparative Analysis of the Weaknesses of the Three Main PPPs

4.7.2.1 Weaknesses of the Catholic Health Service Trust (CHST) PPP

The CHST PPP, despite its large network and robust quality assurance systems, faces significant challenges related to financial coordination and operational inefficiency. A major structural weakness is the decentralized payment system, where individual facilities are responsible for paying suppliers directly. This arrangement leads to inconsistent payment timelines, as many facilities struggle with delayed reimbursements from the National Health Insurance Scheme (NHIS). The resulting late payments damage supplier relationships and undermine the program's credibility, as suppliers become reluctant to fulfill orders from facilities with a history of default.

This financial misalignment also weakens the program's bargaining power. Suppliers, anticipating payment delays, may factor in higher risk premiums, which can erode the cost advantages that pooling is intended to achieve. Furthermore, the lack of a centralized payment mechanism means the secretariat has limited control over the financial health of the supply chain, making it difficult to enforce supplier performance or ensure continuity of supply.

Operationally, the programme is hindered by its reliance on manual processes. There is no integrated digital platform for requisition, ordering, or monitoring. Facilities use informal channels such as WhatsApp or email to communicate with suppliers, which complicates tracking and accountability. The absence of a logistics management information system (LMIS) prevents real-time monitoring of procurement activities across the network of 252 facilities. This lack of visibility limits the secretariat's ability to conduct timely performance evaluations, forecast stockouts, or respond to supply chain disruptions.

Another critical weakness is the inadequate enforcement of supplier accountability. Despite documented cases of poor performance, underperforming suppliers are often re-awarded contracts during subsequent tender cycles. This suggests that past performance is not a decisive factor in the evaluation process, which reduces supplier incentives to meet delivery timelines and quality standards. The combination of financial fragmentation, manual operations, and weak supplier sanctions constrains the program's ability to fully realize its potential for efficiency and cost savings.

4.7.2.2 Weaknesses of the Ghana Adventist Health Services (GAHS) PPP

The GAHS PPP, while benefiting from strong institutional ownership and a centralized warehousing model, is critically undermined by chronic financial instability and low product coverage. The program's sustainability is threatened by its inability to collect timely payments from facilities. The central medical store supplies medicines on credit, but many facilities fail to settle their accounts, leading to a large volume of receivables. This financial strain prevents the programme from meeting its own payment obligations to suppliers, resulting in supply disruptions and threats of legal action. The erosion of supplier trust directly compromises the program's ability to function effectively.

Compounding this issue is the extremely low coverage of medicine needs. The programme currently meets only about 15–20% of the total requirements of its network. As a result, the vast majority of medicines approximately 80–85%—are procured from the open market. This fragmented procurement defeats the core purpose of pooling, which is to aggregate demand to achieve economies of scale. The loss of volume reduces the program's negotiating power and prevents it from securing the lowest possible prices.

The warehousing model itself introduces inefficiencies and additional costs. The programme incurs expenses for storage, staffing, inventory management, and distribution. There is also a constant risk of medicine expiry and spoilage, particularly for temperature-sensitive products. The manual requisition process, combined with bureaucratic delays, results in long lead times, with facilities often waiting two to four weeks to receive their orders. In cases where a medicine is not available, the process of obtaining a certificate of non-availability to procure from the open market can take several more weeks, leading to prolonged stockout periods that negatively impact patient care.

Additionally, the practice of adding a markup to medicines before resale increases prices beyond those in the open market. This pricing strategy reduces the program's cost advantage and discourages full participation from facilities, further limiting its effectiveness.

4.7.2.3 Weaknesses of the Med4All PPP

Med4All's primary weaknesses stem from its voluntary participation model and limited institutional leverage, which constrain its ability to achieve full aggregation of demand and maximize economies of scale. Unlike CHST and GAHS, Med4All does not operate under a church-mandated policy, meaning facilities are free to choose which medicines to procure through the platform. This leads to selective procurement, where facilities only use the platform for items with the most competitive prices, sourcing the rest from the open market. This

fragmentation prevents the programme from fully leveraging its collective purchasing power, weakening its bargaining position with suppliers.

The size and distribution of participating facilities also limit the program's impact. Most are small, private, or faith-based clinics with relatively low procurement volumes. Their scattered geographical locations increase logistical complexity and reduce the overall attractiveness of the market to suppliers. Without a critical mass of high-volume buyers, the programme cannot generate the same level of supplier competition or cost savings as larger, more centralized systems.

Another challenge is the perceived shortness of the credit period. While Med4All offers a 60-day credit term, some facilities find this insufficient given the delays in NHIS reimbursements. This financial constraint limits the volume of procurement from the platform, as facilities may lack the working capital to make large orders. Although the programme guarantees timely payment to suppliers, the financial capacity of the facilities themselves remains a bottleneck.

