

The Role of Legal Digitization in Achieving Sustainable Development in Saudi Arabia

Dr. Mohamed Abdalla Hassan Hamad*

Assistant professor - Saudi Electronic University - College of Science and Theoretical Studies Department of Law, Kingdom of Saudi Arabia

Dr. Hanan Abdel moniem Gubara Elbashir

Hail University, Faculty of Sharia & Law, Law Department, Kingdom of Saudi Arabia

Prof. Shihab Sulaiman Abdalla Osman

Professor, Shaqra University, Law Department, College of Sciences and Humanities, Kingdom of Saudi Arabia

Dr. Ahmed O.K. Hosnia

Associate Professor, Department of Public Law, College of Law, Dhofar University, Sultanate of Oman

Dr. Abdelfattah Mohamed Abdelfattah Hassan

Assistant professor. Shaqra University, Kingdom of Saudi Arabia

Dr. Randa Osman Ahmed Abd Alwahab

Assistant Professor- Law Section- College of Business- University of Bisha, Kingdom of Saudi Arabia

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Abstract: The digital revolution impacts many industries, including the legal field. "Legal Digitisation" encompasses all initiatives to transform the legal services sector through digital technologies. Legal professionals face a difficult task in the ever-changing digital environment, where speed and efficiency are critical. Existing research has often focused on either technological implementation or sustainability initiatives in isolation, with insufficient attention to their interrelationship within the legal domain. This paper addresses this gap by discussing how legal digitalization supports or can inhibit sustainable development progress in the Saudi setting. This study aims to analyze whether the Saudi legal digitalization initiatives so far align with the country's targets of sustainable development and assess the effect of digital legal reformations on social inclusion, environmental sustainability, and economic efficiency. This research applied a mixed-methods research approach in gathering the qualitative richness of implementation experience

and the quantitative aspects of the impact of legal digitization. Triangulation of results and engagement with multiple aspects of the study questions were facilitated by the application of qualitative and quantitative approaches. The results of the study prove that Saudi Arabian legal digitization is a powerful enforcer for fostering sustainable development goals with vital exceptions. Due to the digitization brought about by digital technology, which radically transformed the sector and greatly enhanced the processes and services of the industry, legal services have been widely expanded to offer coverage across inaccessible population groups. Digital transformation can enable sustainable development in legal institutions, as in Saudi Arabia, and digital technology offers excellent means of enhancing institutional performance. Effective alignment with the goals of sustainable development, human capital investment, and emphasis on outputs are prerequisites for their success.

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Contact: mhamad@seu.edu.sa

I. Introduction

The legal industry is just one of several sectors impacted by the digital revolution. "Legal Digitization" refers to all efforts to utilize digital technology to revolutionize the legal services industry. Legal practitioners face a formidable challenge in the rapidly evolving digital landscape, where efficiency and speed are of the utmost importance. Studies that have previously been performed have frequently concentrated on sustainability programs or technology deployment separately, paying little attention to how they interact within the legal field. To close this gap, this study examines how, in the Saudi context, the digital transformation of legal systems and services either supports or impedes sustainable development objectives.

The specific research questions guiding this investigation are:

1. How do current legal digitization initiatives in Saudi Arabia align with the nation's sustainable development objectives?
2. What measurable impacts have digital legal transformations produced regarding social inclusion, environmental sustainability, and economic efficiency?

By addressing these questions, this article aims to enhance understanding of how technological transformation within legal systems can be harnessed as a strategic lever for sustainable development. This research contributes to discussions regarding the role of institutional digitization in facilitating broader societal transitions toward sustainability.

