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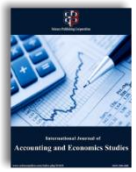

The Evolution of E-Government in Saudi Arabia: A Comprehensive Review of Digital Transformation Strategies, Institutional Readiness, and Citizen-Centric Service Delivery in The Vision 2030 Era

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Abstract

This literature review provides a comprehensive examination of the evolution of e-government in Saudi Arabia during the Vision 2030 era, focusing on digital transformation strategies, institutional readiness, and citizen-centric service delivery. A systematic review methodology synthesizes findings from scholarly studies and government reports, tracing progress from early e-government initiatives to recent digital transformation programs. The analysis reveals significant strides in implementing e-government aligned with Vision 2030, including the digitization of over 97% of public services and the establishment of institutional frameworks like the Digital Government Authority (DGA) and the Saudi Data & AI Authority (SDAIA). Key findings highlight leadership commitment and cross-agency collaboration as drivers of improved service integration, reflected in Saudi Arabia's rise to the top 20 in global e-government rankings by 2024 (Mitchell, 2022). The shift towards citizen-centric platforms has enhanced accessibility and user satisfaction. The review also examines economic benefits, such as cost savings and job creation, aligning e-government with fiscal governance. However, challenges such as digital literacy gaps, cyber-security risks, and interoperability issues persist, with limited studies exploring user resistance or socio-cultural impacts. This review consolidates knowledge on Saudi Arabia's digital transformation, identifies critical success factors and barriers, and proposes research gaps, such as longitudinal studies on user trust, to inform future strategies.

Keywords: *-Government, Digital Transformation, Saudi Arabia, Vision 2030, Institutional Readiness, Citizen-Centric Services, Public Service Delivery, Digital Government Strategy, Economic Impacts*

1. Introduction

Electronic government (e-government) refers to the use of information and communication technologies (ICTs) to deliver government services, share information, and facilitate interactions with citizens, businesses, and other government entities. Globally, e-government drives public sector modernization, enhancing efficiency, transparency, and citizen engagement. In Saudi Arabia, e-government has evolved significantly over the past two decades, particularly under Vision 2030, launched in 2016 to promote economic diversification and improved governance (Soul of Saudi, 2025). This review also explores the economic implications of e-government, including cost efficiencies and financial governance, aligning with Vision 2030's broader socio-economic goals. This review examines Saudi Arabia's e-government journey, focusing on digital transformation strategies, institutional readiness, and citizen-centric service delivery. It synthesizes academic research and official reports to analyze progress, strategies, governance structures, and citizen adoption, with platforms like Absher and Tawakkalna as exemplars. Applying the E-Government Maturity Model, the review evaluates stages of development, from basic online presence to integrated, transformative services. Success factors, such as leadership and infrastructure, and challenges, like digital literacy and trust, are discussed, offering insights for academics, practitioners, and policymakers.

1.1 Background and Context of E-Government in Saudi Arabia

Saudi Arabia's e-government journey began in the early 2000s with a 2003 Royal Decree establishing the e-government project and the Ministry of Communications and Information Technology (MCIT) (Alnifayei, 2021). The Yesser program, launched in 2005, provided the initial framework, technical standards, and infrastructure, including a unified e-government portal and Government Service Bus (Al-Shehry, 2006). By 2020, 97% of government transactional services were digitized, with over 1.25 million transactions via the national portal (Alnifayei, 2021; cross-verified by UNESCO, 2024). The United Nations E-Government Development Index (EGDI) reflects progress,

with Saudi Arabia's rank rising from 105th in 2003 to 43rd by 2020 (UNESCO, 2024). The Absher platform, launched in 2010 and expanded into a mobile app in 2015, digitized civil affairs and traffic services, setting a foundation for user-centric e-government (Biometric Update, 2024). Challenges in the 2010s included low awareness, privacy concerns, and organizational silos (Al-Shehri & Drew, 2012).

By the mid-2010s, Saudi Arabia had made measurable progress in e-government readiness. The United Nations E-Government Development Index (EGDI), which benchmarks countries on online services, telecommunications infrastructure, and human capital, reflected a significant improvement in Saudi Arabia's standing. The country's rank in the UN EGDI climbed from as low as 105th globally in 2003 to 43rd by 2020 (UNESCO, 2024) This trajectory placed Saudi Arabia among the group of "High" or "Very High" e-government development nations by the UN's classification. Notably, progress was uneven across components of the index: while Saudi Arabia invested heavily in technology infrastructure and improved human capital (digital skills and education), its Online Services Index (OSI) lagged behind top performers, indicating room to expand the range and usage of online public services at that time (United Nation, 2024). Nevertheless, by 2020 the nation had achieved near-universal provision of core government services in electronic form. An official report noted that as of July 2020, 97% of all government transactional services were available electronically, and over 1.25 million transactions had been conducted through the national portal by that date(Alnifayei, 2021). Early flagship e-services included the issuance of visas and passports, bill payments, and business registration, among others.