Finally, despite its digital platform, the system is not immune to technical issues. Occasional glitches disrupt the ordering process, forcing staff to revert to manual workarounds. While these disruptions are temporary, they can delay procurement and reduce user confidence in the system's reliability. The program's success therefore depends heavily on maintaining high levels of trust and perceived value, rather than being guaranteed by policy or mandate.

Table 4.2: Summary of Key Weakness of the Three PPPs

WEAKNESS DIMENSION	CATHOLIC HEALTH SERVICE TRUST (CHST)	GHANA ADVENTIST HEALTH SERVICES (GAHS)	MED4ALL

Financial Management	Decentralized payment system; facilities pay suppliers directly, leading to delayed payments and supplier distrust.	High receivables due to poor facility payment compliance; inability to pay suppliers on time.	Facilities report that 60-day credit period is insufficient, affecting procurement volume.
Operational Efficiency	Manual requisition process; no digital platform or logistics management information system (LMIS).	Manual requisition (Excel/printouts); bureaucratic delays; average delivery time of 2–4 weeks.	Occasional technical issues with the digital platform disrupt ordering and require manual workarounds.
Product Coverage	Meets approximately 70–75% of facility needs; gaps force reliance on open market procurement.	Meets only 15–20% of facility needs; 80–85% of medicines sourced externally, undermining pooling benefits.	Voluntary participation leads to selective procurement, reducing aggregated demand and cost advantages.
Supply Chain & Logistics	No consolidation of supplier deliveries; logistical burden falls on suppliers with no coordination.	High operational costs due to warehousing, staffing, distribution, and risk of medicine expiry/spoilage.	Suppliers based in Accra avoid small, distant orders due to high transport costs relative to order value.
Supplier Performance & Pricing	Inflation and currency fluctuations lead to supplier requests for price reviews, disrupting budgets.	The programme adds a markup to medicines, increasing prices beyond open market rates.	Limited bargaining power due to smaller, scattered facilities with lower procurement volumes.
Governance & Accountability	Poor enforcement of supplier performance; underperforming	No system to segregate PPP transaction volumes from non-PPP	No institutional mandate; facilities are not compelled to use

	suppliers are re-awarded contracts.	business, complicating financial tracking.	the platform, limiting full aggregation.

4.8 Chapter Summary

This chapter presented a comprehensive analysis of the effectiveness, challenges, and sustainability of Medicines Pooled Procurement Programmes (PPPs) in Ghana, focusing on the Catholic Health Service Trust (CHST), Ghana Adventist Health Services (GAHS), and Med4All. The findings revealed that all three programmes have significantly improved medicine availability and reduced stockouts through centralized procurement, with CHST achieving up to 95% fulfillment and Med4All reporting an 85% rate. Key enabling factors include institutional policy mandates, economies of scale, centralized quality assurance, and digital efficiency. CHST and GAHS benefit from church-backed directives ensuring compliance, while Med4All leverages a digital platform for transparency and supplier competition. Quality assurance is robust across all programmes, with CHST and Med4All employing field-based testing and post-market surveillance to ensure medicine safety.

Despite these strengths, critical challenges persist. Payment delays from facilities due to NHIS reimbursement gaps undermine supplier trust and programme sustainability, particularly in CHST and GAHS. Operational inefficiencies include fragmented supplier contracts, limited product coverage GAHS meets only 15–20% of needs and logistical constraints in delivering to remote facilities. Med4All's voluntary model limits full demand aggregation, reducing its bargaining power. The comparative analysis highlights that while CHST excels in scale and quality, GAHS in institutional support, and Med4All in digital innovation, all face financial and systemic risks. For long-term sustainability, coordinated payment systems, expanded product lists, and investment in digital infrastructure are essential across all models.

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.1 Introduction

In this chapter, the study has discussed the findings of the study. The findings are based on the data collected from the key stakeholders of the various PPPs programs. Here in this chapter, the findings have been discussed in other of the research objectives.

5.2 To assess the efficiency and effectiveness of the programmes in Ghana.

The study sought to determine the efficiency and effectiveness of the PPPs programs across the 3 institutions involve in this study. The Catholic Health Service Trust (CHST) PPP demonstrates high efficiency and effectiveness through a centralized, structured procurement system. The programme operates on a transparent annual cycle, beginning with the collection of consumption data from all 252 affiliated facilities, which is used to inform a unified tender process. This demand-driven approach minimizes stockouts and overstocking, ensuring optimal inventory management. A clear governance structure, comprising facility-level entity standard committees, a central secretariat, and a board reporting to the Catholic Bishops' Conference, ensures accountability and strategic oversight. The programme achieves a fulfillment rate of 90% to 95% for tendered items, reflecting strong supplier performance and reliable supply chain operations. Deliveries are typically received within one week, enhancing medicine availability. Supplier reliability is ensured through rigorous prequalification, including facility inspections and verification of regulatory compliance, while a tiered supplier ranking system (first, second, and third positions) provides a contingency mechanism to maintain supply continuity during disruptions. This systematic, multi-layered approach aligns with findings by Wirtz et al.

