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MONITORING SYSTEMS IN AFRICA

Caitlin Blaser Mapitsa & Catherine Churchill

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Section 1

THE PURPOSES OF MONITORING SYSTEMS

Chapter 1: Monitoring Systems in a Context of Complexity and Uncertainty

Caitlin Blaser Mapitsa

In times of uncertainty or rapid change, governments must have useful and practical monitoring systems underpinning their policy development. The COVID-19 pandemic has highlighted how rapidly dramatic social change can happen and how monitoring practice linked to effective research systems can anchor policy responses to the best available data, saving lives and mitigating adverse public health and economic and other societal impacts. Climate change's natural and social devastation is another realm where rapid scientific advances can critically shape policy responses (Yung, Louder, Gallagher, Jones, and Wyborn 2019; Vigoda-Gadot and Mizrahi 2016). Public sector policy-making processes exist in an increasingly uncertain context, and rigorous monitoring can provide information about these responses at a scope and speed unthinkable until recently (Nalubega and Uwizeyimana 2019).

Monitoring is the systematic process of collecting information about the implementation or results of a programme. It is often done through the use of indicators to determine programme performance. Monitoring can focus on any part of the programme, from implementing activities to achieving results or spending against the planned budget. Monitoring has many purposes, including contributing to evaluation as part of an M&E system, accountability and compliance, or performance improvement.

Monitoring is usually carried out internally as a core function of programme management, although occasionally, there is an element of external validation oversight. Monitoring usually focuses on data generated by the programme, whether it is organisational data, stakeholder-related data, budget data, or similar. Monitoring usually happens continuously and is linked to nested reporting levels. Usually, specific indicators or other types of programmatic data are gathered on a monthly basis, quarterly, and annually. Things monitored frequently, such as every month, are activity-oriented and speak to low levels of a results chain. In contrast, things monitored annually link to higher levels of a programme's results chain, such as a broader outcome. These results take longer to achieve but are also rarely exclusively reliant on one programmatic intervention, but need to triangulate with other stakeholder interventions, changes in context, and confounding variables.

Monitoring practices are primarily descriptive or observational and record and check the completed activities. In a training programme, this could include activities such as gathering and collating attendance registers from workshops to determine when they were held and how well-attended they were. A school feeding scheme could include checking the number of children fed. Monitoring a service delivery point, such as a clinic, could include information such as the demographics of people who used the service, the average wait times to receive the service, and the levels of satisfaction with the service.

Since monitoring could, but does not necessarily, include elements of judgement or analysis, programme monitoring activities do not usually require a broader context of programme logic or a theory of change that would explain why certain things are done or what they intend to achieve. However, as other chapters in this book will illustrate, the quality of monitoring may be enhanced with this context.

This chapter will explore how monitoring practice connects to organisational evaluation and learning functions and how monitoring effectively feeds into evidence use through evaluation systems. It will also look at the constraints to generating monitoring data that meets the needs of evaluative practice and organisational systems for adaptive management.

Monitoring Within and Beyond M&E

Over the last decade, the field of monitoring for development has shifted beyond focusing on monitoring as key to evaluation and performance management to taking a more systemic view of monitoring. This shift in perspective has defined monitoring in the context of development and reform and has further located monitoring within a range of cognate management tools, practices, and systems. These include accountability, performance budgeting, and evaluation, including data systems, reporting, and performance management systems (Wholey 2007; Van der Waldt 2004; Mayne and Zapico-Goni 2017).

Monitoring serves various purposes, with reporting, compliance, and accountability among the most important. Additionally, generating a foundation of data for evaluation is also a significant objective of monitoring. Much of the contemporary research on monitoring and evaluation assumes that these two practices are intertwined and referred to as “M&E” (Kusek and Rist 2009). While there has been a recent surge in literature focusing on evaluation systems and data management in African contexts, monitoring systems have not received the same level of attention. This lack of attention may stem from the literature’s emphasis on the relative neglect of evaluation, particularly in the public sector, despite the substantial investments and resources allocated to establishing and improving monitoring systems. Consequently, research on evaluation has served, in part, to advocate for increased

evaluative practices and greater utilisation of the monitoring data generated (Porter and Goldman 2013). While this is undeniably important, it is equally crucial and inadequately addressed regarding a knowledge base development that can enhance the current significant investment of organisational time, attention, and resources in monitoring (Wholey 2007).

