DIGITAL TRANSFORMATION AND ADMINISTRATION INNOVATION

Citation: Chabok, F., Dadashkarimi, Y., & Nejad Hajali Irani, F. (2025). Identifying the Components of the E-Government Governance Model with an Approach to Creating and Developing Digital Businesses. *Digital Transformation and Administration Innovation*, 3(4), 1-11.

Received date: 2025-04-07 Revised date: 2025-08-03 Accepted date: 2025-08-13 Published date: 2025-10-01

Identifying the Components of the E-Government Governance Model with an Approach to Creating and Developing Digital Businesses

Fereshteh Chabok [1], Yahya Dadashkarimi [1]*, Farhad Nejad Hajali Irani[1]

1. Department of Public Administration, Bon.C., Islamic Azad University, Bonab, Iran

*Correspondence: Dadashkarimi_2006@iau.ac.ir

Abstract

This study aims to identify and categorize the key components of an e-government governance model that facilitates the creation and development of digital businesses in Iran. The research employed a qualitative methodology using semi-structured interviews with 13 purposively selected experts, including senior managers, policymakers, scholars, and digital entrepreneurs. Participants were chosen based on their expertise and active engagement in the fields of e-government and digital business. Data collection was conducted through recorded face-to-face interviews, each lasting between 45 to 70 minutes. The interview protocol included open-ended questions focusing on governance mechanisms, infrastructure, regulatory frameworks, and cross-sector collaboration. Thematic analysis was applied to analyze the transcribed interviews. Initial coding resulted in 238 raw codes, which were refined into 57 basic themes. These were further categorized into 15 organizing themes and synthesized into 7 overarching (global) themes. The analysis revealed that effective e-government governance for digital business development relies on seven global themes: smart policy-making and digital management, technological infrastructure and interoperability, integrated digital services and collaborative platforms, human resource empowerment and innovative culture, supportive legal frameworks, stakeholder collaboration, and continuous evaluation mechanisms. These themes reflect the interdependence of institutional, legal, technical, and participatory factors. Furthermore, the findings emphasize the necessity of coordinated policymaking, user-centered platforms, data security, inter-organizational collaboration, and adaptive evaluation processes to sustain digital transformation and entrepreneurial growth. The study concludes that a robust and multidimensional e-government governance model must integrate strategic policymaking, institutional agility, stakeholder participation, and technological inclusivity to foster digital entrepreneurship. The proposed framework offers actionable insights for policymakers seeking to harmonize public sector digitalization with private sector innovation and economic development.

Keywords: E-Government Governance; Digital Business Development; Policy Integration

1. Introduction

The rise of digital governance, particularly in the form of e-government, represents one of the most transformative trends in public administration globally. Governments are increasingly integrating information and communication technologies (ICTs) into their operations to improve efficiency, transparency, citizen satisfaction, and ultimately foster economic innovation, especially through digital entrepreneurship. In this context, designing a governance model that aligns e-government

development with the creation and growth of digital businesses is not merely a technological endeavor—it is a multidimensional and strategic task requiring coherent policy, capable leadership, institutional readiness, legal frameworks, and infrastructural robustness (Rastegar et al., 2023; Tavazooi Far, 2024).

E-government systems have been widely recognized as instrumental in enhancing administrative efficiency and service delivery. They facilitate smoother interactions between citizens and the state while reducing bureaucratic overhead (Al-Hussein et al., 2023). The adoption of digital platforms has also demonstrated measurable impacts in reducing corruption and increasing transparency within the public sector, as observed in Afghanistan (Ibrahimy et al., 2023) and in the social security organizations in Iran (Raeisi et al., 2024). These outcomes are particularly significant for digital businesses, which rely on regulatory predictability, ease of interaction with state institutions, and the integrity of public services.

Yet, despite growing recognition of e-government's benefits, several barriers to full-scale adoption remain. These include infrastructural disparities, digital illiteracy, resistance to change, poor inter-agency coordination, and a lack of user-centered service design (Shahzad et al., 2024; Withanage et al., 2022). In developing and transitional economies, e-government implementation often struggles with system fragmentation and limited interoperability—problems that hinder the formation of robust digital ecosystems capable of nurturing innovation and entrepreneurship (Mutar et al., 2022; Sarantis et al., 2022).

Developing a responsive governance model for e-government must, therefore, be anchored in integrated policymaking and adaptive leadership. Collaborative leadership, as shown in the Omani context, plays a crucial role in digital transformation success by fostering organizational readiness and shared strategic vision (Al-Khayari et al., 2024). In parallel, policy coherence across institutional layers is necessary to prevent duplicative efforts and contradictory regulatory signals that may stifle private sector participation in digital initiatives (Khosravi et al., 2022; Rastegar et al., 2023).

Digital infrastructure also remains a pivotal factor in the successful integration of e-government with digital entrepreneurship. Research shows that high-quality digital infrastructure—comprising secure broadband networks, interoperable systems, and scalable cloud services—is essential not only for public service delivery but also for enabling innovation and trust in digital platforms (Latifian et al., 2022; Popescu et al., 2024). Furthermore, e-government applications must go beyond service automation and toward the creation of smart platforms that actively engage citizens, businesses, and developers through APIs, open data, and modular services (Bhandari, 2023; Camorongan, 2023).