(2017) on the importance of governance and supplier management in pooled procurement for health systems in low- and middle-income countries.

The Ghana Adventist Health Services (GAHS) PPP demonstrates a high degree of effectiveness through its centralized, vertically integrated model, which has been sustained for nearly four decades. The program's foundation lies in its Central Medical Stores, established to overcome a critical shortage of pharmacists across its network, ensuring that even facilities without dedicated pharmacy staff can access quality medicines. This centralized redistribution system streamlines procurement, enhances accountability, and reduces operational redundancies. The programme operates on a structured annual procurement cycle, complemented by quarterly monitoring visits that serve both evaluative and supportive functions, reinforcing medicine quality and proper storage practices at the facility level. This hands-on oversight contributes to supply chain integrity and builds trust between the central secretariat and providers. The program's longevity, spanning close to 40 years, reflects deep institutional commitment and policy enforcement, with participation mandated across all affiliated facilities. This stability has fostered organizational resilience, allowing the system to adapt to changing needs. While the model ensures consistent internal coordination, its effectiveness is constrained by limited product coverage and financial challenges due to delayed facility payments, which affect supplier relationships. Compared to the federated model of CHST, GAHS offers greater central control but faces scalability limitations due to its reliance on a single warehousing hub and manual processes.

Med4All demonstrates a distinct model of efficiency and effectiveness through its fully digital, platform-based approach. Unlike the centralized or federated systems of CHST and GAHS, Med4All operates as a virtual marketplace where facilities place electronic orders, compare supplier quotations in real time, and select competitive bids, enhancing

transparency and decision-making. This digital-first model streamlines procurement, reduces administrative delays, and provides an auditable trail, significantly lowering the operational burden on small and medium-sized facilities. The programme has achieved an 85% fulfillment rate, a marked improvement from its initial 50–60%, reflecting growing supplier reliability and operational maturity. Deliveries are typically made within one week, with some suppliers fulfilling orders within 24 hours, ensuring rapid access to medicines and reducing stockout risks. A key strength is the centralization of the entire tender process, where Med4All manages supplier prequalification, evaluation, and contracting, allowing facilities to focus on patient care. This contrasts with CHST and GAHS, where facilities remain involved in payment and logistics. Med4All's model also promotes supplier competition, as facilities can choose from multiple vendors, fostering efficiency and value. However, its effectiveness is partially limited by voluntary participation and incomplete product coverage, which restrict full demand aggregation.

5.3 To identify and evaluate the enabling factors for setting up PPPs in Ghana.

The study sought to identify and evaluate the enabling factors that have facilitated the establishment and operation of Medicines Pooled Procurement Programmes (PPPs) in Ghana, with a focus on the Catholic Health Service Trust (CHST), Ghana Adventist Health Services (GAHS), and Med4All. The findings reveal that institutional policy mandate is the most significant enabler, particularly within the faith-based health sector. Both CHST and GAHS operate under formal directives from their respective church hierarchies the Catholic Bishops' Conference and the Adventist leadership which require all affiliated facilities to participate in the PPP. This top-down governance model ensures uniform compliance, eliminates voluntary opt-outs, and provides the legitimacy needed for centralized coordination. As noted in the data, one respondent from CHST described the programme as a "policy directive," underscoring its binding nature. This institutional anchoring ensures that procurement decisions are aligned

with organizational priorities, fostering long-term continuity. This aligns with global evidence that institutional ownership enhances the sustainability of pooled procurement in fragmented health systems.

The study found that other critical enablers include demand aggregation for economies of scale, centralized quality assurance, financial and operational support, and digital efficiency. Aggregating procurement volumes across hundreds of facilities has significantly improved bargaining power, leading to lower prices and better supplier engagement. CHST, with over 250 facilities, exemplifies how scale drives cost savings and supplier interest. Centralized quality assurance mechanisms, such as CHST's in-house mini-lab and Med4All's use of TruScan for field-based testing, build trust in medicine safety and reduce reliance on individual facility capacity. Regulatory collaboration, particularly the involvement of the Food and Drugs Authority (FDA) in tender evaluations at CHST, further strengthens programme credibility. Financial innovations, including credit facilities, supplier guarantees, and deferred payment arrangements particularly in Med4All and GAHS reduce entry barriers for financially constrained facilities. Med4All's model, for instance, acts as a surety between facilities and suppliers, enabling institutions with poor credit history to regain access to medicines. Additionally, digital platforms enhance administrative efficiency by centralizing procurement processes and reducing manual workloads. Med4All's fully digital system allows facilities to compare supplier quotations in real time, promoting transparency and competition. Together, these factors create a supportive ecosystem that enables PPPs to overcome common barriers to collective procurement, ensuring both feasibility and scalability in the Ghanaian context.