The literature on M&E systems in African public sectors broadly agrees that governments place overwhelming emphasis on monitoring practice (rather than evaluation) for public sector management in the region (Basheka and Byamugisha 2015; Mapitsa and Korth 2017). While the reasons and drivers for this (over)investment and the ends to which it contributes are contested, the phenomenon itself is relatively undisputed. Given its prominence, it is surprising that more resources do not exist linking empirical examples from public sector practice to current theory on monitoring systems. As part of this discussion, we underscore the importance of a systemic approach to monitoring, defining the varied purposes of monitoring, and looking at some of the enablers and constraints of monitoring practice. We will highlight the theoretical and practical implications a systemic approach to monitoring has on practice and problematise different components of monitoring systems from a range of disciplinary perspectives. The result aims to speak to both development and public sector audiences across the continent who use and craft the monitoring tools needed for effective governance.

A Systems Approach to Monitoring

The starting point for considering monitoring is often reporting on progress towards key performance indicators or a similar practice that may be described with different vocabulary based on organisational norms. As a result, a considerable amount of literature about monitoring focuses on the indicators themselves – how to develop them and how to measure them in a collectively understood way (Booth and Lucas 2002). While this is certainly an important part of monitoring (and is discussed at length in Chapter 5), it is a partial and incomplete view of the practice.

To examine how progress is reported, it is crucial to consider that monitoring takes place within a context of numerous interrelated functions, which serve as components of monitoring systems. The figure below illustrates six of these components. Some of these components, such as data systems, provide the inputs for monitoring practices. Others, such as evaluation practices, are situated at the use end of monitoring. However, all these factors influence how monitoring is conducted. They determine the incentives for monitoring and drive the underlying value systems that shape what will be monitored, how monitoring will be conducted, and by whom (Mihaiu 2014). Understanding these factors is key to grasping the essence of monitoring, as well as the facilitators and constraints of effective monitoring.

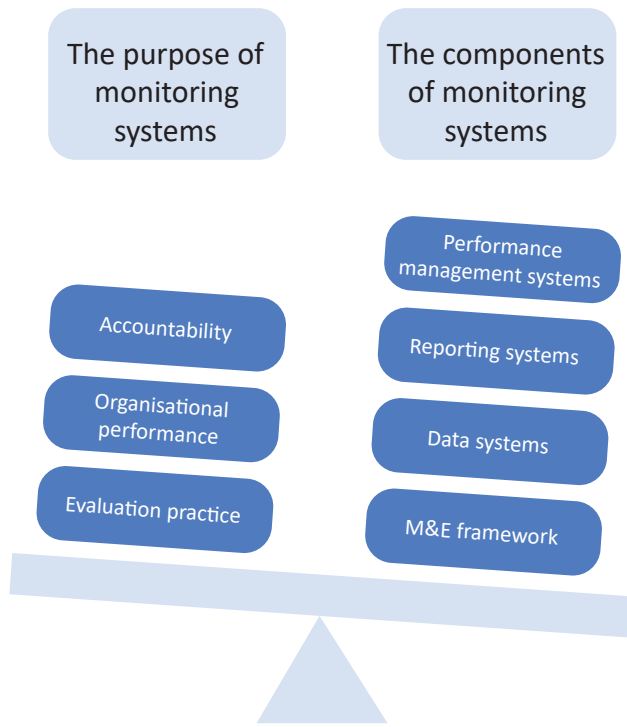


Figure 1.1: Components of monitoring systems

The figure above illustrates, on the left, three common reasons for monitoring: accountability, organisational performance, and evaluation practice. On the right, the column illustrates some components of a monitoring system: data systems, reporting systems, and performance management systems. While neither of these forms an exhaustive list, they are helpful anchors that can demonstrate how monitoring practice is not isolated and linear but rather links to a range of nested systems.

