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Article

Advancing a Performance Management Tool for Service Delivery in Local Government

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Abstract: Various strategic plans compiled by the local levels of government seek to advance the need to integrate strategic planning frameworks and improve service delivery and related content through the application of performance management tools. From the perspective of municipalities, all policies and plans at all levels of government need to be articulated with empirical based plan-level formulation and in compliance with set performance assessment criteria. Using South Africa as a case study, the methodology of the paper included a theoretical analysis of available (but applicable) performance management tools and processes. The focus and outcome were the development of a simplified performance management tool that supports elementary prioritization of projects and the setting of standards to address the growing needs, service backlogs, and informality challenges, thereby enhancing sustainable planning and development applicable to developing countries. The study findings highlight, firstly, the prevalence of persistent service delivery gaps in local government. Secondly, local government performance management and strategic plan implementation is constrained by measurement data, standards, and information gaps. Thirdly, inadequate legislative frameworks and strategic instruments applicable to local government in developing countries adds another layer of performance management gap dimensions. Fourthly, there is misalignment between policies, legislative provisions, and local needs in terms of a set of applicable measurement tools and standards relevant in a developing country. Fifthly, an oversight role gap exists in terms of clearly defining the roles and scope of responsibilities concerning performance management. These above-mentioned shortcomings read together constitute a service delivery performance management tools gap that needs to be overcome if improved service delivery is to be achieved. In view of the above-stated considerations, a simplified performance management tool to enhance service delivery in local government had to be developed. The developed simplified performance management tool assumes that the application of performance management assessment processes is to be aligned throughout all spheres of government.

Keywords: strategic plans; assessment tools; project prioritisation; performance management; modelling; service delivery



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1. Introduction and Study Background

Ingraham (2007) states that the five general management areas present in all levels of government include performance management (i.e., management for results in all focus levels/areas), financial management, capital, and infrastructure management; human resource management, and information technology. At the same time, public context driven accountability in government structures requires structured performance measurement and (re)tooling as a way of implanting an improved governance system steering mechanism for transparency, trust, and legitimacy (Andrews and Entwistle 2015; Beeri et al. 2019; Dubnick and Frederickson 2011; Khawaja and Khalid 2022; Meier et al. 2017; Sebake and Mukonzà 2021). Ingraham (2007) further points out that five lessons are deduced from high-performing governments across all levels in the United States:

- The central role that technological systems and advances play in enabling public service provision through the use and aid of digital devices and systems.
- Government systems that respond and perform efficiently in the delivery of public services have efficient decision support systems to enhance improved decision making and planning.
- High performing public service employees are incentivised through the application of human resource management practices/tools that include reward, recognition, promotion, and bonuses as part of extended talent recruitment, management, and retention strategies.
- Governments are engaged in strategic and tactical planning that provides a conducive environmental for operational planning processes and activities to succeed; and
- Governments' have the ability to hire, fire and create moments of glory, celebration and learning from every service delivery encounter quickly.

[Armstrong and Taylor \(2020\)](#) argues that performance management is a dynamic process for improving performance and a means of getting better results by understanding and managing performance. This is achieved via an agreed framework of planned goals, standards, and competency requirements. Local government systems must therefore be accountable and effective. This is because local government represents the closest system of government to the people. Additionally, local government is directly responsible for basic service delivery and infrastructure provision. In this respect, calls for using agreed sets of performance measures has been viewed as necessary and important. The need is further motivated by the observation that public sector organizations often lack an appropriate set of tools relevant to enhanced performance and service delivery. Consequently, the focus on studies that seek to contribute in terms of improving local government service delivery remains a priority research and project intervention area, hence this study ([Alghamdi 2018](#); [Eitel 2012](#); [Goldman et al. 2019](#); [Immordino 2014, 2017](#); [Martins and Olivier 2018](#); [Olivier 2014](#); [Piña and Avellaneda 2017](#); [Tirivanhu et al. 2017](#)).

In South Africa, performance management, service delivery gaps and cracks have been a persistent issue for both national, provincial, and local government systems and structures ([Biljohn 2017](#); [Bizana et al. 2015](#); [Kroukamp 2005](#); [Manyathi et al. 2021](#); [Tauté 2020](#)). This challenge has manifested itself as procurement bottlenecks and inefficiencies ([Manyathi et al. 2021](#)), mal-administration and integrity issues ([Kotze and Taylor 2010](#); [Shava and Chamisa 2018](#)), project implementation delivery weaknesses and delays ([Kroukamp and Cloete 2018](#)) as well as inadequate institutional decision and support systems (both manual and digital) ([Mulaudzi and Liebenberg 2017](#); [Tshishonga 2021](#)). The need to develop refined performance management and service delivery tools therefore remains important.

Since 1994, South Africa's central and local government systems struggled with different forms of performance management and service delivery requirements. One way of addressing these shortcomings was viewed to be an area in which the development of a model and or frameworks could contribute towards moving all levels of government in the required direction. [Ndevu and Muller \(2018\)](#), developed a value-based integrated performance framework and measurement instrument for improved service delivery based on the following normative values: openness, transparency, consistency, administrative fairness, service standards, and value for money ([Ndevu and Muller 2018](#)). [Biljohn \(2017\)](#) presents social innovation as a tenable alternative to transforming the South African local government service delivery landscape ([Biljohn 2017](#)). On the other hand, public-private and multi-governance partnerships models are argued as one practical way of overcoming service delivery bottlenecks and fast-tracking service delivery performance in South Africa ([Kroukamp 2005](#)). Meanwhile, [Tauté \(2020\)](#) explores and demonstrates how the power of collaborative partnerships can be harnessed towards the quest for improved service delivery in South African local government space. What is missed and lacking from all the above reviewed models and approaches, however, is a simplified but innovative performance management and service delivery tool for central and local government application and use.

This paper therefore seeks to develop a simplified performance management and service delivery tool applicable to intermediate cities and small towns and municipalities in developing countries with a view to enhancing performance with respect to service delivery from the local government to the national government. The study research questions were as follows:

1. What are the key performance areas and performance areas of the management performance system in South Africa?
2. What are the performance management system gaps in the available performance management tools used in South Africa?
3. What performance management variables and or indicators are relevant in the development of a simplified performance management tool applicable to intermediate cities and small towns and municipalities in South Africa?

We hypothesize that the absence of a simplified performance management tool that supports elementary prioritization of projects constrains local government capacity to address informality challenges, service delivery needs and backlogs. This mismatch between performance management tools and service delivery explains the rift with respect to performance management and service delivery inefficiencies and backlogs prevalent in the study area specifically, and similar areas in developing countries.

This paper is organised into seven (7) sections. Section 1 has introduced the subject matter under investigation. Section 2 presents background information and a high-level literature review in respect to performance management and service delivery in both developed and developing countries. Section 3 details the study method employed in exploring the study. The stakeholders involved and data and information realities, access, availability, and quality aspects are also covered in this section. Section 4 presents the study results, findings, and gap analysis. Section 5 elaborates on the data sources and inputs to the model, the equations and calculations developed in responding to the need to develop a simplified performance management and service delivery tool to enhance local government service delivery performance. Section 6 is dedicated to a discussion of the contribution of the developed model and value proposition it brings in the central and local government sphere. The limitations of the study and areas for future research are briefly covered in this section also. Section 7 presents concluding thoughts and remarks on the paper.

2. Theoretical Inclinations and Literature Review Framework Discourses

This section locates performance management within the purview of both theoretical and practical experience. In this regard, the nexus between theory and experiences from South Africa are explored while the international practices from developed countries are used as a benchmark.

Generally, performance management delivery systems (PMDS), structure and operations frameworks draws from management control systems (MCS), value based systems (VBS) and diagnostic control systems (DCS). This includes understanding that these systems have been subjected to further refinements and continuous improvements of the systems for relevancy and impact (Ferreira and Otley 2009). Initially, work on PMDS focused on management control systems with respect to dividing the tasks and deliverables between strategic planning, management control and operational control as initially theorized by Robert Anthony in 1965. Otley (1999) extended this initial theorization by proposing an inductively generated framework in studying the operations of management control systems (MCSs). The core matters that must be satisfied by any PMDS include the following: goals and objectives formulation and setting, the development and generation of relevant strategies and plans for the attainment of corresponding identified goals and objectives, target-setting, a built in incentive and reward system, and functional structures. These aforementioned components ensure that the PMDS system has an active and efficient information feedback loop system to facilitate continuous learning and adept adaptation to the changing world of local government administration and management. Value-based management systems and frameworks (VBMS) were developed in response to the apparent

realization that culture, value, and ethics are a central and inseparable component of any PMDS (Ittner and Larcker 2001). Simons (1995) in complementing and seeking to further enhance the implementation of PMDS, proposed a diagnostic control system in which four levers of control (LOC) are central to the successful implementation of the model. These four interrelated core concepts include core values, risks to be avoided, critical performance variables/indicators, and strategic uncertainties (Ferreira and Otley 2009). Variations of the PMDS have also included the balanced score card (BSC) and various reporting cards (RCs) as a way of gauging and measuring municipal and government service delivery generally (Kasperskaya 2008).

