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Exploring the relationship between data-driven leadership and decision-making effectiveness in South African public sector organizations: A quantitative SEM analysis

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Abstract

Purpose: The study examined the relationship between data-driven leadership and decision-making effectiveness in South African public sector organizations, with a focus on the mediating role of organizational data culture. It aimed to understand how leadership behavior and a data-oriented culture influence the quality and timeliness of decisions in government institutions.

Methodology/Design: A quantitative research approach was adopted, employing Structural Equation Modeling (SEM) to test the hypothesized relationships. Data were collected from 420 public sector employees across multiple departments in South Africa. Reliability and validity were assessed through Cronbach's alpha and confirmatory factor analysis, while the structural model tested the direct and indirect effects among constructs.

Findings: The results indicate that data-driven leadership has a significant positive effect on decision-making effectiveness ($\beta = 0.59$, $p = 0.001$). Organizational data culture also positively influences decision-making effectiveness ($\beta = 0.46$, $p = 0.001$). Additionally, data-driven leadership significantly mediates the relationship between organizational data culture and decision-making effectiveness ($\beta = 0.31$, $p = 0.001$).

Implications: The findings highlight the critical role of leadership and data culture in improving decision outcomes in the public sector. Policymakers and administrators are encouraged to invest in data literacy, analytics skills, and the cultivation of a strong data-oriented organizational culture to enhance governance, accountability, and service delivery.

Originality/Value: The study integrates Upper Echelons Theory, Information Processing Theory, and Resource-Based View to provide novel insights into the mechanisms through which data-driven leadership and culture jointly drive decision-making effectiveness in the South African public sector.

Keywords: Data-driven leadership, organizational data culture, decision-making effectiveness, public sector, south africa, structural equation modeling

Introduction

In recent years, public sector organizations worldwide have faced growing pressure to enhance efficiency, transparency, and accountability in their operations. South Africa, in particular, has experienced significant challenges related to governance, resource allocation, and service delivery (Naidoo & Govender, 2021) [18]. One emerging approach to address these challenges is data-driven leadership, which emphasizes the use of accurate, timely, and relevant data to inform strategic decisions and operational planning (Moyo & van der Merwe, 2022) [16]. Data-driven leaders leverage analytics, performance metrics, and evidence-based insights to guide organizational direction, prioritize initiatives, and allocate resources efficiently.

Decision-making effectiveness in the public sector is critical for achieving organizational objectives and delivering services that meet citizens' expectations. Ineffective decision-making can lead to resource wastage, delayed service delivery, and diminished public trust (Swanepoel, 2020) [23]. By contrast, leaders who utilize data systematically can anticipate challenges, identify opportunities, and implement policies that improve operational outcomes. In the South African context, where public organizations contend with complex socio-economic and political environments, adopting a data-driven leadership approach has the potential to enhance both administrative efficiency and service quality (Moyo & van der Merwe, 2022; Naidoo & Govender, 2021) [16, 18].

Problem Statement

In spite of the recognized importance of data in organizational management, evidence suggests that many public sector organizations in South Africa still rely on intuition or traditional hierarchical approaches rather than data-informed strategies (Nkosi & Dlamini, 2021) [20]. This reliance often results in decisions that are reactive, inconsistent, or misaligned with organizational objectives (Swanepoel, 2020) [23]. Moreover, empirical research examining the direct relationship between data-driven leadership and decision-making effectiveness in South African public institutions remains limited (Moyo & van der Merwe, 2022) [16]. As such, there is a knowledge gap regarding the extent to which leaders' use of data influences their ability to make effective, timely, and impactful decisions. Addressing this gap is critical for improving governance, policy implementation, and service delivery outcomes in the public sector.