The following four sections explore the components of a monitoring system and their interconnectivity. Subsequently, a section is dedicated to each of the three purposes outlined in Figure 1. These sections examine the implications of a monitoring system's response to complexity and uncertainty, and discuss how these purposes impact the design of the monitoring system or its components.

The Components of a Monitoring System

One challenge in studying monitoring systems is the lack of widespread consensus regarding their definition, as organisations establish different boundaries around what constitutes monitoring. Some organisations fully integrate data and monitoring

systems, as well as reporting systems, while others maintain separate functional areas for monitoring and reporting. In certain cases, data management is entirely encompassed within the monitoring function, while in others, these areas have minimal connection. Similarly, some organisations integrate results, spending, and program implementation monitoring through performance-based budgeting. However, management of budget-related information is commonly done through separate channels, often with distinct management structures. Nonetheless, organisations must find ways to integrate these various components to facilitate effective monitoring.

The relationship among these components is multidirectional, encompassing different organisational dimensions. Accountability structures and reporting systems, for instance, incorporate a variety of policies and processes that contribute to accountability both within and outside the organisation. This includes accountability to donors and constituencies, beneficiaries, and achieving desired results. Additionally, accountability exists within the organisation, such as between an employee and their supervisor or between a programme and a monitoring and evaluation function.

Likewise, while data systems play a crucial role in providing inputs for monitoring practices, the outputs of monitoring activities also contribute to these same data streams. These circular dynamics emphasise that monitoring practice cannot be isolated from the complexity within which organisations operate.

While some data systems might be internal, focusing on process or financial data, others could be external, such as climatic or epidemiological data. This book questions one of the assumptions about monitoring, particularly in the chapters by Popphiwa and Everatt, which pertains to the location of monitoring functions. Traditional M&E assumptions propose that monitoring is an exclusively internal function, involving data generated and consumed by the organisation for programmatic decision-making. However, there are numerous situations where this is not the case. Citizen-based monitoring, parliamentary oversight as a form of monitoring, and the use of big data in monitoring are examples of crucial components of a monitoring system that exist outside an organisation. The locations of different components of a monitoring system may not strictly align with organisational boundaries, which can enhance the quality and use of monitoring. In an increasingly complex context, it may be necessary to draw upon data from various sources, thus altering the challenge of monitoring. For instance, organisational capacity to gather data becomes less of a concern when data is obtained externally. However, the processes of synthesising the data and tracing causal linkages differ when data originates from diverse sources. The implications of this remain relatively unexplored in the monitoring literature.

As global challenges become more complex and change occurs at a faster pace, monitoring data increasingly originates from diverse external sources. To effectively

utilise monitoring data for management processes, particularly when it is used for evaluation that connects results data to programmatic implementation data, a greater emphasis on causal linkages and attribution is necessary. In a context of complexity and uncertainty, adaptive management requires data that accurately reflects the activity's context. Results monitoring inherently captures the context through the gathered information, making it an essential tool for evaluation in an uncertain environment.

Monitoring for Evaluation and Learning

Monitoring of programmes establishes a foundation for comprehension of effectiveness, which occurs through two mechanisms. The first is process monitoring. Managers can determine whether programmes have been implemented as intended or not implemented at all, as process monitoring informs them about the implementation progress according to planned strategies. Achieving the intended results is unlikely if programs are not implemented correctly. The second mechanism involves monitoring the results. Some results necessitate causal inference to establish links with programmatic activities. Nevertheless, many programme results incorporate mechanisms for regular monitoring. For instance, conservation programmes benefit from continuous monitoring of biodiversity and land use. Similarly, health programmes may derive advantages from monitoring certain diseases or other health trends at a population level. While monitoring is often perceived to primarily focus on programmatic data and information, the monitoring of results, which may be conducted externally, also holds significant importance.