Importantly, the effectiveness of e-government platforms depends significantly on citizen trust. As empirical studies across OECD nations demonstrate, trust in government is closely linked to the perceived quality of e-government services and the transparency of governance processes (Alsaad et al., 2024). Building this trust requires both technological security and communicative transparency, including public performance reporting, clear legal frameworks, and secure data governance (Gholami et al., 2024; Kala et al., 2024). In the absence of such safeguards, public skepticism may undermine adoption, regardless of technical sophistication.

From a legal and regulatory standpoint, the creation of a conducive environment for digital businesses demands updated and supportive legislation. These include laws related to digital contracts, intellectual property rights, data protection, and cross-border digital transactions. The experience of Iran, for instance, reveals that delays in legislative modernization and institutional reform often obstruct the full realization of e-government goals and its linkage to business development (Majdzadeh et al., 2023; Tavoosi-Baghsiyeh, 2022).

In addition to legal frameworks, cultural and organizational capacity is a determinant of e-government success. Several studies highlight that institutional resistance, traditional bureaucratic values, and a lack of innovation culture among public employees limit the transformative potential of e-government platforms (Raeisi et al., 2024; Suri, 2022). Addressing these cultural barriers requires investment in human resource development, including digital upskilling, team-based innovation incentives, and leadership development programs that prioritize agility and user-centered thinking (Ebele, 2024; Umbach & Tkalec, 2022).

Stakeholder participation is another central pillar of effective e-government governance. A growing body of literature supports the integration of citizen feedback, multi-sector partnerships, and co-creation approaches in policy design and digital platform development (Nawafleh & Khasawneh, 2024; Yusmanizar et al., 2023). In practice, this involves mechanisms

such as public consultation platforms, business-government data sharing, and collaboration between government and academic institutions on R&D and platform evaluation (Al-Khayari et al., 2024; Yuliantini, 2023).

Smart city initiatives provide a practical example of how e-government, when tied to local development strategies and business platforms, can significantly enhance urban innovation ecosystems. However, such transformations require governance structures capable of aligning national-level strategies with local needs and entrepreneurial dynamics (Camorongan, 2023; Marpaung et al., 2023). Without local participation and tailored governance, top-down digital strategies may fall short of producing tangible outcomes for citizens or businesses.

Moreover, the continuity and sustainability of e-government adoption depend on clear performance metrics and continuous evaluation. It is essential to move beyond implementation statistics and adopt frameworks that assess digital service quality, citizen satisfaction, system responsiveness, and impact on economic development (Sarantis et al., 2022; Umbach & Tkalec, 2022). Evaluation models must incorporate both quantitative KPIs and qualitative insights from users and frontline employees (Rastegar et al., 2023; Suri, 2022).

This study, therefore, aims to identify and systematize the components of a governance model for e-government that facilitates the creation and development of digital businesses. I

2. Methods and Materials

This study adopted a qualitative research design aimed at constructing a grounded understanding of the components of an effective e-government governance model that supports digital business development. The research population included a diverse group of national-level experts, senior executives, policymakers, specialists, and entrepreneurs with direct experience or influence in the design, implementation, or evaluation of e-government policies and digital ecosystems in Iran. These individuals were selected based on their familiarity with, or active roles in, digital transformation projects and electronic governance structures.

Sampling was conducted purposefully, a method commonly employed in qualitative research to ensure the selection of participants who possess rich, relevant knowledge about the topic under investigation. Initially, individuals with significant expertise in digital government and digital business ecosystems were invited for interviews. This initial sampling was followed by the snowball sampling technique, wherein participants recommended other qualified individuals. In total, 13 participants were interviewed for this study. Inclusion criteria were: at least five years of professional experience in e-government or digital transformation; active engagement in policymaking, implementation, or evaluation of digital projects in public or private sectors; familiarity with institutional and managerial structures in the Iranian ICT sector; and possession of a PhD in relevant fields such as public administration, IT management, entrepreneurship, or innovation management with a research background in digital transformation, governance innovation, or data governance.

The primary data collection tool was the semi-structured interview, which is considered by scholars such as Kvale and Campenhoudt (2007) to be one of the most effective methods for gathering qualitative data. The interview strategy was built around a semi-structured format, allowing the researcher to provide structure through three elements: defining the topics, sequencing the questions, and articulating them in accessible language, as suggested by Jefferson (2000).

The process began with defining the research problem and developing an interview protocol that outlined the central topics for questioning. Interviews were conducted face-to-face at the participants' workplaces and followed a systematic process: the researcher introduced the purpose of the study and provided a broad definition of e-government governance in the context of digital business development. Participants were then asked to introduce themselves and offer their insights into the current state of e-government governance, as well as propose pathways to support the growth of digital businesses through government action.

Each interview lasted between 45 and 70 minutes. Interviewees were explicitly informed about the objective of the study and were encouraged to freely express their perspectives. Follow-up and probing questions were used when needed to elicit deeper insights. Interview responses were recorded with permission and supplemented with detailed field notes. At the end of each session, participants were invited to provide any final thoughts or reflections they had on the topics discussed.

