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# The Impact of AI and Digital Transformation in Shaping the Saudi Legal System

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## Abstract

The digital economy is a disruptive force, altering industry, trade and society. As the premier financial and technological hub in the Middle East, Saudi Arabia is actively growing its digital economy by embracing Artificial Intelligence (AI) to enhance innovation, economic growth and productivity. This paper looks at the policy and legal framework of the digital transformation in the kingdom. In addressing the research question, the paper employs an interdisciplinary approach; this approach can help address complex technical issues related to technologies such as cybersecurity, data privacy and artificial intelligence. The paper is divided into two sections. The first one provides an overview of the governmental digital transformation policies for the health, finance and banking, and transportation sectors. The second part analyses the regulatory framework of this transformation highlighting the role of an enabling legal framework in the transition and its limit when looking at the continuous advancements of technologies.

**Keywords:** AI, Digital Transformation, Saudi Law, Policies and Legal Framework, Data Protection Law, Enabling Laws.

## 1. Introduction

Saudi Arabia's Vision 2030 places a strong emphasis on digital transformation, with AI playing a critical role in realizing this vision[1]. Its aim is to diversify the economy, reduce dependency on oil, and position the Kingdom as a global leader

[1] Asem Alnasser and others, 'Navigating Digital Transformation in Alignment with Vision 2030: A Review of Organizational Strategies, Innovations, and Implications in Saudi Arabia' (2024) 3 Journal of Knowledge Learning and Science Technology 42.

in technology and innovation. In response, the Kingdom has set the foundation for achieving this goal by creating vital digital platforms and infrastructure. [2] Indeed, since early 2000, Saudi Arabia has made significant investments in artificial intelligence (AI), digital infrastructure, and technology-driven projects. [3] These early investments have ensured that the country has the digital resources and connectivity needed to support widespread digital transformation across industries, fostering economic growth and modernization. [4] With an overall score of 85.04% at the advanced level in 2024, the Kingdom's growth is demonstrated by the Digital Experience Maturity Index for Government Services. [5] The Report evaluated 39 digital platforms according to four main perspectives that cover 20 themes including beneficiaries' satisfaction, user experience and platforms mechanisms to deal with complaints. [6]

Central to the 2030 Vision is the modernization of different sectors, including both the public and private sectors and the regulatory framework. [7] Thus, this paper explores the legislative framework for a successful digital transformation focusing on the actions Saudi Arabia has made in the public, social, and economic spheres. The study's significance stems from the vital role that digital governance plays in fostering innovation, promoting accountability, and ensuring inclusivity. [8] In doing so, the study provides an overview of the nation's digital transformation landscape

[2] Muhammad Babar Khan and Sadia Iqbal, 'Vision 2030 and the National Transformation Program', Research, Innovation and Entrepreneurship in Saudi Arabia (Routledge 2020).

[3] Ashwag Madkhali and Seedwell TM Sithole, 'Exploring the Role of Information Technology in Supporting Sustainability Efforts in Saudi Arabia' (2023) 15 Sustainability 12375 https://www.mdpi.com/2071-1050/15/16/12375.

[4] Abdulla Al-Hajri and others, 'A Systematic Literature Review of the Digital Transformation in the Arabian Gulf's Oil and Gas Sector' (2024) 16 Sustainability 6601 <https://www.mdpi.com/2071-1050/16/15/6601> accessed 15 August 2024.

[5] United Nations human rights office of the high commissioner, 'treaty bodies treaties' (tbinternet. ohchr.org2 June 2023) https://tbinternet.ohchr.org/_layouts/15/TreatyBodyExternal/Treaty.aspx?Treaty=CCPR&Lang=en.

[6] Tamara Almarabeh and Amer AbuAli, 'General Framework for E-Government: Definition Maturity Challenges, Opportunities, and Success. ' (2010) 39 European Journal of Scientific Research 29.

[7] Nadiya Azahra Hidayat, Yon Machmudi and Siti Rohmah Soekarba, 'VISION 2030: SAUDI ARABIA'S MODERNIZATION' (2022) 15 CMES: Centre of Middle Eastern Studies 137.

[8] SMART Governance implies simple, moral, accountable, responsive and transparent governance. Simple-meaning simplification of rules, regulations and processes of government through the use of ICTs and thereby providing for a user-friendly government., Mohammed Alajmi, Masoud Mohammadian and Majharul Talukder, 'The Determinants of Smart Government Systems Adoption by Public Sector Organizations in Saudi Arabia' (2023) 9 Heliyon https://www.sciencedirect.com/science/article/pii/S2405844023076028.

focusing on the main opportunities and challenges facing the kingdom. [9] In addressing the research question, the paper employs an interdisciplinary approach; this approach can help address complex technical issues related to cybersecurity, data privacy and AI ethics. The paper is divided into two sections; the first one provides an overview of the digital transformation policy of the country in the governmental sector, health , finance and banking, and transportation; the second part analyses the policy and regulatory framework of this transformation highlighting the role of the data protection law in this regard and its limit when looking at critical role of AI technologies in the transition. The study identifies key improvement areas to assist the kingdom's digital transformation's sustainability.