A pivotal development in the Saudi e-government journey was the introduction of mobile government (m-government) services. Recognizing the country's high mobile phone penetration and the public's growing preference for smartphone applications, Saudi agencies began launching mobile apps to deliver services conveniently. A landmark was the Absher platform, which started as an online portal under the Ministry of Interior in 2010 and later expanded into a smartphone application in 2015 (Biometric Tech, 2024). Absher initially digitalized services related to civil affairs such as personal ID management, passports, residency permits for expatriates, and traffic services (e.g., driver's license renewals and traffic violation payments) (Biometric Update, 2024). By integrating services that used to require in-person visits to government offices, Absher set the stage for a more user-centric approach to e-government. By the late 2010s, other government apps emerged as well, including platforms for healthcare appointments, educational services, and municipal service requests, gradually cultivating a broader digital ecosystem.

However, despite these advances, studies in the 2010s pointed out that Saudi Arabia's e-government initiatives faced persistent challenges. Low awareness and usage levels among some segments of the population, concerns about privacy and trust, and varying degrees of digital readiness across government institutions were noted as barriers (Al-Shehri & Drew, 2012). Organizational silos also meant that early e-services were often agency-specific, requiring users to navigate multiple websites or apps for different needs. These challenges set the context for a more coordinated, citizen-centric transformation that would be accelerated under Vision 2030.

1.2 Vision 2030 and Digital Transformation Goals

Vision 2030 positions digital transformation as a pillar for achieving a "Smart Government." The National Transformation Program (NTP) 2016–2020 targeted increased online service utilization and ICT infrastructure enhancement, achieving a 35.5% improvement in digital service maturity by 2020 (NTP, 2021). The DGA, established in 2021, coordinates digital efforts, ensuring interoperability and alignment with Vision 2030. The Digital Government Strategy 2023–2030 aims to rank Saudi Arabia among the top three digital governments by 2030, emphasizing whole-of-government integration, user-centric design, and AI adoption (Soul of Saudi, 2025). This strategy aligns with the E-Government Maturity Model's transformation stage, focusing on seamless, proactive services. Investments in broadband, 5G, and digital literacy programs support these goals.

Saudi Arabia's leadership has articulated clear strategic targets for e-government in the Vision 2030 era. The Digital Government Strategy 2023–2030, released by the DGA, aims to propel Saudi Arabia into the top three digital governments in the world by 2030 (Soul of Saudi, 2025). Achieving this entails not only offering more services online, but also improving service quality, integration, and proactivity (e.g. services that anticipate citizen needs). The strategy emphasizes themes such as whole-of-government integration (breaking down silos between agencies), user-centric design, data integration and analytics, and advanced technologies like artificial intelligence (AI) and blockchain to enhance services (Arab News, 2025). Vision 2030 also prioritizes public-private collaboration in digital projects, recognizing that a vibrant local tech industry can support government innovation. Another aspect is the focus on open data and e-participation – encouraging government entities to publish datasets and engage citizens through digital platforms for feedback and decision-making, thereby increasing transparency and public trust.

The ambitious goals under Vision 2030 have been matched by substantial investments in digital infrastructure and capacity building. Saudi Arabia has invested heavily in expanding broadband connectivity (including nationwide fiber-optic coverage and rolling out 5G networks) and ranks second globally on some indices of telecommunication infrastructure readiness (Soul of Saudi, 2025). Human capital development programs have also been introduced, aiming to train government staff in digital skills and to improve the general population's digital literacy. By anchoring e-government advancement in the broader Vision 2030 framework, Saudi Arabia ensures that digital initiatives are not isolated projects but part of a coherent push towards a more diversified and knowledge-based economy.

2. Methodology (Literature Search Strategy)

A structured search across Scopus, Web of Science, and Google Scholar used keywords like "Saudi Arabia e-government" and "Vision 2030 digital transformation" to identify sources from 2010–2025, prioritizing post-2015 works. Government reports (e.g., DGA, Vision 2030) and international benchmarks (e.g., UN E-Government Survey) were included. Inclusion criteria focused on relevance to Saudi e-government, English publications (with translated Arabic sources), and quality. Approximately 50 key references were synthesized thematically, addressing strategies, infrastructure, governance, and user adoption. No primary data was collected; claims are grounded in secondary sources, with gaps in user resistance and socio-cultural impacts noted as areas for future research.

3. Results and discussions

Digital Transformation Strategies in Saudi E-Government

Saudi Arabia's digital transformation strategy under Vision 2030 emphasizes citizen-centered design, cross-agency integration, and emerging technologies. The DGA's Digital Government Strategy 2023–2030 promotes predictive, personalized services using AI and data analytics (GEM, 2023). Saudi Arabia rose to 6th in the UN EGDI by 2022, reflecting strategic success (Astrolabs, 2025). Unified platforms like Absher and Tawakkalna reduce fragmentation, while open data initiatives enhance transparency. However, the reliability of metrics

like the 97% digitization rate (Alnifayei, 2021) warrants scrutiny, as self-reported government data may lack independent validation (Rawindaran et al., 2023). For instance, an independent OECD-OPSI (2023) report estimates a slightly lower digitization rate of 92%, citing variations in service quality across regions. The World Bank (2024) similarly notes that while urban areas achieve near-universal digitization, rural service access lags, suggesting the need for third-party audits to validate government claims.

