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**Digital Governance Capability as a Dynamic Strategic Capability in
Public Sector Digital Transformation Under Institutional and
Technological Uncertainty**



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Digital Governance Capability as a Dynamic Strategic Capability in Public Sector Digital Transformation Under Institutional and Technological Uncertainty



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Abstract

Purpose: This paper repositions digital governance capability as a dynamic strategic capability enabling public institutions to govern emerging technologies effectively and sustain adaptability, resilience, and public service innovation under institutional and technological uncertainty.

Methodology: The study employed a conceptual analytical literature review informed by an interpretivist-constructivist orientation. Evidence was purposively collected from seven scholarly databases (Google Scholar, JSTOR, Scopus, ScienceDirect, SSRN, IEEE Xplore, and ProQuest) and five institutional repositories (OECD, UNESCO, World Bank, African Development Bank, and Smart Africa). Sources published mainly between 2000 and 2024, together with seminal pre-2000 theoretical works, were screened for relevance, methodological quality, geographic diversity, and alignment with the objectives. The evidence was analyzed through a three-stage thematic synthesis comprising initial coding, development of descriptive themes, and analytical interpretation across global, African, and Kenyan public-sector contexts.

Findings: Digital governance capability comprises six dimensions: digital oversight mechanisms, ethical and regulatory governance, data governance, cybersecurity governance, strategic digital alignment, and accountability and transparency mechanisms. Institutional pressures drive capability adoption while technological uncertainty demands adaptive governance responses. Governance capability mediates the relationship between environmental drivers and three outcomes, strategic adaptability, organizational resilience, and public service innovation moderated by leadership support, organizational learning culture, and digital readiness. Kenyan evidence from eCitizen, IFMIS, and KRA illustrates a progression from digital government through digital governance toward AI-enabled governance.

Unique Contribution to Theory, Practice, and Policy: The study advances an integrative framework bridging three governance theories within public sector digital transformation discourse. The six-dimension model offers public leaders an actionable governance diagnostic. For policy, it provides emerging economy governments, particularly Kenya a contextually grounded framework for designing national digital governance policies under institutional complexity.

Keywords: *Digital governance, Dynamic capabilities, Public sector, Digital transformation, Institutional theory*



1. Introduction

1.1 Background and Contextual Overview

1.1.1 The Digital Transformation of Public Governance

Public institutions across the globe are undergoing an unprecedented wave of digital transformation. Governments are deploying interconnected digital systems — from e-government service portals and integrated financial management platforms to predictive analytics, cybersecurity infrastructure, and emerging artificial intelligence applications — to modernize service delivery, enhance administrative efficiency, and strengthen institutional accountability (OECD, 2019; World Bank, 2020). The scope and pace of this transformation have elevated digital technology governance from a peripheral technical concern into a central strategic and institutional challenge.

The governance of digital technologies in public institutions involves navigating complex pressures: regulatory demands for data protection and algorithmic accountability, ethical expectations for transparent and inclusive service delivery, cybersecurity threats to critical public infrastructure, and the rapid evolution of technological capabilities that continuously redefine governance requirements. Institutions that develop robust governance capabilities are better equipped to manage these pressures and to sustain strategic adaptability under uncertainty (Wirtz, Weyerer, and Geyer, 2019).

Among emerging digital technologies, artificial intelligence represents one of the most significant and rapidly evolving governance challenges for public institutions. AI systems are increasingly deployed within public administration for predictive compliance, citizen profiling, fraud detection, and decision support. However, AI operates within, and is dependent upon, broader digital governance architectures, including data governance frameworks, cybersecurity systems, ethical oversight structures, and accountability mechanisms that are established at the institutional level. Understanding digital governance capability as a broader construct, within which AI governance is an emerging and strategically important component, offers a more durable and institutionally grounded analytical perspective.

1.1.2 Digital Governance Capability as a Strategic Imperative

Within contemporary public administration scholarship, digital governance is increasingly recognized as a strategic function that extends beyond compliance management or technical administration. Leading international frameworks from the OECD (2019), UNESCO (2021), and the European Union (2021) converge on the view that governance of digital technologies must be institutionally embedded, strategically adaptive, and oriented toward sustained public value creation (Mikalef et al., 2022). The complexity of public digital systems, spanning data management, cybersecurity, algorithmic accountability, and ethical oversight demand governance mechanisms that are simultaneously comprehensive and adaptive.

Teece, Pisano, and Shuen (1997) demonstrated that organizations which develop dynamic capabilities to sense, seize, and transform resources in response to environmental changes sustain superior performance under conditions of uncertainty. Transposing this insight into

public governance, digital governance capability emerges as a critical institutional resource that enables public sector organizations to manage technological uncertainty, strengthen institutional resilience, and sustain alignment with evolving societal and regulatory expectations. This raises a consequential question: should digital governance capability be conceptualized not merely as a regulatory or compliance mechanism, but as a dynamic strategic capability?

1.1.3 Scope, Rationale, and Contextual Grounding

This paper adopts a conceptual and analytical literature review methodology to examine digital governance capability as a dynamic strategic capability in public sector digital transformation. The study draws systematically on theoretical, empirical, and policy literature, structured around a deliberate geographic funnel: evidence from developed economies in the United States, United Kingdom, and European Union provides the broadest contextual reference; Asian governance experiences from Singapore, South Korea, China, and India illuminate dynamic capability formation in different institutional settings; African evidence from Nigeria, Rwanda, and South Africa situates digital governance within emerging economy realities; and the Kenyan public sector, represented by eCitizen, the Integrated Financial Management Information System (IFMIS), and the Kenya Revenue Authority (KRA) provides the contextually specific empirical grounding for the study's propositions.

