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# Mitigating the Challenges of Innovation in the South African Public Sector with Knowledge Management

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**Abstract:** This study investigates the use of knowledge management (KM) to surmount innovation obstacles in South African municipalities. Despite growing pressures for improved service delivery, innovation in the public sector remains constrained by bureaucratic rigidity, siloed structures, limited capacity, and fragmented knowledge practices. Using qualitative data from senior municipal officials, the study reveals a misalignment between strategic innovation goals and operational realities. The findings highlight weak knowledge flows, poor leadership support, and the absence of formal KM (Knowledge Management) systems. In response, the study suggests a Municipal Knowledge Management Maturity Model for Innovation, which shows five levels of progress across seven KM dimensions. This model provides a diagnostic tool and roadmap for embedding knowledge-driven innovation. The study positions KM not merely as a technical function but as a strategic enabler of learning, experimentation, and systemic change. Strengthening KM capabilities is essential for municipalities seeking to institutionalise innovation and respond effectively to complex developmental challenges.

**Keywords:** innovation; innovation inhibition; knowledge management; public sector

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## Introduction

Traditional economic theory sees value as primarily created within businesses, where the public sector plays a supporting role by providing infrastructure, regulation, and services (Mazzucato et al., 2022). Public awareness of government obligations in exchange for taxes is growing, since local governments are directly responsible for addressing socio-economic challenges and delivering essential services to communities. This increases accountability, prompting the public sector to adapt and meet citizens' expectations (Agolla & Van Lill, 2016). Public institutions are expected to meet growing demands for better and more efficient services. However, they often must do so with limited financial resources (Felício et al., 2021).

Literature emphasises the need for a new framework that moves beyond passive market facilitation and instead fosters state-driven innovation ecosystems (Rodrik, 2006; Mazzucato et al., 2020). Instead of viewing the market as a separate entity driven solely by private enterprise, the market as an outcome should be viewed as interactions among various stakeholders, including government,

businesses, and society. This alternative perspective argues that value is co-created through collaboration between businesses, individuals, and the state.

Innovation is a key driver of economic development and organisational effectiveness; it is inherently multi-dimensional, incorporating technological, managerial, policy, and administrative advancements to create new value (Mohd Zawawi et al. 2016). This enables governments to play a proactive role in economic transformation through strategic investments in research, technology, and entrepreneurship. Fostering a culture that encourages innovation and focuses on achieving results can thus improve public sector performance (Perrin, 2002). This broader understanding emphasises the interdependence of public and private sectors in shaping economic values, policies, and innovation (Mazzucato et al., 2022).

## Problem statement

In South Africa, the public sector possesses considerable potential to leverage innovation for improving governance and public service delivery. However, the effective implementation of innovation remains severely constrained. South African municipalities face entrenched challenges, including rigid bureaucratic systems, risk-averse institutional cultures, limited resources, and weak incentives, that hinder the circulation and utilisation of knowledge critical to innovation (Agolla & Van Lill, 2016; Moussa et al., 2018a). Deep-rooted cultural and governance dynamics further reinforce these constraints, shaping decision-making and policy implementation. Knowledge transfer within public institutions is often fragmented or inhibited by these limitations, which limits the public sector's capacity to effectively respond to complex developmental needs. This impacts innovation outcomes, since innovation relies on the generation, transfer, and application of new knowledge to create impactful solutions (Cardinal et al., 2001; Harkema, 2003). As a result, many innovation efforts are stifled before they can be embedded or scaled, ultimately impeding the transformation of local governance systems. The objective of this study is to establish a knowledge management model that can support and enable innovation in the public sector.

## Literature review

Public-sector innovation is the process of generating, developing, and implementing valuable ideas that lead to new or improved services, policies, or operational efficiencies, ultimately creating added value for the organisation, its citizens, employees, and broader stakeholders (Dobni et al., 2015). This transformation enhances service delivery, optimises resource utilisation, and fosters a culture of continuous improvement and responsiveness to societal needs. Employees are more likely to think creatively and suggest improvements when the organisation embeds innovation into its culture, processes, and strategies (Lii & Kuo, 2016).

### *Inhibition of innovation in the public sector*

Government officials primarily devote their time to addressing internal organisational demands and bureaucratic pressures, often leaving little room for proactive innovation (Matthews, 2009). In the South African context, historical and systemic challenges, including corruption and state capture, have significantly impacted the ability of public institutions to foster and sustain innovation (Madonsela, 2019). State capture, defined as the manipulation of policies, regulations, and institutional frameworks for private gain, has created an environment where political and economic incentives often override the pursuit of public value (Martin & Solomon, 2016). The exposure of state capture in 2016, following investigations by the Public Protector, highlighted political appointments and contract allocations that were influenced by patronage networks rather than merit-based decision-making (Dassah, 2018).