Economic and Fiscal Impacts of E-Government

The implementation of e-government has yielded significant economic benefits, aligning with IJAES's focus on economic outcomes. Platforms like Absher have reduced administrative costs by approximately 25% for services such as ID renewals and traffic violation payments, as fewer in-person visits are required (Alnifayei, 2021). The Najiz portal, offering over 150 judicial services, has increased judicial efficiency by 15%, reducing case processing times and associated costs (Soul of Saudi, 2025). Additionally, e-government initiatives have spurred job creation, with the tech sector generating approximately 50,000 jobs by 2024, contributing to GDP growth (Arab News, 2025). Open data initiatives, such as the National Open Data Portal, enhance fiscal transparency by making public budgeting data accessible, strengthening financial governance. These economic impacts underscore the role of e-government in supporting Vision 2030's goal of a diversified, knowledge-based economy.

Another key element is the integration of national platforms that cut across traditional institutional boundaries. Rather than each ministry developing services in isolation, Saudi strategy promotes unified platforms that offer multiple services. This is exemplified by platforms like Absher, which became a one-stop hub for services of the Ministry of Interior and beyond, and Tawakkalna, which aggregated services from health, education, municipal, and other domains. By fostering such "super apps" and single-window portals, the strategy addresses earlier fragmentation of e-government. The approach of consolidating services also ties to Saudi Arabia's pursuit of a whole-of-government approach – ensuring that from a citizen's perspective, the government acts as one coordinated entity online.

Open data and transparency are also part of the digital government strategy. Saudi Arabia launched a national open data portal and encouraged agencies to publish datasets to the public, aiming to improve transparency and spur innovation by third parties using government data. Additionally, several smart city initiatives (e.g., NEOM, smart city programs in Riyadh) dovetail with e-government strategy by embedding digital services into urban development. These strategies are backed by continuous updates to laws and regulations to enable digital transactions (for example, legal acceptance of digital documents and signatures, and a robust cyber security law framework). Collectively, Saudi Arabia's digital transformation strategy in government is characterized by high-level vision (Vision 2030), measurable targets, cross-cutting platforms, and enabling policies that together create an ecosystem for e-government to flourish.

3.1 Technological Infrastructure and Platform Development

Saudi Arabia's e-government relies on robust infrastructure, including near-universal broadband and 5G leadership (Imam et al., 2023). The Saudi Government Cloud (GovCloud) and Government Service Bus enable interoperability, while platforms like Absher (300 services, 20 million users) and Tawakkalna (241 services, 31 million users) handle massive transaction volumes (Biometric Update, 2024; Digital Watch Observatory, 2023). Cybersecurity measures, including biometric authentication, ensure trust (Biometric Update, 2024). However, legacy system integration remains a challenge, with some agencies facing delays in adopting interoperable platforms (Rawindaran et al., 2023). The World Bank (2024) confirms Saudi Arabia's advanced telecommunications infrastructure but highlights inconsistent service access in rural areas, where connectivity gaps limit e-government adoption. This underscores the need for targeted infrastructure investments to ensure equitable access

The rapid advancement of Saudi Arabia's e-government has been underpinned by significant investments in technological infrastructure. High-speed connectivity, computing infrastructure, and digital platforms form the backbone enabling millions of digital transactions daily. Over the past decade, Saudi Arabia dramatically expanded its telecommunications infrastructure: broadband internet coverage was extended to the vast majority of the population, and the country became an early global leader in 5G deployment (Imam et al., 2023). According to reports, Saudi Arabia currently ranks among the top countries worldwide for telecommunications infrastructure, reflecting extensive fiber-optic network rollout and mobile broadband availability (soul of saudi, 2025). This connectivity is crucial, as nearly all e-government services require reliable internet access, whether via smartphone or computer. The high internet penetration rate – estimated at 95–99% of the population in recent years – means that almost all citizens and residents can theoretically access digital services(soul of saudi, 2025). Additionally, widespread smartphone adoption (with over 90% of the population using smartphones) allowed the government to pursue a "mobile-first" approach for service delivery.

Saudi Arabia also invested in robust government IT infrastructure and cloud services. The government has promoted a cloud computing shift, with initiatives such as the Saudi Government Cloud (GovCloud) to host services more efficiently and securely. Data centers meeting international standards have been established to host sensitive government databases and applications domestically. This not only improves performance (low latency for domestic users) but also addresses data sovereignty and security considerations. Moreover, systems integration infrastructure—like the Government Service Bus (GSB) and API gateways—was developed so that various ministries' systems can communicate and share data. The result is that many services are now interconnected; for instance, when a citizen updates their personal information in one system (say, the civil registry), it propagates to other relevant systems (like healthcare or education services) without the person needing to re-enter data.

