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SMART GOVERNANCE AND DIGITAL SUSTAINABILITY POLICIES IN SAUDI ARABIA: A FRAMEWORK FOR SUSTAINABLE DIGITAL TRANSFORMATION

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Abstract: *Currently, a widespread consensus has formed across the global smart governance field to support the upgrading of public values. This study takes Saudi Arabia as its research setting, focusing on the core theme of smart governance empowering digital sustainable transformation. After sorting out Saudi Arabia's local policy background, this study notes that in the rapidly digitizing context where environmental, social, and economic transformations overlap, existing research has long lacked adequate examination of the link between smart governance and digital sustainability policies. To address this gap, this study constructs a Saudi Arabia-specific conceptual framework that integrates four major domains. It also puts forward supporting research propositions, measurement indicators, quantitative research methods, and policy recommendations. The core logic of the framework is as follows: the six dimensions of smart governance positively influence the five dimensions of digital sustainability policies; digital sustainability policies act as a mediator connecting smart governance and sustainable digital transformation; institutional readiness and stakeholder participation function as moderating variables that strengthen the implementation of the aforementioned policies. This set of research outputs can be used by researchers and policymakers to support assessments of whether Saudi Arabia's digital transformation aligns with its long-term national development goals.*

Keywords: Smart governance; Digital sustainability; Saudi Arabia; Digital transformation; Policy framework

1. Introduction

Digital transformation is a core proposition in the contemporary field of public administration. Currently, governments around the world widely deploy various types of digital government tools, yet the sector is marked by a widespread flawed practice of single-dimensional value assessment. A mature transformation agenda must cover 6 core public value dimensions, and this broad assessment logic is compatible with Saudi Arabia's national development framework.

Saudi Arabia is a high-quality research context for studying the link between smart governance and digital sustainability policies. The official policies underpinning this research setting are clear and comprehensive: on the smart governance front, there are the six core development directions proposed in the 2016 Vision 2030, and the digital government policy with seven development principles released by Saudi Arabia's Digital Government Authority (DGA) in 2024; on the sustainability front, the 2024 Saudi Green Initiative positions sustainability as a core national priority.

Against the backdrop of the gradual integration of multi-issue agendas, this paper puts forward a core policy question: How can smart governance make digital transformation more

sustainable? Drawing on the conception of smart governance defined by Rodríguez et al. in existing academic research, this paper defines digital sustainability policies that underpin triple sustainability, and derives evaluation criteria outlining six core conditions that sustainable digital transformation must meet.

Saudi Arabia has made remarkable progress in the development of its digital government. However, most existing studies discuss the three core themes of smart governance, sustainability policy, and digital transformation separately, resulting in scattered, fragmented sub-research directions. Very few of these studies explore the two categories of core functional mechanisms. This paper aims to fill this research gap.

This paper was developed to meet the submission template requirements of the iBAF2026 conference. The core framework title of the submitted conceptual paper is Smart Governance and Digital Sustainability Policies in Saudi Arabia: A Framework for Sustainable Digital Transformation. Three implementation goals are set for the paper: to conceptualize smart governance in the context of Saudi Arabia's digital transformation, to explain the role of the linkage mechanism of digital sustainability policies, and to propose a quantifiable model that can be empirically tested.

This study puts forward four core contributions at both the research and practical levels: expanding the boundaries of the existing smart governance literature, linking governance mechanisms to digital sustainability, and breaking the longstanding limitation of prior research that focused solely on service delivery; positioning digital sustainability policies as a mediating mechanism; bridging the local Saudi context with universal theories of digital transformation; and launching a practical assessment framework to support the alignment of relevant goals with Saudi Vision 2030.

2. Literature Review

2.1. Smart Governance

Smart governance refers to a governance model that relies on digital technologies, data analysis, networked collaboration, and stakeholder participation to improve the quality of public decision-making. It differs from traditional e-government, which only digitizes existing services, and also covers deep-level changes such as institutional transformation. Rodríguez Bolívar et al. (2016) and Tomor et al. (2019) have also defined this core concept from different dimensions respectively.