The rationale for this inquiry rests on three observations. First, existing digital governance literature pays insufficient attention to governance capability formation, organizational adaptation, capability renewal, and institutional resilience as strategic management concerns. Second, emerging economies present governance challenges analytically distinct from developed economy experiences, yet receive limited theoretical attention in strategic governance scholarship. Third, repositioning digital governance capability, with AI as one significant technological component offers a more durable and institutionally grounded framework than AI-centric governance models that may become outdated as technologies evolve.

1.2 Research Problem

Despite significant global advances in public sector digital transformation, public institutions continue to experience governance deficits associated with technological uncertainty, ethical complexity, cybersecurity vulnerabilities, institutional fragmentation, and organizational capacity limitations. Existing governance scholarship has predominantly addressed technical implementation, operational automation, and ethics regulation, with limited attention directed toward digital governance as a dynamic strategic capability supporting institutional adaptability and resilience (Janssen et al., 2020; Mergel, Edelman, and Haug, 2019).

Existing AI governance scholarship largely specifies the principles and requirements of responsible AI but provides less explanation of how public institutions build, integrate, and renew governance capabilities under institutional and technological uncertainty (Janssen et al., 2020; Wirtz et al., 2019; World Economic Forum, 2020). This gap is particularly pronounced in emerging digital economies, where policy uncertainty, weak institutional coordination,

infrastructure constraints, and limited strategic-management integration compound governance capability deficits (Mergel et al., 2019; Mistry & Misener, 2021).

In Kenya, the eCitizen platform, IFMIS, and KRA digital systems demonstrate measurable progress in public sector modernization. However, these cases also reveal an important analytical distinction: eCitizen is principally a digital government and e-service delivery platform; IFMIS is a public financial management digitalization and ERP system; and KRA represents the most advanced case of AI-enabled governance through predictive compliance analytics and digital risk profiling. Together, they illustrate a progression from digital government through digital governance toward AI-enabled governance, a progression that requires differentiated governance capabilities at each stage.

The theoretical gap centers on the absence of an integrative governance capability framework that: (a) treats digital governance capability as the broader construct within which AI governance is an emerging component; (b) explains how institutional pressures and technological uncertainty drive capability development; and (c) identifies the organizational conditions that moderate governance capability effectiveness. This study addresses that gap through systematic conceptual synthesis.

1.3 Research Objectives

1.3.1 General Objective

To examine digital governance capability as a dynamic strategic capability in public sector digital transformation under institutional and technological uncertainty.

1.3.2 Specific Objectives

1. To examine the influence of institutional pressures on digital governance capability development in public sector institutions.
2. To assess the effect of technological uncertainty on digital governance capability within public sector digital transformation.
3. To evaluate the relationship between digital governance capability and strategic adaptability in public institutions.
4. To examine the moderating influence of leadership support, organizational learning culture, and digital readiness on the digital governance capability-strategic outcomes relationship.

2. Literature Review

2.1 Theoretical Literature Review

2.1.1 Institutional Theory

Institutional Theory, developed by DiMaggio and Powell (1983) and extended by Scott (2001), explains how public institutions adopt governance structures under coercive, normative, and mimetic pressures. Laws and accountability mandates generate coercive pressure; professional standards create normative pressure; and uncertainty encourages imitation of perceived leaders. The theory explains why external expectations initiate digital governance adoption while

distinguishing formal structures from substantive capability. Institutions may adopt policies for legitimacy without developing the skills, resources, routines, and coordination needed for effective implementation (Suchman, 1995). Institutional pressures are therefore antecedents of capability development, not evidence of maturity.

2.1.2 Dynamic Capabilities Theory

Dynamic Capabilities Theory, advanced by Teece, Pisano, and Shuen (1997), Eisenhardt and Martin (2000), and Teece (2007), explains how organizations renew capabilities under rapid change. Applied to public institutions, sensing involves monitoring technological, regulatory, ethical, and cybersecurity developments; seizing involves mobilizing resources and establishing oversight, data, and accountability arrangements; and transforming involves reconfiguring structures and routines as risks evolve. Although developed in a private-sector context, the theory is relevant to sustaining public value, legitimacy, resilience, trust, and service continuity. Digital governance capability is therefore dynamic when institutions anticipate governance demands, coordinate responses, and continuously renew arrangements beyond static compliance.

2.1.3 Adaptive Governance Theory

Adaptive Governance Theory, associated with Ostrom (1990), Folke et al. (2005), and Ansell and Gash (2008), emphasizes institutional flexibility, iterative learning, feedback, polycentric coordination, and multi-stakeholder collaboration. These principles suit digital governance because technological change, algorithmic opacity, cyber threats, and regulatory ambiguity cannot be addressed through rigid, one-time rules. Public institutions need monitoring, review, experimentation, cross-agency coordination, and engagement with citizens, civil society, academia, and industry. The theory explains collaborative adaptation after pressures arise and complements Dynamic Capabilities Theory by showing how governance learning occurs. Together, the three theories explain the drivers, renewal processes, and adaptive arrangements underlying digital governance capability.