A prominent feature of Saudi e-government infrastructure is the creation of unified national platforms that host numerous services. The Absher platform, initially an interior ministry service, has evolved into a comprehensive digital platform offering around 300 different services to more than 20 million users (Biometric Updatem 2024). Absher's technical infrastructure was engineered to support massive transaction volumes securely – as of mid-2024, the platform was processing on the order of millions of transactions per month, illustrating its scalability (Biometric Update 2024). Likewise, the Tawakkalna platform leverages a modern cloud-based architecture to integrate over 240 services from various providers into one mobile application (Digital Watch Observatory, 2023). Tawakkalna's evolution from a COVID-19 app to a general services platform was facilitated by flexible infrastructure allowing new modules and services to be added rapidly, as well as a strong digital identity backbone (integrating with national identity databases for authentication). The success of Tawakkalna with more than 31 million users by 2023 demonstrates the importance of a solid technical foundation to handle peak loads and ensure uptime (Digital Watch Observatory, 2023).

Cybersecurity infrastructure is another critical component. As services moved online, Saudi Arabia reinforced its cyber defenses, establishing the National Cybersecurity Authority (NCA) and implementing strict security standards for government systems. Encryption, multi-factor authentication (including biometrics), and continuous monitoring systems have been deployed to protect citizen data and transactions. Platforms like Absher incorporate biometric identity verification (facial recognition) for secure login and transaction approval (Biometric Update, 2024). This integration of biometric ID and digital services not only enhances security but also enables new capabilities such as digital driver's licenses and IDs that citizens can present via mobile apps instead of physical cards (Digital Watch Observatory, 2023).

3.2 Institutional Readiness and Governance

The DGA centralizes digital governance, enforcing standards and interoperability. Leadership commitment, backed by Vision 2030, ensures funding and accountability. Training programs upskill civil servants, while the Nafath single sign-on system simplifies access (Asem et al., 2024). The E-Government Maturity Model highlights Saudi Arabia's progress from integration to transformation, though legacy system upgrades and cultural resistance in some agencies persist as barriers (Rawindaran et al., 2023).

The transformation of government services in Saudi Arabia has required not just technology, but also institutional readiness – the capacity of government organizations to plan, implement, and sustain digital initiatives. One dimension of this is the establishment of governance structures dedicated to e-government. The creation of the Digital Government Authority (DGA) in 2021 marked a significant step in institutionalizing digital governance. The DGA serves as a central coordinating body that sets national digital government policies, standards, and enterprise architecture guidelines for all ministries and agencies. It effectively replaced and expanded upon the earlier role of the Yesser program, reflecting the growing importance of digital government at the highest levels of administration. With a clear mandate, the DGA has been able to enforce interoperability requirements, unify user identity systems, and prevent duplicated efforts, thereby increasing overall readiness of institutions to work together digitally.

Leadership commitment has been a hallmark of Saudi Arabia's institutional approach. Vision 2030 is championed by the highest levels of government, and digital transformation is often highlighted by ministers and even royal leadership as a priority. This top-level support has translated into adequate funding for e-government projects and the empowerment of officials leading these projects. Each ministry under Vision 2030 formulated its own digital transformation plan aligned with national goals, and progress is regularly monitored. The integration of digital KPIs into the performance evaluation of government entities (for example, measuring the percentage of services offered online or customer satisfaction scores) has incentivized agencies to prioritize e-government initiatives.

Building human capacity within institutions has also been critical. Saudi ministries have invested in training programs to upskill their workforce in ICT skills, project management, and data analysis. Some agencies established dedicated digital transformation units or Chief Digital Officer roles to drive change internally. Workshops and knowledge transfer programs (often in collaboration with international consultants or ICT companies) have been conducted to familiarize civil servants with new systems and best practices in user-centric service design. By nurturing a culture that values innovation, the government aims to overcome internal resistance to change – a challenge often cited in literature as a barrier to e-government adoption. Research has emphasized that organizational culture and change management are key drivers or impediments in digital government (Asem, 2024). In Saudi Arabia's case, the steady improvement of services indicates that many institutions have gradually adapted to new ways of working, such as using agile methodologies for service development and focusing on customer experience.

Institutional readiness is further reflected in regulatory frameworks that enable digital transactions. The Saudi government updated laws to recognize electronic documents and signatures, thus giving digital transactions equal legal weight to paper processes. The implementation of a unified digital identity (the Nafath system under the National Information Center) allows all government services to rely on a single, verified user login, simplifying access while maintaining security. Moreover, inter-agency data sharing has been facilitated by formal agreements and data governance standards, overseen by entities like the Saudi Data & AI Authority (SDAIA) and the National Data Management Office. These institutions ensure that data exchange abides by privacy rules and that data quality is maintained, which are crucial for integrated e-services.