From the United States of America, paradigm shifts in local government performance and service delivery have incorporated e-governance models of development. In this regard, the e-government relationships are theorised within the confines of the relationships, networks, engagement, and collaborative platforms which (re)define government, governance, and governmentality in respect of government to citizen (G2C), government to business (G2B), or government to government (G2G) (Reddick 2004). At the same time, theories of municipal governance, institutional collective action, and network theory have been advanced as lenses for exploring and better understanding performance and service delivery by both state and non-state actors (LeRoux et al. 2010). Consequently, the narrative of local government administration illustrates how the theoretical platforms change, and that includes the dual state theories, principal-agent theory, state autonomy theory and local state regulation theory. These theories are intertwined and linked to the behaviour, values and conduct of both public officials tasked with the mandate to ensure that central and local government delivers the required services to the public. Theories such as the trait theory, contingency theory, situational leadership theory, functional theory, managerial grid theory, leader-member exchange theory, transformational theory, behaviour change theory, theory of reasoned action, and social practice theory become fundamental in accounting for how performance and service delivery plays out within the central and local government landscape (Downe et al. 2010; Steiner et al. 2018; Van der Walldt 2017). In this respect, the combined effect of the interplay of these theories in practice presents implications and call to question the relevance of the professionalisation and state of professionalisation of central and local governments in any setting. It is therefore important to realise that theories and models have an essential role to play in seeking to advance a better performance management and service delivery model in any setting.

On the other hand, the e-LocGov model, in which there is transition of central and or municipal government and governance service delivery, has been associated with paperless, new management and security tracking systems such as those practiced in Finland (Pappel et al. 2019). Such transitions are predicated on migration from a manual system to adoption of the Electronic Document and Records Management Systems (EDRMS) (i.e., digital format and systems) covering all work-flow portfolios and service offerings of a municipality. The transition framework includes change management regimes covering the following: software adoption (open source or licensed), new cultures of engagement between individuals and the municipality/government, transforming expectations on ethics and transparency as well as human capacity building and training. In assessing digital transformation, various measurement tools can be used such as the satisfaction rate index (SRI) and digital performance index (DPI), among others, to assess and track the readiness and impact of digital transformation and implementation on municipal and government service delivery (Pappel et al. 2019). Pappas et al. (2022), in their paper titled *Modelling Key Performance Indicators in a Gamified Waste Management Tool* highlights that although widespread tools and models (e.g., "Sim City 4", "Cities: Skylines", "NetLogo" etc.) have been developed to quantify waste management efficacy among other development impact and city outcome indicators, these efforts are, however, not sufficient. The models seek to represent a complete package of a simulation models toolkit that mimics complex world cities' scenarios. However, the drawback is that such models and tools serve the needs and interests of a small audience. Moreover, these tools and models draw on big data analytics,

artificial intelligence, robotics, and the Internet of Things (IoT), among others, in simulating cloud-based virtual realities (VR) and augmented realities (AR). These simulations can take the form of, for example, expressing how automated and connected cars, smartphone-based audio and crowdsourcing infrastructure and services monitoring, tracking systems, and drones can assist in improving municipal service delivery (Siegel 2016). However, the ease and simplicity in implementing these models in developing countries is limited. The reasons for questioning the model application are linked to data availability, skills, and resource ability. Additionally, setting up these systems in developing countries is complex and difficult. Furthermore, adapting these simulation tools and models for environments such as intermediate cities and small towns and municipalities and environments, particularly in developing countries, is quite challenging. In any case, these simulation tools and models come at a premium in terms of the expertise to manage and oversee their operation, raising sustainability challenges as they tend to add a new knowledge barrier layer in environments in which such skills are scarce, far, and in between (Mohanty et al. 2016). Invariably, literature has studies that highlight that the designing and implementation of data-driven municipal and government planning technologies for intermediate cities and small towns municipalities and areas requires a solid but contextual understanding of the inter-linkages and interconnections between data, physical objects (e.g., settlements, buildings, roads, water and sewage infrastructure), public services (e.g., water provision, refuse collection, etc.) and urban and rural stakeholders (Lăzăroiu and Harrison 2021; Nica 2021; Wolff et al. 2020).

In seeking to advance a performance management tool for enhanced service delivery in local government, this paper adopted the theory of change (TOC) as a meta-theory that can tie together the suite of the Results Oriented Management and Accountability (ROMA) local government performance management system logic models. The origin of these models can be traced back to the 1990s (Holland et al. 2012; Hout et al. 2022). TOC thus places an organisation or agency's development and service delivery needs, outcomes and strategies at the centre and drive local governments' change management and transformation agendas.

2.1. Background Reality Impacting on Performance Management in a Developing Country: The Case of South Africa

A comparison of performance management in developed countries and developing countries has led to the outcome that performance management in all countries has a similar purpose, related to the achievement of a set of goals and objectives. Furthermore, in all of the countries reviewed, performance management needs to be applied to all levels of government and spatial systems as an example. It can be argued that the lack of application of performance management in local government service delivery reduces the quality of life of communities within the developing world.

For this paper, the case study focusses on the importance of performance management application in local government service delivery systems in a developing country. Hence, South Africa was selected as a developing country with unique historical, political, spatial, local government development realities and challenges. A literature review on case studies highlights that a case study is an appropriate research tool for purposes of gaining in-depth investigation and exploration of a study phenomenon, as this allows for multi-perspective analyses (Babbie 2001, 2020; Chakwizira et al. 2021; Feagin et al. 1991; Wagenaar and Babbie 2001; Yin 2003, 2017; Yin and Yin 1994).

Some sixty-seven percent (67%) of South Africa's two hundred and fifty-seven (257) municipalities (local, district and metropolitan) are dysfunctional, bankrupt, and unable to deliver quality municipal services (consider SA Cities Network (2016) and the Audit General (2019)). Figure 1 illustrates the dependency levels on the government in terms of grants to be paid to certain categories of the total population.

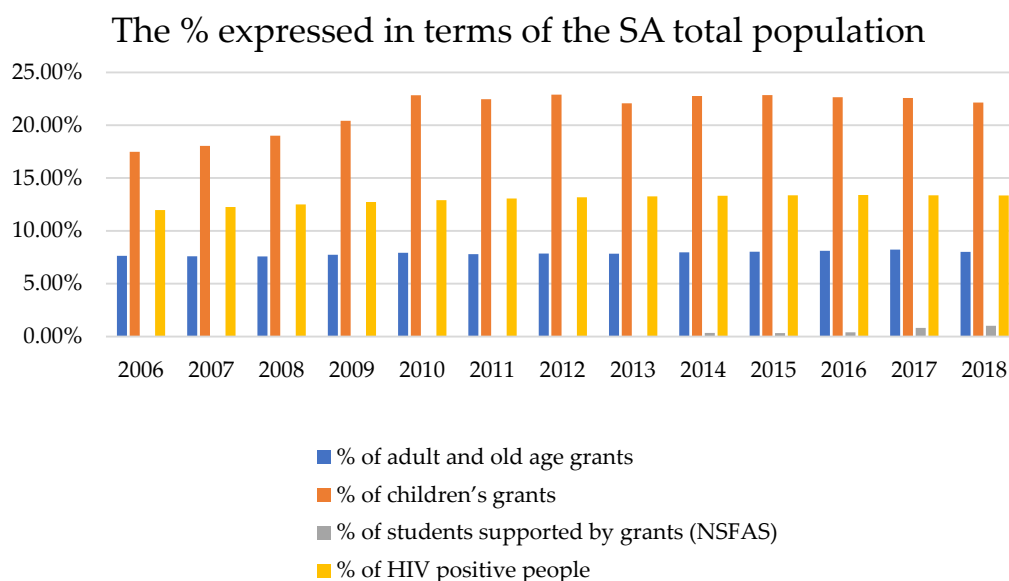


Figure 1. Dependence on the state in South Africa (Source: Own construction using [Quantec \(2020\)](#)).

From [Figure 1](#), we can deduce the high percentage of population that relies on state grants. These same people are either classified as indigent or as households who are exempted from paying municipal rates and fees. This results in decreased revenue for municipalities, while the demand for service delivery and infrastructure needs grows. South Africa's rural municipalities (in which intermediate cities and small towns and municipalities are predominant) experience high state dependency in seeking to deliver services. Generally, 70% of revenue for these municipalities is derived through state funded grants. This can be compared to 24% grant dependence for metropolitan municipalities, for example ([PSA 2015](#)). The implication is that intermediate cities and small town municipalities face multiple service delivery constraints including the lack of adequate finance, lack of skilled manpower, growing service and infrastructure demand, and the need to service a large, poorly resourced spatial municipal area.

The [Moneyweb \(2020\)](#) website concludes that in 2020 personal income tax contributions to the fiscus were 38.82%. This contribution stands in contrast to the average personal income taxes contribution for the Organisation of Economic Co-operation and Development (OECD) countries, which are on average 24%. By analysing the South African financial data on the [Quantec](#) website, it is deduced that only 4.76 million out of 57 million people (8%) contributed to personal income taxes in 2018. Additionally, from 2012 to 2018, the number of personal taxpayers decreased by 12%. This reality within a developing country impacts negatively on performance management within all levels (spheres) of government.

The lack of qualified and specialist knowledge in the workforce has led to the unsuccessful management and monitoring reality of local governments in developing countries ([Shark 2016](#); [Rogers et al. 2015](#)). It is further aggravated by present staff capacity shortages which pose considerable hindrances to the application of the performance management systems. It is worthy of note that performance management is not a practice specifically designed for developing countries only, but is exceptionally relevant in improving spatial systems' performance within developing countries. A successful democracy like South Africa with its challenges of high levels of population growth, unemployment, of un-even human rights record and practices of corruption in service delivery necessitates intervention. Thus, adapted performance management practices can enhance and improve access to services, and in the long run it can serve as an incentive for external investment in South Africa and similar developing countries.

