

# Value Stream Mapping Analysis on Process Capability of the Constituency Development Fund for Project Approval and Funding in Zambia

Kelvin Kashindi<sup>1\*</sup>, Francis Simui<sup>2\*</sup>, Joe Likando<sup>3\*</sup>

<sup>1</sup>PhD Candidate, University of Zambia and Zimbabwe Open University under the Institute of Distance Education, Zambia

<sup>2</sup>Professor, Assistant Director University of Zambia, Institute of Distance Education, Researcher, Supervisor, Lecturer and Mentor, Zambia

<sup>3</sup>Post Graduate Supervisor, educationist, Public Administration specialist, University of Zambia, Zambia

**\*Corresponding Author**

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## ABSTRACT

The constituency development fund is a widely adopted decentralized fund by most governments to improve the living standards of local communities. However, its implementation continues to be plagued by challenges such as underutilization, bureaucratic delays in project approvals and fund disbursement. Hence, the study aims at exploring the current constituency development fund process (CDF) from an operational mechanism point of view. In order to appreciate the challenges inherent in the process, and pave way for process improvement, the study employs lean methodology by use of value stream and process mapping to analyze process design and discover critical points of waste in the process workflow, personal interviews were utilised to appreciate lived experiences of the process operators and Literature review to benchmark with best practices particularly the international standardization organization (ISO) process symbols. The study design is exploratory sequential design. Key Findings indicate that the current CDF process is modelled as a basic linear flowchart, which operationally functions as a Value Stream Map (VSM), it has redundant process steps (too many steps of a similar kind e.g., approval steps) thereby resulting in a lot of handoffs, which increases the chances of process delay, most process steps lack cycle time, which compromises process lead time and data entry is mostly done manually resulting in missing data between handoffs. Recommendation(s): The Government should adopt the appropriate Process Map (VSM) with basic ISO compliant symbols in order to enhance its capability and make it adaptable to conventional software in case of automation, Similar process steps especially approval ones should be merged to reduce on process handoffs and lead time. Conclusion: The goal of value stream mapping analysis on process capability of the CDF process was to explore qualitative factors as a baseline of later process capability computation.

**Keywords:** Delays, Handoffs, value stream map, process model, automation, process design

## INTRODUCTION

The Zambian Government's desire to develop various sectors of the country, particularly local communities through Local Government, was escalated by the adoption of the constituency development fund (CDF), which was approved by Parliament in 1995 (CDF guidelines, 2022) as a decentralized fund. This has led to unprecedented increase of the same fund in the recent past of up to 40 million Kwacha per constituency (Mbewe, 2025). However, there is overwhelming evidence of recurring underutilization of CDF across the country due to bureaucratic delays in project approvals (Hichilema, 2024) observes. These sentiments are echoed by (Sichula, 2025, Pollen, 2025, Likando et al, 2023 & Mofya, 2023)) in their various findings. In

addition, Sampa (2022) reveals that the challenges in question are historical due to the set-up of the CDF process by Central Government which has a two-year lag period. To that point, George (2003) also observed that whenever an operational process consistently manifests chronic waste or problems, it is because it was set up that way. Hence the study explored the CDF process in order to discover where this chronic waste(delay) takes place and pave way for streamlining and continuous process improvement. It is important to state that even though process capability immediately signals quantitative analysis, there are qualitative factors such as, process design, workflow, procedures among others that underline it and must be dealt with first, hence the approach taken in this case.

## **METHODOLOGY**

- Research Design**

The study employed an Exploratory Sequential Design whose goal was to first map the process in question in order to uncover the inherent operational deficiencies and suggest ways of optimisation. For the purposes of this article, the focus was only on qualitative aspects.

- Objective(s)**

To analyse variations in the process visualization models of the constituency development fund for project approval and funding and determine their impact on process capability

- Sampling Frame**

In order to obtain the depth of perspective, the population comprised people most knowledgeable about the CDF process and documents that described the workflow.

- Sampling Technique**

The study utilised purposive and snowball sampling techniques. The former for targeting people most knowledgeable about the CDF process and the latter for accessing the next informant.

### **Data Source Instruments**

1. Value Stream Mapping (VSM) was used to collect data on the understanding of actual work flows (value- and non-value-added process steps), delays, decisions points and process model/design). In short, VSM highlighted problem areas of the process.
2. Process Mapping was used to collect data on granular process tasks of various process steps.
3. Personal Interviews were conducted with 10 key stakeholders to validate the CDF process map and collect performance data. 12 Ward Development committee Chairpersons out of 18 from various wards were interviewed, 3 interviews were conducted with procurement officers and 2 interviews with the planning officer.