The semi-structured interview guide included the following key questions:

- How do you assess the current state of e-government governance in Iran?
- What level of real stakeholder participation (citizens, businesses, organizations) exists in the current digital governance model?
- In your view, what role does e-government play in enabling and growing digital businesses?
- Have you had any positive experiences engaging with e-government platforms or services? Please provide an example.
- What forms of government support could foster a more dynamic digital innovation environment?
- In your opinion, what are the key policy and institutional tools the government should use to advance digital businesses?
- Do current regulatory frameworks align with the fast-paced and technology-driven nature of digital businesses?
- What kinds of institutional or managerial transformations are necessary to make digital government more agile?
- What features should an ideal e-government governance model include to facilitate the growth of digital businesses?
- In your opinion, what roles should government play in this model (e.g., regulator, facilitator, partner, platform owner)?

The collected data were analyzed using thematic analysis, a widely accepted approach for identifying and interpreting patterns of meaning across qualitative datasets. This method allowed the researcher to systematically examine the interview transcripts and code the responses into distinct conceptual units.

The process of analysis began with the transcription of audio-recorded interviews, which were then enriched by incorporating notes taken during the sessions. Through close and repeated readings of the transcribed texts, the researcher identified meaningful ideas and themes in each interview. These themes were initially assigned unique codes. In cases where similar themes emerged in multiple interviews, previously established codes were reused to maintain consistency.

Following the initial coding, the researcher conducted a second-level analysis to group similar codes into broader categories. This iterative process of abstraction led to the formation of key thematic domains representing the major dimensions of e-government governance as they relate to digital business development. Through this coding and categorization process, the study uncovered the foundational components of a proposed governance model, grounded in the empirical experiences and expert knowledge of the participants.

3. Findings and Results

In this qualitative study, data analysis proceeded through thematic analysis, which involved an iterative coding process and concept refinement. Initially, 238 preliminary codes were extracted from the transcribed interviews with 13 national experts, policymakers, and digital entrepreneurs. These codes represented various perspectives on governance practices necessary to support the creation and development of digital businesses within the framework of e-government. After eliminating redundant and overlapping codes, the refined data were synthesized into 57 basic themes. These were then conceptually grouped into 15 organizing themes that collectively depict the multidimensional nature of effective digital governance. These organizing themes and their associated basic themes are presented below in Table 1.

Table 1. Organizing Themes and Basic Themes of E-Government Governance for the Creation and Development of Digital Businesses

Organizing Themes	Basic Themes
Coordinated and Transparent Policy-Making	Formulation of a national e-government strategic document; inter-agency policy coordination; transparent communication of policies and programs; continuous policy updates in response to technological change
Stakeholder Participation and Accountability	Active involvement of private sector and civil society in policy formulation; official feedback and suggestion channels; public disclosure of drafted policies; performance reporting and accountability to stakeholders
Institutional Framework for Digital Regulation and Oversight	Formulation and updating of laws related to technology and digital businesses; technical expertise and human resource capabilities within regulatory bodies
Secure and Inclusive Communication Infrastructure	Equitable and widespread access to high-speed internet; use of standard security protocols and technologies; infrastructure scalability support; network and data center reliability; quality and security assurance of digital services
Open Data Infrastructure and Open Architecture	Publishing open data using standard formats; service-oriented architecture and use of standard APIs; interoperability among public and private systems; effective and secure data governance
Integrated and API-Based Service Delivery	Provision of e-government services through documented, usable APIs; easy integration of services into various platforms; developer support for API utilization
Innovation Facilitation by the Private Sector	Development of shared innovation platforms; technical and financial support for startups; open innovation environments for public-private collaboration; continual upgrading of platform tools and services

Digital Skills Training and Upskilling	Continuous training programs for government staff; upskilling in emerging technologies; specialized courses and workshops; continuous assessment of workforce digital competency
Innovation-Supportive Organizational Culture	Encouraging risk-taking and openness to change; promoting teamwork and collaborative learning; support for innovative ideas and suggestions; incentive systems based on innovation and performance
Supportive Legal Framework for Digital Businesses	Passage of laws that ease digital business operations; protection of intellectual property and creative rights; legal frameworks for data economy and e-commerce
Data Protection and Privacy	Legislation for personal data protection; establishment of independent data privacy authorities; cybersecurity policies to counter digital threats; public awareness and education on user rights
Collaboration among Government, Private Sector, and Academia	Formal mechanisms for cross-sectoral engagement; joint R&D projects; support for innovation networks and startup ecosystems; facilitation of knowledge and technology transfer
Transparency and Public Oversight	Open access to governance and project information; citizen participation mechanisms in decision-making; public reporting on performance and expenditures; citizen feedback and monitoring platforms
Performance Indicators and Transparent Reporting	Definition of KPIs for digital services; publication of periodic progress and performance reports; evaluation of goal achievement in digital governance; performance data analytics for better decision-making
Continuous Feedback and Service Improvement	Collection of feedback from users and stakeholders; leveraging evaluations to improve and develop services; continual technological and procedural upgrades; proactive risk management and troubleshooting

The thematic findings indicate that governance mechanisms supportive of digital business development within e-government are multifaceted, spanning institutional, technological, legal, and cultural dimensions. The first organizing theme, "Coordinated and Transparent Policy-Making," highlights the strategic need for a cohesive national e-government roadmap. Experts emphasized that fragmented and outdated policy frameworks hinder progress, and identified the lack of inter-organizational coordination and real-time policy adaptation as pressing governance deficits.