2.2. Local Government Performance Management in Developed Countries

Against the background as dealt with in the scene-setting sections above (i.e., Sections 2 and 2.1), the core principles applicable to performance management in developed countries should be understood as a mirror, benchmark and departure point in developing appropriate performance management systems. In the United Kingdom and the United States, local governments have applied performance management systems since the 1970s. In 2007 (Perez and Rushing 2007) reported on CitiStat a data-tracking and management tool from Baltimore, also adopted by other U.S. cities/metros, which monitors overtime, sick leave, response time to public complaints, pothole abatement and all city programs and services. CitiStat uses Microsoft Office programs in combination with GIS software and relies on a small staff component to analyse and illustrate data through charts and maps. The success of CitiStat is due to:

- Some performance data that (used by CitiStat) comes from centralized call-in data.
- Leadership buy-in and commitment from political leadership.
- Biweekly meetings, reporting and the continuous review of data.
- Dedicated planning and oversight staff.
- Training (statistical, Geographic Information System (GIS) and data mining) to build capacity for effective data analyses.

With respect to data quality, use and value, the following aspects are key:

- integrated data collection;
- integrated data management;
- data linked to decision-making;
- public disclosure of data; and
- the filling of data gaps.

Kaplan and Norton (1992, 1996) developed the Balance Scorecard (BSC) model in 1992 as a performance management tool with financial and non-financial measures. This model was based on four perspectives: the financial perspective, the internal (quality of service, delivery, cycle time) perspective, the learning and growth perspective, and the consumer perspective. The BSC model is also applied to evaluate local governments' performance in Spain, Italy, Australia, Europe, and Greece (consider the respective sources: Kasperskaya (2008), Farneti and Guthrie (2008), Yetano (2009), Kladogeni and Hatzigeorgiou (2011), Kosmas (2019)). These models provide generic performance management approaches that can be applicable in developing countries' local government set-up, with modifications as dictated by context.

3. Materials and Methods—Research Method Development and Contextual Imperatives

This section presents the research method development process and how this protocol incorporated the contextual imperatives that guide performance management and service delivery in South Africa.

3.1. Case and Study Unit of Analysis

The study adopted a case study method approach in seeking to explore the performance management areas in South African municipalities with a focus on intermediate cities and small towns and municipalities in South Africa. The contextual factors existing in South Africa are largely applicable to similar contexts in developing countries. The case study method was adopted in line with similar studies that highlight that the case study approach is an appropriate and relevant methodology in cases in which a detailed exploration of a subject, theme or phenomena is required. The case study approach provides a researcher with the opportunity to incorporate multi-perspective analyses in any study (Yin 2003, 2017). Since 1994, municipalities in South Africa have generally experienced differentiated struggles and difficulties in attempts to provide the services and infrastructure necessary to confront and reverse both apartheid-created and post-apartheid

perpetuated inequalities, which are worsened by the on-going rapid urbanization (City Support Programme of National Treasury 2019; SA Cities Network 2021). Figure 2 presents the map of South Africa as a case study with depictions of the district municipalities in the country.

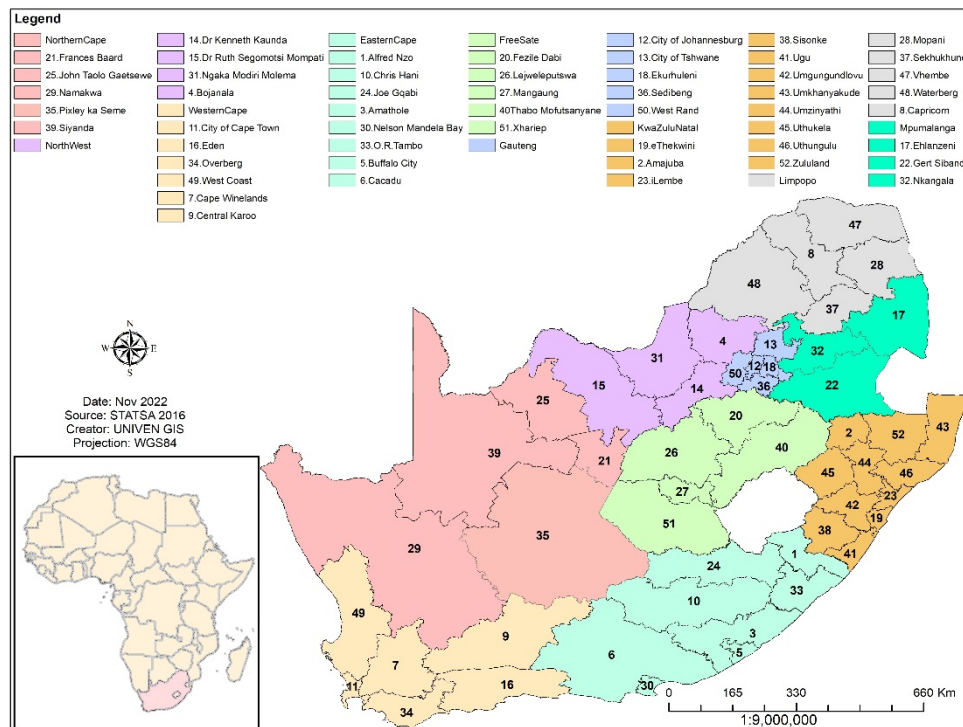


Figure 2. Map of South Africa case study.

District and local municipalities in predominantly rural provinces such as Limpopo, KwaZulu-Natal, the Eastern Cape, and Mpumalanga face accentuated service delivery challenges. This is partly because most residents cannot pay the rates for the services provided, leading to a high municipality consumer service debt ratio. The high municipality consumer service debt ratio makes it increasingly unsustainable for most local municipalities to provide services. In any case, the paying percentage of residents/ratepayers is continually shrinking as the tariffs charged by municipalities for services are increasingly turning up to be beyond the reach of most of the residents/ratepayers. Table 1 presents the reality of the different municipal categories, technical, financial, and human resources.

Indeed, Table 1 places in perspective the contextual reality of service delivery challenges by municipalities categorization in South Africa with respect to category, size, and resource endowment. The study focused on Category B and C municipalities, excluding Category A, that are comprised of metropolitan and large cities that are differently resourced. While Category A municipalities have better resources and are better disposed to respond to service delivery challenges, this does not mean that they are immune to service delivery challenges. However, for the purposes of this study, interest was on intermediate cities and small towns and municipalities in South Africa, which, as highlighted in Table 1, have low financial resource capacity, human management capacity constraints, and have experienced uneven service delivery prioritization, provision, and procurement challenges.

Table 1. Different municipal categories in South Africa.

Category	Sub-Category ¹	Settlement Hierarchy	Number of Municipalities	Population Percentage	Per Capita Income (Rands)
A		Metros	8	40	9152
B	B1	Secondary cities	19	15	5975
	B2	Large Towns	26	9	5159
	B3	Small towns	101	15	3974
	B4	Rural villages	59	22	1457
C	C1	Districts (Not Water Services Authorities)	23		
	C2	District (Water Services Authorities)	21		
$\Sigma = 3$	$\Sigma = 7$	$\Sigma = 7$	$\Sigma = 257$		

Source: SALGA (2022); Xolile (2020).

From Table 1, we can understand that in compliance with the [Constitution of the Republic of South Africa \(1996\)](#), which was founded on the values, principles and standards of a developmental local government, this vision requires that local government capacity is developed continuously with support from all stakeholders. The main categories of municipalities in South Africa are:

- Category (A): This is a metropolitan municipality that has exclusive municipal executive and legislative authority in its area of jurisdiction (SALGA 2022; Xolile 2020).
- Category (B): This is a municipality that shares municipal executive and legislative governance authority in its area with a Category (C) municipality within whose area it falls (SALGA 2022; Xolile 2020).
- Category (C): A municipality that has municipal executive and legislative authority in an area that includes more than one municipality (SALGA 2022; Xolile 2020).

Figure 3 is a graphical representation and illustration of municipal service delivery challenges and problems from May 2020–May 2021. During this reporting period, a total of 16,876 service delivery incidents/matters were reported on the *GovChat* platform throughout the country. Attempts at addressing these service delivery challenges have been difficult since service delivery turn-around times are slow. Timeliness, decision velocity and speed in service delivery response action is still an area of concern as municipalities face differentiated challenges that relate to capacity, governance, and financial management constraints, or a combination of these (SALGA 2022).

While Figure 3 presents the municipalities' service delivery incidents/matters from the perspective of formal lodged complaints to the government electronic platform, the real picture is worse than the picture painted due to under-reporting and at times misrepresentation. However, Table 2 presents a municipal infrastructure reliability audit assessment by service type as conducted by the South African Local Government Association (SALGA).

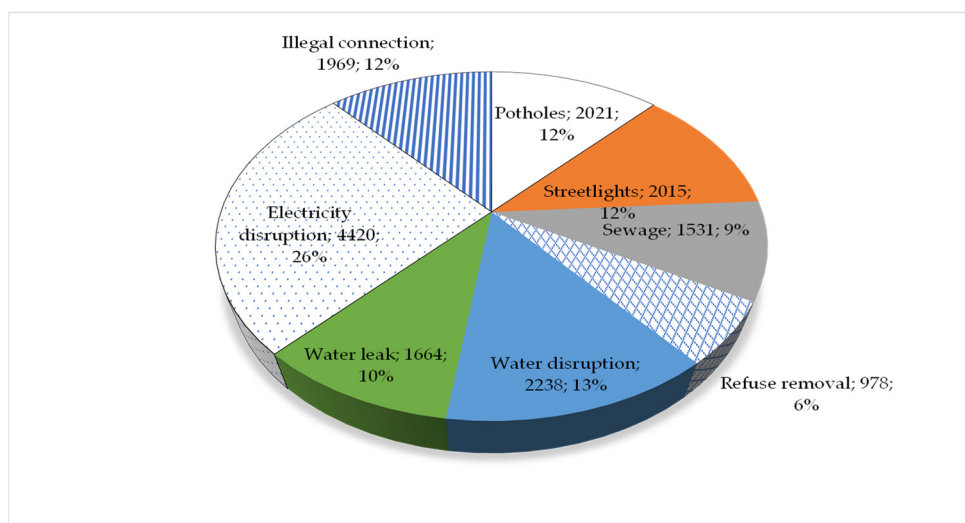


Figure 3. Municipalities service delivery matters as reported on the GovChat platform, South Africa.