The total number of interviews was 17 and the stakeholders involved are shown in table 1.

**Table 1: List of stakeholders who were interviewed in Kapiri Mposhi Constituency**

STAKEHOLDER DESIGNATION	NUMBER
Ward development Chairpersons	8
Council CDF Planning Officer	1
Procurement officers	2

## LITERATURE REVIEW:

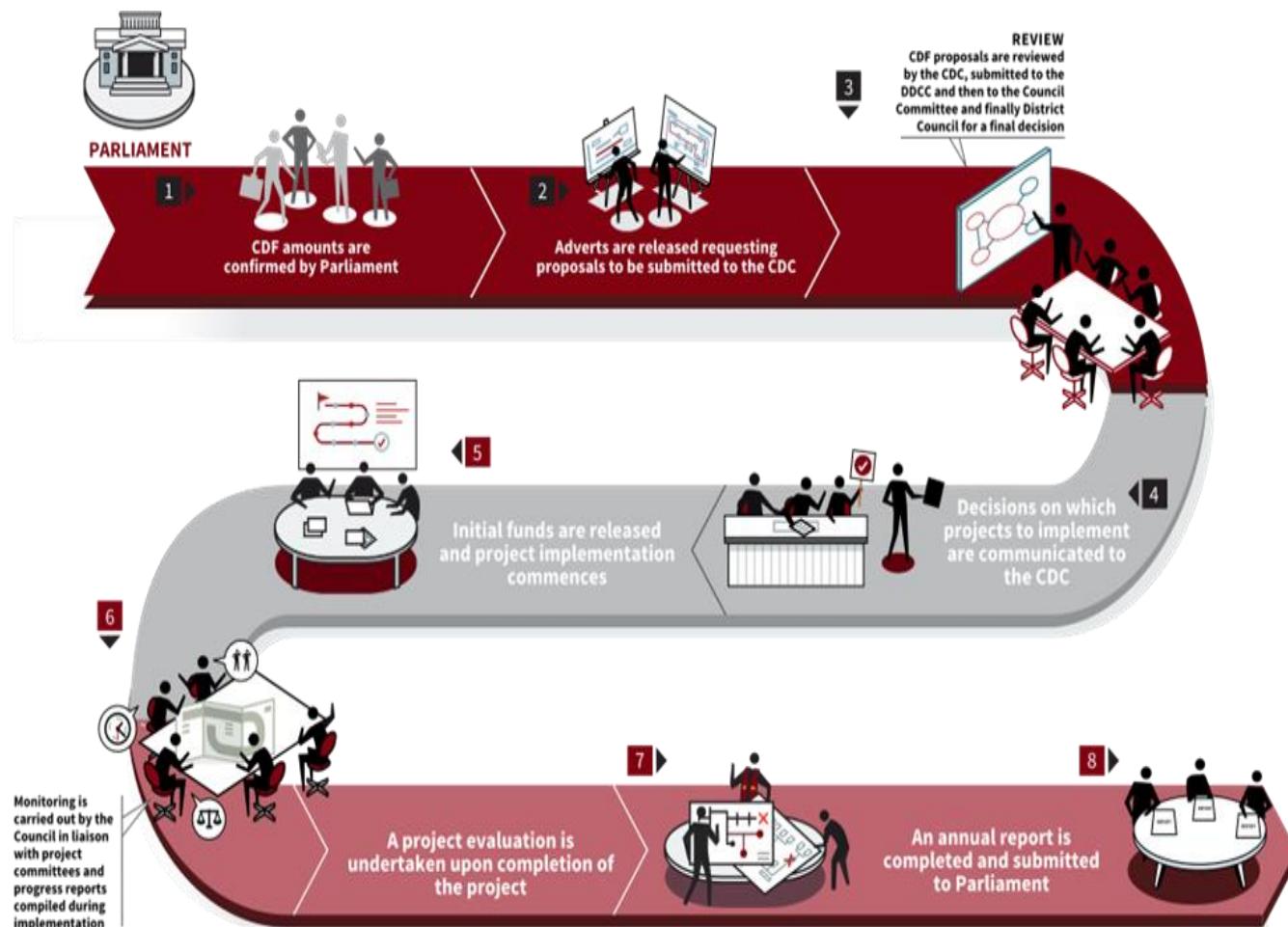
Reviewed literature was used to collect data for benchmarking especially with ISO 9000 on the expected use of standard process symbols and compare current process design with best practices