The theme "Stakeholder Participation and Accountability" underscores the importance of inclusive governance. Interviewees consistently noted the limited engagement of civil society and the private sector in policy design and monitoring. Participants called for institutionalized feedback mechanisms, public reporting systems, and increased transparency in digital policy implementation to enhance legitimacy and responsiveness.

"Institutional Framework for Digital Regulation and Oversight" emerged as a foundational requirement. The rapidly evolving nature of digital technologies necessitates regulatory bodies that are both flexible and technically competent. Several participants stressed that existing regulatory institutions often lack the expertise or structural agility to respond to innovations like blockchain, AI, or platform-based business models.

The theme "Secure and Inclusive Communication Infrastructure" emphasizes digital equity and trust. Experts noted that without equitable access to high-speed internet and robust cybersecurity, digital services will remain inaccessible to many citizens and businesses. Similarly, "Open Data Infrastructure and Open Architecture" was cited as a technical precondition for interoperability, transparency, and third-party innovation. Participants stressed that digital ecosystems thrive on the free and secure flow of standardized, machine-readable data across platforms.

"Integrated and API-Based Service Delivery" was viewed as essential to modernizing government services and fostering digital entrepreneurship. The ability of developers to plug into documented, accessible government APIs enables the creation of added-value services, increasing government reach and enabling market innovation.

The theme "Innovation Facilitation by the Private Sector" reflects a proactive governance approach. Participants argued that governments should actively support private sector innovation through public infrastructure, financial incentives, and collaborative environments. The success of national innovation ecosystems was seen as directly tied to public–private synergies and the openness of government platforms to co-creation.

"Digital Skills Training and Upskilling" addresses human capacity building within the public sector. Many interviewees identified a gap between the digital literacy of government employees and the technological demands of digital governance. Structured and continuous training programs were viewed as necessary to align staff competencies with digital transformation objectives.

Similarly, "Innovation-Supportive Organizational Culture" was identified as an internal enabler of governance reform. The current bureaucratic structure, often resistant to change, must evolve into a more dynamic system that rewards experimentation, embraces collaborative learning, and incentivizes innovative behavior.

"Supportive Legal Framework for Digital Businesses" was considered a prerequisite for regulatory certainty and entrepreneurship. Participants noted that outdated or restrictive regulations are among the main barriers to digital business scalability. The creation of enabling laws for data commerce, intellectual property, and digital transactions was deemed urgent.

"Data Protection and Privacy" was a dominant theme, reflecting both public concern and institutional responsibility. Interviewees emphasized the need for independent oversight bodies and legal safeguards that balance innovation with the ethical handling of personal data. Trust in digital platforms was seen as heavily contingent on robust privacy frameworks and cybersecurity standards.

The theme "Collaboration among Government, Private Sector, and Academia" reflects an ecosystemic view of digital governance. Experts suggested that sustained innovation requires formalized and recurrent interactions among these sectors, particularly in the form of research partnerships, innovation clusters, and knowledge transfer frameworks.

"Transparency and Public Oversight" emerged as an ethical dimension of governance. Interviewees emphasized open access to data and decision-making processes, alongside real-time citizen feedback mechanisms and participatory evaluation systems to increase democratic accountability.

"Performance Indicators and Transparent Reporting" addresses the need for data-driven governance. Respondents advocated for the definition of measurable KPIs, routine performance audits, and transparent data dashboards to assess the effectiveness and impact of digital services.

Lastly, "Continuous Feedback and Service Improvement" reflects adaptive governance capacity. Participants urged the institutionalization of feedback loops, agile problem-solving processes, and continuous improvement strategies to ensure that governance systems remain responsive, innovative, and resilient over time.

Together, these 15 themes constitute a comprehensive framework of e-government governance for enabling and sustaining digital business ecosystems. They reflect the necessity of aligning digital infrastructure, legal foundations, human capital, institutional culture, and participatory mechanisms under a unified and future-ready governance strategy.

As the coding process progressed in this qualitative research, 238 initial codes were identified from expert interviews. After removing duplicate and semantically overlapping items, these were refined into 57 basic themes. Through iterative review and conceptual alignment by the research team, these 57 basic themes were grouped into 15 organizing themes. These organizing themes were then categorized into seven overarching (global) themes, which reflect higher-order conceptual domains of digital governance for e-government with a focus on digital business development. Table 2 presents this complete hierarchical structure, integrating all prior thematic tables.