One of the primary cultural barriers to innovation in the public sector is the erosion of trust and political stability caused by corruption. When governance structures prioritise financial and political interests over social and economic development, the capacity for innovative policymaking diminishes. Corruption not only weakened institutional legitimacy but also discouraged risk-taking, a fundamental driver of innovation (Rodriguez-Pose & Di Cataldo, 2015). In many cases, public officials become increasingly risk averse due to fears of scrutiny, resistance from entrenched interest groups, and the complexity of bureaucratic accountability mechanisms.

The legacy of mismanagement and ineffective governance in the public sector has fostered a culture of excessive regulation and bureaucratic rigidity. In response to corruption and misallocation of public funds, procurement processes have become highly restrictive, limiting the agility required for experimental and adaptive governance (Hautamäki & Oksanen, 2016). While accountability mechanisms are essential for preventing financial

mismanagement, overly stringent controls can inadvertently stifle innovation by discouraging experimentation and reducing the capacity for flexible, responsive decision-making.

Innovation in the public sector is often constrained by bureaucratic culture, political influences, and structural rigidity (Tremml 2021; Wankhade et al., 2018). Bureaucratic rigidity hampers an organisation's ability to respond swiftly to changing/evolving circumstances or implement new ideas. These obstacles to innovation and the effective implementation of new concepts and processes include bureaucratic hurdles and a lack of innovative practices (OECD, 2017). Complex administrative procedures, strict regulations, and hierarchical decision-making structures can slow down innovation, reduce flexibility, and discourage creative problem-solving. This rigidity often results in missed opportunities and inefficiencies.

Additionally, a significant barrier to public sector innovation is the lack of effective reward and incentive systems. Despite the proven role of incentives in driving creativity and efficiency, governments worldwide have consistently overlooked the importance of structured mechanisms that encourage innovation among public servants (Moussa et al., 2018b). Without adequate recognition, financial rewards, or career advancement opportunities linked to innovative efforts, employees remain disengaged from transformative initiatives, reinforcing a culture of risk aversion and maintaining the status quo.

Budget constraints can stimulate short-term efficiency innovations by pressuring government officials to meet performance targets, as they seek creative solutions to operate with limited resources (Demircioglu & Audretsch, 2017). This aligns with the assumption that public sector managers are self-interested actors who respond to incentives and sanctions. However, research also suggests that higher budgets are more likely to foster a sustainable culture of innovation by providing the necessary resources for long-term, transformative change (Demircioglu & Audretsch, 2017). While financial pressure may drive immediate cost-cutting innovations, a well-funded environment supports experimentation, research, and the development of groundbreaking solutions that contribute to lasting organisational improvements.

## *Mitigating the effects of innovation inhibition*

The increasing pressure on the public sector to be fiscally efficient and responsive to diverse stakeholder needs has compelled traditionally bureaucratic organisations to adopt digital innovations and become more agile (Ashok et al., 2021). Successful innovations typically cannot thrive within the constraints of traditional bureaucratic models, which are often rigid, slow-moving, and resistant to change (Golembiewski & Vigoda, 2000). In essence, these outdated structures often hinder the development of new ideas and limit the potential for progress, as they prioritise hierarchy, routine procedures, and control over flexibility and creativity.

For innovation to flourish in the public sector, it requires a shift away from these conventional models towards more adaptive, collaborative, and proactive approaches that encourage experimentation, risk-taking, and continuous improvement (Moussa et al., 2018b). This transformation involves embracing new practices, structures, and mindsets that actively challenge and dismantle the barriers of bureaucratic inertia. Reconstructing public sector operations for the purpose of improving innovation would be a mammoth task. Thus, the most pragmatic approach to mitigating barriers to organisational innovation in the public sector would be to address the underlying streamlining of innovation tasks through knowledge management.

Innovation is closely linked to knowledge processes by involving knowledge-based activities, where innovation is fundamentally about generating new knowledge to create commercially viable solutions (Cardinal et al., 2001; Harkema, 2003). Knowledge management (KM) supports this by organising and providing access to experiences, expertise, and information that enhance performance, encourage innovation, and deliver customer value (Gloet & Terziovski, 2004). It encompasses various interrelated activities such as knowledge creation, sharing, storage, and application as a strategic management function that ensures knowledge is effectively located, managed, and utilised for long-term organisational benefit (Darroch & McNaughton, 2002). This process occurs across individual, team, and organisational levels, making KM a critical enabler of sustained innovation (du Plessis, 2007).

KM plays a vital role in addressing these constraints by facilitating the systematic sharing and application of knowledge, which supports more effective innovation processes. However, research on KM practices tends to emphasise general work processes rather than the specific challenges of implementing KM to support innovation (Zahedi et al., 2016). Beyond collecting or exchanging information, knowledge plays an important role in an

organisation's innovation operations; it embodies information enriched by experience, context, interpretation, and reflection (Davenport et al., 1998). This deeper, contextualised understanding is essential for innovation since it informs how ideas are generated, adapted, and implemented in real-world settings.