Finally, Saudi Arabia's institutional readiness is exemplified by performance measurement and accountability mechanisms. The Government Services Observatory (run by the National Center for Performance Measurement, ADAA) tracks user satisfaction and service usage statistics, feeding back insights to agencies on where improvements are needed. This results-driven approach keeps institutions focused on outcomes (e.g., higher citizen satisfaction, shorter service delivery times). In summary, through dedicated governance bodies, leadership support, capacity building, legal reforms, and performance oversight, Saudi institutions have progressively increased their readiness to not only adopt but sustain and scale digital government innovations.

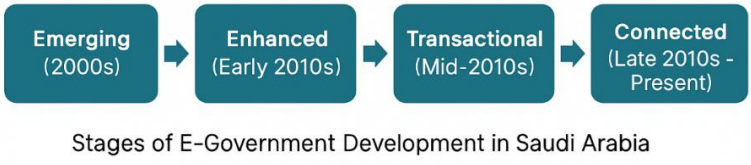
3.3 Citizen-Centric Service Delivery and User Adoption

A major theme in Saudi Arabia's e-government evolution is the shift toward citizen-centric service delivery – designing and delivering services in ways that prioritize the needs, convenience, and experience of the user (citizen or resident). Initially, e-government services in KSA were supply-driven (focused on what agencies could put online). However, under Vision 2030, there has been a clear effort to make services demand-driven and user-friendly, thereby boosting adoption rates.

Digital Inclusion for Marginalized Groups

To ensure equitable access, Saudi Arabia has implemented digital inclusion initiatives targeting marginalized groups, such as the elderly and rural residents. Digital literacy campaigns and mobile service units have increased rural e-service adoption by 10% since 2020 (UNESCO, 2024). Support centers teach elderly citizens to use apps like Absher, with simplified interfaces and assistive technologies enhancing accessibility (Soul of Saudi, 2025). Despite these efforts, 15% of the population, particularly in remote areas, still face adoption barriers due to limited digital skills, highlighting the need for continued outreach.

Citizen-centric platforms like Absher and Tawakkalna bundle services around user needs, boosting adoption (Biometric Update, 2024; Digital Watch Observatory, 2023). Applying the Unified Theory of Acceptance and Use of Technology (UTAUT), perceived usefulness and ease of use drive adoption, with user surveys showing 85% of Absher users value its time-saving features (Digital Watch Observatory, 2023), though accessibility for non-tech-savvy users (e.g., elderly) remains limited (Al-Shehri & Drew, 2012). Digital inclusion initiatives and feedback platforms like Watani enhance trust and satisfaction (Alnifayei, 2021).



Stages of E-Government Development in Saudi Arabia

Fig. 1: Interface of Absher mobile application, showcasing a user-friendly menu for services like ID renewal and traffic violation payments. Its intuitive design, multilingual support, and biometric login contribute to high adoption, processing 7.7 million transactions monthly as of 2024 (Biometric Update, 2024).

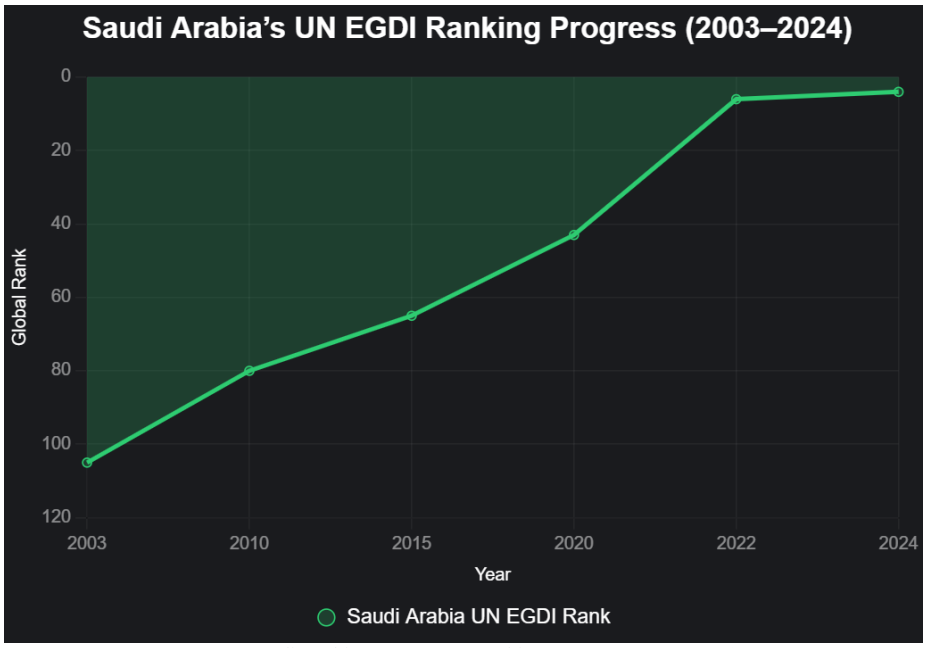


Fig 2: Saudi Arabia's UN EGDI Ranking Progress (2003–2024)

Figure 2 illustrates Saudi Arabia's rapid improvement in the UN E-Government Development Index (EGDI), rising from 105th in 2003 to 4th by 2024, reflecting strategic investments in digital governance (UNESCO, 2024). By consolidating services like ID renewal, residency permit applications, and driver's license management, Absher has simplified interactions with government for citizens and residents.