2.2 Empirical Literature Review

2.2.1 Digital Governance in Developed Economies: US, UK, and EU

Developed economies have generated the most extensive empirical evidence regarding public sector digital governance, reflecting both advanced digital infrastructure and mature governance institutional environments. In the United States, the National AI Initiative Act (2020) and the NIST AI Risk Management Framework (2023) establish risk-based governance principles for AI systems within public administration, illustrating how coercive regulatory frameworks drive digital governance capability adoption. Wirtz, Weyerer, and Geyer (2019) demonstrate that effective digital governance in public institutions requires integration of technical, legal, and ethical governance dimensions into a coherent institutional capability, rather than treating these dimensions in isolation.

Sun and Medaglia (2019) analyze digital governance challenges in public healthcare systems across Denmark and China, finding that governance capability gaps, including limited data

governance, unclear accountability structures, and insufficient organizational readiness significantly constrain successful digital deployment. Their analysis underscores the distinction between governance adoption and governance capability development: technical systems can be deployed without the organizational capacities necessary for effective governance oversight.

The United Kingdom's experience provides instructive evidence regarding the relationship between digital governance and institutional trust. The UK Centre for Data Ethics and Innovation (2020) reports that public trust in government digital systems is significantly influenced by the perceived transparency, accountability, and ethical integrity of governance mechanisms. Public institutions that develop robust governance capabilities experience higher levels of citizen trust and institutional legitimacy. The European Union's AI Act (2021) provides the most comprehensive regulatory governance experiment available, with Mikalef et al. (2022) demonstrating that organizations with higher governance maturity exhibit superior strategic adaptability, stronger risk management, and more sustained organizational resilience.

2.2.2 Digital Governance in Asian Public Sectors: Singapore, South Korea, China, and India

Asian governance systems provide rich empirical evidence regarding the strategic positioning of digital governance within public sector transformation. Singapore's Smart Nation initiative represents one of the most comprehensively documented cases of governance capability integration within a national digital transformation strategy. Cain (2019) demonstrates that Singapore's governance model strategically embeds digital oversight within national architecture, establishing AI ethics review boards, algorithmic transparency requirements, and data governance frameworks that simultaneously enable innovation and accountability.

South Korea's experience reveals how dynamic capabilities enable effective digital governance under rapid technological change. Kwon and Lee (2019) document how South Korean public institutions developed sensing mechanisms for monitoring emerging digital risks through iterative policy learning, cross-ministerial coordination, and strategic investment in digital governance infrastructure. China's governance experience illustrates both the scale at which digital governance capabilities can be deployed and the tensions between innovation ambition and accountability governance that emerge at that scale (Sun and Medaglia, 2019).

India's experience highlights limitations of governance capability development in large, institutionally complex emerging economies. Chatterjee and Bhattacharjee (2020) identify institutional fragmentation, data governance deficits, and limited organizational learning cultures as primary constraints. Their analysis confirms that governance effectiveness is contingent not only on technical systems but on the organizational and institutional enabling conditions, particularly leadership commitment and learning culture that support sustained capability development.

2.2.3 Digital Governance and Public Sector Transformation in Africa: Nigeria, Rwanda, and South Africa

African public-sector digital transformation is expanding, but governance capability remains uneven because infrastructure constraints, fragmented institutions, limited cybersecurity

capacity, and accountability gaps often accompany technology adoption (Asongu & Nwachukwu, 2018; Mistry & Misener, 2021). Evidence from South Africa, Nigeria, Ghana, and Rwanda therefore indicates that effective digital governance cannot be transplanted wholesale from developed economies; it must be adapted to national institutional capacity, regulatory maturity, resource conditions, and public-service priorities.

South Africa's digital governance landscape provides some of the most documented evidence of governance capability challenges in an African context. Mistry and Misener (2021) analyze digital governance challenges in South African public institutions, finding that capability limitations in data management, cybersecurity, and ethical oversight constrain the strategic value realized from digital transformation investments. Their analysis reveals a persistent gap between technology adoption and governance capability maturity that limits institutional resilience.

In Nigeria and Ghana, empirical evidence from fintech governance and digital public service delivery demonstrates how coercive pressures from national digital economy policies and normative pressures from international development organizations drive digital governance adoption, though governance capability limitations in organizational readiness and accountability mechanisms continue to constrain effectiveness (Asongu and Nwachukwu, 2018). Rwanda's experience provides emerging evidence of a more strategic approach, with Buhigiro and Nzeyimana (2021) documenting how Rwanda's governance model positions digital governance capability as a prerequisite for sustainable innovation rather than an afterthought to technology deployment.

2.2.4 Digital Governance in Kenya's Evolving Digital Government Ecosystem

Kenya's public sector digital transformation provides the contextually specific empirical grounding for this study. The three flagship cases, eCitizen, IFMIS, and KRA are best understood not as equivalent AI governance cases but as representing a developmental progression: from digital government through digital governance toward AI-enabled governance.

eCitizen, launched in 2014 and progressively expanded, is principally a digital government and e-service delivery platform providing centralized citizen access to government services including licensing, immigration, tax payments, and business registration. Its governance significance lies in establishing the foundational digital infrastructure, citizen identity management, interoperability frameworks, and service delivery accountability upon which more advanced digital governance capabilities can be built. Empirical analyses reveal both notable capabilities and persistent deficits in data protection, access equity, and accountability mechanism design (Ndung'u and Signé, 2020).