This paper proposes that smart governance encompasses six operational dimensions: transparent government decision-making, performance accountability, evidence-based policy implementation, cross-departmental integration, agile regulation, and stakeholder voice. Non-transparent data governance, while boosting efficiency, erodes citizen trust and undermines equity. Smart governance is precisely the core institutional foundation that supports digital technologies in delivering public value.

Saudi Arabia's development of smart governance is advanced in alignment with its overall national transformation agenda. According to Aldegheishem's 2024 study, the country has already rolled out e-service systems and increased investment in public services, yet it still faces problems of insufficient citizen participation and ineffective inter-organizational coordination. This study judges that while Saudi Arabia has a solid digital foundation, it must upgrade its governance maturity across three core dimensions: in-depth participation, cross-stakeholder integration, and a sustainability-oriented focus.

2.2. Digital Sustainability Policies

The digital sustainability policies studied in this paper are policy arrangements that ensure digital transformation delivers tangible contributions to sustainable development. Covering fields including green ICT infrastructure, high-energy-efficiency data centers, and digital inclusion standards, these policies are built on a core premise: while digital technologies generate positive gains, they also carry a range of potential risks such as excessive energy consumption and electronic waste.

In recent years, literature in the field of sustainability and innovation has generally framed digitalization as having a dual role in sustainable development: it serves as both a core enabler and a core challenge. Florek-Paszkowska and Ujwary-Gil (2025) proposed the digital-sustainable ecosystem, outlined five categories of supporting mechanisms for this system, and simultaneously pointed out that its on-the-ground implementation requires the coordinated alignment of four categories of core elements.

The public sector must introduce digital sustainability policies, as government digital platforms impact three core areas: the ways citizens access public services, the logic of government data use, and the procurement, operation and maintenance of technical infrastructure. Efficient digital services cannot be considered sustainable if they exclude elderly people, people with disabilities, rural populations and groups with limited digital skills. Likewise, an innovative data-driven government is not sustainable if it has shortcomings in privacy, transparency and cybersecurity. Sustainability must be embedded into the design phase of digital policies, rather than added as an afterthought.

2.3. Sustainable Digital Transformation

Sustainable digital transformation refers to a transformation that leverages digital technologies to revamp services, institutions, capabilities, and governance processes, with the goal of creating long-term public value. Reviewing existing research in the field of public sector transformation, Mergel et al. (2019) defined the core essence of public sector transformation, and Haug et al. (2024) further supplemented the core prerequisites for the implementation of this transformation.

The sustainable digital transformation proposed in this study has four core attributes: In the economic dimension, it boosts efficiency, cuts costs, and empowers innovation; in the social dimension, it advances universal accessibility, inclusion, and public participation; in the environmental dimension, it can reduce resource consumption, yet if improperly governed, it will drive up energy use of digital infrastructure; in the institutional dimension, it requires the strong support of solid data governance that delivers security and coordination.

The 2024 study published by Ineizeh, Hussein, Ineizeh, and Al-Zaqeba is highly aligned with the core theme of this paper. This study focuses exclusively on Jordan's accounting field; the collocation adaptation calibration method it verified, alongside its conclusion on blockchain-enabled transformation of governance, supports the core argument put forward in this paper that sustainable digital transformation requires support from multi-dimensional conditions.

2.4. Saudi Arabia Policy Context

This paper sorts out the full-chain nodes of Saudi Arabia's dual national agendas of digital transformation and sustainable development: In the field of digital transformation, the top-level guiding framework Vision 2030, launched in 2016, includes 4 core digital targets, which are integrated into the national transformation agenda covering economic diversification, improvement of people's livelihood quality, and enhancement of institutional efficiency.