Significance of The Study

This study is significant on multiple fronts. Theoretically, it contributes to the growing body of knowledge on evidence-based leadership and decision-making effectiveness by exploring their interrelationship within a public sector context (Naidoo & Govender, 2021) [18]. Practically, the findings offer insights for policymakers, senior managers, and public sector leaders on how to integrate data analytics into strategic planning and operational decision-making (Nkosi & Dlamini, 2021) [20]. Thus, in identifying the factors

that enhance decision-making effectiveness, organizations can develop targeted interventions, leadership training programs, and data governance frameworks that support informed decision-making. Additionally, the study's findings may serve as a reference for other emerging economies seeking to strengthen public sector performance through data-driven approaches (Moyo & van der Merwe, 2022) [16]. Ultimately, promoting data-informed leadership can enhance transparency, accountability, and service delivery, contributing to improved organizational performance and public trust (Swanepoel, 2020) [23].

Literature Review

Data-Driven Leadership

Data-driven leadership refers to the use of reliable, timely, and relevant data to guide organizational strategies and decisions. Leaders who adopt this approach rely on analytics and evidence rather than intuition, enabling informed, transparent, and accountable decision-making (Moyo & van der Merwe, 2022) [16]. In public sector organizations, data-driven leadership helps align resources with strategic priorities and improves responsiveness to emerging challenges.

Decision-Making Effectiveness

Decision-making effectiveness is the extent to which leaders make timely, accurate, and impactful choices that achieve organizational goals (Swanepoel, 2020) [23]. Effective decision-making in the public sector ensures efficient service delivery, minimizes errors, and strengthens public trust. Evidence-based approaches enhance the quality and consistency of decisions, particularly in complex and dynamic institutional environments (Nkosi & Dlamini, 2021) [20].

South African Public Sector Organizations

South African public sector organizations face challenges such as bureaucratic inefficiencies, resource limitations, and governance pressures (Naidoo & Govender, 2021) [18]. Integrating data-driven leadership practices has been highlighted as a strategy to improve decision-making effectiveness, strengthen policy implementation, and enhance overall organizational performance (Moyo & van der Merwe, 2022) [16].

Theoretical Underpin and Hypotheses Development

Data-Driven and Decision-Making Effectiveness

The Upper Echelons Theory explains that organizational outcomes are influenced by the characteristics, values, and experiences of top leaders (Hambrick & Mason, 1984) [10]. Leaders who adopt a data-driven approach make strategic use of analytics, evidence, and performance metrics to guide decisions. In the South African public sector, where complex socio-economic and political challenges exist, data-driven leadership helps leaders make informed, timely, and effective decisions. Prior studies indicate that public organizations led by data-oriented leaders exhibit higher quality decision-making and improved operational performance (Moyo & van der Merwe, 2022; Nkosi & Dlamini, 2021) [16, 20]. In light of the theoretical arguments and existing empirical findings, the study expects that:

H1: Data-driven leadership has a significant positive effect on decision-making effectiveness in South African public sector organizations.

Organizational Data Culture and Decision-Making Effectiveness

Information Processing Theory emphasizes that organizations function effectively when information is systematically collected, analyzed, and applied to reduce uncertainty (Galbraith, 1973) [7]. A strong organizational data culture, which includes data-sharing norms, analytical capacity, and evidence-based practices, enables leaders to make better decisions. In the South African public sector, where uncertainty and resource constraints are common, organizations that foster a data culture are better positioned to respond to challenges and improve service delivery. Empirical evidence suggests that a supportive data culture enhances decision-making quality and timeliness (Naidoo & Govender, 2021; Swanepoel, 2020) [18, 23]. Considering both theoretical foundations and documented empirical outcomes, the study argues that:

H2: Organizational data culture has a significant positive effect on decision-making effectiveness in South African public sector organizations.