As monitoring data is primarily descriptive, the analysis occurs when users employ the monitoring data. The monitoring data tends to be devoid of inherent values, thus using and comprehending it requires an understanding of the context and the connections between the programme and its results. Various applications of evaluation data, such as strategic decision-making, adaptive management, and learning, are often associated with the evaluation function within an organisation.

The evaluation literature predominantly presents monitoring as an input for evaluation practice. Simultaneously, the literature acknowledges the significant constraints placed on the volume and extent of evaluation practice, with a disproportionate amount of organisational effort directed towards monitoring (Porter and Goldman 2013). A recent trend has emerged to broaden the definition of evaluation beyond its traditional practice, which typically involves occasional, externally commissioned activities. This expansion encompasses broader concepts of 'evaluative practice' and even includes 'evidence used in decision-making.' Expanding the terminology has profound implications for the relationship between monitoring and evaluation, as well as the role that monitoring can play in adaptive management and organisational learning.

From an evaluation standpoint, there is a logical flow of sequenced steps for designing a monitoring system: (i) a theory of change process, (ii) using this theory of change to develop evaluation questions, and (iii) aligning monitoring system components around these theory-based evaluation requirements (see Robertsen in this volume). A theory of change describes the way in which a programme's activities anticipate contributing to certain changes, which creates linkages between the activities implemented and the results achieved. Often, some of these causal linkages are very well established, while others are less certain. Monitoring can contribute to testing the accuracy of the theory of change, and can provide evidence to evaluate the process, the linkages to results, and the achievements of the results themselves.

From a monitoring perspective, there are several strengths and weaknesses to this approach. On the one hand, it is relatively straightforward to identify how monitoring data can be used. On the other hand, these theories of change address specific organisational needs that have developed in response to particular questions at a given time. Circumstances may change, as the rapidly changing context often reminds us. Theories of change are typically regarded as live documents and evaluation questions should adapt based on programmatic trends, although this is not always the case in practice. One advantage of monitoring is its ability to consistently track specific aspects over time. Establishing data collection tools, training staff, and reaching a consensus on common indicator definitions and their interpretations require significant investments of organisational time and resources. Regularly changing these elements would not only be inefficient but would also undermine the significant benefits of measuring core changes over an extended period. Maintaining consistency in indicator structure and other aspects of the monitoring systems enables managers to comprehend the results in response to programme or policy adjustments made to adapt to new circumstances.

In practice, monitoring systems are rarely designed to strictly align with the logic of evaluation needs, for better or worse. Typically, a negotiation process occurs between accountability requirements, reporting obligations related to the organisation's core operations, and evaluation needs. It is important to note that this negotiation process is not a zero-sum game. Monitoring data, which is necessary for accountability processes, can also contribute to organisational learning if there is a structured process for analysing and utilising this data for managerial decision-making. Moreover, an organisation's core business is not always fixed and can evolve over time through continuous reflection and discrete evaluation activities that propose significant changes. At this point, the monitoring components and evaluative components of M&E must reach a negotiated conclusion of how they can best complement each other.

Monitoring for Accountability

Significant research indicates that accountability is the primary motivation for monitoring, highlighting the importance of considering its implications for the design and use of a monitoring system (Bornstein 2006). An important implication, particularly in the context of Africa where a substantial portion of public sector activities rely on donor funding, is that organisations or departments may not have full autonomy in determining the key monitoring requirements (Goldman Byamugisha, Gounou, Smith, Ntakumba, Lubanga and Rot-Munstermann 2018). Many large bilateral or multilateral donor organisations enforce standardised systems of indicators and mandate all funding recipients to align with their bureaucratic monitoring priorities (Binnendijk 2019). This raises critical questions regarding the organisational outcomes that the investment in monitoring aims to enhance. Moreover, this issue is closely intertwined with the neocolonial origins of monitoring and evaluation practices across Africa, which have perpetuated entrenched donor interests (Mapitsa, Tirivanhu and Popiwa 2019).