II. Literature Review

The Brundtland Report was the first to use the term "sustainable development" in its conceptualization. Meeting current needs "without jeopardizing the capacity of generations to come to satisfy their own needs" was a broad definition¹. Law, governance, and economic goals converge to create the concept of sustainable development. Environmental, social, and financial factors are integral to this comprehensive environmental framework. Sustainable development includes formal and informal legal systems². During this period of high-quality economic development, sustainable development has risen to the forefront of governments' priorities³. Pursuing "sustained, inclusive, and sustainable economic growth, full

¹ Hajian, M., & Jangchi Kashani, S. (2021). 1 - Evolution of the concept of sustainability. From Brundtland Report to sustainable development goals. In C. M. Hussain & J. F. Velasco-Muñoz (Eds.), *Sustainable Resource Management* (pp. 1-24). Elsevier. <https://doi.org/10.1016/B978-0-12-824342-8.00018-3>

² Omran, M. (2024). Integrated Administrative Law to Sustainable Development Goals (Sdg 13 & 16) for a Greener Future in Saudi Arabia. *Journal of Lifestyle and SDGs Review*, 5(1), e03253. <https://doi.org/10.47172/2965-730X.SDGsReview.v5.n01.pe03253>

³ Li, H., & Liu, S. (2021). Higher Education, Technological Innovation, and Regional Sustainable Development: Insights from a VAR Model. *Discrete Dynamics in Nature and Society*, 2021(1), 8434528. <https://doi.org/10.1155/2021/8434528>

and productive employment, and decent work for all" is one of the Sustainable Development Goals. It brings to light several significant difficulties while emphasizing the significance of universal labor rights⁴. To stay competitive in today's global market, several established manufacturers are introducing new maintenance policies and innovations rooted in digitalization, data-driven approaches, and sterilization⁵. The developing body of literature addresses ownership, innovation, and the sustainable growth of firms, albeit with inherent conflicts⁶. The sustainable development of micro and small enterprises has become a prominent topic due to its crucial role in generating employment, alleviating poverty, and stimulating economic growth. Digitalization is a multidisciplinary issue; however, the extent of its mediation by professionals across many professions differs markedly. Contemporary legal research on digitization is sometimes disorganized and cursory. Legal practitioners are trailing contemporary trends, perhaps resulting in significant issues with legal control and the erosion of humanitarian and legal ideals amassed by humanity. This position poses several tremendous risks to legal regulation. As technological advancements continue, the volume of connected regulations is expanding, and these regulations are formulated by professionals in the digital economy and information technology⁷. The challenges of digitalization are categorized into general societal issues, which pertain to threats against societal development, and specific legal issues, which relate to the transformation of legal regulations and laws in the digital age: it is not the technologies that require legal regulation, but rather the relationships involving the use of these technologies that do. The so-called "horror stories" regarding AI and complete digitalization primarily stem from issues related to natural intelligence rather than artificial intelligence, indicating the necessity to manage the behaviors of natural intelligence agents in the development of artificial intelligence⁸. The study by Djuraev et al.⁹ delves into the revolutionary effects of digitalization on developing nations' legal systems, specifically looking at how new

⁴ Rai, S. M., Brown, B. D., & Ruwanpura, K. N. (2019). SDG 8: Decent work and economic growth – A gendered analysis. *World Development*, 113, 368-380. <https://doi.org/10.1016/j.worlddev.2018.09.006>

⁵ Grijalvo Martín, M., Pacios Álvarez, A., Ordieres-Meré, J., Villalba-Díez, J., & Morales-Alonso, G. (2021). New Business Models from Prescriptive Maintenance Strategies Aligned with Sustainable Development Goals. *Sustainability*, 13(1), 216. <https://doi.org/10.3390/su13010216>

⁶ Chege, S. M., & Wang, D. (2020). The influence of technology innovation on SME performance through environmental sustainability practices in Kenya. *Technology in Society*, 60, 101210. <https://doi.org/10.1016/j.techsoc.2019.101210>

⁷ Beaumier, G., Kalomeni, K., Campbell-Verduyn, M., Lenglet, M., Natile, S., Papin, M., Rodima-Taylor, D., Silve, A., & Zhang, F. (2020). Global Regulations for a Digital Economy: Between New and Old Challenges. *Global Policy*, 11(4), 515-522. <https://doi.org/10.1111/1758-5899.12823>