IFMIS represents Kenya's most significant experiment in digital governance of public financial management. It is principally a public finance digitalization and ERP system, not inherently an AI system, but its governance architecture encompasses many of the core dimensions of digital governance capability: data integrity management, cybersecurity governance, institutional coordination, and strategic oversight. Muriu (2018) documents persistent governance

challenges within IFMIS including cybersecurity vulnerabilities, institutional coordination failures, and limited strategic oversight mechanisms, illustrating how governance capability deficits in a critical digital system create systemic risks of fraud, misappropriation, and accountability failure.

KRA represents Kenya's most advanced case of AI-enabled governance. KRA's adoption of predictive compliance analytics, digital risk profiling, and algorithmic tax administration constitutes a legitimate and well-documented instance of AI governance within a public institution. Mwangi et al. (2019) demonstrate that KRA's digital modernization reflects emerging AI governance capabilities supporting strategic adaptability under regulatory and technological uncertainty. KRA thus represents the frontier of Kenya's digital governance progression, where broader digital governance capabilities provide the institutional foundation for AI-enabled functions.

Together, these three cases create an empirically grounded progression, digital government (eCitizen) - digital governance infrastructure (IFMIS) - AI-enabled governance (KRA) that illustrates how digital governance capability develops progressively across public institutions and contextualizes the study's theoretical framework within Kenya's specific institutional reality.

2.2.5 Technological Uncertainty as an Institutional Governance Challenge

The empirical literature increasingly suggests that technological uncertainty is not solely a technical problem requiring technological solutions, but an institutional governance challenge demanding adaptive capabilities, organizational learning, and strategic oversight. Janssen et al. (2020) demonstrate that rapid technological change, algorithmic complexity, and evolving cybersecurity threats create persistent governance demands that exceed the adaptive capacity of many public institutions, particularly those with limited dynamic governance capabilities.

Fountain (2001), in her foundational analysis of technology enactment in government, demonstrates that technological uncertainty requires adaptive organizational responses at the institutional level, governance structures, organizational cultures, and strategic processes not only at the technical level. This insight anticipates later empirical findings linking governance capability maturity to improved strategic outcomes in digitally intensive public organizations. Mergel, Edelman, and Haug (2019) confirm that governance capability gaps, particularly in strategic alignment, organizational learning, and leadership commitment, are primary constraints on effective public sector digital transformation outcomes across multiple national contexts.

2.3 Conceptual Framework

The conceptual framework synthesizes theoretical and empirical insights to model the relationships among institutional pressures, technological uncertainty, digital governance capability, and strategic outcomes in public sector digital transformation. It is grounded in the integrated insights of Institutional Theory, Dynamic Capabilities Theory, and Adaptive Governance Theory, and informed by the geographic funnel of empirical evidence reviewed above.

2.3.1 Framework Overview

The framework posits two primary independent variables: institutional pressures (comprising coercive, normative, and mimetic dimensions) and technological uncertainty (encompassing digital technology complexity, cybersecurity threats, regulatory ambiguity, and the pace of technological change). These independent variables influence the central mediating variable, digital governance capability conceptualized as a multidimensional dynamic organizational capability comprising six interdependent dimensions: digital oversight mechanisms, ethical and regulatory governance, data governance, cybersecurity governance, strategic digital alignment, and accountability and transparency mechanisms.

Digital governance capability produces three strategic outcomes constituting the framework's dependent variables: strategic adaptability, organizational resilience, and public service innovation. Three moderating variables, leadership support, organizational learning culture, and digital readiness jointly condition the strength of the governance capability-strategic outcomes relationship. AI governance is conceptualized as a strategic technological component within digital governance capability, particularly concentrated in the oversight mechanisms, accountability, and strategic alignment dimensions, rather than as a separate or alternative governing construct.

2.3.2 Institutional Pressures and Digital Governance Capability

Institutional pressures constitute primary drivers of digital governance capability adoption and development. Coercive pressures from national and international digital regulations, data protection laws, and public accountability frameworks compel public institutions to establish governance mechanisms that satisfy regulatory requirements and demonstrate institutional legitimacy. Normative pressures from professional governance standards and international frameworks generate expectations that public institutions adopt governance practices aligned with global responsible digital governance norms.

Mimetic pressures drive governance adoption when public institutions emulate governance structures of prestigious reference institutions under uncertainty. The framework hypothesizes that stronger institutional pressures, particularly when multiple isomorphic pressures converge, positively influence digital governance capability development. However, it also maintains the critical analytical distinction between governance adoption and governance capability: institutional pressures may trigger adoption while organizational conditions determine whether sustained capability development follows.

2.3.3 Technological Uncertainty and Digital Governance Capability

Technological uncertainty is conceptualized as encompassing the rapidly evolving nature of digital technologies, increasing algorithmic complexity, growing cybersecurity threat landscapes, and regulatory ambiguity surrounding emerging digital applications. Drawing on Dynamic Capabilities Theory, the framework posits that higher levels of technological uncertainty create institutional demands for more sophisticated governance capabilities with stronger sensing, seizing, and transforming dimensions.