5.4 To investigate the impact of PPPs on the accessibility and availability of essential medicines.

The study sought to investigate the impact of Medicines Pooled Procurement Programmes (PPPs) on the accessibility and availability of essential medicines in Ghana. The findings reveal

that PPPs have significantly improved medicine availability by drastically reducing stockouts and enhancing supply chain reliability. Facilities participating in these programmes report a substantial improvement in the consistency of medicine supply, with some achieving up to 99% availability of essential drugs. This level of performance is attributed to centralized procurement planning, demand aggregation, and structured tendering processes that ensure timely delivery. The implementation of backup supplier systems where second or third-ranked suppliers step in when primary suppliers fail to deliver has further strengthened supply continuity. This contingency planning has minimized disruptions, allowing facilities to maintain uninterrupted patient care. The shift from a reactive, crisis-driven procurement model to a proactive, predictable system has enabled better inventory management and reduced the need for emergency purchases, which are often costlier and unreliable.

The study found that PPPs have also enhanced accessibility, particularly for rural and underserved facilities. A key factor in this improvement is the direct delivery of medicines to facility doorsteps, which eliminates the logistical burden on small clinics that lack transport or dedicated staff for collection. This model has been especially transformative in remote areas, where patients previously faced long journeys only to be turned away due to stockouts. By ensuring that even geographically isolated facilities receive regular and reliable deliveries, PPPs have reduced geographic inequities in medicine access. Furthermore, the programmes have expanded access beyond National Health Insurance Scheme (NHIS)-covered medicines by including non-insured drugs in their procurement lists. This allows facilities to provide comprehensive treatment without forcing patients to purchase essential medicines out-of-pocket. While challenges remain such as incomplete product coverage and delayed facility payments the overall impact of PPPs on medicine availability and accessibility is profoundly positive, demonstrating their potential to strengthen healthcare delivery across diverse settings in Ghana.

5.5 To assess the impact of PPPs on the quality and safety of medicines procured.

The study sought to assess the impact of Medicines Pooled Procurement Programmes (PPPs) on the quality and safety of medicines procured within Ghana's faith-based health facilities. The findings demonstrate that all three major programmes Catholic Health Service Trust (CHST), Ghana Adventist Health Services (GAHS), and Med4All have institutionalized quality assurance as a core component of their operations, though their approaches differ in scope and methodology. CHST has developed the most comprehensive, multi-stage system, integrating quality checks throughout the procurement cycle. This begins with rigorous supplier prequalification, including physical inspections of manufacturing and storage facilities to verify compliance with international standards such as GMP and CE. The programme further ensures regulatory adherence by verifying the registration status of every product with the Food and Drugs Authority (FDA) before tendering. This systematic, process-oriented approach treats quality as an ongoing requirement rather than a final checkpoint, significantly reducing the risk of substandard medicines entering the supply chain.

The study found that CHST reinforces this framework with active post-market surveillance, conducting quarterly field visits to randomly sample and test medicines at facility level. When a product is found to be questionable, the programme has the authority to initiate a system-wide quarantine and recall, demonstrating a high level of operational coordination and commitment to patient safety. In contrast, GAHS focuses on the integrity of the supply chain after procurement, with a dedicated quality assurance department that monitors proper storage and handling practices across its network. Regular site visits ensure that medicines are stored under appropriate conditions, minimizing risks of degradation and expiry. Med4All introduces a technological innovation with the use of TruScan, a portable device for real-time verification of active pharmaceutical ingredients during field inspections. This capability allows for immediate detection of counterfeit or substandard medicines, closing a critical gap in quality

control. Together, these strategies reflect a shared commitment to medicine safety, with each programme adapting its quality assurance mechanisms to its operational model and resource capacity.

5.6 To explore the challenges and limitations and risks associated with PPPs in Ghana.

The study sought to explore the challenges and limitations associated with Medicines Pooled Procurement Programmes (PPPs) in Ghana, focusing on the Catholic Health Service Trust (CHST), Ghana Adventist Health Services (GAHS), and Med4All. The findings reveal that a major systemic challenge is the persistent delay in payments from healthcare facilities to procurement bodies and suppliers. This issue is primarily driven by delays in reimbursements from the National Health Insurance Scheme (NHIS), which creates a cascading financial crisis. Facilities are unable to pay their suppliers on time, leading to strained relationships and supply disruptions. At GAHS, for instance, the central medical store accumulates significant receivables, which in turn prevents it from settling its own supplier obligations. Similarly, in the CHST model, decentralized payment systems place the burden directly on individual facilities, many of which default on agreed credit terms. This financial fragility undermines supplier confidence and threatens the long-term sustainability of the programmes, as suppliers become reluctant to participate or deliver on time.

Another critical challenge is the impact of macroeconomic instability on supplier performance. Fixed tender prices, once agreed upon, become unsustainable when inflation and currency fluctuations drive up the cost of imported medicines. Suppliers, particularly those reliant on foreign exchange, are unable to fulfill orders at the original bid price, leading to requests for price reviews or outright non-supply. This disrupts procurement planning and forces facilities to seek alternative sources, often at higher costs. Compounding this issue is the fragmented nature of supplier contracts, where some suppliers are awarded contracts for only one or two items. This results in inefficiencies, as facilities must manage numerous small orders from

multiple vendors, increasing administrative burden and logistical complexity. Furthermore, logistical constraints are pronounced, especially for suppliers based in Accra who are expected to deliver to remote facilities. The cost of transportation often outweighs the value of the order, leading to delivery delays or refusals, which disproportionately affect rural institutions.

A third set of challenges relates to programme design and operational limitations. Limited product coverage is a significant barrier, with GAHS meeting only about 15 to 20 percent of facility needs, forcing the remainder to be sourced from the open market. This undermines the principle of pooled procurement by eroding aggregated demand and weakening bargaining power. In the case of Med4All, while the digital platform enhances efficiency, it is not immune to technical issues that disrupt ordering and require manual interventions. These operational gaps highlight the need for robust infrastructure and contingency planning. Together, these challenges financial, economic, logistical, and structural reveal that while PPPs have improved medicine access, their effectiveness is constrained by systemic vulnerabilities that require coordinated policy and financial reforms to address.

5.7 To examine the sustainability and scalability of PPPs in the Ghanaian healthcare system.

The study sought to examine the sustainability and scalability of Medicines Pooled Procurement Programmes (PPPs) in Ghana, with a focus on the Catholic Health Service Trust (CHST), Ghana Adventist Health Services (GAHS), and Med4All. The findings indicate that sustainability is primarily achieved through institutionalized financial mechanisms and strong governance. CHST has established a self-financing model through a five percent administrative levy on supplier transactions, which funds the secretariat's operations and reduces dependence on donor support or unpredictable facility contributions. This closed-loop financing system ensures operational continuity even when individual facilities face cash flow challenges.

Similarly, Med4All has developed a new business model in partnership with CHAC to overcome past financial constraints, signaling a strategic shift toward financial autonomy. GAHS, while facing significant receivables, has introduced formal accountability measures such as payment thresholds, performance-based rewards, and sanctions for non-compliant facilities. These institutional reforms reflect a maturation of governance and a commitment to financial discipline, which are essential for long-term viability.

Scalability, on the other hand, is driven by digital innovation, product diversification, and leadership commitment. Med4All's fully digital platform enables seamless onboarding of new facilities, real-time monitoring, and efficient supplier coordination, making it highly adaptable to growth. The demand for automation in CHST and GAHS underscores the need for digital transformation to enhance efficiency and oversight. Expanding the procurement catalogue to include non-drug consumables is another critical pathway to scalability, as highlighted by multiple facilities that currently rely on the open market for essential supplies. Finally, the deep integration of PPPs into the institutional missions of CHST and GAHS, supported by high-level leadership and church mandates, ensures long-term continuity. This level of organizational commitment provides stability and legitimacy, allowing the programmes to withstand external shocks and evolve in response to changing healthcare needs.

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1 Introduction

The chapter sets out the conclusion of the study and make various recommendations based on the findings of the study. On top of that, the chapter has highlighted the limitation of the study and has also made suggestions to future researchers based on the limitations.

6.2 Conclusion

The study concluded that PPPs in Ghana exhibit varying levels of efficiency and effectiveness based on their operational models. CHST achieves high performance through a structured procurement cycle, centralized governance, and a 90–95% fulfillment rate. GAHS relies on a long-standing, centralized warehousing system that ensures medicine access despite staffing constraints, though limited product coverage and payment delays hinder full impact. Med4All leverages a digital platform to enable real-time supplier competition, centralized tendering, and rapid delivery, achieving 85% fulfillment. Each model shows distinct strengths CHST in scale, GAHS in stability, and Med4All in innovation yet all are challenged by payment delays and supply chain inconsistencies, indicating that sustained effectiveness depends on financial reliability and institutional support.

The study concluded that the success of PPPs in Ghana is driven by five key factors. Institutional policy mandates ensure mandatory participation and system-wide compliance, particularly in CHST and GAHS. Demand aggregation across facilities generates economies of scale, improving bargaining power and lowering prices. Centralized quality assurance through CHST's mini-lab, Med4All's TruScan, and FDA collaboration builds trust in medicine safety. Financial and operational support, such as

credit facilities and supplier guarantees, enables struggling facilities to participate. Lastly, digital platforms enhance transparency, reduce administrative burdens, and support scalability. Together, these factors create a robust foundation that enables PPPs to overcome procurement fragmentation and deliver sustainable, equitable medicine access across diverse health facilities.

The study concluded that PPPs have significantly enhanced the accessibility and availability of essential medicines in Ghana. They have drastically reduced stockouts through reliable supply chains, backup supplier systems, and centralized procurement. Direct delivery to facility doorsteps has improved access, particularly in rural areas, while the inclusion of non-insured medicines has enabled comprehensive patient care. Despite challenges like incomplete product coverage, the overall impact is transformative, demonstrating that PPPs can effectively address systemic gaps in medicine access and strengthen healthcare delivery across diverse settings.

The study concluded that PPPs have significantly strengthened the quality and safety of procured medicines in Ghana through institutionalized, multi-layered assurance systems. CHST demonstrated the most comprehensive approach, integrating supplier audits, regulatory verification, and post-market surveillance. GAHS emphasized proper storage and handling to maintain medicine integrity, while Med4All leveraged TruScan technology for real-time field testing, enhancing detection of substandard products. Despite differing models, all three programmes prioritized quality, moving beyond reliance on individual facility capacity to centralized, proactive oversight. These mechanisms collectively reduce the risk of counterfeit or degraded medicines reaching patients, demonstrating that pooled procurement can serve as a critical platform for ensuring medicine safety in resource-constrained settings.

The study concluded that despite their benefits, PPPs in Ghana face significant challenges that threaten their sustainability. Persistent payment delays, driven by NHIS reimbursement

bottlenecks, create financial strain across all models, undermining supplier trust and supply continuity. Macroeconomic volatility compromises supplier performance, as fixed tender prices become unsustainable amid inflation and currency fluctuations. Logistical inefficiencies, fragmented supplier contracts, and limited product coverage further weaken system effectiveness, particularly for rural facilities. Technical issues in digital platforms also disrupt procurement workflows. These interconnected financial, operational, and structural risks highlight the fragility of PPPs, indicating that without systemic reforms in health financing and supply chain management, their long-term success remains uncertain.

The study concluded that the sustainability of PPPs in Ghana hinges on self-financing mechanisms, institutional accountability, and strong governance, as demonstrated by CHST's levy system and GAHS's enforcement policies. Scalability is enabled by digital platforms, product list expansion, and organizational commitment. Med4All's digital model offers the most scalable framework, while CHST and GAHS rely on institutional mandates for continuity. Despite challenges, the integration of financial discipline, technological innovation, and strategic leadership ensures that PPPs can evolve and expand, positioning them as viable long-term solutions for strengthening medicine procurement in Ghana's healthcare system.

6.3 Recommendations

The study has made the following recommendations based on the findings;

The study recommends that healthcare organizations operating pooled procurement programmes (PPPs), such as the Catholic Health Service Trust (CHST), Ghana Adventist Health Services (GAHS), and Med4All, institutionalize a centralized payment management system to address the persistent challenge of delayed supplier payments. The current model, where individual facilities are responsible for direct payment to suppliers, has led to widespread non-compliance due to delays in National Health Insurance Scheme (NHIS) reimbursements,

undermining supplier trust and supply continuity. A centralized system where the PPP secretariat collects payments from facilities and disburses them to suppliers would insulate suppliers from facility-level financial instability. This model, already partially operational in GAHS and Med4All, should be strengthened with enforceable payment timelines, performance-based incentives for compliant facilities, and sanctions for chronic defaulters. By assuming financial intermediary responsibility, the central body can enhance supplier confidence, improve procurement reliability, and ensure long-term programme sustainability.

The study recommends that faith-based health organizations enhance their procurement scalability by investing in digital transformation and expanding product coverage beyond medicines. The reliance on manual requisition systems in CHST and GAHS creates inefficiencies, limits real-time monitoring, and increases administrative burden. Transitioning to an integrated digital platform similar to Med4All's model would streamline ordering, automate supplier performance tracking, and enable data-driven decision-making. Furthermore, facilities consistently report the need to source consumables, laboratory reagents, and non-insured medicines from the open market, which erodes the benefits of pooled procurement. Expanding the procurement catalogue to include these items would increase aggregated demand, strengthen bargaining power, and position the PPP as a comprehensive supply solution. This holistic approach would not only improve operational efficiency but also reduce stockouts and support better clinical outcomes.

The study recommends that the Ghana Health Service (GHS), in collaboration with the Ministry of Health and the National Health Insurance Authority (NHIA), establish a direct payment linkage between NHIA reimbursements and PPP secretariats to resolve systemic cash flow constraints. The current delay in NHIS fund disbursement to facilities is the root cause of payment defaults to suppliers, creating a cascading financial crisis across all PPPs. By creating a dedicated financial channel that routes NHIA reimbursements directly to the central

procurement body, the government can ensure timely supplier payments, stabilize the supply chain, and strengthen the entire health procurement ecosystem. This reform would reduce the financial burden on individual facilities, prevent medicine shortages, and promote equity in access. Such a policy intervention would align with national health financing goals and demonstrate government commitment to supporting efficient, sustainable procurement systems in both public and faith-based sectors.

The study recommends that the Christian Health Association of Ghana (CHAG) and other umbrella health bodies strengthen coordination among PPPs by facilitating a national pooled procurement framework that harmonizes policies, standards, and supplier contracts across CHST, GAHS, and Med4All. Currently, these programmes operate in parallel, leading to fragmented demand and duplicated efforts. CHAG is uniquely positioned to act as a unifying platform, leveraging its network to negotiate better prices, standardize quality assurance protocols, and expand market reach for suppliers. By promoting collaboration rather than competition, CHAG can enhance the collective bargaining power of faith-based providers and improve medicine access nationwide. This could include joint tendering for high-volume items, shared logistics for remote deliveries, and a unified digital procurement interface. Such coordination would maximize economies of scale and position Ghana's faith-based sector as a model for regional procurement innovation.

The study recommends that suppliers participating in PPPs be held to stricter performance contracts with enforceable consequences for non-compliance, including suspension from future tenders for repeated failure to deliver. While supplier prequalification is robust in programmes like CHST and Med4All, the re-awarding of contracts to underperforming suppliers undermines programme credibility and supply reliability. A standardized supplier performance monitoring system tracking delivery timeliness, fulfillment rates, and responsiveness should be implemented across all PPPs. Data from these evaluations must inform future tender

decisions, ensuring that reliability is a key criterion alongside price. Additionally, suppliers should be incentivized through early payment schemes or volume guarantees for consistent performance. Strengthening supplier accountability will enhance supply chain resilience, reduce stockouts, and ensure that the benefits of pooled procurement are fully realized by end-user facilities.

6.4 Limitations of the Study

This study is subject to several limitations. First, it is based solely on qualitative data, which limits the ability to generalize findings or conduct statistical analysis. Second, the study focused exclusively on three pooled procurement programmes notably, Catholic Health Service Trust (CHST), Ghana Adventist Health Services (GAHS), and Med4All excluding other public and private procurement systems in Ghana, which restricts the comprehensiveness of the findings. Third, data collection was limited to key informants within participating health facilities and programme secretariats, with minimal input from suppliers and regulatory bodies such as the Food and Drugs Authority, resulting in a one-sided perspective on procurement dynamics. Fourth, the study did not assess the impact of national health financing delays on procurement performance in depth, relying on respondent reports rather than financial records or NHIA data.

6.5 Suggestions for Further Studies

Future research should incorporate quantitative methods to complement qualitative findings, enabling statistical validation and broader generalization of results. Studies should expand the scope to include other procurement models, such as those operated by the Ghana Health Service and private health networks, to allow for a more comprehensive national assessment. Further research should engage suppliers, logistics providers, and regulatory agencies to provide a multi-stakeholder perspective on the procurement process and identify systemic bottlenecks. Additionally, future studies should investigate the financial linkages between NHIA

reimbursements and facility payment capacity, using financial audit data to analyze the impact of delayed funding on medicine supply chains.

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APPENDIX 1: INTERVIEW GUIDE

1. COORDINATOR

I. How is the structure of the NCHS
II. What informed the setting up of their PPP
III. How long has it been in the existence
IV. What is the benefit to the NCHS and the church in Ghana

2. PROGRAMME MANAGER

I. What is the volume of medicines consumption within the NCHS per annum?
II. What percentage of medicines is acquired through the PPP?
III. What happens to the proportion that the PPP is unable to provide
IV. Why do facilities patronize the NCHS PPP.
V. Have you done any research to compare prices of medicines on the PPP and that of the open market?
VI. Are there any challenges and risks associated with your PPP
VII. What is the impact id the programme on accessibility, affordability and availability of medicines
VIII. What are the quality assurance measures embedded in the programme to guarantee the medicines quality?
IX. What are the sustainability measures in place.
X. How is the programme financed?

3. HEALTHCARE FACILITIES

I. How long have been on the programme
II. What are the enabling factors
III. Do you procure all your medicines through the programme?
IV. What is the impact of the programme on your facility in terms of availability, accessibility and affordability?
V. How do you finance the orders?
VI. What are the challenges and the benefits of the programme

VII. What would you like to be incorporated in the programme?

4. SUPPLIERS

I. What is the befit of NCHS PPP to your company

II. What are challenges and risks of supplying through the NCHS PPP

III. What is the impact on your company

IV. What would you like to be incorporated into the NCHS PPP

APPENDIX II: CONSENT FORM

Project Title: Assessment of Medicine Pooled Procurement Programmes (PPPs) in Ghana: A Qualitative Research

Principal Investigator: George Yankyera Afful

General Information about Research

This Consent Form contains information about the research named above. To be sure that you are informed about being in this research, we are asking you to read (or have read to you) this Consent Form. You will also be asked to sign it (or make your mark in front of a witness). We will give you a copy of this form. This consent form may contain some words that are unfamiliar to you. Please ask us to explain anything you may not understand.

Medicines play a pivotal role in healthcare delivery, directly impacting patient outcomes and the overall quality of care. In countries like Ghana, access to essential medicines is fundamental to addressing prevalent health issues and achieving universal health coverage. These medicines must be available and accessible without catastrophic cost to patients and their families. This research is for and academic pursuit and will involve interviewing key stakeholders who are involved in designing, implementing and participating in medicine pooled procurement programmes in Ghana. You have been randomly selected to participate in the study because of the role you play in pooled procurement programmes in Ghana.

Possible Risks and Discomforts

The in-depth interview may take place at a time when you are busy with other official routine work. The interaction time would be approximately 45 minutes. The research team will book appointments at times that are convenient for the study participants. The questions are not personal and will medicine pooled procurement programmes.

Possible Benefits

You will have no direct benefit from participating in the study. You will not receive payment for participating. The information from the study will be used to inform and improve pooled procurement practices to increase access to quality and affordable medicines

Confidentiality

Only the researchers involved in this study will have access to detailed information from the study. The identity of the study participants will be anonymized. The study results will be shared with the programme managers and their health agencies, but your identity will not be revealed and no identifiers linking you to the study will be included in any report that might be published. Research records will be stored securely in locked filing cabinets or on secured computers. The investigator will take all measures to ensure that the study is run correctly, and that information is collected and secured properly.

Voluntary Participation and Right to Leave Research

Participating in this study is voluntary. The information obtained is NOT intended to place any blame on the programmes, their managers or the facilities participating.

Contacts for Additional Information

If you have any additional questions or complaints, please call George Yankyera Afful on 0244487988.

Your rights as a Participant

This research has been reviewed and approved by the Institutional Review Board of Christian Health Association of Ghana (CHAG-IRB). If you have any questions about your rights as a research participant, you can contact the IRB Administrator, Mrs. Sarah Sackey Martei-Olletey on 0202904777 or email to chagirb@chag.org.gh .

VOLUNTEER AGREEMENT

The above document describing the benefits, risks and procedures for the research title "Evaluation of medicine pooled procurement practices in Ghana: A qualitative study" has been read and/or explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree to participate as a volunteer.

_____ _____

Date Name and signature or mark of volunteer

If volunteers cannot read the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered, and the volunteer has agreed to take part in the research.

_____ _____

Date Name and signature of witness

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

_____ _____

Date Name Signature of Person Who Obtained Consent

APPENDIX III: ETHICAL CLEARANCE CERTIFICATE

CHRISTIAN HEALTH ASSOCIATION OF GHANA (CHAG)
RESEARCH DEPARTMENT - INSTITUTIONAL REVIEW BOARD (IRB)
21 JUBILEE WELL STREET, LABONE, ACCRA. TELEPHONE: 0202904777. EMAIL chagirb@chag.org.gh

16th January 2025

ETHICAL CLEARANCE

CHAG IRB PIN : CHAG-IRB03072024

On 16th January **2025,** the Christian Health Association of Ghana (CHAG) Institutional Review Board (IRB) reviewed and approved your protocol detailed as follows,

TITLE OF PROTOCOL: **Assessment of medicine pooled procurement practices in Ghana: Qualitative research.**

PRINCIPAL INVESTIGATOR: **Afful George Yankyera**

Please note that a final review report must be submitted to the Board at the completion of the study. Your research records may be audited at any time during or after the implementation.

Any modification of this research project must be submitted to the IRB for review and approval prior to implementation.

Please report all serious adverse events related to this study to CHAG-IRB within seven days verbally and fourteen days in writing.

This certificate is valid till **31st January 2026**. You are to submit annual reports for continuing review.

Signed by:.....
Mrs. Sarah Sackey Matei-Olletey
CHAG IRB Administrator
(for CHAG IRB Chairman)

THE ADMINISTRATOR
INSTITUTIONAL REVIEW BOARD
CHRISTIAN HEALTH ASSOCIATION OF GH.