Table 2. Global, Organizing, and Basic Themes of E-Government Governance with a Digital Business Development Approach

Global Themes	Organizing Themes	Basic Themes
Smart Digital Management and Policy-Making	Coordinated and Transparent Policy-Making	Formulation of a national e-government strategic document; inter-agency policy coordination; transparent communication of policies and programs; continuous policy updates in response to technological change
	Stakeholder Participation and Accountability	Active involvement of private sector and civil society in policy formulation; official feedback and suggestion channels; public disclosure of drafted policies; performance reporting and accountability to stakeholders
	Institutional Framework for Digital Regulation and Oversight	Formulation and updating of laws related to technology and digital businesses; technical expertise and human resource capabilities within regulatory bodies
Technological Infrastructure and Interoperability	Secure and Inclusive Communication Infrastructure	Equitable and widespread access to high-speed internet; use of standard security protocols and technologies; infrastructure scalability support; network and data center reliability; quality and security assurance of digital services
	Open Data Infrastructure and Open Architecture	Publishing open data using standard formats; service-oriented architecture and use of standard APIs; interoperability among public and private systems; effective and secure data governance
Digital Services and Collaborative Business Platforms	Integrated and API-Based Service Delivery	Provision of e-government services through documented, usable APIs; easy integration of services into various platforms; developer support for API utilization
	Innovation Facilitation by the Private Sector	Development of shared innovation platforms; technical and financial support for startups; open innovation environments for public-private collaboration; continual upgrading of platform tools and services
Human Resource Empowerment and Innovative Organizational Culture	Digital Skills Training and Upskilling	Continuous training programs for government staff; upskilling in emerging technologies; specialized courses and workshops; continuous assessment of workforce digital competency
	Innovation-Supportive Organizational Culture	Encouraging risk-taking and openness to change; promoting teamwork and collaborative learning; support for innovative ideas and suggestions; incentive systems based on innovation and performance
Supportive Legal and Regulatory Frameworks	Supportive Laws for Digital Businesses	Passage of laws that ease digital business operations; protection of intellectual property and creative rights; legal frameworks for data economy and e-commerce

	Data Protection and Privacy	Legislation for personal data protection; establishment of independent data privacy authorities; cybersecurity policies to counter digital threats; public awareness and education on user rights
Stakeholder Participation and Engagement	Collaboration among Government, Private Sector, and Academia	Formal mechanisms for cross-sectoral engagement; joint R&D projects; support for innovation networks and startup ecosystems; facilitation of knowledge and technology transfer
	Transparency and Public Oversight	Open access to governance and project information; citizen participation mechanisms in decision-making; public reporting on performance and expenditures; citizen feedback and monitoring platforms
Monitoring, Evaluation, and Continuous Improvement	Performance Indicators and Transparent Reporting	Definition of KPIs for digital services; publication of periodic progress and performance reports; evaluation of goal achievement in digital governance; performance data analytics for better decision-making
	Continuous Feedback and Service Improvement	Collection of feedback from users and stakeholders; leveraging evaluations to improve and develop services; continual technological and procedural upgrades; proactive risk management and troubleshooting

The structure presented in Table 2 demonstrates a hierarchical and holistic understanding of the governance model needed to facilitate the growth and maturity of digital businesses within the scope of e-government. The seven global themes serve as umbrella categories, under which the 15 organizing themes are logically clustered based on content and function.

The first global theme, Smart Digital Management and Policy-Making, comprises governance strategies, coordinated decision-making, and participatory policymaking. It underscores the strategic role of government in setting direction, aligning actors, and maintaining transparency in its digital transformation journey. Within this domain, experts emphasized that agile, coordinated policymaking paired with active stakeholder accountability mechanisms forms the backbone of digital governance.

The second global theme, Technological Infrastructure and Interoperability, addresses the foundational technological conditions needed to deliver secure, accessible, and interoperable services. This theme reflects that equitable access to high-speed internet and the technical capacity for system interoperability are non-negotiable pillars for fostering inclusive and innovative digital ecosystems.

The third domain, Digital Services and Collaborative Business Platforms, links technical capabilities with economic value creation. Interviewees noted that API-based service delivery and open platforms are critical for reducing integration barriers and empowering developers and digital entrepreneurs to build upon public infrastructure. This, in turn, encourages scalable, citizen-facing innovations.

Human Resource Empowerment and Innovative Organizational Culture is the fourth global theme, which was strongly emphasized as a requirement for internal transformation. Without skilled personnel and supportive institutional cultures, even the most advanced digital strategies may falter. Participants highlighted the role of continuous training, innovation-friendly management practices, and collaborative team environments in institutionalizing digital readiness.

The fifth theme, Supportive Legal and Regulatory Frameworks, reflects the need for legal certainty and digital rights protection. A dual emphasis on facilitating business growth through enabling laws and safeguarding citizen trust through privacy regulations was repeatedly mentioned by the experts. The existence of outdated or ambiguous legislation was cited as a major constraint to platform economy development.

Stakeholder Participation and Engagement forms the sixth pillar of this governance model, encapsulating mechanisms for civic, academic, and private sector collaboration. Respondents noted that innovation ecosystems cannot function in silos. Collaborative networks, co-created projects, and open governance practices were all seen as critical components of legitimacy and sustainability in e-government.

Finally, Monitoring, Evaluation, and Continuous Improvement completes the framework, addressing feedback loops, data-informed decision-making, and adaptive capabilities. This area ensures that governance is not static but evolves based on stakeholder input, performance analytics, and proactive risk management. Experts emphasized that without institutionalized mechanisms for ongoing assessment and correction, digital initiatives risk becoming obsolete or misaligned with user needs.

In conclusion, this integrated model highlights the systemic, cross-sectoral, and multi-level governance features required to establish a resilient and innovation-oriented e-government. The combined structure of Table 2 reflects a mature governance ecosystem—one that not only delivers digital services but also nurtures entrepreneurial capacity, institutional adaptability, and long-term stakeholder value.