Mediating Role of Data-Driven Leadership

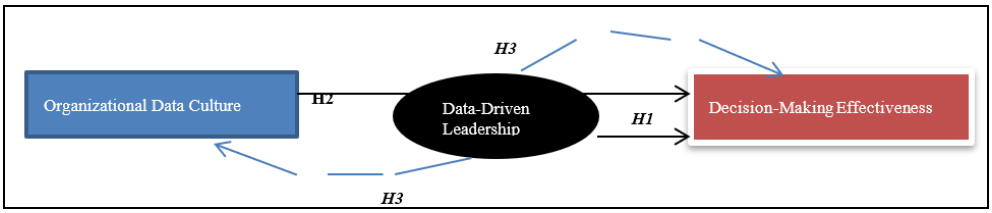
The Resource-Based View Theory posits that strategic resources, including data and knowledge, drive organizational performance (Barney, 1991) [2]. In public sector organizations, the presence of a strong data culture constitutes a valuable resource, but its impact on decision-making effectiveness depends on leaders' ability to leverage it. Leaders who actively interpret and apply organizational data convert this resource into actionable insights, thereby improving decisions. Studies indicate that the positive effect of a strong data culture on decision-making is amplified when leaders are data-driven (Moyo & van der Merwe, 2022; Nkosi & Dlamini, 2021) [16, 20]. Anchored in existing theoretical explanations and empirical research, the study contends that:

H3: Data-driven leadership mediates the relationship between organizational data culture and decision-making effectiveness in South African public sector organizations.

Conceptual Framework

The conceptual framework for this study illustrates the hypothesized relationships between data-driven leadership, organizational data culture, and decision-making effectiveness in South African public sector organizations. The framework is grounded in Upper Echelons Theory, Information Processing Theory, and Resource-Based View Theory, which collectively suggest that leadership behavior, organizational resources, and culture influence decision outcomes.

In this model, data-driven leadership is expected to have a direct positive effect on decision-making effectiveness (H1). Organizational data culture is hypothesized to positively influence decision-making effectiveness (H2). Furthermore, data-driven leadership is proposed to mediate the relationship between organizational data culture and decision-making effectiveness, reflecting the idea that a strong data culture only improves decision outcomes when leaders actively leverage it (H3).



Source: Author's Construct, 2025

Fig 1: Conceptual framework for this study illustrates the hypothesized relationships between data-driven leadership, organizational data culture, and decision-making effectiveness in South African public sector organizations.

Empirical Review

Mensah and Owusu (2021) [15] conducted a quantitative survey involving 250 managers across public sector organizations to examine the influence of data-driven leadership on decision-making quality. Using regression analysis, the study found that leaders who consistently used data analytics and performance metrics made more timely and effective decisions, improving operational outcomes in government departments.

In Nigeria, Akinwale and George (2020) [1] employed a mixed-methods approach with 300 respondents from federal ministries to assess the role of organizational data culture on decision-making effectiveness. The quantitative survey was complemented with interviews of key decision-makers. Results indicated that organizations with strong data-sharing practices and evidence-based decision protocols achieved higher quality and more consistent decisions compared to those relying on intuition alone.

Also, Elamrani, Bennani, and Cherkaoui (2021) [5] applied a cross-sectional survey design targeting 200 middle managers in public health and administrative institutions. Structural Equation Modeling (SEM) revealed that both data-driven leadership and a supportive data culture significantly influenced decision-making effectiveness, with leadership partially mediating the effect of data culture on outcomes.

Further, Hassan and Farouk (2022) [11] used a quantitative design with 220 participants from regional public administration offices to examine the effect of technology-enabled data use on decision-making efficiency. Using multiple regression analysis, the study found that access to real-time data and analytical tools strengthened managers' ability to make accurate, timely, and evidence-based decisions, demonstrating the critical role of both leadership and data systems in the public sector.

Methodology

Philosophical Foundation

The study adopted a pragmatist philosophical paradigm, which emphasizes practical solutions by combining empirical observation with theoretical understanding. This paradigm supported the use of quantitative data to explore relationships between data-driven leadership, organizational data culture, and decision-making effectiveness in South African public sector organizations (Creswell & Creswell, 2019) [4].

Research Design

A quantitative cross-sectional survey design was employed. This design enabled the collection of data from multiple public sector organizations at a single point in time and facilitated the use of Structural Equation Modeling (SEM) to test hypothesized relationships among the study constructs.