Many organisations receiving donor funding are experts at aligning organisational needs with donor needs to reduce the burden of coordination. Nonetheless, it undoubtedly demands organisational resources to align various programme logics and ensure that data gathered for a single purpose can serve several others. A second implication is that incentives to game the data often arise if monitoring data is primarily used for accountability to stakeholders rather than the intended beneficiaries. In this volume, Masvaure considers the dependency of these incentives on the way in which monitoring results are coupled with consequences.

The primary use of monitoring for accountability creates a blanket incentive to overstate the extent of implementation and performance quality, which limits the extent to which monitoring can foster learning. The implementation of various strategies can reduce the ease at which monitoring results can be gamed (Mizrahi 2017). However, perhaps the least complicated and most effective strategy involves shifting the use away from an exclusive focus on accountability. Studies show that public officials view using performance information for accountability as counterproductive and ineffective (Behn 2003; Heinrich and Marschke 2010; Moynihan 2008). This results in low investment in the assurance of high quality data, as well as compliance with monitoring requirements.

In public sector contexts in Africa, where the demand for accountability by citizens, donors, parliaments, and other role players is legitimately high, using monitoring data as a means to provide accountability is an attractive solution.

However, it neglects to acknowledge the context of complexity and the presence of multiple embedded systems that exert influence on monitoring practice. It also

fails to recognise the existing body of research that delves into the practical aspects of monitoring. The accountability function of monitoring establishes an oppositional relationship between the generators and users of monitoring data, thereby creating incentives for subpar data quality. Complexity, as a contextual factor, not only influences monitoring data but can also be utilised to challenge the interpretation of such data. Scholars studying evidence use in decision-making extensively discuss this phenomenon (Stewart, Dayal, Langer and van Rooyen 2019). However, most approaches to monitoring systems assume that organisations provide a framework for interpreting and analysing monitoring data for decision-making. While this assumption may hold true in certain cases, theories of change processes often highlight that achieving this level of consensus cannot be taken for granted.

Organisations make significant investments to ensure that the monitoring data used for accountability remains untainted by incentives that could compromise its integrity. Chapter 6 of this volume explores algorithmic governance, an extreme form of coupling data and decisions. However, a more prevalent practice involves linking decision-making to processes such as parliamentary oversight, systems for data quality checks, or imposing sanctions for attempts to manipulate the data. While evidence suggests that some of these processes are effective, they also consume a considerable amount of time, thereby limiting the utility of the same dataset for adaptive management or responding to an uncertain context. The design of the components within a monitoring system highlights the trade-offs between these different objectives, making it challenging to repurpose the generated monitoring data from one objective to another. Occasionally, there are shared attributes of monitoring systems that effectively serve both accountability and adaptive management purposes. These attributes include timeliness, accuracy, high-quality data, and completeness. However, in other cases, as the investment in accountability systems grows, the system becomes less suitable for adaptive management purposes. These aspects of both mutual reinforcement and trade-offs are discussed throughout the volume in various ways.

Monitoring to Improve Organisational Performance

First and foremost, organisations use monitoring as a tool to improve their performance. The underlying rationale is that organisations can gather sufficient information to optimise their practices and outcomes by continuously tracking actions and achievements at higher levels of the results chain. When implemented effectively, monitoring can complement the evaluation function by providing focused insights in areas where ongoing data collection cannot be addressed due to complexity, uncertainty, or specific research gaps in the contextual landscape.

Several factors contribute to the usefulness of monitoring as a tool. Its continuous nature enables ongoing tracking over time, which can inform adaptive management practices (Waylen Blackstock, Van Hulst, Damian, Horváth, Johnson and Van Uytvanck 2019). This aspect is particularly valuable during periods of uncertainty and when dealing with high levels of complexity. While evaluations can address critical questions regarding program design, they cannot provide the same continuous feedback required for adapting to changing contexts.