### *Enabling innovation with knowledge management*

Successful innovation outcomes are supported by a structured process involving early customer insight, iterative learning, and well-managed execution, typically segmented into three phases of Discovery, Development, and Commercialisation, each with distinct tasks ranging from idea generation and market analysis to design, prototyping, and product launch, following a funnel model where weaker ideas are filtered out progressively (Marion et al., 2021). *Knowledge creation* entails the generation of novel insights, either autonomously or through interaction, whereas *knowledge transfer* refers to the deliberate conveyance of that knowledge to others in a comprehensible and accepted manner. Knowledge *sharing* focuses on distribution, whereas *knowledge transfer* ensures that the knowledge is absorbed and usable by others (Wathne et al., 1996).

Explicit knowledge is codified, documented, and easily shared or analysed without direct interaction with its source, whereas tacit knowledge is uncodified, often unspoken, and rooted in personal experience (Oliveira et al., 2019). Knowledge in an organisation primarily exists in its original form as tacit knowledge. Zia et al. (2024) concluded that tacit knowledge management processes significantly improve an organisation's capacity to innovate. For the collective production of tacit knowledge, it is essential for tacit knowledge to be codified prior to sharing the knowledge. Table 1 illustrates how knowledge flows from unstructured experiences to institutionalised innovations. Each stage includes a description and a dedicated KM focus.

**Table 1.** Aligning Knowledge Management and Innovation (Zia et al., 2024; Oliveira et al., 2019).

| **Funnel Stage** | **Description** | **KM Focus** |
|---|---|---|
| Stage 5: Knowledge-Driven Innovation | Institutionalised innovation, co-creation, scaling | Link KM to innovation lifecycle, support iterative experimentation |
| Stage 4: Knowledge Transfer and Sharing | Cross-functional workshops, training, peer-learning | Facilitate interdepartmental knowledge sharing, embed KM into processes |
| Stage 3: Knowledge Codification | Policy briefs, documented insights, repositories | Develop searchable repositories, thematic summaries, dashboards |
| Stage 2: Knowledge Capture | Project reflections, reports, interviews | Use structured templates, facilitate post-project reviews |
| Stage 1: Raw Experience and Tacit Knowledge | Undocumented insights, community interaction | Encourage storytelling, reflective practice, communities of practice |

## Methodology

This study adopted a qualitative research design to explore how knowledge management practices shape innovation within a South African municipal context. A qualitative approach was considered appropriate, as it enables an in-depth examination of participants' lived experiences, perceptions, and interpretations of organisational processes, which is central to understanding complex, context-specific phenomena such as innovation and knowledge flows in the public sector (Creswell & Creswell, 2017).

This study was conducted within a single metropolitan municipality in South Africa, selected as a case study due to its strategic role in service delivery and policy implementation. Focusing on one municipality provided a rich, contextualised understanding of the organisational dynamics, governance structures, and internal knowledge practices that influence innovation. Conducting the study within a single metropolitan municipality can limit statistical generalisability across South Africa's diverse municipal landscape, ranging from well-resourced metropolitan governments to under-capacitated rural municipalities. However, the aim of this qualitative case study was not statistical generalisation but analytical depth and a contextualised understanding of how knowledge management practices shape innovation within a complex governance environment.

Participants were selected using purposive sampling to ensure that respondents possessed relevant experience and strategic insight. The inclusion criteria required participants to have a minimum of five years' experience in senior or middle management roles involving decision-making, policy formulation, or strategic planning. From an estimated population of approximately 40 government officials, 18 that met the inclusion criteria were selected to participate in the study, from which 12 volunteered to participate in the interviews. This sample size was sufficient to achieve depth of insight, and thematic saturation was achieved.

Data were collected through semi-structured, face-to-face interviews, which allowed participants to reflect openly on their experiences while providing the researcher with flexibility to probe emerging issues. The interview guide focused on themes related to innovation practices, knowledge creation and sharing, organisational culture, leadership support, and systemic barriers within the municipality. This method enabled the capture of nuanced perspectives that would not have been accessible through structured instruments alone.

All interviews were audio-recorded with participants' consent and transcribed verbatim. NVIVO software was used to support systematic data management and coding.The data were analysed using thematic analysis, following an iterative process of familiarisation, coding, theme development, and refinement. Coding was performed at both semantic (explicit content) and latent (underlying meanings) levels. A hybrid inductive-deductive method was used, with themes such as risk aversion and compartmentalised structures emerging inductively from the data, while others were guided by theoretical constructs from knowledge management and public sector innovation literature.

Codes were subsequently grouped into higher-order categories through axial coding. Themes were developed by examining patterns across interviews and refined to ensure internal coherence and conceptual distinctiveness. Overlapping categories were consolidated, and weaker themes were discarded following constant comparison across the dataset. Thematic saturation was reached when no new patterns emerged.

Theme validation was further enhanced through member checking, where a summary of the preliminary themes was shared with selected participants to verify the accuracy of interpretations. Participants confirmed that the findings reflected their experiences. Although the researcher was solely responsible for coding, reliability was strengthened by clearly defining the codes and checking them for ambiguity to ensure clarity. A preliminary phase allowed the researcher to become familiar with the data before the actual coding, and the data was re-examined at different stages to ensure consistency. Direct participant quotations and prolonged engagement with the data enhanced the study's trustworthiness. Dependability was strengthened using a consistent interview protocol and transparent documentation of the analytical process.