Table 2. Municipal infrastructure reliability by service type in South Africa.

Water	Sanitation	Electricity	Solid Waste	Roads and Stormwater
<ul style="list-style-type: none"> Only 64% of households have access to reliable water supply (Department of Water and Sanitation (DWS). Non-revenue water is estimated at R9.9 billion per year, due in part to maintenance backlogs or inefficiencies. 44% of water treatment plants are in a poor or critical condition. 	<ul style="list-style-type: none"> 56% of wastewater treatment works are in poor or critical condition (Department of Water and Sanitation). Several municipalities have been taken to court and convicted over sewage pollution. 	<ul style="list-style-type: none"> Non-revenue electricity is estimated at R10 billion annually (National Treasury) The condition of municipal electricity infrastructure is undesirable. 	<ul style="list-style-type: none"> In 2020/2021, only 45% of landfill sites were compliant² (Department of Environmental Affairs and Forestry). In 2019/2020, only 47% were compliant (Department of Environmental Affairs and Forestry). In 2018/19, only 40% were compliant (Department of Environmental Affairs and Forestry). 	<ul style="list-style-type: none"> The poor state of municipal roads is evidenced by potholes, cracks (crocodile, linear, and block cracking), blading etc. A significant number of municipalities need to improve their data on the state and condition of their roads and pavement management systems.

Table 2 highlights that service delivery challenges cut across the gamut of all infrastructure and service areas that are the responsibility of municipalities and that they are obligated to provide to residents and ratepayers in their areas of jurisdiction.

Figure 4 presents secondary cities in South Africa. Secondary, medium sized and small towns in South Africa face extreme forms of service delivery in terms of poor roads, water and sanitation, and electricity blackouts, among other challenges.

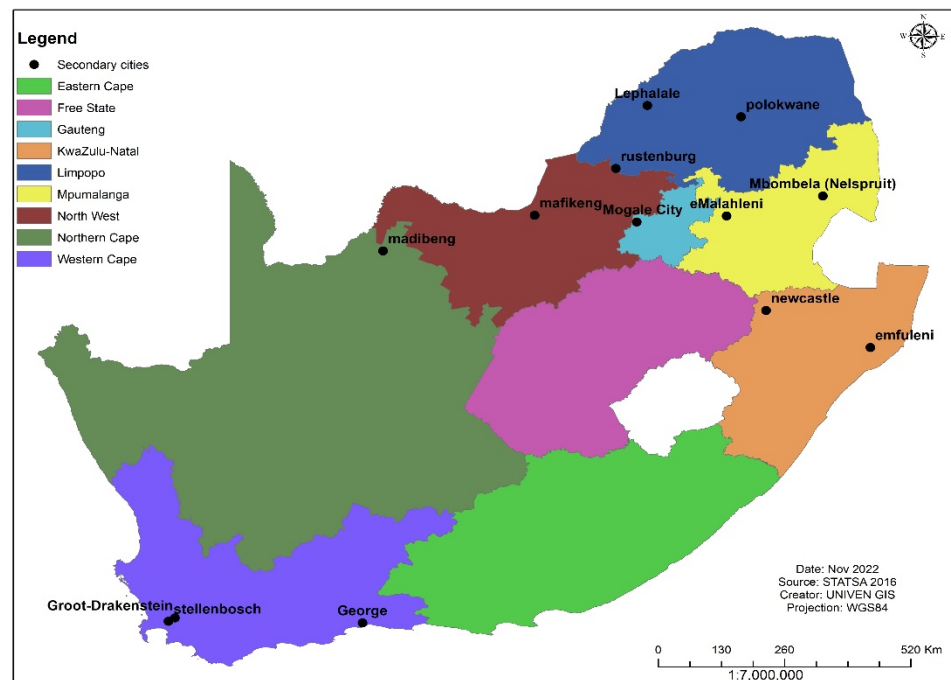


Figure 4. Map of secondary cities³ in South Africa.

The impact of local government inefficiencies, climate change and rapid urbanization has seen the emergence of local government service delivery that has been criticized as ‘broken’, ‘fractured’ and responsible for uneven service delivery in various municipal areas. Additionally, this set-up leads to difficulties in the construction of new infrastructure, including the maintenance and rehabilitation of old infrastructure. These problems are becoming increasingly complex in a context in which service delivery supply chain management (SCM) challenges abound. It has been argued that the backbone of service delivery is municipal infrastructure. This is an asset that has a long-term lifespan and a long incubation period before being implemented and completed. The provision of essential municipal infrastructure requires long-term planning, and the planning horizon runs counter to the municipal governance electoral systems that are based on short term periods of five years or less. Consequently, employing the integrated development plan (IDP) ward-based planning and prioritization tool results in injustice to bulk infrastructure construction, maintenance, and rehabilitation for service delivery. This is much more pronounced in the case of the planning and provision of bulk infrastructure interconnecting infrastructure systems that cross ward boundaries. In this regard, infrastructure projects fall through municipal and strategic planning cracks. This results in an ‘infrastructure collapse’ crisis and or the backlogs that most municipalities in South Africa find themselves in (SA Cities Network 2021) (refer to Figure 4). Infrastructure and service delivery backlogs for all geographic levels is common throughout developing countries and are not unique to South Africa (Reddy 2008; Daniel 2015; Helao and Naidoo 2016; Mudalige 2019).

Critics have highlighted that the municipal governance system in South Africa is riddled with both systematic and systemic challenges that include a lack of technical capacity, with thinly staffed supply chain management (SCM) units, and a shortage of project engineers, town planners, and project managers. Most municipalities have been further criticized for focusing on achieving compliance (‘clean audits’) rather than on development projects and outcomes that enhance service delivery. Given the aforementioned issues and observations, it was therefore viewed appropriate to use South African municipalities as a case study, since the municipalities exhibit characteristics of failed service delivery in their settings. Therefore, the case study of South Africa and South African district and local municipalities was an appropriate case study in the quest to develop a simplified performance management tool that will support elementary prioritization of projects and the setting of

standards to address the spatial and population areas growing needs, services backlogs, and informality challenges confronting local government areas in South Africa. The developed simplified performance management tool would therefore contribute towards enhancing sustainable planning and development within similar contexts in developing countries. This is because a pivotal component of the developed simplified performance management tool was satisfying the criteria of applicability in resource constrained environments. Such resource constrained municipal and government environments are home to various service delivery problems, as illustrated in this case study unit of analysis section of the manuscript.

3.2. An Analysis of the Available Performance Management Tools and Processes

The methodology followed included an analysis of available performance management tools and processes in developing countries, making use of South Africa as a case study.

Table 3 presents the key performance areas of the management performance assessment tool (MPAT) implementation guide that was used in conducting an analysis of available performance management tools and processes. This step also meant that the alignment between the performance management of both developed and developing countries was also carried out. The MPAT tool was supplemented by a gap analysis technique in analysing available performance management tools and processes in developing countries, making use of South Africa as a case study. The identified gaps informed the next method step. This was the development of a simplified performance management tool that will support the prioritization of project implementation and the delivery of services to improve management accountability of the project, service delivery and monitoring of the value chain system.

Table 3. The key performance areas and performance areas of the Management Performance Assessment Tool (MPAT) implementation guide (Source: Own construction from [Management Performance Assessment Tool \(MPAT\) 2012](#)).

Key Performance Area (KPA) ⁴	Performance Area
Strategic Management	1.1 Strategic Planning 1.2 Programme Management 1.3 Monitoring and Evaluation
Governance and Accountability	2.1 Service Delivery Improvement 2.2 Management Structure 2.3 Accountability 2.4 Ethics 2.5 Internal Audit 2.6 Risk Management 2.7 Public Administration Delegations 2.8 Financial Administration Delegations
Human Resource Management and Employee Systems	3.1 Human Resource Strategy and Planning 3.2 HR Practices & Administration 3.3 HR Utilization & Capacity Development 3.4 Employee Relations 3.5 IT Systems
Financial Management	4.1 Supply Chain Management 4.2 Budget Management 4.3 Asset Management 4.4 Revenue Management 4.5 Compensation of Employees 4.6 Financial Management 4.7 Goods and Services 4.8 Transfer Payments 4.9 Liability Management

Scientifically, the performance management principles as well as service delivery models (e.g., European Excellence Model (EEM), Common Assessment Framework (CAF), and modernising local government agenda (United Kingdom) applied in developed countries are also applicable within developing countries (e.g., Back to Basics (B2B) (South Africa), government turn-around strategy, district development model (South Africa), Harrod-Domar Model and the accelerator model, albeit with differences of scale, size, complexity, results, outputs, and outcomes (Bovaird 2014; Bovaird and Löffler 2002; Bovaird and Loeffler 2013; Bel et al. 2014; Albalate and Bel 2021; Bel and Sebó 2021; Vos and Voets 2021). The BSC model is also applied as part of performance management in developing countries. Figure 5 illustrates the different components of the application of a monitoring and evaluation system in a developing country (South Africa). Since 2010, South Africa has followed the process as applied in Uganda, Kenya, and Ghana by introducing a formal ministry dealing with all Monitoring and Evaluation (M&E) i.e., the (Department of Performance Monitoring and Evaluation (DPME) 2018).