⁸ Saeed, S., Altamimi, S. A., Alkayyal, N. A., Alshehri, E., & Alabbad, D. A. (2023). Digital Transformation and Cybersecurity Challenges for Businesses Resilience: Issues and Recommendations. *Sensors*, 23(15), 6666. <https://doi.org/10.3390/s23156666>

⁹ Djuraev, I., Baratov, A., Khujayev, S., Yakubova, I., Rakhmonova, M., Mukumov, B., & Abdurakhmanova, N. (2025). The Impact of Digitization on Legal Systems in Developing Countries. *Qubahan Academic Journal*, 5(1), 81-117. <https://doi.org/10.48161/qaj.v5n1a1246>

technologies like smart contracts and blockchain are being integrated. Digital use improves legal infrastructure, increases access to justice, and drives legislative innovation; case studies from Ghana, South Africa, India, Kenya, Brazil, and Rwanda illustrate this point. Digitization positively influences case backlogs, transparency, and acceleration of judicial process, as recorded in Djuraev's analysis. However, an ever-existing need for collective solutions due to ongoing issues such as cybersecurity attacks, lack of digital literacy skills, and poor digital infrastructure exists. The study indicates the importance of blockchain technology in maintaining confidentiality of legal documents, creating unmanipulable evidence, and generating trust in the justice system. Similarly, smart contracts enforce and automate contracts, lower the cost, and increase the effectiveness of legal transactions. To those areas with issues of inefficiency in bureaucracies and corruption, these innovations are vital for modernizing legal structures and offering solutions for governance. To gain maximum positive impact from digitalization in law, the report lastly highlights investment in digital literacy, development of inclusive regulatory models, and phased deployment technique adoption. The marriage of blockchain technology and smart contracts enables developing nations to establish legal frameworks that are transparent, accessible, and robust enough to keep up with changing societal needs. Data "digitization" refers, in the simplest terms, to storing and retrieving data in numerical form. Digitized data can be quickly edited, stored, and copied from one device to another. Modern computing power and connectivity via the Internet allow for instant processing, storage, and transmission of vast amounts of data. Information technology application at the state level, or digitization, is among the contemporary methods of managing the law¹⁰. In recent decades, globalization has exerted mounting pressure on businesses to adapt. This necessitates that firms integrate efficiently to survive and prosper in competitive landscapes. Effective integration can be accomplished via digital methodologies and cooperative instruments. Consequently, the significance of digital transformation (DT) has escalated. Research highlights the importance of including digital transformation in today's business models, as it involves much more than just technological changes and affects many, if not all, parts of the company¹¹. The swift proliferation of globalisation, evolving economic and political landscapes, healthcare crises, technological advancements, and shifts in consumer demand have underscored the increasing significance of business model concepts in all facets of business operations. Although there is consensus regarding

¹⁰ Panova, L., Radchenko, L., Gramatsky, E., Kodynets, A., & Pohrebniak, S. (2021). Digitization in Law: International-Legal Aspect. *Cuestiones Políticas*, 39(69), 547-563. <https://doi.org/10.46398/cuestpol.3969.34>.

¹¹ Bouncken, R. B., Kraus, S., & Roig-Tierno, N. (2021). Knowledge- and innovation-based business models for future growth: digitalized business models and portfolio considerations. *Review of Managerial Science*, 15(1), 1-14. <https://doi.org/10.1007/s11846-019-00366-z>

the importance of the business model in fostering innovation and achieving corporate success, this notion remains overlooked within the legal sector¹². Innovative enterprises use transformation mandates to sustain their competitive market positions. In doing so, they address emerging opportunities and strive to enhance their resilience to risk. This implementation underscores the significance of digital transformation for maintaining competitiveness in a digital economy. Digitalization yields enhancements in productivity, savings in costs, and innovations that also "impact" digital transformation¹³. Numerous scholars from various fields have participated in assessing digital transformation (DT) and its associated potential and problems^{14,15}. Furthermore, digital transformation induces alterations within a business and affects societies. Consequently, as the significance of digital transformation becomes increasingly evident, it is concurrently accompanied by elevated expectations¹⁶. Legislators must control the use of new technology to foster innovation, e-commerce, and online dispute resolution. Despite its conservative reputation, digitalisation significantly impacted the legal profession, developing new subfields of law and their effects on daily practice. Information technology (IT) is becoming more vital in assisting developing nations in their efforts to promote sustainability, a pressing global concern¹⁷. New technical developments are better, addressing many social and environmental problems, and emerging countries are jumping on the bandwagon to make the most of these chances for a more sustainable future. Sustainability has recently received much attention from many fields, including accounting and finance. New opportunities for firms to improve their sustainability performance have emerged due to the growing importance of information technology (IT) in supporting sustainability activities¹⁸. There is a lack of cohesion in the rulemaking, engagement, and negotiations surrounding digital economy challenges, and sustainable development