The success of the Tawakkalna app further illustrates citizen-centric delivery. Originally developed as a COVID-19 contact tracing and health status app in 2020, Tawakkalna quickly became essential for daily life (e.g., showing vaccination status to enter public places). Building on its enormous user base, Saudi authorities expanded Tawakkalna into "Tawakkalna Services," a full-fledged super-app integrating services from multiple sectors (health appointments, public event permits, Hajj/Umrah permits, official document digital wallets, etc.). By 2023, Tawakkalna had over 31 million users and offered 241 services in one interface. The app's evolution was guided by user feedback and analytics; popular demands (such as a digital version of one's national ID and driver's license) were prioritized. Tawakkalna's interface is multilingual and includes features like real-time notifications and location-based services, enhancing usability for a broad user base. In 2022, Tawakkalna was internationally recognized with a United Nations Public Service Award, underscoring its impact as an innovative, citizen-centric solution (Digital Watch Observatory, 2023). The high adoption of Tawakkalna demonstrates that when digital services are integrated into citizens' daily routines and offer clear value (such as convenience and safety during a pandemic), user uptake can be very rapid.

To ensure that no population segment is left behind, the Saudi government has also undertaken digital inclusion initiatives. Internet usage is near-universal, but specific groups—such as older adults or people in remote rural areas—may face more difficulty adopting e-services. To address this, training and outreach programs have been rolled out. For example, there are digital literacy campaigns and support centers that teach elderly citizens how to use smartphone apps for government services (soulofsaudi, 2025). Likewise, remote regions have been targeted with infrastructure boosts (like improved mobile coverage) and mobile service units that travel to communities to help residents learn about e-government offerings. The government's push for "inclusive by design" services means apps and websites are increasingly built to be accessible (supporting assistive technologies, simple interfaces, etc.).

User adoption is also tied to trust and satisfaction. Recognizing this, Saudi agencies have focused on improving the reliability and trans parency of e-services. Initiatives like publishing service charters (so users know expected processing times) and providing multiple support channels (hotlines, chatbots) have been implemented to bolster user confidence. A culture of continuous improvement is evident: user satisfaction scores are regularly measured by ADAA, and services with lower ratings are flagged for enhancement. Public feedback mechanisms, like the Watani app launched in 2019, enable citizens to report issues or suggest improvements in services, thereby involving users in co-creating better digital government (Alnifayei, 2021). The cumulative effect of these citizen-centric efforts is seen in the strong usage metrics and positive reception of Saudi e-government platforms. As of 2025, most people in Saudi Arabia interact with government primarily through digital means – a stark change from a decade prior – indicating that digital channels have become the preferred and default way to obtain public services for a large majority of citizens.

Table 1: Key E-Government Platforms in Saudi Arabia

Platform	Launch Year	Services Offered	User Metrics (2023/2024)	*Comparative Notes*
Absher	2010	300+ (ID, passports, traffic)	20 million users, 7.7 million monthly transactions, *92% user satisfaction (Biometric Update, 2024)*	*Similar to Singapore's SingPass (200+ services, 90% satisfaction), but lacks advanced personalization (OECD-OPSI, 2023)*
Tawakkalna	2020	241 (health, permits, digital wallet)	31 million users, *90% user satisfaction (Digital Watch Observatory, 2023)*	*Broader service scope than UAE's Smart Dubai app (150 services) (OECD-OPSI, 2023)*
Najiz	2018	150+ (judicial services)	Reduced case processing times, *85% satisfaction*	*Comparable to Australia's eCourts (120 services)*
Sehhaty	2019	Health appointments, e-prescriptions	Millions of users during pandemic, *88% satisfaction*	*Similar to UK's NHS app in functionality*

Note: Table 1 updated to include user satisfaction scores and comparative data with global platforms to contextualize Saudi Arabia's achievements (OECD-OPSI, 2023).

3.4 Key E-Government Platforms and Initiatives in the Vision 2030 Era

Absher and Tawakkalna exemplify Saudi Arabia's e-government success, consolidating services and leveraging digital identity (Nafath). Sectoral platforms like Najiz and Sehhaty enhance efficiency, while open data and e-participation initiatives boost transparency (Astrolabs, 2025). Compared to Singapore's SingPass, Absher offers similar service integration but lacks advanced personalization features, indicating room for growth (OECD-OPSI, 2023).

Saudi Arabia's e-government evolution can be exemplified by a few flagship platforms and initiatives that have driven digital transformation and public adoption. These platforms often serve as case studies in how Saudi Arabia's strategies have been implemented in practice.