The framework theorizes that institutions experiencing higher technological uncertainty develop stronger governance sensing mechanisms, environmental monitoring, risk intelligence, and regulatory scanning more robust cybersecurity governance, and more strategically aligned digital oversight structures. Organizational learning culture is theorized as a critical moderating variable that conditions the capacity of institutions to translate technological uncertainty into productive governance adaptation rather than institutional paralysis.

2.3.4 Dimensions of Digital Governance Capability

The framework conceptualizes digital governance capability as comprising six interrelated dimensions. Digital oversight mechanisms encompass the institutional structures, processes, and roles dedicated to monitoring, evaluating, and controlling digital systems within public institutions, including AI systems where deployed. Ethical and regulatory governance refers to the frameworks, values, and deliberative processes through which public institutions embed ethical principles and regulatory compliance into digital system design, deployment, and evaluation decisions.

Data governance encompasses the policies, processes, and technical mechanisms through which public institutions manage data quality, integrity, security, and compliance throughout the digital system lifecycle. Cybersecurity governance refers to institutional capabilities for identifying, assessing, mitigating, and recovering from cybersecurity threats within digital environments. Strategic digital alignment encompasses the organizational processes through which governance mechanisms are integrated with institutional strategy, public service mandates, and organizational values. Accountability and transparency mechanisms refer to the governance structures through which public institutions ensure explainability, auditability, and redress in digital, including algorithmic decision-making systems.

2.3.5 Strategic Outcomes and Moderating Variables

The framework theorizes that robust digital governance capability generates three primary strategic outcomes. Strategic adaptability refers to the organizational capacity to adjust governance structures and strategic priorities in response to emerging technological opportunities and environmental uncertainties. Organizational resilience encompasses the institutional capacity to absorb, adapt to, and recover from technological disruptions, cybersecurity incidents, and changing regulatory environments. Public service innovation refers to the capacity to leverage governance capabilities as enablers of novel service designs, citizen engagement modalities, and administrative efficiency improvements.

Leadership support, organizational learning culture, and digital readiness jointly moderate the governance capability-strategic outcomes relationship. Rather than assigning each moderator to a single outcome, the framework theorizes that these three moderating variables collectively strengthen or weaken the effect of digital governance capability on all three strategic outcomes. Leadership support provides institutional authorization, resources, and strategic direction; organizational learning culture enables iterative governance learning and adaptive capability

renewal; and digital readiness determines the institutional absorptive capacity for translating governance investments into sustained strategic outcomes.