In 2024, the Digital Government Authority, the core driving force behind the government's digital transformation, released a digital government policy and built a regulatory framework covering 8 core business lines across all government agencies. The 2025 official assessment, which draws on data from 50 digital platforms and 4 categories of core indicators for calculation, recorded a digital experience maturity index of 86.71%, earning the high-level performance rating.

The parallel sustainable development agenda takes the 2024 Saudi Green Initiative as its core carrier, covering 4 major areas including climate action. The two agendas must be integrated via a smart governance model that relies on digital platforms to meet diverse development requirements such as inclusiveness and environmental friendliness.

2.5. Theoretical Foundation

This study carries out its analysis anchored in three major theoretical perspectives. First, it introduces public value theory, proposing that assessments of government transformation cannot be limited only to internal efficiency, but must also cover social public values. This study breaks down the public value of digital services into six specific dimensions, and demonstrates that smart governance can align digital technologies, public values, and citizen needs, confirming that this line of research is indeed necessary.

This paper adopts institutional theory as its analytical framework, focuses on Saudi government agencies subject to four categories of institutional constraints, and proposes that institutional readiness is the core prerequisite for digital sustainability policies to take effect, requiring that all four types of supporting conditions are fully secured.

Drawing on the resource-based view and the capability-based view, we propose that digital transformation relies on an organization's strategic capabilities. The four categories of assets—digital platforms, data assets, cybersecurity systems, and workforce skills—can only generate value when integrated with organizational capabilities. Echoing the 2024 study by Ineizeh et al., this paper defines smart governance as the core institutional capability that underpins sustainable digital transformation.

3. Conceptual Framework and Research Propositions

This paper proposes an analytical framework that can support quantitative empirical research (see Figure 1). The core of the framework comprises three categories of variables including the independent variable smart governance, and two enabling conditions. Follow-up research will conduct quantitative tests on relevant institutions in Saudi Arabia.

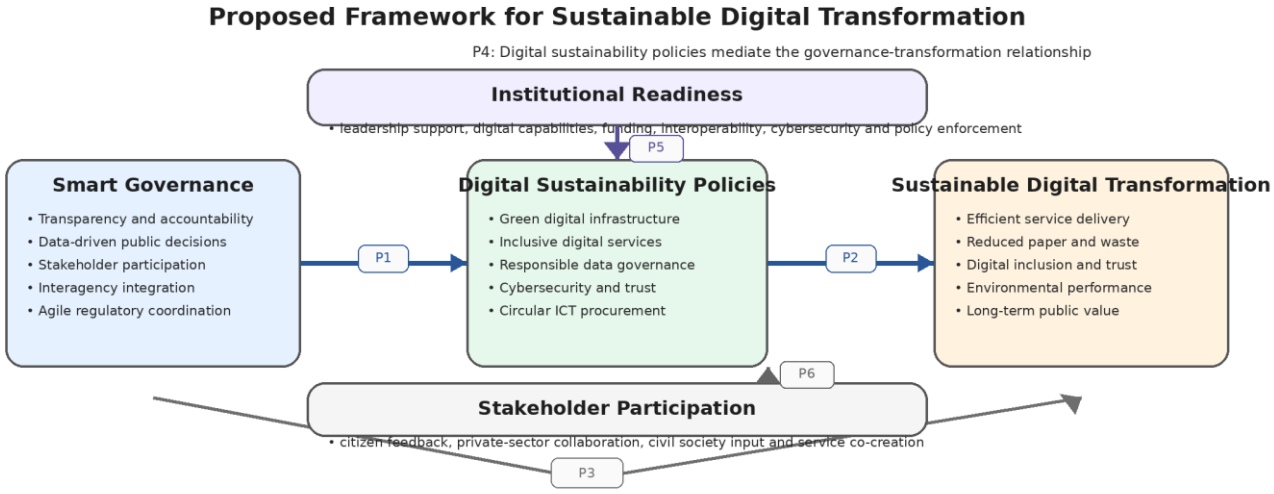

Figure 1. Proposed framework for smart governance and digital sustainability policies

3.1. Smart Governance and Digital Sustainability Policies

The authors of this paper propose that smart governance can enhance the effectiveness of digital sustainability policies by establishing matching institutional mechanisms. This set of mechanisms covers five core dimensions, all of which support the core research logic of the study: transparency, accountability, data-driven decision-making, cross-departmental integration, and participatory governance.