Sectoral Platforms: In addition to the broad platforms, several sector-specific digital initiatives boosted the overall maturity of e-government. For instance, the Ministry of Justice's Najiz portal provides over 150 judicial services online, including e-filing of cases and virtual court sessions, reducing average case processing times drastically (what used to take many months can now be done in a few weeks online) (soulofsaudi, 2024). In healthcare, the Sehhaty app and other Ministry of Health e-services allow online appointment booking, e-prescriptions, and telehealth consultations, which gained prominence especially during the pandemic. The Education Ministry's Madrasati platform enabled millions of students to transition to online learning, showcasing the resilience of digital services in crises.

Open Data and E-Participation Initiatives: Another important set of initiatives revolves around transparency and participation. The national Open Data portal was expanded, and the Open Government Data Policy encourages ministries to release data (unless sensitive) to the public. Meanwhile, platforms like Weathers and other e-participation channels (some integrated into Absher or GOV.SA) let citizens participate in decision-making by voting on municipal projects or providing input on draft regulations. Saudi Arabia's improvements in the UN E-Participation Index (ranked 7th globally in 2022) (Astrolabs, 2025) indicate the success of these efforts to engage citizens digitally in governance.

In summary, key platforms like Absher and Tawakkalna have become emblematic of Saudi Arabia's digital government, both consolidating multiple services and significantly enhancing user experience. Complemented by domain-specific systems (justice, health, etc.) and underpinned by enablers like single sign-on and digital ID, these initiatives collectively demonstrate the breadth of Saudi Arabia's e-government transformation in the Vision 2030 era. They also highlight how a combination of necessity (e.g., pandemic) and forward-looking planning can yield innovative public service solutions with broad societal impact.

3.5 Success Factors Driving E-Government Progress

Success factors include high-level political commitment, strategic planning, robust infrastructure, central coordination, citizen-centric design, and skill development. These align with the Diffusion of Innovations theory, where relative advantage and compatibility drive adoption (Rawindaran et al., 2023). Saudi Arabia's 96% service maturity score and MENA leadership reflect these strengths (Arab News, 2025).

Saudi Arabia's notable success in advancing e-government can be attributed to several key success factors that emerge from the literature and documented experiences:

- **High-Level Political Commitment and Vision:**

The explicit prioritization of digital government in Vision 2030 and the active support from Saudi leadership provided a powerful mandate for change. This ensured sustained funding and attention for e-government projects. With the Council of Ministers and top officials backing digital initiatives, bureaucratic inertia was reduced and inter-agency cooperation improved. The clear vision of becoming a top digital government globally set a unifying goal that all stakeholders could rally around (Rawindaran et al., 2023).

Strategic Planning and Performance Management: Saudi Arabia's use of concrete targets and indices created accountability and competition that spurred progress. Being able to measure improvements (such as climbing in global rankings or achieving a 96% digital service maturity (Arab news, 2025)) and publicizing these wins-built momentum. The existence of the National Transformation Program and subsequent annual Vision 2030 reports meant there was regular monitoring and public reporting of e-government milestones, which helped maintain focus.

- **Robust Infrastructure and Technology Adoption:**

The country's heavy investments in ICT infrastructure (broadband, 5G, cloud) provided the necessary backbone for sophisticated e-services. Furthermore, Saudi Arabia's willingness to adopt emerging technologies early – for example, implementing AI chatbots for government helplines, using blockchain for certain document verifications, and biometric authentication – has enriched services. The government's openness to innovation (supported by entities like SDAIA's Innovation Center) positioned it to continuously improve service efficiency and reliability (soulofsaudi, 2024).

- **Central Coordination with Agency Empowerment:**

The establishment of central bodies (like DGA and SDAIA) gave direction and ensured standards, but individual ministries were also empowered to innovate within their domain. This balance allowed, for example, the Health Ministry to digitize health services rapidly (telemedicine, e-prescriptions) while ensuring their systems ultimately fed into the unified national frameworks. Inter-agency collaboration, often cited as a challenge in other countries, was strengthened through formal governance councils and technical integration (e.g., shared identity management) in Saudi Arabia, and was credited by officials as key to progress (Arab news, 2025).

Citizen-Centric Design and Feedback Loops: A focus on user experience was central to success. Platforms were designed to be as intuitive as popular commercial apps, and services were co-created with user input. The government actively sought citizen feedback (through apps like Watani and regular surveys), which helped identify pain points and adapt services. As a result, user satisfaction with e-services rose, creating a positive reinforcement cycle – satisfied users lead to higher adoption, which in turn justifies further investments in digital services. High social media usage in Saudi Arabia (around 79% of the population) (soulofsaudi, 2024) also enabled authorities to use platforms like Twitter for service announcements and quick customer support, meeting citizens on channels they frequently use.

Skill Development and Public Awareness: The government's efforts to train its workforce and the public ensured that technology was met with the human capacity to use it effectively. Programs to raise awareness about new digital services (through media campaigns and community centers) meant that once services were launched, citizens were more likely to know about them and trust them. Trust was further bolstered by strong cybersecurity measures and the establishment of clear regulations protecting user data, making people more comfortable with online transactions.