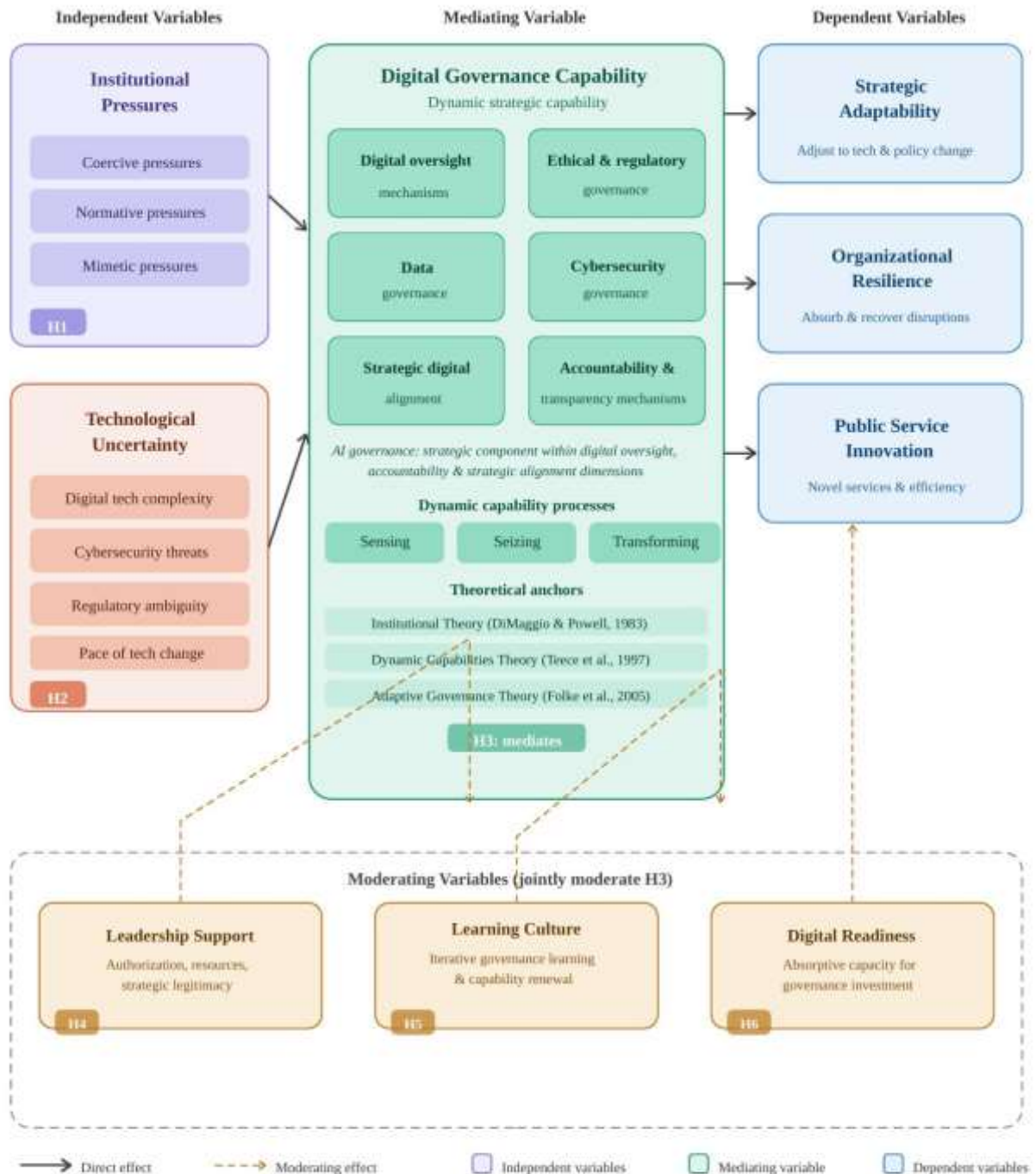


Figure 1: Digital Governance Capability as a Dynamic Strategic Capability

Figure 1: Conceptual Framework — Digital Governance Capability as a Dynamic Strategic Capability in Public Sector Digital Transformation Under Institutional and Technological Uncertainty

3. Methodology

3.1 Research Philosophy and Design

This study adopts a conceptual analytical review methodology grounded in an interpretivist-constructivist research philosophy, recognizing that knowledge regarding digital governance capability in public institutions is socially constructed, context-dependent, and theoretically mediated (Creswell, 2014). The study does not employ primary data collection; rather, it relies on purposive thematic synthesis of existing theoretical, empirical, and policy literature to develop conceptual insights and a generative research agenda.

The methodology is a conceptual analytical review, not a systematic review with formal PRISMA protocols which prioritizes theory-building and conceptual synthesis over exhaustive source enumeration. This design is appropriate and widely established for studies aimed at developing integrative frameworks, advancing theoretical understanding, and identifying research gaps in emerging and evolving domains of scholarly inquiry (Webster and Watson, 2002; Torraco, 2005). The conceptual analytical approach allows for purposive engagement with diverse literature types, including theoretical contributions, policy analyses, case studies, and comparative governance analyses, that a strictly protocol-bound systematic review might exclude.

3.2 Literature Search and Selection Strategy

Literature was identified through systematic searches of electronic databases including Google Scholar, JSTOR, Scopus, Science Direct, SSRN, IEEE Xplore, and ProQuest, as well as institutional repositories of the OECD, UNESCO, World Bank, African Development Bank, and Smart Africa. Google Scholar and Scopus were prioritized for breadth; IEEE Xplore was included to capture technical governance literature; ProQuest extended access to public administration and policy studies. Search terms included combinations of: digital governance capability, dynamic capabilities and public sector, institutional theory and digital transformation, AI governance in government, cybersecurity governance, algorithmic accountability, data governance, strategic adaptability, organizational resilience, and digital transformation Kenya.

Literature selection was guided by relevance to the study's theoretical framework and research objectives, methodological quality and scholarly rigor, geographic diversity across the study's geographic funnel, and recency, with primary emphasis on literature published between 2000 and 2024, while retaining seminal foundational works predating 2000 where theoretically essential (including Ostrom, 1990; DiMaggio and Powell, 1983; Teece et al., 1997). The lower bound of 2000 reflects the emergence of digital government as a scholarly field; older governance theory literature is incorporated through the theoretical framework directly. Both peer-reviewed studies and high-quality grey literature, including OECD reports, World Bank analyses, and national digital strategy documents were included were empirically informative.

3.3 Analytical Approach

Thematic synthesis was employed as the primary analytical method, involving three sequential stages: close reading and initial coding of selected literature, development of descriptive thematic categories aligned with the study's conceptual framework, and analytical interpretation generating conceptual insights and propositions beyond the findings of individual studies (Thomas and Harden, 2008). The synthesis process was iterative, with conceptual categories refined through progressive engagement with the literature and aligned with the geographic funnel design.

The analysis addressed each research objective systematically, generating evidence-based insights regarding: institutional pressures and digital governance capability development; technological uncertainty and governance adaptation requirements; the governance capability-strategic outcomes relationship; and the moderating roles of leadership support, organizational learning culture, and digital readiness. The geographic funnel structure ensured that findings were grounded in progressively more specific empirical contexts, from global evidence through African experience to Kenyan institutional reality.

4. Results and Discussion

4.1 Institutional Pressures and Digital Governance Capability Development

The literature review reveals that institutional pressures constitute a primary driver of digital governance capability development across public sector contexts globally. Consistent with Institutional Theory, public institutions respond to coercive, normative, and mimetic pressures by developing governance mechanisms that demonstrate legitimacy, regulatory compliance, and alignment with prevailing governance standards (DiMaggio and Powell, 1983; Scott, 2001).

Coercive pressures, particularly through national data protection legislation and international digital regulatory frameworks, exert the strongest direct influence on governance adoption. The European Union AI Act (2021), OECD AI Principles (2019), and national digital governance policies in the United Kingdom, Singapore, and Kenya generate compliance-driven incentives for public institutions to establish digital oversight mechanisms, data governance policies, and ethical review structures. Mikalef et al. (2022) and Sun and Medaglia (2019) confirm that regulatory pressure positively correlates with governance adoption, particularly in dimensions of risk management, transparency, and accountability.