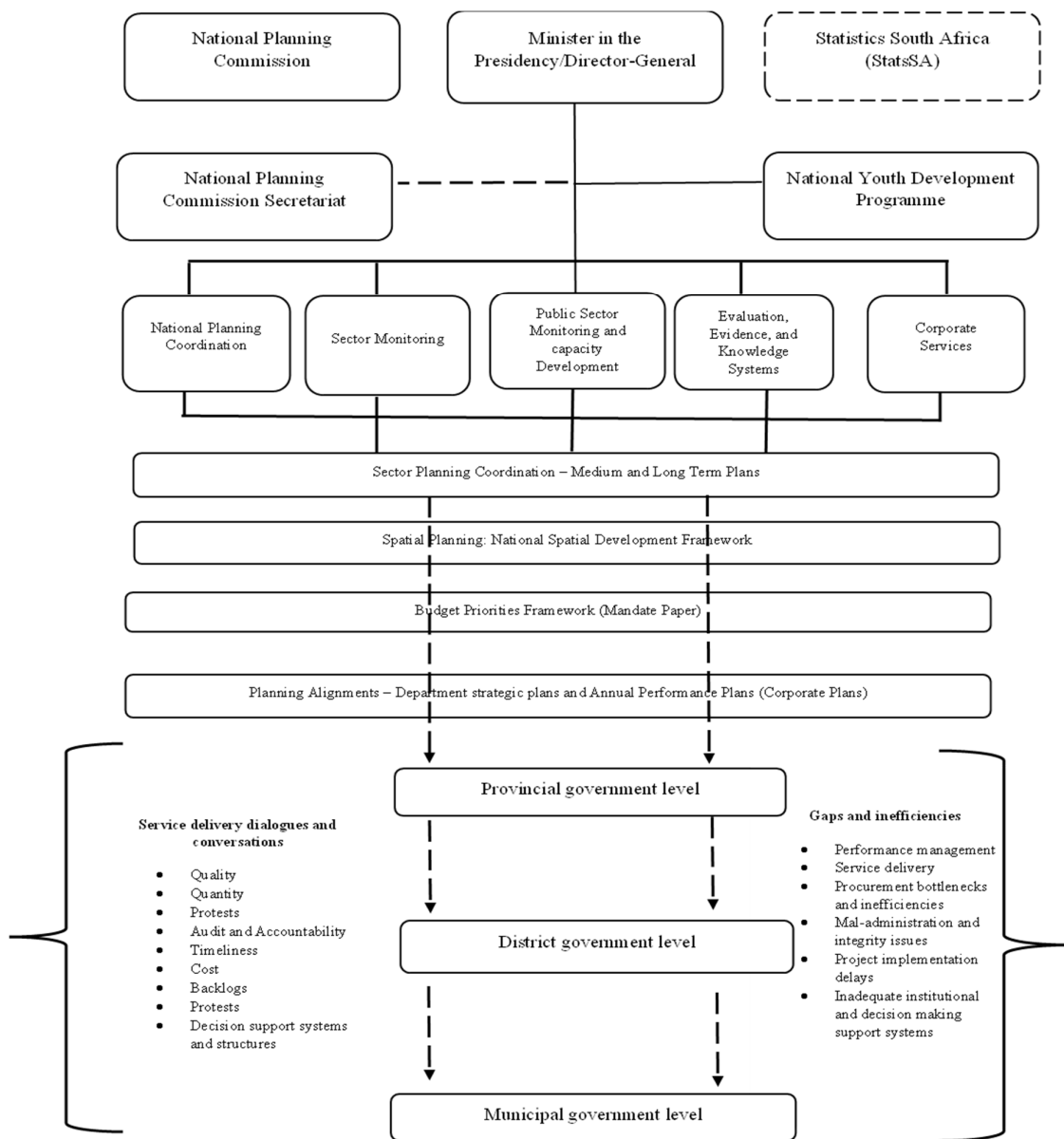


Figure 5. The different components of the Department of Planning, Monitoring and Evaluation (DPME) system in South Africa.

The Department of Planning, Monitoring and Evaluation (DPME) was established and mandated to monitor and evaluate all national priorities (i.e., the [National Development Plan \(NDP\) \(2012\)](#)) which had been translated into the [Medium-Term Strategic Framework \(MTSF\) \(2014\)](#) (refer to Figure 5). The idea was that all government departments should establish their own Monitoring and Evaluation units, but [Goldman et al. \(2021\)](#) points out that by 2019, only 68 of the 155 national and provincial departments have formulated departmental evaluation plans. [Abrahams \(2015\)](#) points out that the DPME roll out of the National Evaluation Policy Framework (NEPF) in 2011, to operationalise the National Evaluation System (NES) and the [Management Performance Assessment Tool \(MPAT\) \(2012\)](#) programme, is a good initiative that is yet to be fully implemented. MPAT was undertaken by the DPME for implementation at the Local Government (municipal) level to assess the quality of Management Practices in the four key performance areas (KPA) (consider Table 3). The development of the MPAT was supported by the Canadian Treasury Board Secretariat, Canadian International Development Agency, German Development Agency, and the Independent Monitoring Performance Expertise Centre, and therefore based on other countries’ performance assessment methodologies. The existing Department of Planning, Monitoring and Evaluation (DPME) system illustrates the alignment and parallels between performance management of both developed and developing countries.

3.3. *An Analysis of the Performance Management and Strategic Plans Compiled by the Local Level of Government (Municipalities)*

A municipality’s performance management system is the monitoring and review mechanism to foster improved accountability, decision-making and implementation (refer to the [Department of Cooperative Governance Traditional Affairs \(COGTA\) 2005, Guidelines](#)). The documents reviewed in this study included the following: Integrated Development Plans (IDPs), Integrated Transport Plans (ITPs), Service Delivery and Budget Implementation Plans (SDBIPs), and Housing and Environmental Sector Plans including municipal, provincial, and national legislation linked to performance management frameworks (refer to Table 4).

Table 4. Available Performance Management Tools (Source: Own construction from COGTA Guidelines, 2019).

Local Municipalities Performance Management Tools	Minimum content
<p>Integrated Development Plan (IDP): Tool for municipalities to facilitate integrated and co-ordinated delivery. Formulated to achieve aligned planning with bordering municipalities (inclusive of Integrated Transport Plans). Performance Management Frameworks. Annual reports, Housing sector plan; Transport sector plan; Environmental plan; Precinct Plan; Municipal budget), organs of state as well as provincial and national legislation and policies.</p>	<ol style="list-style-type: none"> (1) Indicate outputs to be produced; Specify performance indicators, performance targets and Key Performance Indicators (KPI). (2) development objectives and priorities, (3) operational strategies (4) the provision of basic services to the poor. (5) appropriate services levels. (6) Spatial Development Framework (SDF) to direct and coordinate development. (7) financial projections and sustainability and the presence of adequate organizational capacity.
<p>Service Delivery and Budget Implementation Plan (SDBIP) of the City Support program of National Treasury.</p>	<p>Indicate available resources, Allocate responsibilities, Direct decisions, development programmes and budgets. Hence, provides KPI’s and targets to monitor the annual performance of management and municipalities. Quantification of the number of services backlogs.</p>
<p>Organizational Scorecard</p>	<p>Strategic objectives/ outputs per Key Performance Area (KPA) and performance measures. Demand data, Baseline Data, Backlog data. Quarterly targets. Responsible department. Estimated financial implications. Benefit services deliver per Ward. Prioritisation.</p>

3.4. The Methodology Flowchart Process

The research methodology processes and steps (refer to Sections 3.1–3.3) as described are presented as a graphical illustration in Figure 6.