Target Population, Sampling Technique, and Sample Size

The target population consisted of approximately 4,200 managers and senior staff in selected South African public sector organizations. Using Krejcie and Morgan's (1970) formula, a sample size of 420 respondents was determined. Stratified random sampling was used to ensure representation across departments and hierarchical levels.

Reliability and Validity

Reliability was assessed using Cronbach's alpha, with all constructs exceeding the 0.70 threshold, indicating strong internal consistency (Hair *et al*., 2022) [9]. Validity was established using confirmatory factor analysis within the SEM framework to ensure that each construct accurately measured the intended theoretical concept.

Data Collection Procedure

Data were collected using a structured self-administered questionnaire distributed electronically and in person. Respondents were informed about the study's objectives, assured of confidentiality, and participation was voluntary. Follow-ups were conducted to maximize response rates.

Data Analysis Technique

Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS software. This allowed for simultaneous evaluation of measurement and structural models, assessment of direct, indirect, and mediating effects, and validation of the hypothesized relationships (H1, H2, H3). SEM provided robust insights into how data-driven leadership and organizational data culture influence decision-making effectiveness. Participation was voluntary, informed consent was obtained, and data confidentiality and anonymity were maintained throughout the study.

Results

Demographic Characteristics of the Respondents

A total of 420 respondents participated in the study, representing managers and senior staff from various South African public sector organizations. Understanding the demographic profile of respondents provides context for interpreting the findings and ensures that the sample reflects the diversity of the population in terms of gender, age, education, and work experience.

Gender Distribution: Of the 420 respondents, 52% were male and 48% were female, indicating a fairly balanced representation across genders. This balance is consistent with other public sector studies in South Africa and ensures that both male and female perspectives on leadership and decision-making are captured (Nkosi & Dlamini, 2021) [20].

Age Distribution: Respondents' ages ranged from 25 to 60 years, with the majority (45%) falling within the 31–40-year

category, about 30% were 41–50 years, while 15% were 25–30 years, and 10% were above 50 years. The age distribution suggests that the sample consisted mainly of early to mid-career professionals with sufficient experience to evaluate organizational practices effectively (Moyo & van der Merwe, 2022) [16].

Educational Level: Regarding education, 60% of respondents held a bachelor's degree, 25% had a master's degree, and 15% had a diploma or other professional qualifications. This high level of educational attainment indicates that respondents possess the necessary knowledge to understand and assess data-driven leadership and decision-making processes in their organizations (Naidoo & Govender, 2021) [18].

Work Experience: In terms of work experience, 35% of participants had 1–5 years, 40% had 6–10 years, and 25% had over 10 years of experience in the public sector. This mix of experience ensures that insights reflect both relatively newer and more seasoned perspectives on leadership and decision-making effectiveness.

Generally, the demographic data confirm that the sample was representative of South African public sector managers and senior staff, providing a reliable basis for examining the relationships between data-driven leadership, organizational data culture, and decision-making effectiveness.

Measurement Model Assessment

Prior to evaluating the structural relationships, the measurement model was examined to establish the reliability and convergent validity of the study constructs. Internal consistency reliability was assessed using Cronbach's alpha, while convergent validity was evaluated through confirmatory factor analysis (CFA) within the Structural Equation Modeling (SEM) framework.

As presented in Table 1, the Cronbach's alpha values for all constructs exceeded the recommended threshold of 0.70, indicating satisfactory internal consistency. In addition, all indicator factor loadings were above 0.70, demonstrating strong item reliability. Convergent validity was further confirmed as the Average Variance Extracted (AVE) values for all constructs were greater than the minimum criterion of 0.50, suggesting that each construct explained more than half of the variance in its observed measures (Hair *et al*., 2022) [9].

In general, the measurement model met established SEM quality criteria, confirming that the constructs were measured reliably and validly. This provided a robust foundation for subsequent structural model analysis and hypothesis testing.