Secondly, monitoring data offers insights into the implementation of organisational activities, allowing for triangulation with various other data sources. These sources may include internal organisational data such as performance-based budgeting, data gathered during evaluation processes, national statistical data, or relevant demographic trends. Organisations can gain a comprehensive understanding of their operations by analysing trends and linkages between their impact and interconnected factors. This process is particularly valuable given the increasingly complex nature of social problems and the involvement of multiple stakeholders.

The use of monitoring data for performance management implies a few things. It is essential for monitoring data to be built into several systems that measure results, negotiate the outcomes of these measurements, and reflect this to people at different places within the organisation. People feel motivated to feed into an effective system upon seeing that their efforts yield results. The feedback loop regarding processes of use is often broken (Mapitsa, Tirivanhu and Popiwa 2019). An effective monitoring system for improving organisational performance should ensure that processes are in place to feed back data use to those contributing the data. A robust monitoring system allows each contributor to understand how their part of the data puzzle fits into a coherent whole. Simultaneously, coherence and management of these various processes is necessary. In an organisational context characterised by uncertainty, feedback time is of the essence; the loop from data to decisions to feedback needs to be clear and timely. The loop must be adaptive enough that necessary changes can be made for efficient implementation in a context of complexity, should anything change.

Examples of Monitoring in Complex, Uncertain Systems

The section below presents examples of programmatic interventions that took place in complex or uncertain contexts and examines the ways in which monitoring systems either contributed to effective programme design, or failed to do so due to inappropriate institutionalisation or barriers hindering the use of monitoring data.

Policymakers in the COVID-19 pandemic faced a situation where they had relatively good access to external data about the pandemic results. This data included the number of deaths each day, the rates at which people tested positive for COVID-19,

the availability of hospital beds, and similar information. The health sector had widely available information systems, although the quality of this data and its causal mechanisms could be questionable. They eventually obtained information about the virus, such as its usual rate of spread and the conditions under which it spread. However, the challenge they faced was building causal linkages between those pandemic results and the programmatic or policy mechanisms at their disposal. Tools to combat the pandemic, such as mask mandates, curfews, and limits on gatherings and mobility, were connected to pandemic outcomes. However, due to the rapid rate of change of the pandemic, the differing contexts in which the policy response was rolled out, variations of policy implementation and enforcement, and the comparably long timeline for rigorous evidence generation, determining the causal linkages between policy decisions and pandemic outcomes has been challenging. For example, some analysts believed the lockdown was relatively successful in ‘flattening the curve’ of infections, while others believed it led to spikes in infection in areas with townships of high population densities and little possibility for social distancing. The contestation of evidence regarding causal linkages has shown that even when high-quality monitoring data is relatively widely available, disputes about the interpretation of this data arise from ideological positions and methodological preferences. While robust monitoring systems can shape the scope of the debate around causal linkages, they cannot eliminate contestation.

Monitoring systems shaped decision-making in the following example: A critically endangered member of the Lily family grew exclusively in a small provincial reserve in Limpopo. There had been a few censuses of the plant, but the biological knowledge of the species was relatively low. Conservation decisions needed to be based on good practice in general protected area management. Although the reserve held ecological importance, it lacked a tourism market or other economic benefits. Moreover, it did not receive significant local support as it was seen as a means to exclude people from accessing the land. Despite breaching the allowed land use, cattle grazed widely. A small lobby group of environmental activists and scientists, concerned with this particular protected species, organised a collaborative intervention to strengthen land management within the provincial reserve for the benefit of the plant. They worked alongside local and provincial authorities to reinforce fencing, garner support for the conservation effort, and prevent further grazing within the reserve. Their intervention was framed based on indicators for protected area management. Process monitoring was established to track improvements in protected area management practices. The implementation process of the conservation initiative was largely successful, as grazing decreased due to the newly erected fences. However, results monitoring occurred only at a later stage, when an additional count of the lily’s population was conducted. It became apparent through this count that the interventions had significantly reduced the size of the lily’s population. Grazing was found to be essential in reducing competition faced by the plant, as faster-growing

grass crowded it out. The decisions made based on the best available evidence did not account for all components of this complex system. This example illustrates that effective monitoring systems have the potential to challenge established theories of change and programmatic designs.