¹² Hongdao, Q., Bibi, S., Khan, A., Ardito, L., & Khaskheli, M. B. (2019). Legal Technologies in Action: The Future of the Legal Market in Light of Disruptive Innovations. *Sustainability*, 11(4), 1015. <https://doi.org/10.3390/su11041015>

¹³ Bondar, S., Hsu, J. C., Pfouga, A., & Stjepandić, J. (2017). Agile digital transformation of System-of-Systems architecture models using Zachman framework. *Journal of Industrial Information Integration*, 7, 33-43. <https://doi.org/10.1016/j.jii.2017.03.001>

¹⁴ Burton-Jones, A., Akhlaghpour, S., Ayre, S., Barde, P., Staib, A., & Sullivan, C. (2020). Changing the conversation on evaluating digital transformation in healthcare: Insights from an institutional analysis. *Information and Organization*, 30(1), 100255. <https://doi.org/10.1016/j.infoandorg.2019.100255>

¹⁵ Hai, T. N., Van, Q. N., & Thi Tuyet, M. N. (2021). Digital Transformation: Opportunities and Challenges for Leaders in the Emerging Countries in Response to Covid-19 Pandemic. *Emerging Science Journal*, 5, 21-36. <https://doi.org/10.28991/esj-2021-SPER-03>

¹⁶ Nadkarni, S., & Prügl, R. (2021). Digital transformation: a review, synthesis and opportunities for future research. *Management Review Quarterly*, 71(2), 233-341. <https://doi.org/10.1007/s11301-020-00185-7>

¹⁷ Qadri, S. S. S. M., Almusawi, A., Albdairi, M., & Esirgün, E. (2024). Optimizing Traffic Signal Timing at Urban Intersections: A Simheuristic Approach Using GA and SUMO. In *2024 Innovations in Intelligent Systems and Applications Conference, ASYU 2024*. <http://doi.org/10.1109/ASYU62119.2024.10757086>

¹⁸ Chen, A., Li, L., & Shahid, W. (2024). Digital transformation as the driving force for sustainable business performance: A moderated mediation model of market-driven business model innovation and digital leadership capabilities. *Heliyon*, 10(8), e29509. <https://doi.org/10.1016/j.heliyon.2024.e29509>

is only partially or peripherally addressed as a result. A multilateral digital economy would be the gold medal winner if it cuts across sectors and tackles sustainable development head-on¹⁹. The legal sector is undergoing a transitional era characterized by changes in law firms' supply-and-demand dynamics and the emergence of alternative legal service providers. Law firms are transitioning from a lawyer-centric model to a customer-focused marketplace²⁰. This transition is propelled by evolving consumer demand, rapid delivery, transparency, and competitive pricing. The legal sector faces significant pressure to innovate and reform its conventional company structure. The progression of data-driven technology has catalyzed the automation of legal documents. Artificial intelligence advancement is poised to substantially disrupt legal processes, including e-discovery, business management, practice management, online dispute resolution, and contract management²¹. The legal sector's potential for disruption through business model changes or digitalization is greater due to its underutilization of technology. Digitalization results in substantial modifications to the fundamental components of business models, including client segmentation, value propositions, delivery routes, collaboration networks, and value capture mechanisms²². According to Zott et al.²³, the digital business models present novel potential for corporate and market growth. The revolution in automated processes and AI has catalyzed the expansion of legal technology within the legal sector, rendering it unable to resist innovations anymore²⁴.