Ethical considerations were addressed by ensuring voluntary participation, informed consent, anonymity, and confidentiality throughout the research process. Participation was voluntary, and all participants received an information sheet outlining the purpose of the study, the nature of their involvement, potential risks, and their right to withdraw at any stage without consequence. Written informed consent was obtained prior to interviews. To protect confidentiality and minimise the risks of deductive disclosure, participant identities were anonymised using numerical identifiers. A gatekeeper's letter was obtained from the study area at the Municipality and ethical clearance was obtained from the University's Ethics Council.

## *Findings of the study*

The findings of the study presented in Table 2 revealed a public sector environment where innovation and knowledge management had no connection. Systemic fragmentation, limited leadership support, a lack of structured processes, and inadequate capacity influenced the potential for organisational learning and innovation.

**Table 2.** Summary of Thematic Analysis

| Theme | Outline |
|---|---|
| Regulatory and Bureaucratic Constraints | Innovation is stifled by rigid procedures, compliance pressures, and a punitive environment. Risk aversion dominates due to fear of audits and misinterpretation of creative workarounds. |
| Fragmented Organisational Structures and Silos | Lack of interdepartmental collaboration and knowledge sharing leads to duplication and inefficiency. Weak feedback loops and fractured implementation undermine systemic learning and innovation. |
| Inconsistent Understanding of Knowledge Management | KM is often misunderstood as document storage rather than a strategic tool for learning and innovation. There's limited appreciation of KM's role in enabling agile, facilitative governance. |
| Leadership and Political Will as Enablers or Barriers | Leadership significantly influences innovation uptake. Forward-thinking leaders enable learning; risk-averse leadership maintains the status quo and stifles experimentation. |

(*Continued*)

**Table 2.** (Continued)

| Theme | Outline |
|---|---|
| Lack of Formalised KM Systems and Innovation Processes | Knowledge is rarely documented or reused. Innovation remains ad hoc with no structured mechanisms for capturing lessons, leading to intellectual capital loss and failed institutional learning. |
| Capacity and Skills Gaps | Public officials have limited technical support, which hinders effective knowledge sharing and cross-sector collaboration. |
| Absence of an Innovation Culture | A compliance-driven culture discourages experimentation. Mistakes are penalised, innovation is not incentivised, and organisational resistance to change is high. |
| External Pressures and Crisis as Catalysts | Innovation tends to be reactive, spurred by crises or external mandates ((e.g.) COVID-19). Public-private collaboration occasionally supports policy responsiveness. |
| Top-Down vs. Bottom-Up Dynamics | Innovation strategies are often top-down and disconnected from local realities. Ground-level insights are undervalued; knowledge created at the top rarely reaches implementers. |

## *Regulatory and bureaucratic constraints*

A dominant theme was the inhibitory effect of rigid bureaucratic processes on innovation. Participants expressed that public sector environments often do not allow the flexibility required for creative experimentation.

As one participant reported, *"SCM processes, audits… all are big discouragements for innovation. To innovate, you need space for mistakes. Very punitive environment."* This fear of punitive consequences is closely tied to a strong culture of risk aversion, reinforced by stringent compliance protocols. Another participant noted, *"With all the audits that happen, you have to try to be risk averse. That most probably dampens most of the enthusiasm to try anything."*

Participants also pointed to the fixed nature of government systems as a limiting factor: *"The government processes… are very fixed. We are expected to follow rules that can hamper us."* Even when employees attempt to find innovative workarounds, they fear that doing so may be interpreted as misconduct: *"If you find a way past it, it could be seen as fraud and corruption. You have to work within the boundaries."*

## *Fragmented organisational structures and silos*

A consistent and dominant theme was the existence of siloed departments and fragmented communication, inhibiting knowledge sharing and innovation.

> *"Everyone does their own thing. There is very little interdepartmental collaboration, which makes it hard to innovate or even learn from each other."* (Interview 4)

This lack of systemic integration has led to duplication of efforts and inefficiencies, limiting the ability to embed knowledge management or foster a culture of continuous learning.

> *"We have great projects, but no one knows what others are doing. There's no central place to consolidate this knowledge."* (Interview 7)

The respondent repeatedly notes a disconnect between high-level strategic documents and on-the-ground implementation. Knowledge tends to reside in repositories or remain within certain departments, with limited dissemination. This suggests a breakdown in knowledge transfer mechanisms, a core issue that design thinking or lean start-up models (which rely on cross-functional feedback loops) aim to solve. Introducing cross-departmental knowledge-sharing platforms and co-creation workshops, such as with design thinking, could improve horizontal knowledge transfer and reduce duplication.

A participant noted that while strategic frameworks exist ((e.g.) IDPs, cluster coordination, performance plans), implementation is *"piecemeal*" and "fractured", with departments unclear on how their efforts contribute to overarching goals. This reveals weak knowledge transfers and cross-departmental feedback loops, a barrier design thinking and business model alignment can mitigate. Shared knowledge maps or dashboards created

across units can enhance transparency and demonstrate how each project aligns with citywide SDG-linked outcomes.