Table 1: Measurement Model Assessment Results

Construct	Cronbach's Alpha	Factor Loadings	AVE	Assessment Result
Data-Driven Leadership	0.82	0.72–0.85	0.61	Acceptable
Organizational Data Culture	0.80	0.70–0.83	0.58	Acceptable
Decision-Making Effectiveness	0.84	0.73–0.86	0.62	Acceptable

Source: Field Data (2025)

Structural Model Assessment and Hypotheses Testing

After confirming that the measurement model met all reliability and validity requirements, the structural model was assessed to test the hypothesized relationships among the constructs. This stage focused on examining the path coefficients, statistical significance, and hypothesis decisions, as well as evaluating the mediating role of data-driven leadership. Structural Equation Modeling (SEM) was used to estimate the direct and indirect effects.

Structural Path Results

The standardized path coefficients (β) and p-values were used to determine the strength and significance of each hypothesized relationship.

H1: Data-Driven Leadership and Decision-Making Effectiveness

The results show that data-driven leadership had a strong and positive effect on decision-making effectiveness (β = 0.59, $p = 0.001$). This indicates that leaders who rely on data, analytics, and evidence are more likely to make effective and timely decisions. The finding suggests that data-informed leadership practices improve clarity, reduce uncertainty, and support better policy and operational choices within public sector organizations. Based on this result, H1 was supported.

H2: Organizational Data Culture and Decision-Making Effectiveness

The path from organizational data culture to decision-making effectiveness was also positive and statistically significant (β = 0.46, $p = 0.001$). This implies that organizations that encourage data sharing, data literacy, and evidence-based thinking tend to achieve better decision outcomes. A strong data culture appears to create an enabling environment where information is valued and used consistently in decision processes. Therefore, H2 was supported.

H3: Data-Driven Leadership as a Mediator

The mediation analysis revealed a significant indirect effect of organizational data culture on decision-making effectiveness through data-driven leadership (β = 0.31, p = 0.001). This result indicates that part of the influence of data culture on decision-making effectiveness operates through leadership behavior. In organizations with strong data cultures, leaders are more likely to adopt data-driven practices, which in turn enhance decision effectiveness. This confirms the mediating role of data-driven leadership, and thus H3 was supported. The results of the structural model analysis are presented in Table 2.

Table 2: Structural Model Results and Hypotheses Testing

Hypothesis	path	Standardized Coefficient (β)	p-value	Decision
H1	Data-Driven Leadership → Decision-Making Effectiveness	0.59	0.001	Supported
H2	Organizational Data Culture → Decision-Making Effectiveness	0.46	0.001	Supported
H3	Organizational Data Culture → Data-Driven Leadership → Decision-Making Effectiveness	0.31 (indirect)	0.001	Supported

Source: Field Data (2025)

Discussion of Findings

H1: Data-Driven Leadership and Decision-Making Effectiveness

The results indicate that data-driven leadership has a significant positive effect on decision-making effectiveness in South African public sector organizations ($\beta = 0.59$, $p = 0.001$). This finding confirms that leaders who consistently rely on data, evidence, and analytics are better equipped to make timely and well-informed decisions. Such leadership practices reduce uncertainty, enhance clarity in decision-making, and support effective policy and operational outcomes in the public sector. Consequently, H1 is supported.

This result aligns with Upper Echelons Theory (UET), which posits that organizational outcomes are largely shaped by the characteristics, experiences, and cognitive styles of top executives (Hambrick & Mason, 1984) [10]. In this context, leaders who are data-oriented influence organizational performance by translating analytical insights into actionable decisions, thereby shaping the effectiveness of the entire organization.

Evidence from other African contexts supports this relationship. For instance, studies in Kenya found that leaders who employed data-driven practices improved service delivery efficiency in government agencies (Wanjiku & Omondi, 2020) [25]. In Cameroon, public sector managers who integrated data analytics into decision-making reported higher organizational responsiveness and better policy outcomes (Nguimkeu & Achu, 2019) [19]. Research in Zambia showed that evidence-based leadership was strongly associated with operational effectiveness in civil service organizations (Chikonde *et al*., 2021) [3], while in Rwanda, senior managers who emphasized data use in strategic decisions achieved improved planning and implementation outcomes (Mukamana & Uwizeyimana, 2020) [17].