Normative pressures from professional governance standards and international development organization recommendations exert significant influence on governance capability design and quality. The OECD (2019) demonstrates that countries adopting governance frameworks aligned with international responsible digital governance norms exhibit stronger institutional accountability and public trust outcomes. In Kenya, normative pressures from international development partners, the African Union digital transformation agenda, and Smart Africa initiatives generate expectations that public institutions adopt governance practices consistent with global responsible governance standards.

Critically, the literature consistently affirms the distinction between governance adoption and governance capability development. Mimetic adoption may produce formally compliant governance structures that lack substantive organizational capacities. Scott (2001) and Teece (2007) converge on the view that external pressures can initiate governance adoption but sustained capability development requires active organizational investment in learning, leadership commitment, and capability-building processes. This finding underscores that institutional pressures are necessary but insufficient conditions for dynamic governance capability formation.

4.2 Technological Uncertainty and Digital Governance Capability

Technological uncertainty emerges consistently as a defining contextual factor shaping digital governance capability requirements and development trajectories. Janssen et al. (2020) demonstrate that rapid technological change, algorithmic complexity, and evolving cybersecurity threats create persistent governance demands that exceed the adaptive capacity of many public institutions, particularly those with limited dynamic governance capabilities.

Three dimensions of technological uncertainty are particularly prominent. First, algorithmic complexity and opacity create governance challenges for public institutions seeking accountability and explainability in digitally assisted decision-making. Wirtz et al. (2019) and Diakopoulos (2016) document how algorithmic complexity undermines traditional administrative accountability frameworks, creating demands for new governance mechanisms oriented toward transparency, auditing, and redress. Public institutions lacking robust accountability mechanisms experience increased vulnerability to governance failures and public trust deficits.

Second, cybersecurity threats generate escalating governance capability demands. The IFMIS experience in Kenya (Muriu, 2018) and broader African digital governance evidence (Asongu and Nwachukwu, 2018) demonstrate that cybersecurity governance deficits in digital environments create catastrophic risks of financial loss, data breach, and institutional reputation damage. Organizations with advanced cybersecurity governance capabilities demonstrate significantly superior resilience under increasing cyber threat intensity.

Third, regulatory ambiguity surrounding emerging digital technologies challenges public institutions to develop adaptive governance frameworks capable of anticipating regulatory evolution. Fountain (2001) and Mergel et al. (2019) demonstrate that organizations with strong organizational learning cultures and dynamic governance sensing mechanisms are better positioned to navigate regulatory uncertainty, continuously monitoring policy developments, engaging in governance experimentation, and building adaptive compliance capacities. KRA's experience illustrates how progressive governance capability investment enables effective adaptation to evolving regulatory and technological demands, while IFMIS illustrates how capability deficits amplify technological risks.

4.3 Digital Governance Capability and Strategic Adaptability

The relationship between digital governance capability and strategic adaptability is substantiated across multiple levels of the literature. At the macro level, comparative analyses

of national governance systems demonstrate that countries with higher governance maturity exhibit stronger adaptive capacity in responding to technological disruption and regulatory change (OECD, 2021; Cain, 2019). At the organizational level, public institutions with robust governance capabilities demonstrate greater strategic flexibility, more effective risk management, and more sustained digital transformation performance (Mikalef et al., 2022).

The sensing dimension of dynamic governance capability is most strongly associated with strategic adaptability. Teece (2007) argues that organizations with sophisticated sensing mechanisms can identify strategic opportunities and governance risks earlier, enabling proactive strategic adjustment rather than reactive crisis management. Singapore's Smart Nation governance model provides a compelling illustration of how sensing capabilities embedded in governance architecture translate into sustained strategic adaptability advantages (Cain, 2019). South Korea's experience with iterative policy learning and cross-ministerial digital governance coordination demonstrates how seizing and transforming capabilities enable sustained governance effectiveness under rapid technological change (Kwon and Lee, 2019).

In the Kenyan public sector, eCitizen demonstrates how foundational digital governance investments in service integration, data management, and citizen engagement translate into strategic adaptability improvements, enabling progressive expansion of digital service scope in response to citizen demand and technological opportunities (Ndung'u and Signé, 2020). KRA demonstrates more advanced strategic adaptability through AI-enabled governance capabilities that enable continuous adaptation to evolving compliance risks and revenue administration challenges. Persistent governance capability gaps in cybersecurity, accountability, and strategic alignment, most evident in IFMIS constrain strategic adaptability potential, reinforcing that governance capability must be developed across all six framework dimensions.

4.4 Moderating Influences: Leadership Support, Organizational Learning Culture, and Digital Readiness

Leadership support, organizational learning culture, and digital readiness jointly condition the governance capability-strategic outcomes relationship across the empirical literature. Rather than each moderating a single outcome, the evidence suggests these three variables collectively strengthen or weaken the effect of governance capability investment on all three strategic outcomes.

Leadership support operates as a critical enabling condition through which governance capability investments are authorized, resourced, strategically legitimized, and organizationally sustained. Mergel et al. (2019) demonstrate that digital transformation initiatives with strong senior leadership commitment exhibit significantly higher governance capability development rates and more sustained strategic outcomes. Leadership support manifests through visible executive commitment, strategic prioritization of governance investment, and active championship of governance learning processes. Where leadership support is weak, governance capability development tends to be fragmented, under-resourced, and insufficiently integrated with strategic organizational processes.