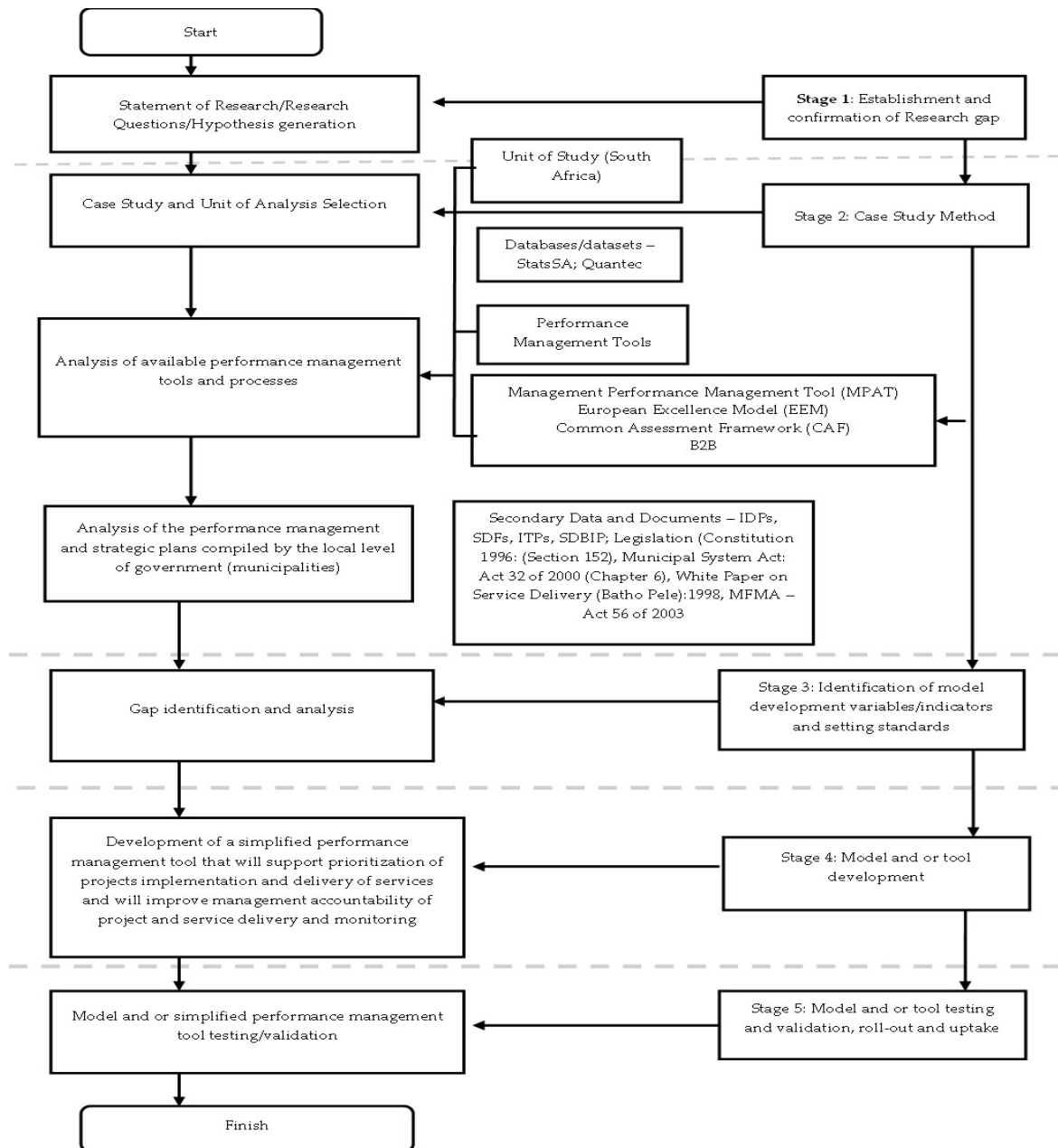


Figure 6. Study research methodology flowchart.

Figure 6 shows how the research method followed a step-by-step procedure from problem definition, gap identification, case study selection and justification, to the analysis of performance management tools, processes with regard to the setting of standards, and the development of the model/tool and testing. This step-by-step procedure enabled the rigorous development of a simplified performance management tool that is applicable for intermediate cities and small towns and municipalities in developing countries. This is because each step allowed for further scrutiny and validation in the model development process.

4. Discussion of Results and Findings

The discussion of study results and findings is given in terms of the gap analysis process that informed and motivated the development of a simplified performance management tool that is applicable for intermediate cities and small towns and municipalities in developing countries. This is in pursuit of the requirement for improved performance in respect to service delivery by all levels of government.

4.1. Performance Management Tools Gap

Table 4 presents the available performance management tools for government service delivery in South Africa as derived from existing policy and planning guide documents.

Table 4 summarises the performance management strategic plans compiled by the local level of government (municipalities) which is also dependent on input from strategic planning instruments such as the Spatial Development Framework (SDF) (which directs and coordinates development within municipalities), the Infrastructure Asset Management Plan (with information, priorities and needs for different sectors (such as roads etc.)); Levels of Service (LOS); future demand estimations and projections; capital works and funding plans for each municipality), the Land Use Management System (LUMS), Waste Management Plan (WMP), Integrated Transport Plan (ITP), Housing Sector Plan (HSP), Local Economic Development Plan (LED) and the needs of sector departments (such as the Water Services Development Plan) (WSDP). Our analysis addresses the following gaps in the current local level of governments' performance management and strategic plans. In addition, the analysis identified the gap that service information must include specific data inclusive of:

- Socio-economic information needs to be included;
- The number of serviced stands provided for various density areas;
- The number of housing units constructed with completion certificates (not invoices) issued within the reporting period;
- The provision of social facilities and amenities ([Department of Public Service and Administration \(DPSA\) 2011](#); [Republic of South Africa \(RSA\) 2011](#)).

4.2. Roles and Responsibilities Concerning Performance Management—Oversight Role Gap

The [Local Government: Municipal Finance Management Act \(MFMA\) \(1999\)](#), and the [Local Government: Municipal Systems Act \(MSA\) \(Act 32 of 2000\) \(MSA 2000\)](#), applicable to the study area, stipulate the roles and responsibilities of the Municipal Manager (MM), Deputy Municipal Manager (DMM), Section 57 Managers, Departmental Managers (DMs), The Mayor, Municipal Council and the Executive Committee regarding performance management. Our analysis reveals that while the framework and legislation provides for roles and responsibilities in overseeing performance management, this is, however, not enough. This is because there is a lack of a simplified performance management tool that the Mayor, Municipal Council and The Executive Committee can use in conducting an oversight role with respect to supporting the elementary prioritization of projects and the setting of standards to address the spatial areas' growing needs, services backlogs, and informality challenges confronting local government areas in South Africa. This set-up stifles the capacity of local government areas to contribute towards enhancing sustainable planning and development in any municipal setting. This finding and gap highlights the need to develop a simplified performance management tool that will support elementary prioritization of projects and the setting of standards to address local government spatial and population growth needs, service backlogs, and informality challenges. The fully developed model has the potential to contribute towards the strengthening of performance management and sustainable development at the local government level within similar contexts in developing countries.

4.3. Legislative Framework and Strategic Instruments Applicable to Local Government in a Developing Country Gap

The Management & Evaluation role of the DPME system is illustrated in Figure 5, but the legislation that governs performance management in local government includes:

- [Government of South Africa \(2001\)](#), Municipal Planning and Performance Management Regulations;
- Local Government, The Municipal Finance Management Act (MFMA) (Act 1 of 1999);
- Local Government, Municipal Systems Act (MSA) (Act 32 of 2000) ([MSA 2000](#));
- [Department of Planning, Monitoring and Evaluation and National Treasury \(2018\)](#), *Implementation Evaluation of the Framework for Strategic and Annual Performance Plans* and
- [National Treasury \(2010\)](#), *Framework for Strategic and Annual Performance Plans* (FSAPP).

The Department of Planning, Monitoring and Evaluation and the National Treasury's *Implementation Evaluation of the Framework for Strategic and Annual Performance Plans* (2018) report includes the strategy, management and planning tactics relevant to South Africa consisting of the "planning school" (formal, top-down control), "learning school" (dynamic strategies), and the "configuration school" (the strategic planning process to serve broader intended organisational processes) in terms of the management structure format. The FSAPP provides templates for strategic plans, annual performance plans (APPs) and technical indicator descriptions. These templates standardise the structure and content areas of the strategic plans (consider the National Treasury's, *Framework for Strategic and Annual Performance Plans* (FSAPP) (2010)). Furthermore, the FSAPP identifies the roles and responsibilities of the Department of Planning, Monitoring and Evaluation (DPME), the National Treasury, and the Offices of the Premier and Provincial Treasuries. However, our analysis identifies a gap in this respect since a generic framework is provided which does not provide information on how to roll-out and steer the implementation function by the public service. In addition, the generic framework is silent with respect to how technology and human resources can be developed and attuned to existing and evolving performance management technologies and innovations.

4.4. Mis-Alignment between Policies, Legislative Provisions, and Local Needs for Measurement in a Developing Country

In South Africa, focal areas of (mis-)alignment between the key planning regulations and policies include and are not limited to the Department of Planning, Monitoring and Evaluation and the National Treasury, *Implementation Evaluation of the Framework for Strategic and Annual Performance Plans* (2018), Department of Agriculture, Land Reform and Rural Development. Additionally, disconnects between the [National Development Plan \(NDP\) \(2012\)](#), Integrated Development Plan (IDP), Spatial Development Framework (SDF), Provincial Spatial Development Framework (PSDF) and National Spatial Development Framework (NSDF) have been noted and identified ([Khambule 2020](#); [Penderis and Tapscott 2018](#); [Pieterse 2021](#); [Schoeman 2015](#)). The Key Performance Areas (KPA's) in the *National Development Plan* (NDP) were carried over to the Integrated Development Plans (IDPs) and the Service Delivery and Budget Implementation Plans (SDBIPs) guidelines, but each municipality must still identify their own applicable key performance indicators, baselines, targets, and measurement scales. Nevertheless, the City Support Programme provides statutory planning and reporting guidance (in terms of 104 indicators) to the eight (8) metropolitan municipalities for the 2018/19 cycle and onwards. The Local Governments' *Municipal Systems Act* (MSA) (Act 32 of 2000) ([MSA 2000](#)) and the *Municipal Finance Management Act* (MFMA) (Act 1 of 1999) requires that each municipality must establish and develop (indicators and measures) and monitor performance according to their circumstances, but also in line with the targets, key performance indicators (KPIs), objectives and priorities in the Integrated Development Plans (IDPs). In terms of our analysis and findings gap, the aforementioned acts were not well-thought-through, since the development of indicators, measures and targets require analytical and interpretation skills. We argue in this paper that a scientific process must be used to calculate the relative importance of criteria and that

there must be an imperfect linear relationship between any two criteria to assure that there is no double counting. The lack of dynamic, intervention and implementable strategies are thus evident.