III. Digital Transformation and Sustainability Initiatives in Saudi Arabia

Since 2016, Saudi Arabia's path toward digital transformation has accelerated significantly under the direction of Vision 2030, a comprehensive national development plan aimed at reducing oil dependency, diversifying the economy, and enhancing the quality of life. With the National Transformation Program (NTP) and following digital strategy documents establishing ambitious targets for

¹⁹ Burri, M., & Kugler, K. (2023). Digitization, Regulatory Barriers and Sustainable Development. <https://dx.doi.org/10.2139/ssrn.4424470>

²⁰ Brooks, C., Gherhes, C., & Vorley, T. (2020). Artificial intelligence in the legal sector: pressures and challenges of transformation. *Cambridge journal of regions, economy and society*, 13(1), 135-152. <https://doi.org/10.1093/cjres/rsz026>.

²¹ Hongdao, Q., Bibi, S., Khan, A., Ardito, L., & Khaskheli, M. B. (2019). Legal Technologies in Action: The Future of the Legal Market in Light of Disruptive Innovations. *Sustainability*, 11(4), 1015. <https://doi.org/10.3390/su11041015>

²² Wang, X., Zhang, Z., & Chun, D. (2025). Resource Bricolage, Digital Transformation, and Business Model Innovation: Based on the Conditional Process Analysis of Entrepreneurship. *Systems*, 13(5), 355. <https://doi.org/10.3390/systems13050355>

²³ Zott, C., Amit, R., & Massa, L. (2011). The Business Model: Recent Developments and Future Research. *Journal of Management*, 37(4), 1019-1042. <https://doi.org/10.1177/0149206311406265>

²⁴ Brooks, C., Gherhes, C., & Vorley, T. (2020). Artificial intelligence in the legal sector: pressures and challenges of transformation. *Cambridge journal of regions, economy and society*, 13(1), 135-152. <https://doi.org/10.1093/cjres/rsz026>

technological advancement across governmental functions, digital transformation forms a central pillar of this vision. Several prominent projects in the field of law demonstrate this dedication to digitization:

- The Najiz Portal, launched in 2020, offers comprehensive digital access to judicial services, enabling online case filing, document submission, hearing management, and access to judgments.
- The Saudi Data and AI Authority (SDAIA) is the kingdom's designated authority responsible for vast data and artificial intelligence. SDAIA serves as the national authority on the organization, development, and management of data and AI, possessing exclusive expertise in operations, research, and innovation within this domain.
- The Digital Legislation Hub consolidates access to laws, regulations, and royal decrees, improving transparency and accessibility of legal information.
- The Smart Assistant employs artificial intelligence to enhance judicial decision-making through precedent analysis and legal research support.

These initiatives fall under the broad umbrella of Saudi Arabia's sustainability agenda, which is articulated in several policy frameworks. The Saudi Green Initiative, launched in 2021, outlines ambitious targets for reducing carbon emissions, increasing the use of renewable energy, and conserving ecosystems. The National Environment Strategy provides an overarching framework for environmental governance with an emphasis on mainstreaming sustainability across policy domains²⁵. Omran²⁶ study incorporates Saudi Arabia's administrative law with the Sustainable Development Goals. It assesses the efficacy of legal frameworks and policies in promoting sustainable development, specifically emphasizing environmental governance; this study seeks to ascertain the congruence of this legislation with Saudi Arabia's Vision 2030. A comparative analysis of this study indicates that enhanced legal integration may increase the efficiency of sustainable development goals by as much as 30%.