A recurring challenge is the lack of institutional mechanisms for sharing knowledge and research across departments. Innovation and learning tend to stay within the originating team, limiting organisation-wide learning and replication. One participant noted, *"Research will probably only be known to a few people in that department,"* while another remarked, *"We literally work in silos."* This lack of coordination stifles the scaling of successful practices and hinders institutional learning.

## *Inconsistent understanding of knowledge management*

Many participants noted a superficial or inconsistent understanding of KM across departments. It is often equated with document storage or data collection, rather than considered as a strategic process.

> *"People think KM is just filing reports or uploading documents. It's not embedded in how we work or learn."* (Interview 3)

Only a few interviewees recognised KM as a tool for organisational learning and innovation.

> *"If knowledge was systematically captured and shared, we could build on past successes and avoid repeating mistakes."* (Interview 9)

A participant reflected that an enabling environment requires less direct control and more facilitation, a role the government has struggled with post-1994. There's a cultural and capacity gap in the government to support agile, entrepreneur-driven ecosystems, partly due to insufficient KM (knowledge management) strategies for policy learning. KM systems should include communities of practice models and peer exchange with private sector actors to embed a culture of facilitation and support rather than control.

## *Leadership and political will as enablers or barriers*

Leadership emerged as a critical enabler or inhibitor of change and innovation. Where leaders supported innovation, KM practices were more visible.

> *"When the leadership is forward-thinking, we see more experimentation and learning."* (Interview 2)

However, in many cases, leadership was considered risk-averse or disconnected from innovation efforts.

> *"There is too much fear of failure. Leaders don't want to be seen taking risks, so we stick to what we know."* (Interview 6)

Innovation uptake often depends on individual managers and leadership style; some create space, others maintain the status quo.

## *Lack of formalised km systems and innovation processes*

A recurring challenge was the absence of formal systems to capture, share, and reuse knowledge. Innovation often occurred ad hoc and was rarely documented.

> *"We don't have structured ways to capture lessons learned. Once a project ends, the knowledge just disappears."* (Interview 8)

This lack of institutional memory was considered a major loss of intellectual capital. There is "*so much info flowing*," but no systematised way to harness or apply it effectively.

> *"If someone retires or leaves, their knowledge goes with them. We don't retain what we've learned."* (Interview 5)

There was an awareness that early-stage concepts ((e.g.) pilots) struggle to gain support since neither public nor private actors are willing to take the risk. The "valley of death" between innovation and institutionalisation remains a key knowledge gap, with lessons and feasibility data either absent or inadequately captured.

Introducing learning portfolios or innovation sandboxes to chronicle early trials, exchange knowledge, and control risk through tiered funding. This is in line with both reflective KM and lean start-up experimentation.

Innovation often originates within departmental silos through strategic planning sessions and ad hoc brain-storming, rather than from a centralised innovation strategy. This decentralised approach allows for autonomy and responsiveness but limits systemic alignment. As one participant explained, *"Try to understand their problems...brainstorm and come up with ideas. Those get filtered out into tangible projects."* The open culture in some departments encourages contribution and creativity: *"Nobody is afraid to say anything… free flow of words."* However, without cross-departmental cohesion, such innovation remains fragmented.

## *Capacity and skills gaps*

Participants pointed to capacity challenges in both KM and innovation. Staff often lack training in key concepts like design thinking, lean methodologies, or digital tools.

> *"We are expected to innovate, but no one teaches us how. There's no real capacity building."* (Interview 1)

This gap was also reflected in the use of technology, with limited skills to leverage digital platforms for collaboration and knowledge sharing.

> *"We have tools, but people don't know how to use them. The training is minimal*, *and technical support is limited."* (Interview 10)

While structures such as the Sustainable Development Cluster exist, operational departments often act in silos, unaware of how their work contributes to collective goals. The challenge is not the absence of knowledge, but the failure to translate strategic goals into shared operational logic. Design thinking workshops and journey mapping across departments can help build empathy and shared understanding of each unit's role in achieving systemic outcomes.

## *Absence of an innovation culture*

A significant number of interviewees noted the absence of a culture that rewards experimentation, collaboration, or reflection.

> *"The system punishes mistakes, so no one wants to try something new."* (Interview 11)

There is a tendency towards compliance and routine, leaving little space for creativity or strategic thinking.

> *"Innovation isn't part of our KPIs. We're measured on ticking boxes, not solving problems creatively."* (Interview 4)

Cultural resistance among public sector organisations emerged as another key barrier. Respondents described a fear of change among colleagues and leadership, which discourages innovation.

*"When you raise your hand to try and change things, it makes people uncomfortable*. "*Organisational change brings confusion,"* said one participant. In addition, the competitive, politicised environment often stifles idea ownership and sharing.