The Constitution of the Local Government Structures ([Government of South Africa 1998](#)), Act 17 of 1998, provides for the compilation of a local municipality's basic service delivery functions. However, our analysis finding (and gap) is that a comparison of the alignment of such functions with the KPIs provided for in the *Municipal Performance Management Regulations 2001*, and the *Municipal Planning and Performance Management Regulations, (2001)* leads to the conclusion that some functions were not covered by these KPI's, including municipal roads, public transport, street electricity, storm water management, housing, traffic, and parking. In this set-up, accessibility between workplaces and residential areas are of importance due to the fragmented spatial form of cities in developing countries, as typified in South Africa. Hence, urban integration and densification (compaction), for example, also needs to be a factor to be assessed in terms of the criteria.

5. Model Development

This section is dedicated to the development and generation of a simplified performance management tool that is applicable for intermediate cities and small towns and municipalities in developing countries as informed by the gap analysis presented in the previous section four (4) of this article. The intention is to embed improved performance with respect to service delivery in all levels of the government.

5.1. Setting of Standards

On the scorecard, for the IDP, the target value is equal to the previous year's actual value (refer to *Performance Management Made Simple, 2019* by the [Department of Cooperative Governance Traditional Affairs \(COGTA\) 2019](#)). More meaningful targets would be the inclusion of the previous year's values for the whole of South Africa, the provincial values, and the values of comparable urban and or municipal areas of the same size, function, and spatial characteristics.

5.2. Information and Statistical Data That Need to Be Included in All Strategic Plans

5.2.1. Population Information per Ward/Neighbourhood

This information should comprise the following:

- Number of households;
- Annual population growth; and
- Population density per km².

5.2.2. Municipal Area Information to Be Included

The required information should comprise the following:

- The existing urban form within the municipal area together with the Spatial Development Framework (SDF) and Town Planning Scheme (TPS) and or Land Use Scheme (LUS), whichever is applicable;
- Existing and planned transportation network systems as well as a plan showing existing and planned infrastructure; and
- The Environmental Management Framework Plan.

All plans need to be on the same scale and should serve as an overlay for analysis, synthesis, recommendations, and decision making.

- Gross value added (GVA) per capita, Total population, rural population, and Urban population;
- In the determination of the number of backlogs, consider the number of poor households (combined income per month < R3 200 ≈ € 167) without access to basic services;

- Calculate the annual, past 5-years and past 10-years population and household growth rates, considering Table 5 as an example. In Table 5, the 10-year, 5 year, and 1 year growth rates were determined from historical data;
- Forecast the growth in the number of low-income households for the next 5-years and 10-years (consider Table 6). In Table 6, we made a 5 year and 10-year forecast which are based on three scenarios—the high annual growth scenario, the medium annual growth scenario, and the low annual growth scenario.

Table 5. The population and household growth rates for Local Municipality (LM) EEE. (Source: Own construction from Stats SA data on the Regional Explorer (ReX n.d.) platform, time series only available up to the year 2017).

Different Growth Rates	Years	Population Growth Rate		Growth in the Number of Households	
		Growth	Annually	Discrete Growth	Annually
10 year growth	2007–2017	10.40%	1.04%	19.53%	1.95%
5 year growth	2012–2017	5.72%	1.14%	6.90%	1.38%
1 year growth	2016–2017	1.20%	1.20%	0.37%	0.37%

Table 6. Forecasts the household growth rates for local municipality (LM) EEE (Source: Own construction from Stats SA data on the regional explorer (ReX n.d.) platform, time series only available till the year 2017).

Scenario Based on Annual Growth Rate	High Scenario $r = 1.95\%$	Medium Scenario $r = 1.38\%$	Low Scenario $r = 0.37\%$
Households in 2022	147,281	143,143	136,094
(Increase in number of households from 2017)	(13,682 ↑)	(9544 ↑)	(2495 ↑)
Households in 2027	162,365	153,369	138,635
(Increase in number of households from 2017)	(28,765 ↑)	(19,769 ↑)	(5036 ↑)

5.3. The Development of a Methodology to Determine Service Delivery Priorities?

Quality and reliable basic services must be any municipality's main priority, as it is one of the seven priorities which drive the National Development Plan (NDP). The *Performance Management Made Simple* guide by the Department of Cooperative Governance, Traditional Affairs, demonstrates the following prioritization model (1 = No impact and high risk, 2 = Little impact; 3 = Medium impact and risk; 4 = Significant impact; 5 = Most impact and low risk) to determine the social/economic risk and the impact of a project on the community.

The number of basic services needed includes the following variables: $b_1 = \text{Sanitation}$, $b_2 = \text{Solid waste removal}$, $b_3 = \text{Water}$, $b_4 = \text{Formal housing}$, $b_5 = \text{Roads}$, $b_6 = \text{Storm water}$, $b_7 = \text{Streetlights}$. Our gap analysis and findings revealed that there is no data available for the last three variables on any national data website. These variables also did not form part of the KPIs in the Municipal Planning and Performance Management Regulations of 2001. Hence, these variables will not be contained within the example, but in practice, they must be included.

Step 1: Determine the:

baseline basic service backlog (in terms of number of households)
the growth in the number of households (Table 5) and
forecast the household growth rates (Table 6).

Step 2: Calculate the relative baseline backlog (to the total number of backlogs) to determine where the need is the highest (consider Table 7, Row 3). Use these values as weights, w_1, \dots, w_4 for the respective variables in the Local Municipality (LM) EEE i.e., $w_1(\text{sanitation}) = 0.19$; $w_2(\text{refuse removal}) = 0.55$; $w_3(\text{water}) = 0.16$ and $w_4(\text{formal dwellings}) = 0.10$. Hence, the highest priority must be given to refuse removal.

Table 7. Challenges and goals to erase the backlogs in the future (Source: Own construction).

Backlog for the Different Basic Services	Formal Housing Backlog	Sanitation Backlog	Water Infrastructure Backlog	Refuse Removal Backlog	
Baseline (2017) backlog	16,058	30,845	26,763	89,576	
Relative baseline backlog	0.10	0.19	0.16	0.55	
Backlog as a % of 2017 baseline number of households	12.02%	23.09%	20.03%	67.05%	
Additional future (2027) backlog due to increase in households	High scenario	3458	6641	5762	19,287
	Medium scenario	2376	4564	3960	13,255
	Low scenario	605	1163	1009	3376
Total future (2027) backlog = 2017 backlog + Additional future backlog	High scenario	19,516	37,486	32,526	108,862
	Medium scenario	18,435	35,409	30,724	102,831
	Low scenario	16,664	32,008	27,772	92,952
How to erase backlogs in 5-years (2022–2027). Given in households per year.	High scenario	3903	7497	6505	21,772
	Medium scenario	3687	7082	6145	20,566
	Low scenario	3333	6402	5554	18,590

Step 3: Express the baseline backlog (Step 1) as a percentage of the total number of households (Table 7, Row 4).

Step 4: Use the data in Table 6 in combination with Step 3 to determine the total future backlogs (Table 7, Row 5–Row 10) and determine how to erase the backlogs in the future (as in Table 7, Row 11–Row 13).

Step 5: Calculate the estimated cost to erase basic service backlogs in the future as given in Table 8. This can be done by using the national average unit cost given by the government for formal housing and the unit cost guidelines used by the Municipal Infrastructure Grant (MIG) (consider the Service lever and Unit Cost Guideline, (2005)).

Table 8. Unit costs for basic level services (Source: Own construction from The Municipal Infrastructure Grant (MIG). Basic Level of Services and Unit Costs: A guide for municipalities, 2005).

Cost (c_1, \dots, c_7) R/€ = R19.20/€	Minimum Service hh = household	Full Service m = month	Medium-Full-Service Scenario: Costs to Erase Backlogs in the Next 5 Years Or Costs to Deliver the Service to all These Households within the Next 5 Years.
Sanitation		R660/hh	R23,370,104 \approx €1,217,193
Roads (serve \pm (60 \times 2) hh/km)	Gravel: R300,000/km	Paved/sealed: R100,000,000/km	
Stormwater (serve \pm 60 hh/km)	Earth V: R130,000/km	R510,000/km	
Streetlights		R650/hh	
Refuse Removal Service (Note: This service is not a one-off service)	Skips: R7/hh/m	Kerbside: R15/hh/m	R55,528,613 \approx €2,892,115 Note: Here we add 20,566 hh per year, but we also pay for hh added in the year(s) before.
Water Infrastructure (Connector and bulk)		R6000/hh	R184,342,267 \approx €9,601,160
Formal housing (R3200/m ²)		R160,000/hh	R2,949,522,448 \approx €153,620,961

Step 6: How to select the best combination of scenarios, given a limited budget of R 5,000,000. Consider the three independent projects (Project 1, Project 2 and Project n) with different scenarios shown in Table 9. Only one scenario can be selected for each project. Note that the cost for the scenario's R4100 is less than the budget.

Table 9. The best combination of projects (Source: Own construction).