4. Discussion and Conclusion

The findings of this study provide a comprehensive and contextualized framework for understanding the governance components necessary for aligning e-government development with the creation and expansion of digital businesses. Based on the thematic analysis of expert interviews, 57 basic themes were categorized under 15 organizing themes and further synthesized into 7 global themes. These themes collectively reflect the multifaceted nature of governance required to facilitate digital transformation within the public sector while creating an enabling environment for digital entrepreneurship. The results underscore the central role of coordinated policy-making, stakeholder participation, institutional reform, infrastructural readiness, legal frameworks, organizational culture, and continuous evaluation in shaping a successful e-government ecosystem that supports business innovation.

One of the most prominent findings was the critical importance of *smart digital policy-making and management*. Experts emphasized that fragmented and outdated policies undermine coherence and slow digital transformation. The necessity of inter-agency coordination and real-time policy updates aligns with previous studies indicating that successful e-government strategies depend on integrated governance and adaptive leadership (Rastegar et al., 2023; Tavazooi Far, 2024). This supports findings by (Al-Khayari et al., 2024), who argue that collaborative leadership significantly enhances the effectiveness of e-government by promoting cross-institutional synergies and clarity of vision. Moreover, transparency in digital policymaking—another key element identified in this study—has been widely recognized as a driver of citizen trust and administrative accountability (Alsaad et al., 2024; Kala et al., 2024).

The theme of *stakeholder participation and accountability* emerged as another fundamental pillar. Interviewees strongly advocated for mechanisms that allow meaningful involvement of the private sector and civil society in the design, implementation, and evaluation of e-government initiatives. This finding is consistent with the work of (Yusmanizar et al., 2023), who highlights the role of social media and participatory platforms in making e-government more responsive and user-driven. Similarly, (Nawafleh & Khasawneh, 2024) demonstrated that citizen trust and loyalty in digital government services significantly increase when e-service quality is co-created and feedback mechanisms are integrated into the service design.

The study also confirms the centrality of an *institutional framework for regulation and oversight*. Effective digital governance requires robust legal and regulatory structures capable of keeping pace with rapidly changing technologies. As previous research indicates, outdated regulatory mechanisms can become significant obstacles to digital entrepreneurship and innovation (Khosravi et al., 2022; Shahzad et al., 2024). Experts in this study noted that institutions tasked with digital oversight must possess both legal authority and technical capacity. This supports the argument of (Ibrahimy et al., 2023), who showed that institutional competence is essential in ensuring transparency, reducing corruption, and enhancing service reliability in digital governance.

Another key set of findings revolves around *technological infrastructure and interoperability*. Participants emphasized the importance of secure, scalable, and inclusive communication infrastructure as well as the development of open data architecture. These components are foundational for ensuring both access and innovation. Previous literature affirms that robust ICT infrastructure and the availability of open APIs are prerequisites for integrating public services and fostering digital entrepreneurship (Camorongan, 2023; Popescu et al., 2024). Furthermore, (Bhandari, 2023) highlighted the importance of big data infrastructure and interoperability in enabling data-driven governance and business analytics, aligning well with this study's insights on infrastructure's role in platform integration and service improvement.

The study also identified *digital services and collaborative platforms* as a strategic domain in enabling digital business ecosystems. Providing e-government services through APIs and modular platforms was cited as a critical factor for enabling third-party developers and startups to build on government systems. This corresponds with findings by (Mutar et al., 2022), who argue that a comprehensive transition to platform-based e-government models allows for higher levels of innovation, customization, and responsiveness in public services. The facilitation of open innovation through government-private collaboration echoes (Marpaung et al., 2023), who explored how such partnerships support smart city development and economic vitality.

The role of *organizational culture and human capacity* was repeatedly emphasized. The study found that without digital skills training, cultural openness to innovation, and incentive systems for public employees, e-government programs face internal resistance and implementation delays. This aligns with (Suri, 2022), who points out that strategic goals of e-governance often fail due to misalignment between strategy and internal capabilities. Similarly, (Ebele, 2024) stresses the importance of changing public sector mindsets and building digital literacy to sustain digital innovation in governance. These findings suggest that institutional transformation must be as much cultural and educational as it is technological.

Moreover, findings related to *supportive legal frameworks* further underscore the connection between regulation and entrepreneurial capacity. Experts emphasized the need for legal reforms that not only protect users' data and rights but also empower digital businesses through laws related to intellectual property, digital transactions, and data economy governance. The works of (Tavoosi-Baghsiyeh, 2022) and (Majdzadeh et al., 2023) have similarly stressed the importance of legal clarity and up-to-date legislation in creating enabling environments for digital platforms. Additionally, the emphasis on data protection and user privacy echoes global best practices and confirms previous findings that legal assurance is a necessary condition for public trust (Alsaad et al., 2024; Kala et al., 2024).

The theme of *cross-sector collaboration* further reinforces the ecosystemic nature of digital governance. Experts in this study suggested that joint projects among government, private sector, and academia are vital for fostering innovation, knowledge transfer, and real-time problem-solving. The collaborative models described here align with findings from (Yuliantini, 2023), who demonstrated that collaborative governance contributes to both technological innovation and democratic legitimacy in the e-government context. Similarly, (Rastegar et al., 2023) emphasized the importance of inter-institutional synergy in ensuring the success of national digital strategies.