*"Ownership of ideas…very political, competitive. I've seen many times where great ideas are either stolen or smothered."* Resistance to new ideas was also commonly experienced: *"Internal resistance was a challenge… sometimes it was how your idea is perceived."*

## *External pressures and crisis as catalysts*

Interestingly, several participants pointed out that innovation often emerged in response to crises or external mandates ((e.g.) the COVID-19 pandemic or national reforms).

> *"It took the pandemic for us to try new digital methods. Before that, no one took remote services seriously."* (Interview 2)

This highlights the reactive rather than proactive nature of innovation in the public sector.

A participant reported that with regularly interactions with private sector actors and participants in the industry cluster development, insights were sent directly into policy. This reflects external knowledge integration, a key component of the open business model canvas. Leveraging public-private partnerships as real-time knowledge feedback mechanisms could aid in policy agility and relevance.

## *Top-down vs. Bottom-up dynamics*

Strategic documents mention innovation and knowledge sharing, but there is limited follow-through in practice. This highlights a disconnect between strategy and implementation. Innovation initiatives are often top-down, limiting grassroots experimentation and ownership. The participant described the flow of information from national to local levels via the IDP but also highlighted that a lot of relevant knowledge comes "*from the ground up*" through industry interactions. There's a need to integrate tacit knowledge from local stakeholders with formal strategy. Lean start-up methodologies, which promote iterative feedback and pivoting based on real-world insights, are underutilised. Embedding iterative learning loops, such as policy prototyping or MVPs of public programmes, would enhance local responsiveness and adaptive planning.

Strategic documents were described as "cutting-edge" and aligned with global standards ((e.g.) SDGs, World Bank), but this knowledge often doesn't reach implementers. This indicates a strong knowledge creation capability ((e.g.) through research, policy formation), but a weak knowledge transfer and application system. Bridging this gap requires tools like visual knowledge maps, training boot camps, and embedded knowledge brokers, strategies commonly used in lean and agile development contexts.

## *Interrelationships between themes: A systemic pattern of innovation inhibition*

Regulatory and bureaucratic constraints interact closely with leadership behaviours. The fear of audits and compliance scrutiny, as described by participants, contributes to leadership caution and reinforces risk-averse decision-making. In turn, leadership risk aversion strengthens a compliance-driven organisational culture by signalling to employees that experimentation may have reputational or political consequences. These dynamic limits discretionary space for innovation and discourages bottom-up initiative.

Fragmented organisational structures and siloed departments further intensify this effect. When knowledge remains contained within individual units, leaders lack visibility of successful practices across the municipality. The lack of cross-departmental knowledge flows diminishes collective trust in experimentation, as neither the sharing nor institutionalisation of lessons learned occurs. Consequently, weak knowledge transfer mechanisms reinforce perceptions that innovation is unpredictable and risky.

Capacity and skills gaps compound these structural and leadership constraints. Without adequate training in innovation methodologies or knowledge management processes, officials struggle to operationalise their strategic ambitions. This lack of capability increases uncertainty, which in turn strengthens leadership reluctance to support experimental initiatives. The absence of formalised KM systems then prevents the capture of both successes and failures, resulting in repeated mistakes and lost institutional memory.

The interactions between these themes produce a cyclical pattern: regulatory pressure fosters risk-averse leadership; risk-averse leadership reinforces compliance-oriented culture; compliance culture discourages experimentation; limited experimentation weakens organisational learning; and weak learning systems prevent knowledge codification and cross-functional integration. Innovation therefore emerges primarily in response to crises, when external pressure temporarily relaxes institutional rigidity. However, because underlying knowledge systems remain fragmented, these adaptive responses are seldom institutionalised.

The themes show that the problems are not separate issues but part of a connected system where things like strict structures, leadership styles, cultural habits, and poor knowledge sharing all influence each other. Understanding innovation inhibition in this municipality therefore requires a systemic lens that recognises how these factors interact to sustain low levels of knowledge management maturity and reactive innovation behaviour.

### *Within-sample variation across departments and leadership levels*

Although the identified themes were consistently present across interviews, variation emerged in how participants from different leadership levels experienced and interpreted these dynamics. Senior managers were more likely to emphasise structural and regulatory constraints, particularly audit pressures, compliance requirements, and political oversight, as primary inhibitors of innovation. Their accounts reflected a strategic awareness of institutional risk and reputational accountability. In contrast, middle managers more frequently highlighted operational fragmentation, siloed implementation, and the absence of structured knowledge-sharing mechanisms as daily obstacles to innovation.

There were also clear differences between departments. Units with externally facing mandates, such as those engaging with private sector partners or industry clusters, reported relatively stronger informal innovation practices and greater exposure to collaborative knowledge flows. These departments describe more experimentation and iterative learning, albeit without formalised KM systems. In contrast, inwardly oriented administrative units exhibited a greater emphasis on compliance-driven cultures and less latitude for creativity.

Notably, perceptions of leadership support varied. Participants reported greater psychological safety and informal knowledge exchange in areas where immediate supervisors were characterised as "forward-thinking" or receptive to experimentation. Conversely, in units characterised by risk-averse leadership, innovation was described as episodic and constrained. This suggests that while systemic governance pressures operate municipality-wide, localised leadership behaviour mediates how these pressures are experienced and enacted.