IV. Methodology

1. Research Design

This paper used a mixed-methods research approach to gather the qualitative subtleties of implementation experiences and the quantitative aspects of legal digitisation effects. Combining qualitative and quantitative methods allowed the

²⁵ Kahia, M., Jarraya, B., kahouli, B., & Omri, A. (2024). The Role of Environmental Innovation and Green Energy Deployment in Environmental Protection: Evidence from Saudi Arabia. *Journal of the Knowledge Economy*, 15(1), 337-363. <https://doi.org/10.1007/s13132-022-01093-9>

²⁶ Omran, M. (2024). Integrated Administrative Law to Sustainable Development Goals (Sdg 13 & 16) for a Greener Future in Saudi Arabia. *Journal of Lifestyle and SDGs Review*, 5(1), e03253. <https://doi.org/10.47172/2965-730X.SDGsReview.v5.n01.pe03253>

triangulation of results and addressed several characteristics of the study questions. Three complementary elements were included in the research plan:

- This study provides a quantitative evaluation of measurements of digital service acceptance, accuracy indicators, and sustainability results connected to legal digitization projects.
- Qualitative analysis, semi-structured interviews on stakeholder situations, implementation difficulties, and apparent advantages.

This design facilitated examination of measurable impacts and contextual factors influencing the relationship between legal digitization and sustainable development outcomes.

2. *Population and Sample*

48 semi-structured interviews between September 2023 and January 2024 involving stakeholders with different points of view on legal digitization constituted part of the qualitative data collection.

- 12 judicial officials and court administrators
- 8 legal practitioners (lawyers and legal consultants)
- 7 technology implementation specialists
- 6 policy specialists from relevant ministries

3. *Data Collection*

Quantitative data were gathered from many sources to evaluate Saudi Arabia's legal digitization projects' dimension, acceptance, and effects.

- Statistics for service utilization from the Ministry of Justice, covering the period 2018-2023, including metrics on digital service adoption rates.
- Efficiency indicators from the Saudi National Observatory for Digital Transformation, measuring resource consumption reductions (paper, energy, transportation) associated with legal digitization.
- Sustainable development indicators from the General Authority for Statistics, providing context on relevant social, economic, and environmental trends.
- User satisfaction surveys conducted by the National Centre for Performance Measurement (Adaa), offering insights into public perceptions of digital legal services.

These datasets were consolidated into a structured database for analysis, with appropriate normalization procedures applied to ensure comparability across different periods and measurement frameworks.

4. *Data Analysis Method*

Quantitative data were analyzed using both descriptive and inferential statistical methods. Descriptive analyses included trend analysis of digital service adoption,

geographical distribution mapping, and comparative assessment of efficiency gains across different service categories. Inferential analyses examined relationships between digitization indicators and sustainable development outcomes using correlation analysis and multiple regression models, controlling for relevant socioeconomic variables. Time-series analysis was employed to assess pre-post implementation effects of major digital initiatives, while spatial analysis identified patterns in regional adoption and impact distribution. All quantitative analyses were conducted using R statistical software (version 4.2.2), with significance levels set at $p < 0.05$.

V. Results

Service category analysis demonstrated uneven digitization across legal domains. Notarization services showed the highest digitization rate (94% of all transactions), followed by commercial registration (87%), civil status documentation (83%) as shown in Table 1, and court case management (79%). Environmental permitting and compliance services showed lower digitization rates (57%), despite their direct relevance to sustainability objectives.

Table 1: Summary of Digital Legal Services Categories and Adoption Rates (2018-2023)

Legal Service Category	2018 Adoption Rate (%)	2023 Adoption Rate (%)
Notarization	30%	94%
Commercial Registration	50%	87%
Civil Status Documentation	45%	83%
Court Case Management	60%	79%
Environmental Permitting	20%	57%

Service category analysis demonstrated uneven digitization across legal domains. Notarization services showed the highest digitization rate (94% of all transactions), followed by commercial registration (87%), civil status documentation (83%), and court case management (79%). Environmental permitting and compliance services showed lower digitization rates (57%), despite their direct relevance to sustainability objectives. The environmental impact of legal digitization initiatives manifests through multiple pathways, with varying degrees of intentionality and effectiveness. Quantitative assessments indicated substantial resource consumption reductions associated with the digital transformation of legal processes, see Table 2:

- Paper consumption in the judicial system decreased by 63% between 2018 and 2023 (from 7,000 tons in 2018 to 4,250 tons in 2023), with an estimated 2,750 tons of paper saved annually by 2023.
- Transportation-related carbon emissions reduced by an estimated 27,800 tons

CO₂ (73%) equivalent annually through decreased physical court appearances and document submissions.