## 2. Digital Transformation in Saudi: Policies and Framework

This section covers government initiatives and policies in setting the technological infrastructure, and institutional capacity. It focuses on efforts to develop a robust digital infrastructure that supports innovation and digital transformation, contributing to the improvement of public and private services and increasing the efficiency of administrative and production processes. In order to guarantee that the transformation will result in an inclusive and sustainable economy and society, it looks at the relevant policies to evaluate its role and contribution.

### 2.1. Understanding Digital Transformation and Artificial Intelligence's Role:

In the digital age era, the ability of governments, businesses and society to adopt digital technologies will determine their future in an age that is driven by information and communication technologies. [10] It is widely acknowledged that information and communications technologies can be used to promote inclusive economic growth and socioeconomic change. [11] By that, they are referring to the potential and difficulties that arise from the blurring of the boundaries between the

[9] Fadi Salem, 'A Smart City for Public Value: Digital Transformation through Agile Governance - the Case of "Smart Dubai"' (papers.ssrn.com10 February 2016) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2733632.
[10] Klaus Schwab, 'The Fourth Industrial Revolution: What It Means and How to Respond' (World Economic Forum14 January 2016) https://www.weforum.org/stories/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/.
[11] Ibid.

biological, technical, and physical dimensions. [12] Digital transformation needs a comprehensive and innovative regulatory and policy framework in order to implement responsive policies that better enable society and the government to seize opportunities and overcome challenges.

Digital transformation is the comprehensive process of integrating digital technology into all areas of a business or organization, fundamentally changing how it operates and delivers value to customers. [13] It involves rethinking traditional business models, optimizing processes, and enhancing customer experiences by leveraging emerging technologies such as cloud computing, artificial intelligence, big data, IoT, and automation. [14] The aim is to increase efficiency, agility, and innovation, enabling businesses to adapt to evolving market trends and stay competitive in the digital era. [15] Digital transformation is not just about technology, but also about cultural change that encourages the organization to challenge the status quo, experiment, and be open to new approaches. [16]

There are several key components of digital transformation including, leadership and culture change, customer experience, technology integration, process optimization, and digital skills and workforce development, security and data protection, agile infrastructure, innovation ecosystem.[17] These components of the DX need to be considered in light of the rapid development of digital technologies

[12] Nelly P Stromquist, Education in a Globalized World: The Connectivity of Economic Power, Technology, and Knowledge (Rowman & Littlefield 2002).
[13] Mohamed A Ramady, The Saudi Arabian Economy: Policies, Achievements and Challenges (Springer 2010).
[14] Meshal Alhumaid and Ibrahim Alotaibi, 'Artificial Intelligence, Big Data, and Their Impact on Improving Marketing Effectiveness and Customer Experience in the Retail Sector in the Kingdom of Saudi Arabia' (2025) 13 Jazan University Journal of Human Sciences (JUJHS) 431 https://www.researchgate.net/publication/388028349_Artificial_Intelligence_Big_Data_and_Their_Impact_on_Improving_Marketing_Effectiveness_and_Customer_Experience_in_the_Retail_Sector_in_the_Kingdom_of_Saudi_Arabia.
[15] Karam Zaki and others, 'Digital Synergy and Strategic Vision: Unlocking Sustainability-Oriented Innovation in Saudi SMEs' (2025) 15 Administrative Sciences 59 https://www.researchgate.net/publication/388926627_Digital_Synergy_and_Strategic_Vision_Unlocking_Sustainability-Oriented_Innovation_in_Saudi_SMEs.
[16] Oliver Kohnke, 'It's Not Just about Technology: The People Side of Digitization' (2016) 2 Shaping the Digital Enterprise 69 https://link.springer.com/chapter/10.1007/978-3-319-40967-2_3.
[17] Gerald C Kane and others, 'The Essential Components of Digital Transformation' (Harvard Business Review, 10 November 2021) https://hbr.org/2021/11/the-essential-components-of-digital-transformation accessed 19 February 2025.

and its wide spread across all life aspects from AI, Cloud computing, internet of things and blockchain, the issue that has made it imperative to reevaluate the current policies and regulatory framework[18].

### 2.2. The Saudi Journey in AI and Digital Transformation:

The Kingdom of Saudi Arabia has made significant strides in integrating digital technology into the nation's government, society, and economy, working on both developing and deploying these technological advancements into all levels of governance. [19] The work started early 2006 when the first digital strategy and action plan (2006-2010) was adopted. [20] The main focus of the Plan was on the concept of electronic services for citizens. Its main goal was to provide each citizen with easy-to-access and high-quality governmental services from anywhere and at any time through integrated and secure e-platforms by the end of 2010.