Lastly, the study's focus on *monitoring, evaluation, and continuous improvement* demonstrates the need for adaptive governance mechanisms. Participants emphasized the importance of citizen feedback, key performance indicators (KPIs), and real-time service evaluation. This reflects the perspectives of (Umbach & Tkalec, 2022), who critiques traditional performance evaluation tools for being inadequate in the fast-changing digital landscape. Evaluation practices must go beyond static indicators and integrate user-centered feedback loops, a conclusion also supported by (Sarantis et al., 2022), who called for participatory assessment mechanisms in local e-government platforms.

Despite its robust qualitative methodology and engagement with expert voices, this study has several limitations. First, the sample size was relatively small and limited to experts within a specific national context, which may affect the generalizability of findings. While the diversity of roles among participants strengthened the richness of insights, the results might not fully reflect experiences in different institutional settings, especially in countries with divergent e-government maturity levels. Second, the study focused primarily on governance aspects and did not extensively examine user-side challenges, such as digital exclusion, accessibility issues, or behavioral resistance among citizens. Third, as the study relied on self-reported expert perspectives, it is susceptible to subjectivity and potential bias. Future studies employing mixed-method approaches could mitigate these limitations by incorporating user surveys, administrative data, and case comparisons.

Future research should explore comparative studies across regions and governance models to identify transferable practices and context-specific challenges in aligning e-government with digital business development. Longitudinal studies could track the evolution of governance indicators over time in relation to changes in infrastructure, policy reforms, or digital market growth. Additionally, future inquiries may benefit from analyzing citizen experiences and satisfaction with digitally delivered public services, especially in marginalized or rural communities. Research that integrates artificial intelligence, blockchain, or Internet of Things (IoT) into the analysis of digital governance models would also enrich understanding of the technological frontiers impacting digital entrepreneurship.

Practitioners should prioritize integrated policy-making frameworks that facilitate collaboration among government entities, private entrepreneurs, and research institutions. Digital transformation strategies must include not only infrastructure investment but also legal modernization, public sector upskilling, and regulatory simplification to support platform economies. Continuous monitoring and citizen feedback should be institutionalized into digital service cycles to promote agility and accountability. Governments must also shift their role from sole service provider to ecosystem orchestrator—enabling co-creation, fostering trust, and driving inclusive innovation across the public and private sectors.

Ethical Considerations

All procedures performed in this study were under the ethical standards.

Acknowledgments

Authors thank all who helped us through this study.

Conflict of Interest

The authors report no conflict of interest.

Funding/Financial Support

According to the authors, this article has no financial support.

References

Al-Hussein, M. A.-H. A., Alabdallat, W. I. M., Abu, M. A., Rumman, O. J., & Ali, B. (2023). Impact of e-government applications on reducing administrative burden in delivering public service. *Information Sciences Letters*, *12*(3), 1663-1671. https://www.researchgate.net/profile/Basel-Ali-3/publication/368823255_Impact_of_E-Government_Applications_on_Reducing_Administrative_Burden_in_Delivering_Public_Service/links/63fb6a5bb1704f343f83cd5c/Impact-of-E-Government-Applications-on-Reducing-Administrative-Burden-in-Delivering-Public-Service.pdf

Al-Khayari, N. M., Yousefi, M., & Aigbogun, O. (2024). A Predictive Model for Collaborative Leadership in Digital Transformation: Does It Make a Difference in Oman's E-Government Performance? *foresight*, *26*(5), 775-792. https://doi.org/10.1108/fs-08-2023-0163

Alsaad, A., Alkhawaldeh, A., Elrehail, H., & Almomani, R. (2024). Linking e-government development and quality of governance to trust in government: evidence from OECD member countries. *Transforming Government: People, Process and Policy*, *18*(4), 575-593. https://doi.org/10.1108/TG-03-2024-0060

Bhandari, R. B. (2023). Application of Big Data in E-Governance. *Patan Prospective Journal*, *3*(2), 143-157. https://doi.org/10.3126/ppj.v3i2.66185

Camorongan, J. R. C. (2023). The Pledge of Smart City Development: The E-Governance (Under) Development in the Philippines. *International Multidisciplinary Research Journal*, *5*(3). https://doi.org/10.54476/ioer-imrj/042507

Ebele, N. A. (2024). Periscoping E-Governance in Nigeria: Matters Arising. *NGJSD*, *13*(1), 37-47. https://doi.org/10.4314/ngjsd.v13i1.3

Gholami, Z., Shafiei, S., & Barakhas, H. (2024). The Role of E-Government in Employee Performance at the Sports and Youth Administration of Qazvin Province With the Mediating Role of Organizational Transparency. *Sports Management Studies*. https://smrj.ssrc.ac.ir/article_4324.html?lang=en

Ibrahimy, M. M., Virkus, S., & Norta, A. (2023). The role of e-government in reducing corruption and enhancing transparency in the Afghan public sector: a case study. *Transforming Government: People, Process and Policy*, *17*(3), 459-472. https://doi.org/10.1108/TG-10-2022-0135

Kala, D., Chaubey, D. S., Meet, R. K., & Al-Adwan, A. S. (2024). Impact of User Satisfaction With E-Government Services on Continuance Use Intention and Citizen Trust Using TAM-ISSM Framework. *Interdisciplinary Journal of Information Knowledge and Management*, *19*, 001. https://doi.org/10.28945/5248

Khosravi, H., Tayebi Tavakkol, H., & Mansourian, N. A. (2022). Challenges and Strategies of E-Government in Achieving Democracy. *Journal of Contemporary Political Studies*, *13*(4).