At present, multiple industries and government entities across Saudi Arabia are simultaneously advancing digital transformation. A lack of integrated governance would trigger three types of risks, including service fragmentation. For this reason, this study puts forward its first core research proposition.

P1: Smart governance in Saudi Arabia has a positive impact on digital sustainability policies.

3.2. Digital Sustainability Policies and Sustainable Digital Transformation

Digital sustainability policies can embed the core principles of sustainability into digital service delivery, effectively advancing sustainable digital transformation. The five subcategories of these policies deliver distinct outcomes respectively: reducing environmental costs, ensuring equitable access, refining trust governance, strengthening security and resilience, and developing the circular economy.

The authors of this paper propose that the policy dimension can turn digital transformation from a technical project into a public value project. Merely achieving digitalization while leaving flaws unaddressed is unsustainable; embedding sustainability into the process can deliver four major values. The following sections will elaborate on another core proposition of this research.

P2: Digital Sustainability Policies Positively Drive Sustainable Digital Transformation

3.3. Direct and Mediating Effects

Smart governance can provide core support for sustainable digital transformation. Institutions with strong governance capabilities will leverage digital tools to break down cross-departmental data silos and advance the implementation of this transformation; however, this enabling effect extends far beyond this, as governance capabilities can also amplify the transformation's long-term benefits through an indirect mechanism of coordinated resource allocation.

This paper argues that the mediating role of digital sustainability policies is critically important. A single abstract governance principle cannot produce measurable, on-the-ground outcomes. Taking the principle of transparency as an example, this principle must rely on supporting policies to be effectively implemented. The core propositions of this study will be presented in subsequent sections.

P3: smart governance positively promotes sustainable digital transformation

P4: the relationship between digital sustainability policies play a mediating role.

3.4. Institutional Readiness and Stakeholder Participation

This paper defines institutional readiness as the capacity of government entities to implement digital sustainability policies, a concept that covers seven core dimensions. Without this capacity, even the most mature governance frameworks will fail to function, and Saudi Arabia's cross-sectoral, multi-institution coordinated digital agenda further underscores its critical value.

Building on the preceding review of the policy dilemmas of digital sustainability outlined in earlier sections, we propose that stakeholder participation can serve as a core enabling condition for such policies. The participation of five categories of actors across the three core stages of policy formulation can effectively strengthen trust and improve policy suitability, which in turn leads into the core research propositions presented later in this paper.

P5: Institutional readiness strengthens the relationship between smart governance and digital sustainability policies.

P6: Stakeholder participation strengthens the effect of digital sustainability policies on sustainable digital transformation outcomes.

Table 1. Summary of research propositions

Code	Relationship	Expected effect
P1	Smart governance -> Digital sustainability policies	Positive
P2	Digital sustainability policies -> Sustainable digital transformation	Positive
P3	Smart governance -> Sustainable digital transformation	Positive
P4	Smart governance -> Digital sustainability policies -> Sustainable digital transformation	Mediating effect
P5	Institutional readiness x Smart governance -> Digital sustainability policies	Positive moderation
P6	Stakeholder participation x Digital sustainability policies -> Sustainable digital transformation	Positive moderation

4. Proposed Methodology

4.1. Research Design

This study is a conceptual paper, positioned as a foundation for future quantitative research. The model built in this study includes latent variables and testable associations, and is well-suited to the application of quantitative research methods. The study plans to use cross-sectional surveys and structured questionnaires to collect data from employees and managers across seven fields, including digital government.