Organizational learning culture enables iterative governance learning, knowledge sharing, error correction, and adaptive capability renewal. Argote and Miron-Spektor (2011) demonstrate that organizations with strong learning cultures more effectively translate governance experiences, both failures and successes into systematic organizational knowledge that enhances future governance performance. In the Kenyan context, differences in learning culture partially explain the divergent governance capability trajectories between KRA, which has developed progressive analytics and risk management capabilities through iterative organizational learning and IFMIS, which has experienced persistent governance challenges that suggest limited learning from recurring failures.

Digital readiness, the institutional absorptive capacity for integrating digital technologies and governance mechanisms moderates the translation of governance capability investments into strategic outcomes. Institutions with higher digital readiness are better positioned to leverage governance frameworks for service innovation and resilience, while lower digital readiness creates absorptive capacity constraints that limit governance effectiveness even where formal governance structures exist. Together, the three moderating variables constitute the organizational enabling conditions for dynamic digital governance capability.

4.5 Synthesis: Digital Governance Capability as a Dynamic Strategic Capability

Synthesizing the theoretical and empirical evidence, this study affirms that digital governance capability must be reconceptualized as a dynamic strategic capability rather than a static compliance or administrative function. The evidence demonstrates that governance capability encompasses dynamic sensing, seizing, and transforming dimensions that collectively enable public institutions to navigate institutional and technological uncertainty effectively (Teece et al., 1997).

The six governance capability dimensions, digital oversight mechanisms, ethical and regulatory governance, data governance, cybersecurity governance, strategic digital alignment, and accountability and transparency mechanisms constitute a comprehensive institutional capability architecture. Within this architecture, AI governance is not a separate or alternative organizing concept but a strategically important and emerging technological component, particularly concentrated in the oversight mechanisms, accountability, and strategic alignment dimensions. As AI technologies become more pervasive in public institutions, the governance demands they generate will increasingly test and develop all six capability dimensions.

The Kenyan progression from eCitizen through IFMIS to KRA provides an instructive empirical illustration of how digital governance capability develops in stages, with each stage creating the institutional foundation for the next. This progression is not unique to Kenya, it reflects a broader pattern in which public institutions first establish digital government infrastructure, then develop digital governance architectures, and finally build the advanced AI-enabled governance capabilities that depend on both preceding stages. The broader framing of digital governance capability captures this developmental trajectory in ways that an AI-centric framework cannot.

5. Summary, Conclusion, and Recommendations

5.1 Summary of Findings

This paper examined digital governance capability as a dynamic strategic capability in public sector digital transformation under institutional and technological uncertainty. Through a conceptual analytical literature review anchored in Institutional Theory, Dynamic Capabilities Theory, and Adaptive Governance Theory, the study synthesized theoretical, empirical, and policy evidence across a geographic funnel from developed economies through African contexts to the Kenyan public sector.

The review established that institutional pressures, coercive regulatory mandates, normative professional standards, and mimetic benchmarking are primary drivers of digital governance capability adoption, while maintaining the critical analytical distinction between adoption and capability development. Technological uncertainty generates sustained governance capability demands requiring dynamic, adaptive organizational responses. Digital governance capability, conceptualized across six interrelated dimensions, mediates the relationship between environmental drivers and three strategic outcomes. Leadership support, organizational learning culture, and digital readiness jointly moderate governance capability effectiveness. Kenyan evidence from eCitizen, IFMIS, and KRA illustrates a developmental progression from digital government through digital governance to AI-enabled governance that grounds the theoretical framework in contextual institutional reality.

5.2 Conclusion

Digital governance capability is a strategic necessity for public institutions navigating institutional and technological uncertainty because effective governance must extend beyond administrative compliance and technical management to enable institutions to sense emerging risks, seize governance opportunities, and transform structures for sustained adaptability, resilience, and public-service innovation. Positioning AI governance as an important component within the broader digital governance capability construct provides a more durable framework: technologies evolve, but the institutional capacity to govern them remains an enduring requirement. The proposed six-dimension model accommodates current AI concerns while remaining applicable to future technological change. Theoretically, the study integrates Institutional Theory, Dynamic Capabilities Theory, and Adaptive Governance Theory to explain the external pressures, organizational renewal processes, and collaborative learning arrangements that shape capability development. It therefore extends strategic capability thinking into public administration and offers a contextually grounded explanation of Kenya's progression from digital government through digital governance to AI-enabled governance.

5.3 Recommendations

Public institutions should develop integrated digital governance capability across the six dimensions by assigning clear leadership responsibility, allocating dedicated resources, embedding governance objectives in strategic plans, and instituting regular review, lessons-learned, cross-functional learning, and external benchmarking mechanisms. Kenyan agencies should prioritize cybersecurity governance, data quality and protection, algorithmic

accountability, transparency, and redress, while adapting practices to each institution's level of digital maturity rather than equating formal structures with effective capability. Policymakers should establish a coherent national digital governance framework that aligns data protection, cybersecurity, ethical technology use, and algorithmic accountability while requiring continuous learning and capability renewal; regional coordination through the African Union and Smart Africa should further support shared standards and reduce fragmentation. Future research should empirically test the framework using quantitative, qualitative, comparative, and longitudinal designs across African public institutions, with particular attention to how leadership support, organizational learning culture, and digital readiness condition the progression from digital government to digital governance and AI-enabled governance.

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