Latifian, M., Ghasemi Rad, A., Ghasemi Rad, A., & Ghasemi Rad, A. A. (2022). The Impact of E-Government on Transparency and Improving the Health of the Administrative System. https://sid.ir/paper/1030950/fa

Majdzadeh, S. A., Salajegheh, S., Nikpour, A., & Kamali, M. J. (2023). Meta-Analysis of E-Government Studies in Enhancing Good Governance Indicators. *Strategic Management Research*, *29*(89), 77-108. https://sanad.iau.ir/en/Journal/smr/Article/706114?jid=706114

Marpaung, I. S., Harianja, N., Hasibuan, M. H. M., & Harahap, R. (2023). Efektivitas Penerapan E-Government Dalam Mewujudkan Smart City Di Kabupaten Tapanuli Selatan. *Concept Journal of Social Humanities and Education*, *2*(3), 103-114. https://doi.org/10.55606/concept.v2i3.552

Mutar, A. F., Abdullah, A. R., Jasim, O. M., Saare, M. A., & Lashari, S. A. (2022). A Comprehensive Method of E-Government Transition for Viable Development in Iraq. *Bulletin of Electrical Engineering and Informatics*, *11*(4), 2388-2398. https://doi.org/10.11591/eei.v11i4.3142

Nawafleh, S., & Khasawneh, A. S. (2024). Drivers of Citizens E- Loyalty in E-Government Services: E-Service Quality Mediated by E-Trust Based on Moderation Role by System Anxiety. *Transforming Government People Process and Policy*, *18*(2), 217-240. https://doi.org/10.1108/tg-04-2023-0053

Popescu, M. A. M., Barbu, A., Costea-Marcu, I.-C., & Dumitriu, D. (2024). Conceptual Framework for Unified E-Government Web Platform. *Proceedings of the International Conference on Business Excellence*, *18*(1), 3503-3514. https://doi.org/10.2478/picbe-2024-0284

Raeisi, N., Jafarinea, S., & Zare, H. (2024). Testing the Model for Enhancing Administrative Transparency in Interaction with E-Government Development Programs in the Social Security Organization. *Dynamic Management and Business Analysis*, *3*(1), 320-334. https://doi.org/10.61838/dmbaj.3.1.18

Rastegar, A., Manafi Varkiani, M., Roufi, M., & Hemmati, A. (2023). Explaining the Role of Electronic Leadership on E-Government Governance (with an Approach to the Seventh National Development Plan). Proceedings of the 6th International Conference on New Developments in Management, Economics, and Accounting, Tehran, https://link.springer.com/article/10.1080/0957881042000220886

Sarantis, D., Soares, D., Susar, D., & Aquaro, V. (2022). Local E-Government Development: Results of an International Survey. 391-396. https://doi.org/10.1145/3560107.3560167

Shahzad, K., Tahir, Z., Cheema, U., & Ahmad, M. A. (2024). Barriers Towards Adoption of E-Government Services. *Journal of Business and Social Review in Emerging Economies*, *10*(2). https://doi.org/10.26710/jbsee.v10i2.2966

Suri, P. K. (2022). Effectiveness of strategy implementation and e-governance performance. *Evaluation and Program Planning*, *92*, 102063. https://doi.org/10.1016/j.evalprogplan.2022.102063

Tavazooi Far, H. (2024). Comprehensive Study of E-Government in Iran: Opportunities, Challenges, and Improvement Strategies. 12th International and National Conference on Management, Accounting, and Law Studies, Tehran. https://civilica.com

Tavoosi-Baghsiyeh, H. (2022). The Role of IT and E-Government in Creating Transparency and Reducing Administrative Corruption.

Umbach, G., & Tkalec, I. (2022). Evaluating e-governance through e-government: Practices and challenges of assessing the digitalisation of public governmental services. *Evaluation and Program Planning*, *93*, 102118. https://doi.org/10.1016/j.evalprogplan.2022.102118

Withanage, U. P. A., Gunawardene, L., & Endagamage, D. M. (2022). Why the Utilization of E-Government Services Is Poor? – A Study With the Citizens in Colombo Municipal Council Area in Sri Lanka. *Integrated Journal for Research in Arts and Humanities*, *2*(4), 7-13. https://doi.org/10.55544/ijrah.2.4.35

Yuliantini, L. S. (2023). The the Impact of the E-Government Development Index (EGDI) on the Worldwide Governance Indicator (WGI) in European Union Countries. *Policy & Governance Review*, *7*(2), 140. https://doi.org/10.30589/pgr.v7i2.732

Yusmanizar, Y., Djalil, N. A., Yulhaidir, Y., & Alyas, A. (2023). Developing E-Government Policy Through Social Media Platform in Makassar City, Indonesia. *Otoritas Jurnal Ilmu Pemerintahan*, *13*(3), 454-468. https://doi.org/10.26618/ojip.v13i3.11641