This study focuses on digital sustainability. Its research scope covers government agencies, municipal authorities, and all types of organizations within Saudi Arabia that advance work in this field. The quantitative design adopted for this study can verify associations between variables, support cross-actor cross-sectional comparisons, and align with the core needs of this research.

4.2. Population, Sampling and Data Collection

This study focuses on digital sustainability policy implementation, and adopted a two-tiered sampling logic in Saudi Arabia. It first delineated 8 categories of target positions, then screened qualified respondents against four types of knowledge thresholds.

This paper clarifies core design standards for empirical studies in the public sector that adopt structural equation modeling: Since not all employees possess the professional knowledge required to evaluate a study's research constructs, purposive sampling must be used. The minimum number of valid samples is 200, while a sample size of 300 to 400 delivers stronger statistical power. Data must be collected from three types of compliant channels, and four core ethical requirements must be fully implemented.

4.3. Measurement of Constructs

All core constructs of this study were uniformly measured using a 5-point Likert scale, where 1 stood for "strongly disagree" and 5 stood for "strongly agree". All dimensions are summarized in Table 2. The scale items were adapted from literature across five major research fields, and underwent double review by experts from academia and the public sector prior to data collection.

Table 2. Proposed measurement of the framework constructs

Construct	Dimensions	Illustrative indicators	Role
Smart governance	Transparency; accountability; participation; data-driven decisions; integration; agile regulation	Open digital information, integrated platforms, evidence-based decisions, stakeholder consultation, service accountability, regulatory coordination	Independent variable
Digital sustainability policies	Green ICT; digital inclusion; responsible data governance; cybersecurity; circular ICT procurement	Energy-efficient infrastructure, accessibility standards, privacy safeguards, secure services, sustainable procurement, e-waste reduction	Mediating variable
Sustainable digital transformation	Efficiency; inclusion; trust; environmental performance; resilience; public value	Faster services, lower paper use, improved citizen trust, inclusive access, resilient digital systems, measurable public value	Dependent variable
Institutional readiness	Leadership support; skills; funding; interoperability; cyber readiness; policy enforcement	Executive commitment, digital training, budget availability, shared systems, cyber capacity, compliance mechanisms	Moderating variable
Stakeholder participation	Citizen feedback; co-creation; private-sector collaboration; employee participation; civil society input	Feedback channels, consultation, service co-design, public-private partnership, employee innovation, inclusion of vulnerable groups	Moderating variable

4.4. Data Analysis

This study adopts the partial least squares structural equation model (PLS-SEM) to conduct data analysis. The framework of this study includes multiple latent variables, mediating effects, and

moderating effects, and takes prediction as its core research goal, which perfectly fits the applicable scenarios of this method. Later, tools including Cronbach's alpha, composite reliability, and factor loadings will be used to successively complete the full-process test of three types of validity.

This paper proposes data analysis specifications for quantitative research in the field of public management. Structural models must complete assessment of seven mandatory evaluation indicators including collinearity, and researchers may additionally select two categories of extended analysis that fit their respective research scenarios: multi-group analysis, which applies to group-level comparisons, and the triangulation method adapted for use with secondary data.

5. Discussion

The analytical framework proposed in this paper breaks through the misconception that digitalization will naturally generate digital sustainability. It points out that five types of problems still exist following government digitalization, and thus smart governance is needed to provide support through the core functions of guidance, coordination, assessment, and correction.

The analytical framework of this study is anchored on the mediating role of digital sustainable development policies. Core governance principles including transparency, accountability, and public participation must be translated through operational policy tools to be put into practice and deliver tangible real-world effects.

To clarify the necessity of research on institutional readiness, this study selects Saudi Arabia as an analysis sample. It finds that while the country's national-level digital infrastructure and policies have grown mature, gaps in skills and resources across institutions have caused implementation deviations of the nationally developed comprehensive framework.