- Energy consumption in judicial facilities decreased by 18% on a per-case basis, partially attributable to reduced physical storage requirements and facility usage.

Table 2: Key Quantitative Indicators of Legal Digitization and Sustainable Development

Indicator	2018	2023	% Change
Paper Consumption (tons)	7,000	4,250	-63%
Carbon Emissions (tons CO ₂)	38,000	10,200	-73%
Energy Consumption (MWh)	15,000	12,300	-18%
User Satisfaction (%)	60%	76%	+16%

These efficiency gains were complemented by specific environmental governance enhancements enabled by digital legal tools.

The document analysis identified 14 distinct digital platforms supporting environmental regulation, monitoring, and enforcement. These included systems for:

- Digital environmental permitting with automated compliance checking.
- Remote sensing integration for detecting environmental violations.
- Blockchain-based carbon credit verification and trading.
- Digital water rights management and allocation.

As shown in *Table 3*, judicial officials and legal practitioners identified increased efficiency and reduced paperwork as key benefits of legal digitization.

Table 3: Summary of Stakeholder Feedback on Legal Digitization

Stakeholder Group	Benefits Identified	Challenges Identified
Judicial Officials	Increased Efficiency, Reduced Backlog	Initial Resistance to Change, Training Requirements
Legal Practitioners	Faster Case Management, Reduced Paperwork	Digital Literacy Concerns Among Clients
Technology Specialists	Improved System Reliability, Enhanced Data Security	Data Privacy Concerns, Integration Issues
Policy Specialists	Improved Transparency, Better Access to Justice	Regulatory Gaps, Digital Divide

Interviews lasted between 45 and 90 minutes, following a semi-structured protocol that addressed participants' experiences with legal digitization, perceived impacts on sustainable development dimensions, implementation challenges, and recommendations for improvement. All interviews were recorded with permission, transcribed verbatim, and translated from Arabic to English when necessary. Transcripts were validated by participants to ensure accuracy before analysis proceeded. Qualitative findings provided deeper insight into both enablers and

barriers affecting inclusive access.

Multiple participants highlighted the particular significance of digital services for women in the Saudi context: Before the Najiz portal, women often faced practical difficulties attending court due to transportation limitations or cultural considerations. Digital services have created a more gender-neutral space for accessing justice. As shown in Table 4, 52% increase in service utilization by residents of remote regions (defined as locations more than 100km from provincial capitals). Many elderly citizens and those from disadvantaged backgrounds still struggle with digital interfaces. The physical service centres remain essential, but they're being progressively reduced with the assumption that everyone can go digital.

Table 4: Impact of Legal Digitization on Social Inclusion (2019-2023)

Demographic Group	Increase in Service Utilization (%)	Challenges Identified
Women	68%	Gender-Specific Barriers, Tech Literacy
Remote Region Residents	52%	Limited Internet Access
Elderly Citizens	24%	Digital Interface Challenges

VI. Discussion

The above multi-dimensional results reveal that law digitization in Saudi Arabia has achieved considerable but uneven contributions to the sustainable development objectives. There are some noteworthy trends when compared to theoretical frameworks. Second, legal digitization combined with sustainable development operates through direct and indirect pathways. Direct pathways include resource usage decreases, accessibility improvements, and administrative efficiency gains. Indirect pathways entail more complex institutional shifts, which reshape governance practices, economic routines, and social interactions with the law cumulatively over time. Such indirect impacts call for longitudinal approaches to assessment because they oftentimes realize themselves through iterative processes rather than outright implementation results. Second, legal digital design has been less tangibly aimed at measurements of environmental sustainability than economic and governance ones. While economization of resources has brought significant ecological dividends, they are mostly desirable externalities rather than actively pursued ends. Such a trend is in line with institutional theory about path dependency, wherein new technical capabilities are used to optimize existing purposes more than changing those purposes extensively. Third, the distributional nature of digitization helps to highlight significant issues about digital change as a capacity builder. While overall gains in access are large, ongoing digital divides along socioeconomic status, generations, and geography lines mean that the