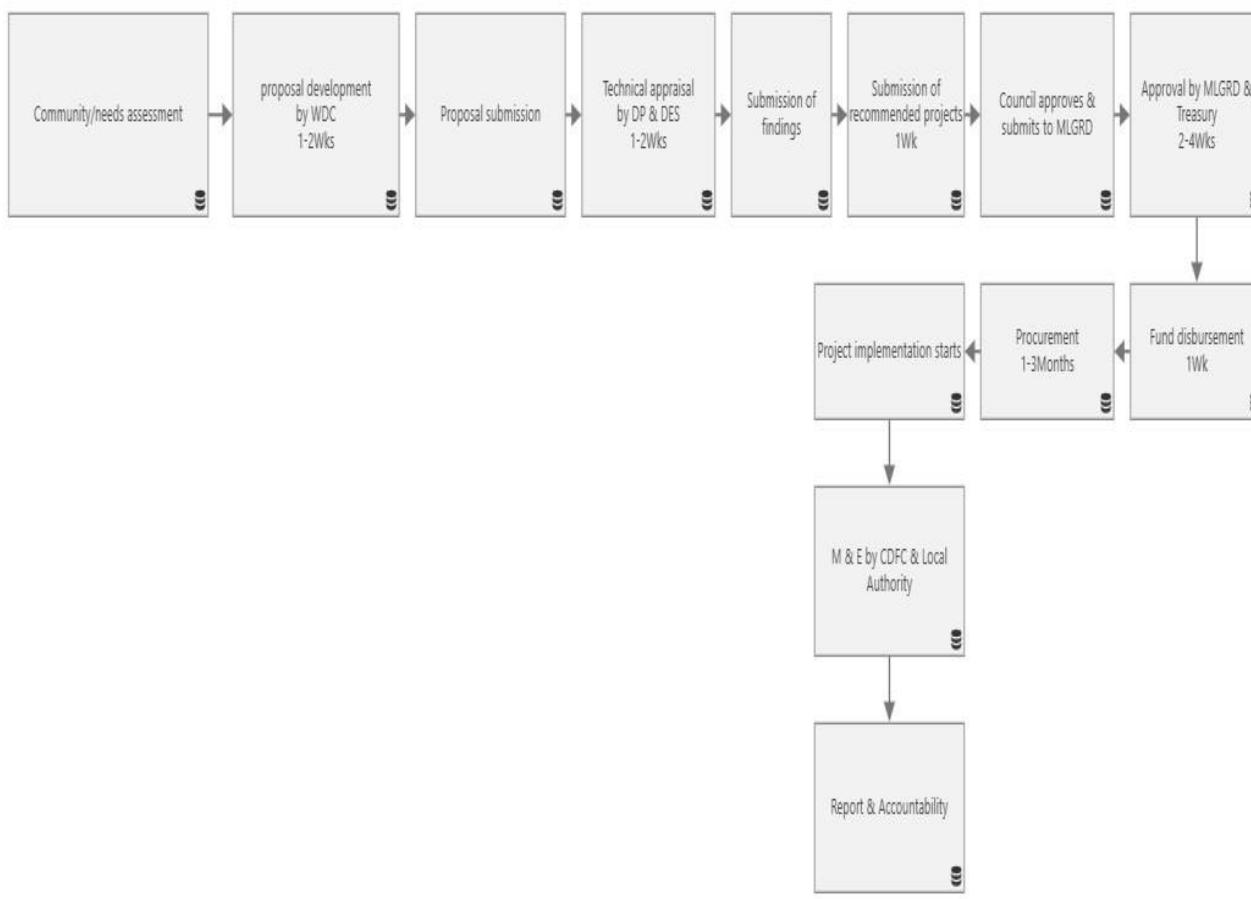
### Value Stream or Process Mapping Analysis

Process mapping involves constructing a macro-map (VSM), identifying and prioritizing bottlenecks in the existing process and constructing a micro-map (PM) to identify the root causes of the bottlenecks, and iterative redesign. Process mapping (PM) therefore, fundamentally facilitates better understanding of complex systems and processes, which gives way for adaptation of improvement interventions to their local context (Antonacci, Lennox, Barlow, Evans, and Reed, 2021).