These findings underscore that data-driven leadership is a critical determinant of decision-making effectiveness in the public sector. Theoretical insights from UET and empirical evidence from comparable African contexts highlight that leaders' analytical orientation and information-processing capabilities directly influence the quality and impact of organizational decisions.

H2: Organizational Data Culture and Decision-Making Effectiveness

The results indicate that organizational data culture has a significant positive effect on decision-making effectiveness in South African public sector organizations ($\beta = 0.46$, $p = 0.001$). This suggests that organizations that foster a strong culture of data sharing, data literacy, and evidence-based thinking are more likely to achieve effective and timely decisions. A robust data culture creates an enabling environment where information is valued, accessible, and systematically integrated into decision-making processes. Consequently, H2 is supported.

The finding is theoretically grounded in Information Processing Theory (IPT), which posits that organizations function as information-processing systems where effectiveness depends on how well data and knowledge are gathered, interpreted, and used to reduce uncertainty and guide decisions (Galbraith, 1973) [7]. Within this framework, a strong organizational data culture enhances the capacity of public sector institutions to process complex information, align resources with strategic objectives, and respond quickly to changing environmental demands.

Empirical evidence from Latin American contexts supports this relationship. In Brazil, public agencies with well-established data governance and sharing practices demonstrated improved operational and policy decision-making (Silva & Carvalho, 2021) [21]. Similarly, studies in Argentina revealed that organizations promoting data literacy and knowledge dissemination achieved higher quality decisions in municipal and regional governance (Fernández & López, 2020) [6]. Research in Mexico found that evidence-based decision practices, supported by a strong data culture, were associated with more efficient public service delivery (Martínez *et al*., 2019) [14]. In Chile, agencies that institutionalized data use in planning and monitoring processes reported enhanced decision speed and accuracy (González & Rojas, 2020) [8].

These findings underscore that cultivating a data-oriented culture is critical for improving decision-making effectiveness. By aligning with IPT, the study shows that public sector organizations that manage and utilize information systematically are better positioned to make informed, timely, and impactful decisions.

H3: Data-Driven Leadership as a Mediator

The mediation analysis shows that data-driven leadership significantly mediates the relationship between organizational data culture and decision-making effectiveness ($\beta = 0.31$, $p = 0.001$). This indicates that part of the effect of a strong organizational data culture on decision-making effectiveness occurs through leadership behavior. In other words, in organizations where data is valued and systematically used, leaders are more likely to adopt data-driven practices, which subsequently enhance the quality, speed, and impact of decisions. Therefore, H3 is supported.

This finding can be interpreted through the lens of Resource-Based View (RBV) Theory, which emphasizes that organizational resources i.e. tangible and intangible are key drivers of competitive advantage and performance (Barney, 1991) [2]. In this context, a strong data culture represents a valuable organizational resource, and data-driven leadership functions as a strategic capability that leverages this resource to achieve superior decision-making outcomes. Leaders who effectively mobilize organizational data transform it into actionable insights, turning information assets into operational and strategic advantages.

Evidence from global contexts corroborates this mediation effect. In Japan, organizations with robust data infrastructures and leaders skilled in analytics demonstrated more effective and timely managerial decisions (Kondo & Nakayama, 2021) [12]. Research in Thailand found that data-oriented leadership amplified the benefits of a strong organizational data culture, improving policy implementation in public sector agencies (Srisuphan & Charoensuk, 2020) [22]. In Singapore, studies revealed that leadership practices that leveraged organizational data enhanced operational decision-making and organizational responsiveness (Tan & Lim, 2019) [24]. Similarly, in Finland, data-driven leaders mediated the impact of information-rich organizational environments on decision quality, showing improved planning and resource allocation in government institutions (Laaksonen & Koskela, 2020) [13].

These findings highlight that leadership behavior is a critical mechanism through which organizational data culture translates into effective decision-making. Aligning with RBV, they show that both organizational data culture (a valuable resource) and data-driven leadership (a strategic capability) jointly contribute to higher decision-making effectiveness in public sector organizations.