Independent Projects	Scenarios for Each Project (Values Given in Millions)	Cost	NPV	Scenario (Selected or Not)
Project 1: Road between A and B	S1: Gravel	2	4	Yes, select this scenario
	S2: Paved/sealed 2 lanes	3	5	
	S3: Paved/sealed 3 lanes	1.5	3	
Project 2: Bridge at C	S4: Repair existing	0.5	1	Yes, select this scenario
	S5: Add Lane	1.5	1.5	
	S6: New bridge	2.5	2.5	
Project 3: Traffic Control at D	S7: Traffic lights	0.1	0.3	Yes, select this scenario
	S8: Turn lanes	0.6	1	

To find the optimal solution, we used Baker's Binary Optimisation modelling method with spreadsheets (Baker 2006, pp. 198–2003). The problem can be mathematically expressed as:

$$\text{Maximize } 4s_1 + 5s_2 + 3s_3 + s_4 + 1.5s_5 + 2.5s_6 + 0.3s_7 + s_8 \text{ (NPV of scenarios)} \quad (1)$$

Such that:

$$2s_1 + 3s_2 + 1.5s_3 + 0.5s_4 + 1.5s_5 + 2.5s_6 + 0.1s_7 + 0.6s_8 \leq 5 \text{ (Costs } \leq \text{ Budget)} \quad (2)$$

$$s_1 + s_2 + s_3 \leq 1 \text{ (only one scenario can be selected for Project 1)} \quad (3)$$

$$s_4 + s_5 + s_6 \leq 1 \text{ (only one scenario can be selected for Project 2)} \quad (4)$$

$$s_7 + s_8 \leq 1 \text{ (only one scenario can be selected for Project 3)} \quad (5)$$

$$s_i = \begin{cases} 1, & \text{if scenario } i \text{ is to be selected, } i \in [1;8] \\ 0, & \text{otherwise.} \end{cases} \quad (6)$$

It is seen that the solution is to select scenarios S2, S4 and S8 for a total expenditure of R4.1 million and a total NPV (net present value) of R 7 million (i.e., 5 + 1 + 1 = 7).

6. Discussion

This paper has managed to develop and advance a simplified performance management tool that is applicable to intermediate cities and small towns and municipalities in developing countries. Such an intervention is necessary in seeking to address service and performance delivery cracks and gaps that impact and are impacted by all levels of governmental inefficiency (Ammons and Roenigk 2021; Bizana 2013; Pretorius and Schurink 2007). The need for refinement and reforming tools used in making local and municipal government function better has always been key to turnaround efforts aimed at transforming the service and performance delivery of government at all scales, and hence the importance of this work and the developed tool (Korir et al. 2015; Linders et al. 2018; Ndanyi 2019; Zeemering 2018). The following aspects comprise important policy, planning pointers, and considerations in seeking to fast-track and transform the performance and service delivery culture of both central and local governments with a particular focus on developing countries:

- The lack of an inadequate application of performance management in service delivery reduces the quality of life of communities within the developing world (Grossi et al. 2019; Helmold and Samara 2019). This paper thus adds value in seeking to address this need in such communities. The correct application of performance management in developing countries will enhance access to services, reduce infrastructure backlogs and address informality challenges (Bizana et al. 2015; Zhang et al. 2021);

- The paper furthermore succeeds in addressing the role of strategic planning and performance management through the integration of existing knowledge of theory, practice, and realities within developed and developing countries;
- The guiding considerations within developing countries, such as political and socio-economic differences, were addressed, based on core strategic planning principles. Through analysis, a simplified performance management tool for intermediate cities and small towns and municipalities at all levels and spheres of government in developing countries was developed;
- We thus have argued and hypothesised that the spatial and development realities guiding performance management within the urban and rural spatial systems in developing countries requires the application of a simplistic but customised and context driven approach. This is due to the inability or lack of employees who can use, apply, and implement sophisticated methodologies (Allen et al. 2018; Avgerou and Walsham 2017; Joshi et al. 2017; Kumar et al. 2021);
- The application of performance management systems to direct service delivery between countries are also different (Gendźwiłł et al. 2021; Khawaja and Khalid 2022; Linders et al. 2018; Munzhedzi 2021; Ohrling et al. 2021; Park et al. 2022; Schoute et al. 2021; Shin and Jhee 2021; Warner et al. 2021). Consequently, the output of this paper guides towns, cities, central and local government, and municipalities in developing countries to implement a simplistic, and easy to understand and apply performance management approach for service delivery, infrastructure development, and asset management.

Limitation of the Study and Areas for Future Research

This study sought to develop a simplified performance management tool that is applicable for intermediate cities, small towns, and municipalities in developing countries. This was in pursuit of the requirement for improved performance with respect to service delivery by all levels of the government. The developed tool was tested with municipal authorities in local government, at least in theory, and was found to be functional and relevant. The next step would be to implement the tool in pilot municipalities (i.e., category A, B and C) in South Africa, including similar contexts in developing countries with different service delivery and audit performances with a view to conducting a monitoring and evaluation (M&E) exercise of the full robustness of the tool. Various scenarios and models of the simplified performance management tool for enhanced service delivery can be done, e.g., low, medium, and high-capacity municipalities; low, medium and high financial resourced municipalities; low, medium and high-tech municipalities, etc. The limitation of the study is that it was not conducted over a longer period of time, and it overlapped the political terms of various municipal administrations. While the tool can provide sufficient insights on the changes in municipal political offices of terms, an empirical-based inter-municipal political term cycle study could have unraveled issues that the present study may have failed to uncover.

Future studies and research into local government service delivery performance could explore the granulated and nuanced application of the tool to cover the following areas:

- Artificial Intelligence (AI) based local and central government based self-delivery technology guided performance and service delivery;
- Privatisation and intermunicipal cooperation in municipal service delivery and joined governance performance management;
- Upscaling the model for sophistication and implementation for relevance in complex and inter-institutional and multi-level governance systems.

In the context of discourses with respect to innovation and the transformation of performance management and service delivery in local government, this paper has succeeded in redirecting debate and conversations in this space. This is important in the quest to create local government futures, foresight studies and intelligence aimed at advancing the local government agenda, infusing various lenses and approaches to engage with the space.

7. Conclusions

This paper included a theoretical analysis and synthesis for a small, intermediate cities and towns spatial system by developing a simplified performance management model. The developed procedure can be adapted to other scales of regional and urban spatial systems in pursuit of enhanced service delivery and performance management at all levels of government. The paper thus contributes towards enhancing project prioritization, implementation, and delivery of services by central and local governments in developing countries. Furthermore, by extension and implication, the paper thus makes a contribution towards the continuous improvement in the management and accountability of project, service delivery and the monitoring of progress with respect to project implementation. This paper thus adds to the growing body of literature on local government aimed at transforming how the central and local government engages and interacts with citizens and stakeholders via the performance management and service delivery mediums. Overall, the development of a simplified performance management tool that supports the elementary prioritization of projects and the setting of standards to address service delivery backlogs, constraints and informality challenges is an important tool. The tool constitutes part of an extended local delivery service toolkit/framework. These tools/framework read together constitute attempts aimed at closing gaps that constrain efforts at enhancing sustainable local government planning and development in South Africa. In its full development, the tool presents innumerable opportunities for application within similar contexts in developing countries. This is viewed in perspective and within a context in which the human resources and technological advancement and innovations in South Africa are not at the same level, and by extension in developing countries as compared to developed countries. The developed tool is what we argue is “a fit for purpose” simple performance management tool to enhance service delivery in municipalities in South Africa and under-resourced or resource constrained developing countries generally.

In terms of the final assessment results of the service delivery management system in local government in South Africa and developing countries generally, improving service delivery is a complex phenomenon. Service delivery turn-around requires the implementation of the right balance and mix of policy and strategic frameworks, tactical planning, and standardized in-built KPAs and KRAs covering local government priorities. Indeed, the prevalence of persistent service delivery gaps in local government suggests that alternative approaches and new models that include hybridization of performance management tools that require customization and implementation. Improved service delivery faces vertical and horizontal local government administration layers of constraints. Overcoming these layers and nested barriers requires better alignment of policies, plans, strategies, projects, and tools constituting the local government administration systems. A key consideration that should assist in developing and implementing local government performance management and strategic plans is directing effort and energy towards removing measurement data inconsistency, adopting meta standards, and addressing information and data gaps. This is important so that developed models are based on and have data curation protocols that are accurate, up to date, reliable, credible, and valid. Inadequate legislative frameworks and strategic instruments applicable to local government in developing countries adds another layer of performance management gaps. At the same time, there is a need to better streamline and clearly articulate the oversight roles in local government service delivery administration so that the current oversight role gap does not militate against efforts aimed at improving service delivery provision. This study therefore argues for a one joined governance or whole of local government approach in deploying a simplified performance management tool. This is important and necessary to resolve the identified service delivery performance management tools gap that fights against efforts and initiatives aimed at transformative local government service delivery performance management systems, results, outcomes, and effects.

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Notes

- ¹ The Municipal Infrastructure Investment Framework (MIIF) in South Africa classifies local municipalities into four (4) subcategories, namely B1, B2, B3 and B4. The B1 category comprises secondary cities and local municipalities with the largest budgets; the B2 category refers to local municipalities with a large town as its core; the B3 category defines local municipalities with small towns with relatively small populations and significant proportions of urban population but with no large town at its core. Finally, the B4 category is made up of local municipalities which are mainly rural with communal tenure and with, at most, one or two small towns in their area. In addition, the MIIF classifies district municipalities into two categories, namely C1, which refers to district municipalities that are not water services authorities, and C2, which defines district municipalities that are water services authorities ([Municipal Demarcation Board 2012](#)).
- ² Compliance in terms of the Minimum Requirements for Waste Disposal by Landfill and subsequent regulations.
- ³ Secondary cities represented on the map comply with and are defined based on the modification of previous typologies (including the 2002 CSIR typology, the Cities Network typology 2005, the Classification of Settlement Typology for Economic Evaluation, the Census classification of settlements/Municipal Services Finance model) for South Africa ([CSIR 2015](#), p. 11).
- ⁴ The source did not give any information on the weight of each KPA.

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