In order to uncover bottlenecks, inefficiencies and delays in the work flow affecting project implementation, the above analysis was utilized by visualizing the current CDF process. According to Eckhard, Wittges and Rinderle-Ma (2025), Visualization has a duo purpose namely to visualize the process model or show information about process bottlenecks. The purpose of visualization therefore, was to make the process understandable, and mapping makes it actionable for improvement. As such, it is the first task that an organization implements as a framework of how operations must be conducted (Mandelburger, Mendling and Mendling, 2014). Process visualization is so critical that it stands as self-evidence of clarity and effectiveness as argued by Malinova, Monika and Mendling (2013) that a process map is cognitively effective if it is self-explanatory. The implication being, process model stands as the first determinant of process capability. Hence, the current CDF process for project approval and funding was visualized as shown in figures 1 and 2 respectively.

**Figure 1. CDF Process (Source: CDF guidelines, 2022)**



**Figure 2. CDF Process (Source: Kapiri Town Council Planning Department)**


**Figures 1 and 2 represents the visualization of the current CDF process in two versions.**

### Key Findings

The findings reveal the following, (a) there is variation in the visualization of the process model of CDF for project approval and funding as evidenced by figures 1 and 2. The reason being that a flow chart can be visualized in any way provided the process steps are sequential. As such, the process does not have complete or 3 basic minimum ISO process symbols, (b) There are too many process steps (13) in number, which create a lot of handoffs (c) some process steps do not have cycle time that is, the time taken for a process step to complete a task or how long a task or activity takes from one point to the next as shown in figure 2 while figure 1 does not have any process step with cycle time, (d) there are too many approval stages signaling the need to streamline such stages by merging them or some of them, (e) the process steps with the most bottlenecks or delay points are, Procurement with 1 to 3 months and approval by Ministry of Local Government and Rural Development and Treasury with cycle time of 2 to 4 weeks and (d) most of the process steps are done manually.

## DISCUSSION

### Process Model

**Sequential Linear Flow Chart vs Value Stream Map:** The fact that the current CDF process is modelled as a linear flowchart, which is a type of a process map but operationally functions as a value stream map is the first sign of an inefficient process because it conveys the wrong message. Tronier (2025), argues that by design, a sequential linear flowchart simply shows how the workflow in a process starts and ends in sequential order, by design, a flowchart is meant for information or instructional purposes only. On the contrary, a value stream map by design and function, deals with delivery of a good or service and quantifies process performance. Therefore, the appropriate process model for CDF should be a value stream map as

evidenced firstly, by the presence of cycle times in some process steps and secondly, based on the background that there are bureaucratic delays and long implementation of projects, it is only value stream map that captures such information.

### Process Model/Map Analysis vs Visual Notations (ISO Symbols)

Malinova et al (2013) indicates that the above analysis is done in two phases. First, by assessing cognitive effectiveness of the process maps with focus on the design of a process map, without going into the process details. The assessment is restricted to the process map design regarding whether or not its design conforms to the principles for designing cognitive effective visual notations (Moody, 2009). Second, by applying the cognitive fit exists between process design and organizational goals. To that effect, the assessment is to ascertain whether process design infers any meaning, which leads to effective results. Therefore, if a process map does not align with the said criterion, then it becomes difficult to interpret thereby yielding unwanted, unanticipated effects (Malinova et al, 2013) or as is stated in process capability parlance, the process becomes unstable and unpredictable hence cannot perform consistently according to specification.

Moody (2009) states that with regards to visual notations or iso symbols, a process must have at least three in its design to be considered effective. Table 2 shows the visual notations in question with their corresponding meanings based on the challenges under discussion as a restriction.