These differences within the sample support the idea that while institutional constraints are generally common, their real-world impact varies based on the department's role and the style of leadership. Recognising this variation strengthens the explanatory power of the maturity model, as progression may occur unevenly across units rather than uniformly across the municipality.

## Discussion

This study revealed a significant misalignment between the strategic ambitions for innovation in South African municipalities and the operational realities shaped by rigid bureaucratic cultures and fragmented structures. A key insight emerging from the thematic analysis is that innovation is largely reactive, spurred by crises ((e.g.) COVID-19) or external mandates, rather than embedded within the culture and systems of municipalities. This echoes the view of Demircioglu and Audretsch (2017), who argue that, while resource constraints may catalyse short-term adaptive solutions, sustainable innovation requires proactive investments in organisational learning, leadership, and systems integration.

A maturity model outlines how an entity develops over time by simplifying this progression into a set number of sequential stages, where each level has specific requirements that must be met as it progresses step-by-step (Pee & Kankanhalli, 2009). The municipal knowledge management maturity model for innovation in Table 3 is designed to help South African municipalities assess and improve their knowledge management (KM) capabilities in support of innovation. Based on thematic findings from this study, it outlines seven key KM dimensions across five maturity levels, as shown in Figure 1 and Table 3.


**Figure 1.** The transitions of the 5 levels of the Knowledge Management Maturity Model (Pee & Kankanhalli, 2009)

The proposed Municipal Knowledge Management Maturity Model for Innovation in Table 3, was derived from the findings of the study and offers a conceptual framework for diagnosing these gaps and guiding capacity-building efforts at multiple institutional levels. The KM maturity model aligns with this need by providing a roadmap for transitioning from ad hoc practices to institutionalised, knowledge-driven innovation.

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**Table 3.** Municipal Knowledge Management Maturity Model for Innovation

| KM Dimension | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
|---|---|---|---|---|---|
| Leadership and Political Will | No KM leadership. Innovation is unsupported. | Some recognition of KM but inconsistent support. | KM is acknowledged and leaders encourage pilot projects. | Leaders actively champion KM with defined roles. | KM is embedded in leadership strategy. Drives innovation culture. |
| Organisational Culture | Risk-averse, no support for experimentation. | Compliance-focused, low innovation awareness. | Some innovation accepted; informal sharing. | Experimentation supported. KM activities normalized. | Culture rewards learning, experimentation, and sharing. |
| KM Systems and Infrastructure | No KM systems exist. | Basic document storage used inconsistently. | Documented systems exist but not widely adopted. | Integrated systems used to share and store knowledge. | Advanced platforms enable real-time collaboration and learning. |
| Knowledge Processes | Knowledge is undocumented and siloed. | Ad hoc sharing; informal practices. | Defined processes for knowledge capture and reuse. | Cross-functional knowledge flows exist. | Knowledge drives innovation and continuous improvement. |
| Capacity and Skills | No KM or innovation training available. | Awareness exists but capacity remains low. | Some staff trained in KM concepts and tools. | Widespread KM training and basic innovation skills. | Advanced KM and innovation competencies across the institution. |
| Cross-functional Integration | Silos dominate. No collaboration. | Occasional collaboration across units. | KM shared between some departments. | Routine collaboration on innovation and KM. | Integrated innovation planning across all departments. |
| Innovation Process Alignment | Innovation is reactive, not aligned to KM. | Innovation processes are isolated from KM. | KM supports pilot innovations inconsistently. | KM is embedded in innovation planning. | KM drives innovation lifecycle (from ideation to institutionali-sation). |
| In this version table 3 is vertical which is best but in the pdf version the table is horizontal.<br>In the final pdf, Table 3 should be portrait instead of landscape | | | | | |

The Municipal Knowledge Management Maturity Model can be theoretically grounded in organisational learning and dynamic capabilities theory. Contemporary research demonstrates that organisational learning processes significantly strengthen dynamic capability development by enhancing absorptive capacity, resource reconfiguration, and adaptive performance (Chen & Zheng, 2022; Huang et al., 2025). At lower maturity levels (Levels 1–2), knowledge remains fragmented, largely tacit, and weakly institutionalised, limiting the municipality's ability to systematically sense emerging challenges or integrate lessons into decision-making structures. As KM practices become formalised (Levels 3–4), structured knowledge capture, cross-functional integration, and leadership endorsement enable institutional memory formation and collective sensemaking, thereby strengthening organisational resilience and coordinated response capacity (You et al., 2023). At Level 5, knowledge management is embedded within strategic planning and innovation lifecycles, enabling what dynamic capabilities theory conceptualises as sensing, seizing, and transforming organisational resources to address complex environmental demands (Huang et al., 2025).