capacity growth remains skewed. The problem warrants policy intervention on a priority basis since it involves a potential conflict between equity considerations and efficiency goals. Fourth, a central intermediary connecting technical systems and individuals is then the interface through which decisions are made regarding whether potential sustainability gains are realized in practice. A finding that is in line with socio-technical transition theory is that technological expertise is transformed into tangible outcomes for sustainability through information literacy, user interface design, and other support, showing how technology and user behavior co-develop. Saudi legal digitisation institutional transformation aspects have unique characteristics that are influenced by the Kingdom's top-down governance pattern and development with international waves of digital governance. Some practical conclusions follow from this analysis for policymakers wishing to leverage legal digitization to bring about sustainable development.

Firstly, findings highlight the importance of coordinated impact assessment models that comprehensively identify a range of sustainability dimensions. These must include efficiency measures and environmental performance measures, distributional measures, as well as governance results in order to facilitate balanced evaluation of digitization initiatives.

Secondly, the research emphasizes the need for complementary investment in human capabilities alongside technology systems. User support services, digital literacy programs, and inclusive design approaches seem to be central pieces of effective implementation strategies, such as ensuring that excluded populations benefit from digitization and avoiding new exclusions.

Third, the findings point to merit in more explicit incorporation of environmental sustainability issues in legal digitization planning. As much as resource efficiencies are likely outcomes of digital transformation, forward-looking design that most optimally supports environmental ends, such as paperless operations, energy-efficient infrastructure, and digital environmental monitoring capabilities, has a substantial impact on adding sustainability value.

Fourth, the study highlights the importance of institutional change management strategies that address potential resistance and capability gaps within legal organizations. Successful implementation requires attention to organizational cultures, professional identities, and incentive structures that shape how technological capabilities are utilized in practice.

VII. Limitations and Future Research Directions

First, while the mixed-methods approach provided comprehensive insights, the relatively short observation timeframe (primarily 2018-2023) limits analysis of longer-term institutional transformations and sustainability impacts. Longitudinal studies extending over longer periods would enable a more robust assessment of

durable legal institutions and practice changes.

Second, while the study incorporated diverse stakeholder perspectives, certain groups, particularly populations with limited technological access, may be underrepresented in the qualitative sample despite efforts at inclusive recruitment. Future research employing specialized methodologies for engaging difficult-to-reach populations could address this limitation.

Third, attribution challenges complicate precise quantification of legal digitization's contribution to broader sustainable development outcomes, given multiple concurrent reform initiatives in Saudi Arabia. More granular analysis using quasi-experimental designs could help isolate specific effects of digital legal interventions from other policy factors.

Future research directions emerging from this study include:

- Comparative analysis of legal digitization approaches across GCC countries to identify regional patterns and distinctive national strategies
- In-depth examination of specific legal domains where digitization particularly enhances environmental governance capabilities
- Longitudinal tracking of how digital legal competencies diffuse across different demographic groups over time
- Analysis of how artificial intelligence integration within legal systems may further transform sustainability implications

VIII. Conclusion

This study has demonstrated that legal digitization in Saudi Arabia represents a significant force for advancing sustainable development objectives, albeit with important qualifications and uneven impacts across sustainability dimensions. With the radical makeover and essential upgrading of the processes and services of the courtesy industry of digital technology, legal services have now penetrated populations that were heretofore unreachable. Digital transformation has the potential to promote sustainable development in legal systems, as the case of Saudi Arabia illustrates, and digital technology offers excellent tools for enhancing institutional performance. Their effectiveness, however, hinges on alignment with sustainable development goals, investment in human capacities, and a focus on outcomes. This study has valuable implications for enhancing our knowledge of how the multifaceted interplay of institutional effort and technical capabilities can be harnessed and legal digitization can be used for sustainable development. With legal digitisation being on an exponential growth trajectory and influencing legal systems around the world, further research into its potential implications for sustainable development in varied contexts is now more pressing than ever.

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