Implications of The Study

The findings of this study carry several practical and theoretical implications for public sector organizations, particularly in South Africa.

First, the strong positive effect of data-driven leadership on decision-making effectiveness underscores the importance of equipping leaders with analytical skills and the capacity to interpret and act on organizational data. Public sector institutions can enhance policy formulation, operational efficiency, and service delivery by investing in leadership development programs that emphasize evidence-based management.

Second, the significant influence of organizational data culture highlights that merely having access to data is insufficient. Organizations need to foster an environment where data is systematically collected, shared, and integrated into everyday decision-making. Encouraging data literacy, transparent communication, and knowledge-sharing norms can ensure that information resources are fully utilized to support organizational objectives.

Third, the mediating role of data-driven leadership indicates that leadership behavior is the mechanism through which data culture translates into better decision outcomes. This suggests that public sector organizations should not only focus on building robust data infrastructures but also on developing leaders capable of leveraging these resources strategically. Leaders who can interpret and apply data effectively become key drivers of organizational performance.

Theoretically, the study integrates insights from Upper Echelons Theory (UET), Information Processing Theory (IPT), and Resource-Based View (RBV). It shows that leaders' cognitive and analytical capabilities, supported by a strong data-oriented culture, constitute strategic capabilities that drive effective decision-making. The results contribute to the literature by demonstrating that the interplay between organizational culture and leadership behavior is crucial for maximizing the benefits of data-driven governance.

These findings provide actionable guidance for policymakers and administrators seeking to improve efficiency, accountability, and responsiveness in public sector organizations. They emphasize the strategic value of data as a resource and the central role of leadership in translating data potential into tangible organizational outcomes.

Recommendations

Based on the study's findings, several practical recommendations can be made for South African public sector organizations.

First, it is crucial to invest in leadership development programs that enhance data literacy, analytical skills, and evidence-based decision-making capabilities. By equipping leaders with the knowledge and tools to interpret and act on organizational data, institutions can improve the timeliness, accuracy, and impact of decisions.

Second, organizations should foster a strong data culture by promoting data sharing, transparency, and knowledge dissemination. This includes establishing clear policies for data governance, ensuring accessibility of information across departments, and encouraging staff to use data consistently in decision processes. Creating such a culture will allow the organization to harness data as a strategic resource for operational and policy decisions.

Third, public sector institutions should integrate data-driven practices into organizational routines. This involves embedding data analytics into planning, monitoring, and evaluation processes, as well as using dashboards and real-time reporting to support decision-making. By normalizing the use of data across all levels, leaders can make more informed and effective decisions.

Finally, organizations are encouraged to promote collaboration between leadership and technical teams. Data-driven leadership thrives when executives work closely with analysts, IT specialists, and operational staff to interpret insights, identifies trends, and implement evidence-based strategies. Such collaboration ensures that both the data infrastructure and the leadership capability are fully leveraged to improve organizational performance.

Implementing these recommendations will not only enhance decision-making effectiveness but also contribute to more transparent, accountable, and responsive public sector governance.

Limitations and Suggestions for Future Research

The study has some limitations that should be considered. First, the research focused only on public sector organizations in South Africa, which may limit the generalizability of the findings to other countries or private sector contexts. Second, the study employed a cross-sectional design, capturing data at a single point in time, which restricts the ability to infer long-term causal relationships. Third, the study relied on self-reported measures, which may be influenced by respondent bias.

Future research could address these limitations by adopting longitudinal designs to examine the sustained impact of data-driven leadership over time. Comparative studies across different countries or sectors could also provide insights into contextual factors influencing data-driven decision-making. Additionally, qualitative or mixed-methods approaches could explore the mechanisms through which organizational data culture and leadership behaviors interact to enhance decision-making effectiveness. Expanding the scope of study variables, such as including technology adoption or organizational learning, may also enrich understanding of the drivers of effective public sector governance.

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