This was followed by the second digital strategy and action plan (2012-2016) called "Yesser". [21] The Strategy set the groundwork for the growth of e-government, in order to fully support Saudi Arabia's digital transformation objectives. Main issues faced implementing the strategy was related to tackling institutional opposition, adaptation and technological depth. [22] Thus, the 2020-2022 Initial Smart Government Strategic plan laid a strong plan for digital transformation prioritizing agility, human centered services and alignment with the global sustainable development goals. The strategy focused on enhancing service delivery and long term national and international goals. [23] Indeed, a

[18] The International Trade Administration, 'Saudi Arabia - Digital Economy' (International Trade Administration | Trade.gov17 September 2024) https://www.trade.gov/country-commercial-guides/saudi-arabia-digital-economy.
[19] OECD, 'Saudi Arabia - OECD Cooperation' (OECD) https://www.oecd.org/en/about/programmes/saudi-arabia-oecd-co-operation.html accessed 19 February 2025.
[20] Saudi Digital Transformation Program. (n.d.). Policies and strategies: Second Digital Strategy and Action Plan (2012 – 2016). Saudi e-Government Program (Yesser). Retrieved October 30, 2024, from https://www.my.gov.sa/wps/portal/snp/aboutksa/digitaltransformation/dtcontentdetails/policies-and-strategies/a%201-3/
[21] ibid.
[22] Yosef Abdulaziz Alajaji, 'How Strategic Leaders Facilitate Public Sector Digitalisation: The Context of Two Saudi Arabian Ministries' (e-space.mmu.ac.uk16 November 2023) https://e-space.mmu.ac.uk/633322/.
[23] IBID. Saudi Digital Transformation Program. (n.d.). Policies and strategies: Second Digital Strategy and Action Plan (2012 – 2016). Saudi e-Government Program (Yesser). Retrieved October 30, 2024, from https://www.my.gov.sa/wps/portal/snp/aboutksa/digitaltransformation/dtcontentdetails/policies-and-strategies/a%201-3/

strategic shift was made with the creation of the Digital Governance Authority (DGA), which might enable more centralised and targeted digital governance under the new Digital Government Strategy. [24]

Therefore, the focus of the current digital transformation strategic plan for (2023-2030) is centered around a main goal of providing a world class governmental service that guarantees efficient and effective governance aiming to place the Kingdom among the top 10 global leaders in digital government. [25] The Plan defined the tools to achieve this goal as below:

- Citizen Satisfaction.
- Business Competitiveness.
- Digital Transformation.
- Government Efficiency.
- Open Government.
- Green Government. [26]

### 2.3. Key Aspects of the Digital Governance and Transformation Policy:

This journey underpinned a comprehensive framework of laws and policies that promote innovation, economic growth, and security. The three main aspects of the national policy are to provide the digital and physical infrastructure for digital transformation, and to ensure globally competitive policy and regulatory frameworks, [27] and simultaneously ensure digital inclusion and participations as the third pillar of "ambitious nations". [28]

[24] Abdullah Aldarazi, 'Electronic Government in Saudi Arabia: Influence of Culture and Impact on Compliance' (PhD2022).
[25] GIP Digital Watch, 'Digital Government Strategy 2023-2030 | Digital Watch Observatory' (Digital Watch Observatory23 October 2024) <https://dig.watch/resource/digital-government-strategy-2023-2030> accessed 22 February 2025.
[26] Nabil Tarifi, 'The Role of Sustainability and Innovation in Small Business Transformation in Saudi Arabia' (2024) 14 American Journal of Industrial and Business Management 492 https://www.scirp.org/journal/paperinformation?paperid=132635 .
[27] Shaleen Khanal, Hongzhou Zhang and Araz Taeihagh, 'Building an AI Ecosystem in a Small Nation: Lessons from Singapore's Journey to the Forefront of AI' (2024) 11 Humanities & social sciences communications.
[28] Gov. Saudi, 'An Ambitious Nation' (Vision2030.gov.sa2015) https://www.vision2030.gov.sa/en/overview/pillars/an-ambitious-nation.

The digital governance framework has played a significant role in Saudi's ranking as one of the most digitally competitive developing country. The aim of the digital government strategy for the years 2023-2030 is to ""transform government by embedding digital in operations and decisions," through the integration of digital solutions across all aspects of governmental functions. [29] The goal is to modernize the way governmental agencies operate, provide services to people, create policies and make decisions.

The three guiding principles of e-government policy are accountability, transparency, and openness. Thus, relevant regulation has made it possible for people and companies to seek information that is kept by the government, access a vast array of official datasets, and obtain trustworthy and timely government information in order to accomplish that[30]. The policy also recognizes the right of people to access governmental information including the governmental budget and spending and participate in all public procurement procedures. Providing citizens with such rights ensures fiscal transparency aligning with international anti-corruption such as the united nation convention against corruption[31]. This reflects a state shift towards collaborative government.

The policy also acknowledges citizens' rights to express their opinions on policies and laws. