

## Procurement Bottlenecks in Zambia's Ministry of Health: A Qualitative Analysis of Systemic Constraints

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### Abstract

The availability of essential medicines continues to be a major challenge in many low- and middle-income countries (LMIC), despite ongoing reform efforts. This study analysed procurement bottlenecks affecting availability of essential medicines in Zambia's Ministry of Health. The paper adopted a qualitative research design and drew on evidence from 30 Key Informant Interviews and 3 Focus Group Discussions held across Lusaka, Kafue, Chilanga and Rufunsa districts. Thematic analysis was used to analyse data in relation to systemic constraints within procurement processes. Findings revealed four primary bottleneck domains in Zambia's public health procurement system: delayed budget releases; proliferating approval layers and stages; errors in specifications/planning and limited supplier capacity with late deliveries. These constraints cumulatively interact resulting in extended procurement cycles and undermined supply reliability across health facilities. The Analysis, uses the Theory of Constraints, to ascribe procurement inefficiencies to financial synchronization failures and workflow congestion rather than regulatory inadequacy. It then recommends targeted reforms to improve procurement system performance through timely fiscal entry point, streamlined approvals, accurate planning and budgeting and stronger supplier coordination. Thus, efforts to improve the availability of medicines in Zambia's primary healthcare system need policy interventions that are focused on managing systemic constraints rather than on expanding processes.

**Keywords:** Public Procurement, Health Supply Chain, Procurement Bottlenecks, Theory of Constraints, Zambia.

### Introduction

Access to essential medicines is widely recognized as a fundamental component of the right to health and a critical determinant of health system performance. It constitutes a key input for the effective delivery of health services, particularly in low- and middle-income countries where public health systems provide the majority of care to the population (Quick, 2003; WHO, 2004; WHO, 2020). As such, the availability of essential medicines remains a cornerstone of efforts to reduce disease burden and improve population health outcomes.

Many health systems across Sub-Saharan Africa are still plagued by chronic medicine stockouts, despite decades of sustained policy engagement to address pharmaceutical access issues (Bigdeli et al., 2014; Wagenaar et al., 2014; World Health Organization [WHO], 2017). Structural deficiencies in procurement, financing, planning and supply chain

management have often undermined the dependability of medicine availability at public health facilities (Yadav, 2015; Quick et al., 2014; Wagner et al., 2014). These challenges are especially evident in countries where centralized procurement systems must navigate complex relationships among financing institutions, procurement agencies, regulatory bodies and private suppliers, often creating coordination and operational inefficiencies that affect timely medicine availability (Management Sciences for Health, 2012; Yadav, 2015; WHO, 2021).

Over the past twenty years, access to essential medicines has varied greatly in Zambia. According to reports from the Presidential Delivery Unit, as recently as 2021 only about 35 percent of essential medicines were available among many public health facilities. While official statistics indicate improved access in recent years, operational bottlenecks including procurement delays and supplier delivery failures persist, undermining the reliability of medicine supply throughout the health system (Yadav, 2015; World Health Organization [WHO], 2017; Management Sciences for Health [MSH], 2012).

Public health procurement in Zambia is largely organized through the Ministry of Health and the Zambia Medicines and Medical Supplies Agency, which procures and distributes medicines to public sector healthcare facilities across the country (Ministry of Health, 2022; ZAMMSA, 2023). Although the Public Procurement Act No. 8 of 2020 has reinforced procurement transparency and compliance requirements, operational bottlenecks continue to hinder effective implementation in several areas, including procurement planning, approvals sequencing, financial disbursement, and supplier coordination (Office of the Auditor General, 2022; World Bank, 2020; Yadav, 2015).

Many studies have examined challenges related to financing volatility, bureaucratic approval procedures, human resource capacity constraints and supplier performance limitations (Magadzire et al., 2017; OECD, 2019; WHO, 2020). However, there is limited empirical research specifically assessing procurement bottlenecks within Zambia's Ministry of Health. Most existing literature focuses on outcomes such as medicine affordability or stock out rates rather than examining the procurement processes that influence medicine availability and supply reliability.

Thus, this study fills an important research gap by exploring procurement bottlenecks in Zambia's Ministry of Health using a qualitative analytical approach. Following the Theory of Constraints, the study explores how interlinking system procurement constraints affect the availability of essential medicines within Zambia's public health systems.

### **Statement of the Problem**

Despite government efforts to strengthen health supply chains, the availability of essential medicines in Zambia remains inconsistent and often below international benchmarks, reflecting persistent procurement and distribution challenges. Parliamentary records presented to the National Assembly of Zambia indicate that national availability levels were as low as 40–60% in 2021–2022, well below the World Health Organization's recommended 70–80% for well-functioning health systems (WHO, 2007; 2020; Yen et al., 2023; National

Assembly of Zambia, 2023). Although initiatives such as health centre kits and bulk procurement improved availability at primary facilities to over 80% by mid-2023, national stock levels were reported at approximately 68.4% during the first distribution cycle of 2025 by the Zambia Medicines and Medical Supplies Agency (ZAMMSA, 2025). ZAMMSA's 2026 data show central warehouse levels near 70%, with wide variation across facility types, highlighting ongoing volatility in medicine supplies. These figures demonstrate enduring procurement system constraints that hinder consistent access to essential medicines across Zambia's public health system (ZAMMSA, 2025).

These logjam supply disruptions raise significant operational performance questions surrounding Zambia's pharmaceutical procurement system. Though legal changes (e.g., Public Procurement Act No. 8 of 2020) have improved procedural monitoring and compliance checks, these measures may not capture systemic blockages in procurement workflows and explain shortages of medicines.

Available studies concerning pharmaceutical systems in low- and middle-income countries show that inefficiencies related to procurement could be driven by several interacting factors such as delays in releasing the budget, long approval processes, poor procurement planning but also issues with compliance from suppliers. But empirical evidence directly assessing how these constraints function within Zambia's Ministry of Health procurement system is sparse.

This research thus aims to identify and examine the systemic procurement bottlenecks impacting the availability of essential medicines in Zambia's ministry of health. Grasping these limits is vital for enhancing procurement efficiency, bolstering supply chain dependability and ensuring sustainable access to necessary medicines throughout Zambia's open medicinal services framework.

## Research Questions

1. How do financial flows to the Ministry of Health affect procurement performance in Zambia?
2. What is the impact of approval structures on procurement timelines in the Ministry of Health?
3. What is the impact of procurement planning quality on procurement efficiency?
4. What impact if any do suppliers have on access to essential medicines?

## Literature Review

The literature review examines procurement bottlenecks within public health systems, focusing on financial flow constraints, bureaucratic and approval structures, human capacity limitations, supplier performance challenges, governance coordination weaknesses, and digital system integration. It synthesizes conceptual, theoretical, and empirical perspectives relevant to understanding how structural constraints affect procurement efficiency in public sector health procurement systems.

### Conceptual Review

Access to medicines is widely recognised as a multi-dimensional concept encompassing availability, affordability, accessibility, acceptability and quality (Penchansky & Thomas, 1981; Wirtz et al., 2017). Availability is one of the most important dimensions among these as it determines proper healthcare delivery. Shortages of essential medicines often occur in low- and middle-income countries because of weaknesses in procurement and supply chain systems rather than financial constraints per se.

Zambia has a policy of supplying essential medicines free of charge for public primary health care (Government of Zambia, 2012). However, due to resource constraints, essential medicines are only occasionally available. For example, in 2017, a study conducted in 15 public facilities in Lusaka discovered that the availability of a variety of antidiabetics and antihypertensives was limited to 44.7% to 58.2%, with stock out rates ranging from 69% to 92% (Kalungia et al., 2017). When public facilities are unable to dispense the necessary medications, patients are compelled to purchase them at the current prices in the private sector, where availability levels are often higher (Volman, 2008; Cameron et al., 2009; Masiye and Kaonga, 2016). Although there are no reliable estimates of private sector medication prices in Zambia, they have generally been observed to be high (Masiye and Kaonga, 2016; Kaiser et al., 2019). The figures for these prices vary considerably. In this context, the 2014 Zambian Household Expenditure and Utilization Survey determined that essential medicine expenses accounted for 42% of out-of-pocket payments incurred by rural and urban populations of all income categories (Ministry of Health, 2015). More recent national supply data continue to reflect volatility. According to ZAMMSA distribution data and official reports to the National Assembly, the availability of national medicines ranged from about 40–60% in 2021–2023 to roughly 68–70% in 2025 (National Assembly of Zambia, 2023; ZAMMSA, 2025). There is a continuous lack of trustworthy data on the precise procurement bottlenecks affecting medicine supply in Zambia's public health system, and these trends underline the financial burden that insufficient drug availability takes on people and households.

### Constraints in Procurement and Supply

Literature related to procurement supply constraints is replete however; this is not the case on Zambia. Research is scanty and what exists relates to affordability of essential medicines and stock outs. However, available literature tends to focus on financial flow and budget execution constraints, bureaucratic and approval constraints, human capacity and technical competence constraints, supplier performance and contract management constraints and digital systems and governance coordination constraints. These constraints are presented below.

### Financial Flow and Budget Execution Constraints

Research has shown that health systems frequently experience severe stock-outs because of delayed funding, rigid financial regulations, and inefficient, centralized budgeting, which

frequently impede the effective procurement of medication. Complex bureaucracy in fund approval, cash flow constraints, and inadequate alignment between procurement planning and financial disbursement are among the primary impediments (Testa et al., 2012; Vejaratnam et al., 2020). Delayed fund releases disrupt procurement schedules, compress tender timelines, and weaken supplier confidence. In health systems, misalignment between procurement plans and funding releases has been shown to disrupt procurement schedules and increase reliance on emergency purchasing, contributing to stock-outs of essential medicines and supplies (Kalison et al., 2025). Financing constraints therefore represent a structural bottleneck that restricts procurement flow and institutional responsiveness.

## **Bureaucratic and Approval Constraints**

Bureaucratic constraints refer to multi-layered approval processes, rigid sequencing requirements, and institutional hierarchies that influence procurement flow. These inefficiencies necessitate that health facilities depend on private suppliers who are inefficient and occasionally more costly (Basheka and Kakumba 2017; Flynn and Davis (2017). In the majority of African countries, there are national regulatory authorities and the national procurement agencies. These tend to be primary entities responsible for regulating access to medical products. To date, global and regional initiatives to enhance access to high-quality versions of medical products have frequently prioritized the reinforcement of national regulatory authorities (Guzman et al., 2020; Preston et al., 2020; O'Brien et al., 2021). However, national procurement agencies are also essential in guaranteeing that patients have access to high-quality medical products. In an ideal world, a nation's regulatory and procurement agencies would collaborate to guarantee that citizens have access to products that satisfy international standards for safety, efficacy, and manufacturing quality. Regrettably, the seamless collaboration between regulatory and procurement agencies in low- and middle-income countries (LMICs) can be a difficult task (Cohen et al., 2007). Procurement agencies are typically organized under the Public Procurement Acts and Regulations of their respective countries, while regulatory agencies operate under the Medicines Regulatory Acts and Regulations of their respective countries. The purpose of these distinct collections of acts and regulations is typically not to encourage collaboration or coordination. The regulations demand long procedures and numerous players and this constrains efficient procurement (Arney et al., 2014; Bonnifield et al., 2019).

## **Human Capacity and Technical Competence Constraints**

A number of challenges must be overcome in order for the additional resources to be invested effectively and efficiently (Mills, 2002; Hanson et al., 2003). For any large-scale effort to scale up priority intervention coverage of the population, human resources for health (HRH) are a key to success. HRH heavily influence the effective and efficient delivery

of services. HRH also determine in an important way absorptive capacity of supplementary resources to health systems in low- and middle-income countries. Numerous procurement agency personnel in Africa are deficient in training that is specifically tailored to pharmaceutical supply chain management (Arney et al., 2014; Bonnifield et al., 2019). For instance, Knight et al. (2012) emphasize that skills gaps in public procurement significantly affect process timeliness and compliance quality. In health systems, capacity limitations often manifest as workload pressure, role overlap, and limited specialised training, which may weaken planning accuracy and delay evaluation processes. Capacity deficits therefore amplify other structural bottlenecks within procurement workflows.

### **Supplier Performance and Contract Management Constraints**

Supplier performance encompasses responsiveness within contractual agreements, adherence to specifications, coordination efficiency, and reliability in delivery. Constraints such as rigid, legally-focused, or ambiguous contracts, resource shortages, and poor data visibility impede supplier performance and contract management. These issues frequently lead to fragmented information, ignored renewals, and inconsistent monitoring, which in turn leads to increased supply chain risks and value erosion. Supplier-related constraints are frequently recognized as a distinct cluster of procurement limitations (Testa et al., 2012; Walker et al., 2008). Delayed deliveries, partial fulfilment, and weak contract enforcement mechanisms contribute to disruptions in supply continuity. In health procurement systems, supplier unreliability may interact with delayed payments and specification weaknesses, further extending procurement cycle times. Effective supplier management therefore plays a critical role in stabilizing procurement performance.

### **Digital Systems and Governance Coordination Constraints**

Digital procurement systems and governance arrangements provide the regulatory and technological infrastructure supporting procurement execution. Electronic government procurement platforms are widely promoted as mechanisms for improving transparency, documentation integrity, and traceability (OECD, 2019; World Bank, 2023). However, empirical evidence suggests that partial digital adoption often improves transparency at tendering stages while leaving upstream planning and downstream contract management processes less optimized. Incomplete system integration and digital infrastructure limitations may interrupt workflow and fail to eliminate approval bottlenecks. Governance fragmentation and coordination weaknesses further amplify financial and procedural constraints in complex institutional environments (Magadzire et al., 2017; Musonda et al., 2025).

## **Theoretical Review**

### **Theory of Constraints**

The Theory of Constraints, developed by Goldratt (1990), posits that system performance is determined by its most limiting constraint rather than by the number of processes or

regulations in place. According to this perspective, improvements in non-constraining areas yield limited system-wide impact unless the primary bottleneck is identified and addressed. The Theory of Constraints suggests that a limited number of dominant bottlenecks that restrict throughput (Goldratt, 1990) governs system performance. Evidence from healthcare settings indicates that bottlenecks, including process delays, resourcing gaps, and coordination weaknesses, act as constraints that suppress operational and supply chain efficiency (Bacelar-Silva et al., 2020; Obeagu et al., 2026). Within Zambia's Ministry of Health, understanding these systemic procurement bottlenecks are essential for strengthening procurement performance and stabilizing healthcare service delivery.

Applied to public procurement and health systems, the Theory of Constraints suggests that inefficiencies tend to concentrate at binding points such as financing delays, approval congestion, weak forecasting, and coordination failures (Goldratt, 1984/1990). Empirical research in healthcare settings has demonstrated that identifying and managing system bottlenecks can improve operational performance and supply chain responsiveness (Mabin et al., 2017; Cox, 2021). The theory therefore justifies examining procurement workflow sequencing and identifying where delays are concentrated within public health procurement systems.

The study interprets the four thematic domains identified in the findings; delayed budget releases, approval layers, planning errors, and supplier capacity constraints through the Theory of Constraints, highlighting how each act as a system-limiting bottleneck. A cross-district comparative design allows identification of systemic rather than localized constraints. This approach provides a framework for understanding how interconnected financial, procedural, planning, and supplier inefficiencies collectively affect medicine availability in Zambia's public health system.

## **Empirical Review**

### **Global Perspective**

Globally, empirical analyses and policy reviews demonstrate that structured procurement planning, coordinated budgeting, and digital integration contribute to more efficient public procurement and better service delivery (OECD, 2019; OECD, 2025; Afolabi et al., 2022; Chen et al., 2021). Even in well-regulated systems, multi-layered approval processes can limit timeliness, according to research from a variety of scenarios. Divergence, however, occurs in the evaluation of digital reforms: although partial digital integration frequently fails to enhance contract management and procurement planning, leaving systemic obstacles in overall performance, it tends to increase efficiency at the tendering stage.

### **Regional Perspective**

Research from Sub-Saharan Africa shows that limitations during the planning and coordination phases, rather than only legal design, are frequently the cause of procurement inefficiencies. According to Ameyaw and Mensah (2016), procurement performance in

Ghana's public sector was hampered by procedural delays and a lack of alignment between the planning and budgeting systems. Supply chain delays and disruptions in East African health systems have been linked to institutional fragmentation, external shocks, and financial instability, which exacerbate the unpredictability and performance of essential health commodity supply chains (Ipagala et al., 2023). Even though some nations have implemented digital procurement reforms, efficiency advantages are frequently limited by incomplete implementation, with improvements at the e-tendering phases not extending to planning or contract administration (Munyoki & Kihoro, 2020). These results show both divergence; differences in the relative significance of institutional, operational, and technological factors across countries and convergence; planning and financial coordination as key limits.

### **Local Perspective**

Empirical research specific to Zambia shows that the Public Procurement Act No. 8 of 2020, which aims to improve accountability, competition, and transparency in public procurement, has strengthened legal compliance and transparency mechanisms. However, there are still operational issues with supplier coordination, digital system integration, approval sequencing, and procurement planning alignment. According to research on Zambia's public procurement performance, institutional outcomes and procurement efficiency are still hampered by poor planning, inconsistent implementation of procedures, and delays (Katamuna et al., 2025). While structured tender processes and committee-based evaluations enhance procedural integrity, partial digital integration and hierarchical decision-making structures may extend procurement cycle times. These findings confirm that public procurement systems may be procedurally compliant yet operationally constrained by interconnected financial, bureaucratic, capacity, supplier, and governance bottlenecks.

Comparatively, Zambia's experience mirrors regional patterns in the significance of planning, financial, and coordination bottlenecks, yet there remain unresolved questions regarding how these constraints interact to affect the availability of essential medicines. Existing studies in Zambia primarily focus on regulatory compliance and procedural reforms, with limited empirical analysis on systemic interactions among financial delays, approval congestion, supplier capacity, and governance structures. This underscores the need for research that examines procurement bottlenecks as interlinked constraints, providing insights into both operational inefficiencies and policy interventions needed to improve health system performance

### **Methodology**

#### **Research Design**

This study uses a qualitative research design to explore procurement bottlenecks within the Ministry of Health in Zambia. A qualitative approach is appropriate, as procurement

inefficiencies are rooted in institutional practices, administrative procedures and organisational dynamics that require contextual interpretation.

### **Data Collection**

We collected data through 30 Key Informant Interviews from stakeholders (S) across Lusaka, Kafue, Chilanga and Rufunsa districts and three Focus Group Discussions (FGDs). The participants were purposively sampled according to their role in procurement planning, financial administration, supplier coordination and supply chain management.

Ethical approval for the study was obtained from the Institutional Review Board of the University of Zambia, assigned to review social science research (Approval Number: HSSREC – 2025-May-025). All participants provided informed consent, and data collection procedures were designed to protect confidentiality and ensure voluntary participation.

### **Data Analysis**

The paper adopted a qualitative analytical approach to examine procurement bottlenecks within the Ministry of Health. Data collected through Key Informant Interviews and Focus Group Discussions were analysed using thematic analysis to identify recurring patterns, structural constraints, and institutional dynamics shaping procurement performance. The analytical process followed a systematic sequence. First, interview transcripts were read repeatedly to ensure familiarisation with the data. Second, open coding was conducted to identify text segments relating to procurement delays, financial disruptions, approval processes, supplier performance, human capacity limitations, and digital system challenges. Third, related codes were grouped into broader analytical nodes reflecting structural bottlenecks within the procurement workflow. Fourth, dominant themes were developed to represent recurring constraints affecting efficiency and effectiveness. Thematic categorisation enabled identification of four principal bottleneck domains: Financial Flow and Budget Execution Constraints (Delayed budget releases), Bureaucratic and Approval Constraints (Multiple approval layers), Planning and Specification Quality Constraints (Weak specifications and planning errors), and Supplier and Market Constraints (Limited supplier capacity and late delivery). Cross-district comparison across Lusaka, Kafue, Chilanga, and Rufunsa allowed verification of whether constraints were localized or systemic. Patterns that recurred across institutional levels were interpreted as structural bottlenecks rather than isolated operational issues. Interpretation of findings was guided by a constraint-based analytical lens, enabling examination of how identified bottlenecks interact within the broader procurement system. Direct participant quotations were used to support thematic interpretation and ensure analytical grounding in empirical evidence.

### **Trustworthiness of Findings**

In order to guarantee the reliability of qualitative findings, a variety of methodologies were implemented. It has been recommended that at least two of these strategies be

implemented in any qualitative investigation (Long and Johnson, 2003; Creswell, 2006). Nevertheless, this investigation implemented multiple strategies. The following is a concise summary of the strategies that were implemented.

### **Triangulation**

In order to guarantee the credibility and conformity of qualitative studies, researchers implemented triangulation (Creswell, 2006). Data triangulation was carried out by comparing the findings from Key Informant Interviews and Focus Group Discussions to verify them from other participant types in different institutional settings. Triangulation was a method that aimed to mitigate the inherent bias associated with a single source, method, or researcher by utilizing at least two related data sources, data collection methods, or researchers to collect data together and share experiences (Long and Johnson, 2000). Nevertheless, triangulation should not be regarded as a tool for verifying the validity of data and classifying it as "true" or "false," but rather as a method for evaluating the validity of the inferences that are drawn from multiple data sources (Hammersley and Atkinson, 1995).

### **Reflection and Self-Description**

In qualitative research, it is crucial to engage in self-description and self-reflection in order to recognize and mitigate researcher bias, which is a prevalent critique of qualitative research. The team was able to discuss their positions within the study and how personal beliefs and past acquaintances with procurement actors might have influenced the research findings through self-reflection (Hammersley and Atkinson, 1995; Long and Johnson, 2000). In order to identify and explicitly state any personal biases, the team was advised to keep a reflective journal and take field notes (Hammersley and Atkinson, 1995). Self-description has enhanced the credibility and conformity of the research findings in this study (Shenton, 2004).

### **Member Checking**

Alternatively, this is referred to as respondent validation. It is frequently referred to as the most critical method for establishing the credibility of a study (Lincoln and Guba, 1985) and involves the verification of the study's findings and conclusions by the respondents from whom the data (interview) were initially obtained (Creswell, 2006). During the transcription process, the team conducted member checks to guarantee that the transcription accurately represented the captured content. Respondents received a reprint of their own transcription. The objective of member verification was to guarantee the credibility and dependability of qualitative studies. Nevertheless, certain methodologists have expressed skepticism regarding the efficacy of member checking, as qualitative data encompasses more than just interview data; it also includes field notes, the author's reflective journal, and non-verbal cues that respondents may not "own as their personal views" (Sandelowski, 1993; Hammersley and Atkinson, 1995; Long and Johnson, 2000). The reflective journal and

transcripts were employed extensively by the team to validate the data during the analysis and presentation.

## **Researcher Positionality**

One of the co-authors of this study holds a professional position as a procurement officer within the Ministry of Health. This insider status provided the research team with unique access to institutional knowledge, operational processes, and internal documentation, which enhanced the depth of contextual understanding during data collection and interpretation. However, such a positionality also carries the potential to influence participant responses, shape the framing of research questions, and bias data interpretation toward the perspectives familiar to the insider researcher. Recognizing this dual-edged influence, the research team adopted multiple strategies to mitigate potential bias and maintain methodological rigor.

During data collection, care was taken to minimize the influence of the insider researcher on participants' responses. The insider co-author did not directly conduct interviews with staff from their own department or immediate reporting line, thereby reducing the risk of coercion or social desirability bias. Where engagement with familiar colleagues was unavoidable, the research team emphasized confidentiality, voluntary participation, and the independent analytical role of other team members to encourage candid responses.

In the data analysis phase, collaborative coding was employed. Multiple researchers independently coded transcripts before engaging in consensus-building sessions, during which recurring themes were cross-checked and examined for potential insider bias. Particular attention was paid to instances where the insider co-author's familiarity with internal practices could inadvertently shape interpretations; these instances were explicitly discussed and validated against the broader dataset to ensure consistency and credibility. For framing the study findings and recommendations, reflexivity practices included structured team discussions on how professional experience might influence the emphasis of particular bottlenecks or the prioritization of policy solutions. The research team deliberately contextualized insights within the existing literature and cross-referenced participant perspectives to avoid privileging the insider's viewpoint unduly.

This approach is consistent with established guidance on insider research and reflexivity (Berger, 2015; Brannick & Coghlan, 2007; Evetts, 2013), recognizing that professional proximity can be both a source of rich understanding and a potential source of bias. By systematically documenting the co-author's positionality and employing concrete mitigation strategies at every stage of the research process, the study sought to maintain rigor, transparency, and trustworthiness while leveraging the benefits of insider insight.

## **Findings and Discussion**

The findings demonstrate that procurement inefficiencies within Zambia's Ministry of Health are structurally embedded and systemically reinforcing rather than isolated

administrative failures. Across Lusaka, Kafue, Chilanga, and Rufunsa, respondents consistently described procurement as constrained by four constraints and these are:

- i. Delayed budget releases
- ii. Multiple approval layers
- iii. Weak specifications and planning errors
- iv. Limited supplier capacity and late delivery Constraints

These constraints are at play at multiple stages of the procurement cycle and concisely undermine the reliability of medicine availability in public health facilities. The analysis indicates that procurement inefficiencies are not a direct result of weak regulation but is instead the outcome of misaligned governance within the procurement system.

### **Theme I: Delayed Budget Releases**

The theme of Delayed budget releases emerged as a foundational constraint affecting the entire procurement cycle. Respondents emphasized that procurement execution is contingent upon fund disbursement, regardless of whether planning and documentation have been completed. As one participant noted, "Funds do not always come on time" (R19), while another explained that "Procurement plans are approved, but money delays" (R21). A focus group participant further highlighted the operational consequences by stating that "Months pass without supplies because funds are not released" (FGDR1).

Despite the introduction of the Public Procurement Act No. 8 of 2020, which reinforced regulatory oversight, budgetary bottlenecks persist. This reflects a disconnect between procurement legislation and fiscal governance structures: The Act prescribes procedural compliance and approval accountability but does not directly address financial flow management, the true limiting factor in procurement throughput.

These findings are consistent with international evidence that fiscal synchronization is critical to procurement efficiency (McCue, Prier, & Swanson, 2015) and highlight that compliance with legal timelines cannot substitute for timely fund availability, illustrating that legislative reform alone cannot overcome structural financial misalignments. Within Zambia, this demonstrates that the timeliness of fund releases constitutes a dominant binding constraint, as predicted by the Theory of Constraints (Goldratt, 1990).

This theme contributes to procurement literature by demonstrating that regulatory enhancements are insufficient without corresponding integration of financial planning mechanisms, emphasizing the role of fiscal synchronization as a dominant constraint in health procurement systems

### **Theme II: Multiple Approval Layers**

The theme of Multiple approval layers highlights procedural congestion within procurement workflows. Participants repeatedly described the process as sequential and heavily layered. One respondent observed that "Procurement has many approval stages" (R14), while another explained that "Each approval takes time before the next one can move" (R22). The practical implication of these delays was captured by a focus group

participant who remarked that “We wait for signatures for weeks while patients are waiting” (FGDR2).

Although the 2020 Act was intended to enhance compliance and accountability, it has inadvertently contributed to approval congestion. By introducing stricter reporting and oversight requirements without parallel streamlining of interdepartmental workflows, the law has amplified procedural sequencing rather than reduced delays. The paradox is that a regulation designed to improve efficiency can generate operational friction in the absence of supporting structural changes such as digital approvals, delegation frameworks, or fiscal alignment.

This theme contributes to procurement scholarship by highlighting the counterproductive potential of compliance focused legislative reforms when operational realities are not concurrently addressed, particularly in contexts with centralized multi-layered institutional hierarchies (Flynn & Davis, 2017; OECD, 2019; Ameyaw & Mensah, 2016).

### **Theme III: Weak Specifications and Planning Errors**

The theme of Weak specifications and planning errors reveals that procurement inefficiencies often originate upstream. Respondents indicated that unclear technical specifications and documentation weaknesses create delays that cascade throughout the procurement cycle. One participant stated that “Specifications are sometimes unclear” (R21), while another noted that “Procurement fails because documents are not well prepared” (R23). A third respondent emphasized the systemic nature of the problem, explaining that “Mistakes at planning delay everything” (R29).

Even with the 2020 reforms, planning-related bottlenecks persist because the Act focuses on process compliance and approval accountability, not on upstream technical competence, forecasting realism, or specification quality. Planning deficiencies continue to generate downstream delays in evaluation, clarification, and contract implementation. The persistence of these inefficiencies illustrates that legislation alone cannot substitute for investment in human capacity, training, and procedural alignment in procurement planning.

Compared with regional studies (Ipagala et al., 2023; Munyoki & Kihoro, 2020), Zambia’s experience confirms that procurement reforms must pair regulatory oversight with operational capacity building to be effective. This theme contributes to the literature by emphasizing that procurement legislation is necessary but not sufficient; systemic performance improvements require attention to the technical and managerial foundations of planning.

### **Theme IV: Limited Supplier Capacity and Late Delivery**

The theme of Limited supplier capacity and late delivery reflects downstream market-related bottlenecks affecting procurement reliability. Participants described both limited supplier competition and delayed deliveries. One respondent noted “Some medicines have

very few suppliers" (R25), while another stated that "Supplier performance affects availability at facility level" (R18). A focus group participant captured the service-level impact by explaining, "Medicines arrive after patients have already bought outside" (FGDR<sub>1</sub>).

Capacity constraints are particularly acute during contract start up and immediately post award, and suppliers are frequently reappointed despite documented underperformance:

"Our hands are really bound the most we can do is notify the ministry that our suppliers are unreliable. However, history and our own experience have shown that these suppliers are reappointed and we are once again faced with the same issues" (FGDR<sub>2</sub>).

These observations align with regional studies in Sub-Saharan Africa emphasizing supplier capacity as a systemic limitation (Magadzire et al., 2017). They also demonstrate that market limitations alone cannot explain inefficiencies; institutional factors such as delayed payments and compressed timelines amplify supplier underperformance.

The interplay of constraints further supports the view that procurement inefficiencies are systemic, not just isolated operational problems. As such the resolution of any individual constraint in isolation is unlikely to lead to sustainable improvement(s) in procurement performance.

For interpreting these findings, the Theory of Constraints offers a valuable framework. According to Goldratt (1990), the system is ultimately constrained by whatever provides its limit capacity, and efforts to improve constraint-free areas result in negligible overall benefit. So, within Zambia's health procurement system at the intersection of information and physical flows, financial flow instability seems to act as the dominant binding constraint on throughput for procurement. Even in instances where approval processes, planning procedures and supplier co-ordination mechanisms are functioning well procurement implementation cannot proceed without the timely availability of funds. To that end, alleviating this dominant constraint would have exponentially more systemic effect than creating additional procedural controls.

The results further indicate that Zambia's procurement system is still in transition as a result of institutional and legislative reforms. Since the introduction of Public Procurement Act No. 8 of 2020, this regulation has been governed by law that severely delineates oversight and efficiency mechanisms in procurement processes. But the institutions need time and might lag gradually adapting to new governance structures, operational roles, and compliance obligations. "Other countries in the midst of procurement reforms have experienced similar transitional challenges where newly created systems coordinately struggle initially with administrative adjustments before ramping up to operational efficiencies."

It shows that inefficiencies in procurement by Zambia's Ministry of Health are better understood as structural rather than regulatory failings in the workflow. Although the procurement framework lays out legal guidance and procedural oversight, operational performance is contingent upon coordination across financial management, procurement planning, approval processes and supplier engagement. Sustained improvements in

availability, therefore, require cohesive reforms which align fiscal synchrony with approval pathway efficiency and planning accuracy with supplier coordination in a comprehensive manner rather than treating each in silos of procedural adherence.

These constraints work cumulatively and reinforce procurement inefficiencies throughout the procurement cycle.

The four constraints reinforce one another across the procurement cycle, with financial flow delays acting as the dominant bottleneck (Goldratt, 1990). Even efficient approvals, planning, or supplier coordination cannot overcome delayed funds. This explains why isolated interventions fail and highlights the need for coordinated, system-wide reforms. Zambia's configuration centralized financing plus multi-layered approvals illustrates a context-specific systemic profile consistent with broader sub-Saharan trends.

## Significance and Contributions

This study contributes to the procurement literature by showing that in Zambia's health sector, procurement inefficiencies stem from systemic workflow constraints rather than regulatory deficiencies. The Theory of Constraints is a useful framework for analysing procurement bottlenecks in public health systems. The findings also have real-world implications for policymakers interested in increasing medicine and medical supply access through procurement reform.

## Policy Implications

The findings of this study have significant implications for public procurement policy and health system management in Zambia. Procurement bottlenecks are structurally embedded, and addressing them requires coordinated reforms that harmonize financial synchronization, administrative processes, technical planning capacity, and supplier coordination. The following policy steps are derived directly from the thematic evidence.

### Align Procurement Planning with Budget Execution

Delayed budget releases were identified as a foundational bottleneck affecting the entire procurement cycle. Participants emphasized the operational consequences:

- "Procurement plans are approved, but money delays" (R21)
- "Months pass without supplies because funds are not released" (FGDR1)

These accounts indicate that procurement activities cannot proceed without reliable funding. Policy should therefore focus on closely aligning procurement planning with predictable budget disbursements. Improved coordination between procurement units and public financial management systems could ensure that procurement timelines are realistically synchronized with available funds, reducing supply failures and improving system throughput.

### **Streamline Procurement Approval Pathways**

Participants described approval workflows as highly sequential and layered:

- "Procurement has many approval stages" (R14)
- "Each approval takes time before the next one can move" (R22)
- "We wait for signatures for weeks while patients are waiting" (FGDR2)

While the 2020 Public Procurement Act mandates accountability, excessive procedural steps were reported to generate cumulative delays. Policymakers could consider delegated authority thresholds or simplified approval processes for routine procurement activities, maintaining transparency while enhancing operational responsiveness.

### **Strengthen Technical Capacity in Planning and Specification**

Upstream planning deficiencies were highlighted as recurring causes of downstream delays:

- "Specifications are sometimes unclear" (R21)
- "Procurement fails because documents are not well prepared" (R23)
- "Mistakes at planning delay everything" (R29)

Training programs for procurement personnel should focus on technical specification drafting, demand forecasting, and bidding process management. By addressing these capacity gaps, procuring entities can reduce clarification requests, tender modifications, and contract renegotiations, thereby enhancing overall procurement efficiency.

### **Expand Digital Procurement Systems**

Participants noted that digital platforms were largely limited to tender advertisement and bid submission. To address administrative bottlenecks and improve coordination, end-to-end digital systems should support:

- Procurement planning
- Contract management
- Supplier performance monitoring
- Payment tracking

Such systems would enhance transparency and enable real time workflow monitoring, directly targeting inefficiencies identified by respondents in planning and approval stages.

### **Implement Robust Supplier Performance Monitoring**

Supplier related bottlenecks were reported as a major source of medicine shortages:

- "Supplier performance affects availability at facility level" (R18)
- "Some medicines have very few suppliers" (R25)
- "Our hands are really bound suppliers are reappointed and we face the same issues" (FGDR2)

Policy should establish formal supplier performance management processes, including delivery tracking and contract compliance monitoring. By linking supplier evaluation to

future procurement decisions, authorities can increase accountability in the pharmaceutical supply market and reduce repeated supply failures.

These policy interventions taken together highlight the urgent need for systemic reform to procurement that focuses on how financial management, administrative procedures, planning capacity and supplier coordination intersect. In Zambia, improving this performance requires a coordinated approach to managing structural challenges rather than imposing additional procedural controls on procurement in the health sector.

### Conclusion

The study further shows that procurement inefficiencies within the Ministry of Health in Zambia are predominantly a result of linked systemic constraints rather than individual administrative failure. Coordinated reforms of financial intermediation, approval streamlining, procurement planning and supplier coordination are the way forward to resolving these bottlenecks. These sustainable improvements in availability are thus contingent on addressing prevailing procurement limitations rather than increasing procedural controls.

### Ethical Approval

The ethical approval was obtained from the institutional review board of the University of Zambia assigned to review social science research. The approval number is HSSREC – 2025-May-025

### Conflict of Interest

The authors declare that they have no financial conflicts of interest related to this study. One author is employed as a Procurement Officer in the Ministry of Health, Zambia, which is the institution examined in this research. This affiliation was fully disclosed and managed in accordance with ethical research practices. The author's professional role did not influence the study design, data collection, analysis, interpretation of results, or the decision to publish the findings.

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Dr. Chikusela Sikazwe is a distinguished academic and professional leader in strategic management, health systems, and development. Dr. Chikusela Sikazwe holds a PhD in Business and Management, an MBA, and an MSc. He serves as a part-time Lecturer at the University of Zambia's Graduate School of Business, where he specializes in strategic management, decision-making, leadership, innovation, and research methodologies including qualitative and quantitative analysis. His scholarly work emphasizes academic writing, interviewing, and data collection, contributing to publications and educational advancements in Zambia. With over 17 years of experience in high-performing team leadership and organisational growth, Dr. Sikazwe is the Country Director for Zambia at Seed Global Health, focusing on health workforce expansion, provider competence, and sustainable system advocacy. His career includes roles in international NGOs and the private sector, with key contributions to HIV prevention, human resources for health, maternal and neonatal care, and addressing Zambia's health sector challenges during socio-economic transitions.

Memory Mawini Ntaimo is a part-time PhD candidate at the Graduate School of Business, University of Zambia, and a procurement professional with the Ministry of Health, Zambia. She holds a Bachelor of Science in Purchasing and Supply from the Copperbelt University and a Master of Science in Procurement, Logistics and Supply Chain Management from the University of Lusaka. With over thirteen (13) years of experience in public procurement within the health sector, Memory has played a key role in strengthening Zambia's health procurement systems. She has contributed to sector reforms and was instrumental in the establishment of the National Malaria Elimination Centre procurement unit, which has enhanced service delivery and supply chain efficiency. Her research interests focus on public procurement systems and health supply chains, particularly in strengthening governance, efficiency, and sustainability in public health systems. Memory is a Full Member of the Zambia Institute of Purchasing and Supply (ZIPS).

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