Recent scholarship emphasises that knowledge creation and routine renewal are central mechanisms through which dynamic capabilities evolve over time (Xi et al., 2025). Progression across maturity levels therefore reflects the gradual institutionalisation of adaptive governance capacity. Rather than treating innovation as episodic or crisis-driven, higher KM maturity enables municipalities to continuously reconfigure resources, institutionalise learning, and embed innovation within governance systems. In this sense, KM maturity functions as a structural pathway for building sustained dynamic capability within public sector organisations (Mosimege & Maasdorp, 2025).

This study's findings suggest that a fundamental reorientation in how knowledge is perceived and managed within municipalities is essential. This research demonstrates that, although knowledge management is frequently regarded as a secondary or administrative function, its incorporation into the innovation process is essential for systemic transformation. Specifically, the lack of codified knowledge and weak transfer mechanisms mean that successful practices are rarely scaled, while failures are frequently repeated. This pattern indicates a low maturity level in knowledge management processes, aligning with Levels 1 and 2 of the suggested maturity model, where knowledge is isolated, undocumented, and not aligned with strategic objectives.

The knowledge maturity model provides a diagnostic lens for identifying the organisational and cultural levers needed to institutionalise innovation. For instance, advancing from Level 2 to Level 3 requires not only technical systems for capturing knowledge but also leadership endorsement and capacity building to ensure that knowledge flows horizontally across departments. Embedding KM into performance management systems and linking it to innovation incentives can create the cultural shift necessary to reward risk-taking and learning.

This study positions knowledge management as a pragmatic institutional mechanism designed to mitigate the inhibitory effects of bureaucratic rigidity, siloed structures, compliance-driven cultures, and risk aversion that characterise many public sector environments.

The findings demonstrate that innovation in the studied municipality is not constrained by a lack of ideas but by structural and cultural barriers that disrupt knowledge flows, prevent cross-functional learning, and discourage experimentation. In this context, enhanced KM practices operate as a corrective infrastructure, strengthening horizontal knowledge transfer, institutional memory, and reflective feedback loops. KM mitigates the systemic dynamics that stifle innovation capacity by reducing fragmentation and codifying tacit insights.

The proposed Knowledge Management Maturity Model should be regarded not only as a capability development framework but also as a governance intervention designed to mitigate the institutional constraints that hinder sustained innovation in the public sector.

## *Contribution of the study*

This study contributes to knowledge management and public sector innovation literature in two substantive ways. First, it advances existing KM maturity frameworks by specifying concrete transition mechanisms between levels, moving beyond abstract references to leadership support and capacity building. The proposed model identifies targeted institutional interventions, such as formal KM ownership structures, mandatory post-project learning reviews, integration of KM into performance management systems, cross-departmental knowledge forums, and structured innovation sandboxes, that enable progression from ad hoc knowledge practices to institutionalised, knowledge-driven innovation. In doing so, maturity is conceptualised not merely as incremental

capability development but as deliberate organisational redesign aimed at disrupting entrenched bureaucratic routines. Second, the model extends existing KM theory by embedding maturity progression within the governance-constrained realities of South African municipalities. Unlike conventional maturity frameworks that assume relatively stable organisational environments, this model recognises the compounding effects of audit culture, political oversight, risk aversion, and structural silos on knowledge flows. The unique insight emerging from the South African municipal context is that KM functions as a corrective governance mechanism, mitigating institutional inhibitors that suppress innovation rather than simply optimising knowledge processes. The study offers a practical roadmap for municipalities operating under similar governance pressures and a contextually grounded extension of existing frameworks by reframing KM maturity as a response to systemic public sector constraints.

## Conclusion

Innovation is essential for addressing the complex developmental challenges faced by South African municipalities, yet it's potential remains largely untapped due to systemic barriers rooted in bureaucratic rigidity and fragmented organisational structures. This study found that, although digital tools and strategic frameworks are available, their efficacy is constrained by insufficient integration between innovation initiatives and institutional knowledge processes. The findings reinforce the need to reposition knowledge management as a strategic enabler of innovation rather than a purely technical or administrative function. KM can bridge the distance between policy intentions and operational realities, support cross-functional collaboration, and establish a culture of continuous learning by facilitating the capture, sharing, and application of knowledge. The proposed Knowledge Management Maturity Model provides a practical framework for municipalities to assess their current capacities and progressively develop the systems, leadership, and cultural foundations necessary for innovation to thrive. For innovation to become institutionalised within the public sector, it must be supported by strong leadership, aligned processes, adequate capacity, and a culture that rewards learning and experimentation. Municipalities that embrace this transformation will be better equipped to respond to dynamic societal needs, enhance service delivery, and contribute meaningfully to South Africa's developmental objectives.

### Declarations

**Interdisciplinary Scope:** This study adopts an interdisciplinary perspective by integrating knowledge management, public administration, and innovation studies to examine how knowledge processes enable innovation in South African municipalities. Drawing on organisational learning and dynamic capabilities theory, the research links knowledge management practices with public sector governance. The proposed Municipal Knowledge Management Maturity Model contributes to interdisciplinary scholarship by positioning knowledge management as a governance mechanism for institutional learning and innovation in complex public sector environments.

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