The adaptive digital transformation analysis framework proposed in this study aligns with existing research conclusions in the digital transformation field. Drawing on the complementary findings of Mergel et al. (2019), Haug et al. (2024), and Ineizeh et al. (2024), this study argues that Saudi Arabia's digital sustainability requires coordinated action across four types of elements: technology, governance, policy, and institutional capacity.

The framework also aligns with the policy requirements of Saudi Arabia's Vision 2030 and the Saudi Digital Government Authority (DGA). Leveraging the country's solid foundational progress in digital government construction, the framework clarifies that six core transformation tasks must be advanced with sustainability as the central focus.

6. Implications

6.1. Theoretical Implications

This study integrates three concepts that academic circles have previously discussed separately: smart governance, digital sustainability, and sustainable digital transformation. It constructs a unified analytical framework, adopts digital sustainability policy as a mediating variable, and resolves the core problem of prior research: the separate treatment of these three concepts, and the ambiguous logic underpinning their correlation assumptions.

Past mainstream research in the field of digital government has only focused on three core outcomes: efficiency, service quality, and user satisfaction. This paper supplements five entirely new evaluation dimensions, expands the definition of successful digital transformation in public sectors, and clarifies the core theoretical contribution of this study.

6.2. Practical and Policy Implications

The authors of this paper propose a sustainability assessment framework exclusively developed for the digital transformation of the public sector. This framework serves as a diagnostic tool for policymakers, allowing them to evaluate the integration of sustainability goals during the early initiation phase of a project. The framework covers two categories of indicators: traditional indicators and newly added indicators.

This dedicated framework for digital transformation in the public sector takes organizational readiness as its core prerequisite. It requires the development of five core capabilities—including

digital skills, data governance, and cybersecurity—paired with two supporting mechanisms: citizen feedback and employee participation. Transformation policies can only be implemented and take effect if they respond to the genuine needs of end users.

The general digital transformation framework proposed in this paper can align with three national-level strategies—Saudi Vision 2030, the national digital government policy, and the national sustainable development initiative—to advance the implementation of four core digital transformation actions.

7. Limitations and Future Research

This study is a conceptual study that has not yet yielded empirical results. The variable relationships outlined in this paper require verification through surveys and interviews. The analytical framework developed here is only applicable to Saudi Arabia, and future research may conduct comparative analyses with other Gulf Cooperation Council (GCC) countries to validate its cross-context applicability.

In future work, this study will advance four specific research tasks in sequence: first, the partial least squares structural equation model (PLS-SEM) and covariance-based structural equation model will be applied to validate the existing analytical framework; second, variable heterogeneity across five types of public sectors that include the central government will be tested; third, a longitudinal study will be carried out to capture transformation dynamics; and finally, qualitative case studies will be used to explore the underlying logic of policy implementation.

This study puts forward two highly promising research pathways for digital sustainability. The first is to expand the existing analytical framework by incorporating five additional dimensions, including artificial intelligence governance. The second is to develop a dedicated digital sustainability index for Saudi Arabia's public sector that integrates survey measurement indicators and includes six secondary indicators.

8. Conclusion

Saudi Arabia's digital transformation has now entered a new phase. The importance of the sustainability, inclusiveness, and governance level of digital services is no less significant than the speed of the transformation. This paper establishes a framework of five core elements, and puts forward that smart governance can support sustainable digital transformation either directly or indirectly.

This study dispels the misconception that digital sustainability can be achieved solely through technological adoption, sorts out 8 core supporting prerequisites, and proposes that integrating these prerequisites can help Saudi Arabia build a multi-dimensionally qualified digital government.

The intelligent governance framework proposed in this paper can lay a foundation for subsequent empirical research and policy evaluation. It helps scholars verify the link between governance and sustainability, supports policymakers in Saudi Arabia to assess whether transition measures align with long-term public values, and enables the framework to become a core driving force for the country's sustainable digital transformation.

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