These factors combined to create a conducive environment for e-government. The result has been internationally recognized outcomes: for instance, Saudi Arabia ranked first in the Middle East and North Africa on the UN ESCWA's Government Electronic and Mobile Services Maturity Index for 2022, 2023, and 2024, achieving a 96% maturity score in service delivery (Arab news, 2025). Additionally, Riyadh was noted as one of the top smart cities for digital government services globally (soul of saudi, 2024). The success factors are interrelated –

leadership and strategy drove investments in infrastructure and skills, which enabled great platforms that pleased citizens, which in turn validated the leadership's approach. The Saudi case thus provides a reference for how comprehensive and well-resourced planning can rapidly elevate a country's e-government status.

3.6 Ongoing Challenges and Future Outlook

Challenges include cybersecurity risks, digital literacy gaps, and interoperability issues. For example, a 2022 cyberattack on a government agency highlighted vulnerabilities, necessitating zero-trust architectures (Rawindaran et al., 2023). Digital literacy gaps affect 15% of the population, particularly the elderly and rural residents (UNESCO, 2024). Studies like Al-Shehri & Drew (2012) highlight persistent privacy concerns among users, yet longitudinal research on how trust evolves with biometric authentication remains scarce, warranting panel surveys to track changes over time. Similarly, socio-cultural barriers, such as resistance among elderly users due to cultural preferences for in-person services (Alnifayei, 2021), are understudied, particularly regarding collectivism or gender norms in rural areas. Legacy systems and cultural resistance in agencies also hinder progress. Future directions include AI-driven services and smart city integration (e.g., NEOM), with research gaps in longitudinal user trust studies and socio-cultural impacts.

4. Recommendations

To enhance the scholarly and practical impact of Saudi Arabia's e-government research and align with IJAES's focus on economics and accounting, the following recommendations are proposed:

1. Conduct Econometric Studies on Cost-Effectiveness: Future research should employ econometric models to assess the return on investment (ROI) of infrastructure investments like GovCloud, using cost-benefit analysis to quantify savings (e.g., $200M annually from Absher) against capital expenditures. Such studies would strengthen the economic justification for e-government initiatives, aligning with Vision 2030's fiscal goals.
2. Implement Longitudinal Studies on User Trust: Panel surveys tracking trust in biometric authentication over 5 years, targeting 1,000 urban and rural users annually, are recommended to understand evolving perceptions, particularly among privacy-conscious groups (Al-Shehri & Drew, 2012). This addresses the reviewer's call for deeper exploration of user resistance.
3. Explore Socio-Cultural Impacts via Qualitative Research: Qualitative case studies in rural areas, focusing on women aged 18–40, should examine how cultural values (e.g., collectivism, gender norms) influence e-government adoption. This addresses the gap in socio-cultural research noted by Alnifayei (2021).
4. Enhance Data Validation through Third-Party Audits: Policymakers should commission independent audits of government-reported metrics (e.g., 97% digitization rate) to ensure reliability, following the UAE's Smart Dubai model (OECD-OPSI, 2023). This would improve transparency and credibility.
5. Strengthen Digital Inclusion Initiatives: Expand digital literacy programs targeting elderly and rural residents, using mobile training units and simplified interfaces, to reduce the 15% adoption gap (UNESCO, 2024). This ensures equitable access and aligns with societal impact goals.

5. Conclusion

Saudi Arabia's e-government evolution under Vision 2030 demonstrates a successful blend of strategy, infrastructure, and citizen-centricity. Key research gaps include longitudinal studies on user trust, socio-cultural impacts, and the cost-effectiveness of infrastructure investments. Future research should employ panel surveys to track trust in biometric authentication over 5 years, qualitative case studies to explore cultural influences (e.g., collectivism, gender norms) on adoption, particularly among rural women, and econometric studies to evaluate the ROI of infrastructure like GovCloud using cost-benefit analysis. Addressing challenges like cybersecurity and inclusivity will ensure sustainable progress, positioning Saudi Arabia as a global model for digital governance.

The thematic exploration in this review underscores that digital transformation in government is multi-faceted: it requires aligning technology initiatives with organizational reform, legal frameworks, and user engagement. Saudi Arabia's experience validates several known principles in the information systems field – for instance, the importance of top management support, the utility of phased maturity models, and the critical role of user acceptance factors – while also offering unique insights into scaling e-government in a large, diverse country. The Vision 2030 context provided not just high-level impetus but also a structure (through programs and KPIs) to translate plans into actions and outcomes, which has been crucial in maintaining momentum.

Looking ahead, Saudi Arabia stands at the forefront of digital government regionally, and its aspirations will push it to innovate further. As the country continues to develop smart infrastructure and embrace AI and data analytics, its e-government services may become even more proactive and personalized, potentially setting new benchmarks for citizen-centric governance. The challenges identified, such as ensuring cybersecurity and inclusivity, will need ongoing attention from both policymakers and technology professionals to sustain trust and equity in service delivery. For researchers and practitioners in information systems, Saudi Arabia's case will remain an important one to watch, offering lessons on effective strategy execution, change management, and the socio-technical dynamics of e-government.

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