**Table 2: Basic Flowchart Symbols (Source: based on Moody and ISO 9000)**

SYMBOL	NAME	MEANING/USE
	Terminator	Process start/End
	Rectangle	Process step
	Diamond	Depicts decision points
	Delay symbol	Delay points/pause/waiting
	Connector	Connects process step and shows direction of activities

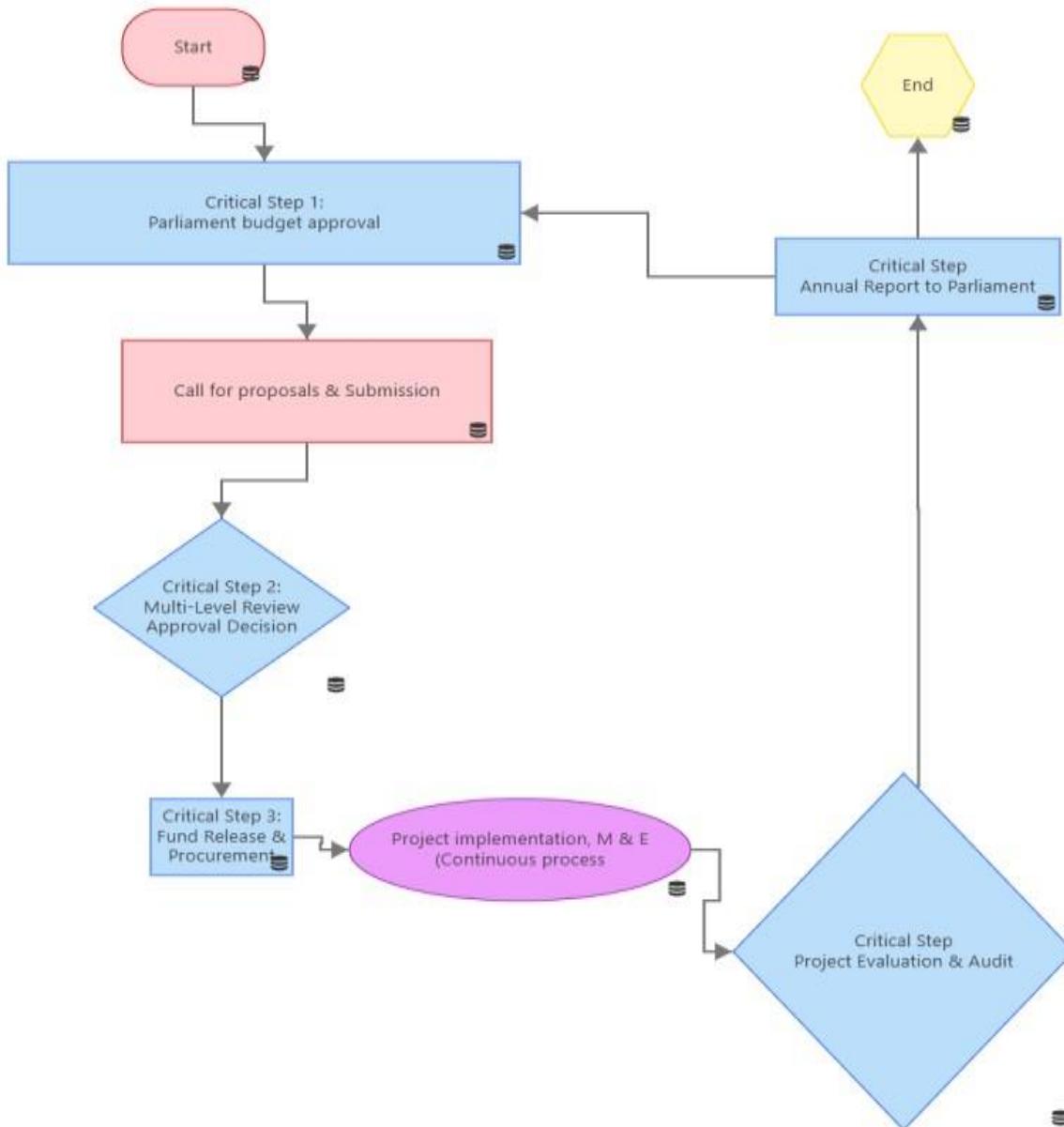
In light of the above, figures 1 and 2 only have two symbols, namely the Connector and rectangle, as such, according to Moody (2009), they do not qualify as efficient processes. Ramuthi (2025) argues that without the use of such symbols, which foster clarity and universal understanding, process analysis becomes difficult and its subsequent improvement.

### Process Streamlining

The other logical and immediate observation after process design is the number of process steps in the CDF process, which are a lot. As such, Hackmd Editorial Team (2024) prioritizes process simplification by emphasizing elimination of redundant tasks or approvals that do not negatively impact the final outcome. They further contend that simplicity is at the heart of efficiency as most processes become inefficient due to unnecessary complexity. Process simplicity is therefore, a key strategy for organizations to reduce wasted time, cut unnecessary costs, and optimize performance output.