The establishment of the social relief of distress grant serves as a final example involving the response to the COVID-19 pandemic. This grant expanded social grants available in South Africa to unemployed adults who would not qualify for other grants, such as the old age or disability grant. Since the beginning of the lockdown and subsequent years, there has been contestation and debate surrounding this grant, highlighting divergent views regarding its purpose and the necessary monitoring to determine its effectiveness. Evidence suggests that it played a significant role in reducing hunger. However, several other intended benefits, such as facilitating job seeking, remain subjects of significant contention. The data required to monitor its effectiveness is spread across multiple departments that lack aligned systems for generating useful monitoring data on key aspects of the intervention. Moreover, numerous variables have compounded the desired outcomes of the grant, including poverty reduction, increased employment, and improved access to food. The dynamic nature of the pandemic has made it challenging to isolate the contribution of this particular intervention.

Enablers and Constraints to Effective Monitoring

Many organisational factors such as a lack of awareness and the resulting deprioritisation, budget and mandate limitations, hesitancy around transparency, or limited ability to implement changes based on available data, can hinder effective monitoring. However, monitoring systems have been strengthened due to significant and rapid change in the contextual factors that previously impeded progress.

The COVID-19 pandemic has highlighted the importance of data in policy decisions. The availability of information regarding crucial aspects of the pandemic response, including hospital bed availability, virus spread rates, recovery rates, and vaccination rates, has driven the response of many countries and undoubtedly saved many lives. Paired with the best available knowledge about behavioural science and decision-making, the pandemic has inspired transformative changes at a societal level that would have been unimaginable before. On one hand, this underscores the heightened level of uncertainty in which monitoring systems now operate. The previously assumed impossibility of many societal changes now taken for granted prompts questioning of numerous other issues.

Citizen expectations regarding the availability and use of evidence have shifted, evident in various fields. The expectation now includes real-time tracking of social assistance measures, mirroring the accessible information on the pandemic, owing

to increased awareness and involvement with diverse data sources. The government COVID-19 portal has become a household decision-making tool, resulting in profound implications for expectations concerning democratic decision-making and transparency.

Simultaneously, false news has showcased the extent to which data can be contested and interpreted differently by various stakeholders (Uwalaka, Nwala and Chinedu 2021). This diverse interpretation emphasises the significance of monitoring systems that not only provide data but also establish a framework for its interpretation and use.

Interests and incentives linked to the interpretation of monitoring data often lead to ongoing contestation of monitoring systems. Nonetheless, comprehending the origins of this contestation and its implications for monitoring system design is crucial to ensure their suitability for the intended purpose.

Conclusion

The government needs to respond to increasingly complex and unpredictable challenges, highlighting the heightened importance of monitoring systems. However, these systems must be capable of measuring what is crucial for adaptive management. It is essential to have the capacity to (i) collect the requisite data, (ii) analyse it, and (iii) provide feedback on its use to those responsible for gathering it. The organisational systems required for these tasks are intricate and must operate with timeliness to be effective. Governments already invest substantial time, energy, and resources into monitoring, often focusing on compliance and accountability, which can compromise the quality of the gathered data. While this serves a purpose, it also carries risks that can incentivise manipulation or improper use of monitoring data. There are indications that monitoring systems could be better structured to align with performance improvement objectives.

The unprecedented demand for transparent and readily available information, combined with existing capabilities, presents significant opportunities for building monitoring systems that are tailored to their purpose and fulfil both information supply and demand. With big data and technology accessible to virtually all citizens, who can provide real-time verifications or input on implementation and delivery, the potential for creating monitoring systems that meet the necessary requirements is substantial.

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