On the contrary, the current CDF process is far from being simple or streamlined as Hackmd Editorial Team (2024) suggests. It has too many process steps 13 in total as shown in figures 1 and 2. This was due to the fact that some process steps perform similar activities for example, submissions and approval steps. Therefore, the current CDF process when redesigned, simplified, and aligned with iso symbols and best practices should have 7 process steps without compromising the final outcome as shown in figure 4.

Figure 3. Application of ISO Symbols to a streamlined CDF Value Stream Map



### Process Steps with High Waste/Delay

Procurement, Ministerial approval and Treasury were the process steps with the highest source of waste (cycle time), with procurement taking up to 1-3 months and ministerial 2-4 weeks. The negative impact of these stages particularly the procurement stage was notable in the frustration of Respondent A who stated that, “*It is difficult to convince people in the Wards that it is not the Councils fault that implementation of projects takes long, in fact, sometimes the procurement goes up to 10 to 12 months. It is very frustrating because people we are accused of delaying the projects.*” And when asked why an accusation such as this rests on them, the answer was that, “*The message of decentralisation has not been clearly explained to the public, what people know is that the power to make all decisions regarding CDF rests with the local authorities, which is not true.*” This is true because through process mapping, it was revealed that certain process steps like procurement and fund disbursement are not in control of the local Councils anywhere in the Country as the central Government still holds the power.

On the contrary, Respondent B argued that, “*The problem with the Council is that they lack communication, they do not give us feedback about the progress of projects that we submit.*” This is evidenced by the lack of feedback loops in the CDF process as shown in figures 1 and 2.

## Impact of findings on process capability

The key findings affect process capability in the following ways:

1. The variations in process visualization and lack of minimum ISO symbols makes the CDF process ambiguous rendering it vulnerable to different independent interpretation and execution as it signals lack of standardization. As such, it hinders process improvement because there is no single source of Truth.
2. Numerous approval and submission stages or process step drive excessive process steps and handoffs resulting in a compounding effect on cycle time, lead time and variation.
3. Excess reliance on manual processing of data results in loss of information between handoffs as evidenced by some process steps missing cycle time, the process is largely slow, it is highly susceptible to human mistakes, and it is difficult to create an audit trail of waiting time.
4. The identification of the procurement (1-3 months) stage and ministerial approval (2-4 weeks) as high sources of waste constrains the entire process and significantly reduces its capability because it entails a wide process spread. This creates frustration in stakeholders as funding approvals take anywhere between 3 to 10 months.

## RECOMMENDATIONS

Based on the key findings, the Ministry of local Government and Rural Development should adopt a streamlined standard Value stream map with basic ISO symbols as shown in figure 3 instead of a basic linear flowchart (Figures 1 and 2) for the reasons discussed. The ministry should introduce cycle times in all process steps to account for quantitative insights. They should consider automation (Control Charts) of the CDF process focusing on process steps with measurable timelines or quantitative outputs, for example, approval and fund disbursement stages. They should do that through a triadic criterion based on,

1. Lead Time or Cycle time stamps: they can compute or record days for proposal development not ranges, technical appraisals, fund disbursement or contract completion
2. Quality or compliance measures whereby the number of proposals returned for correction, number of sites failing inspections or rejected procurement documents could be recorded and
3. Financial Variation whereby the variance between the budget versus actual costs and disbursement timings between allocations can be computed. All these can easily be made into an X-bar, R, p or u chart

Methods: they can achieve the above by integrating a digital CDF management system because if time stamps are captured digitally, then they can automatically calculate start-end time differences or rejection counts for example. However, if a digital system does not exist, then structured spreadsheets with formulas and time stamps can be utilised.

## CONCLUSION

The goal of value stream mapping analysis on process capability of the CDF process was to explore qualitative factors as a baseline of late process capability computation. As a result, create an opportunity for a process that is devoid of redundancies, inefficiencies, waste and very low variation to emerge.

## Ethical Considerations

The study was approved on 11<sup>th</sup> April, 2025 by humanities and social science ethics committee at the University of Zambia. Human participants were issued with consent forms, which they signed before answering questions.

## Data Availability

Some of the data was available at Zambia e-Government Procurement system ([Login to e-GP](#)) especially on procurement and types of projects and bidding.

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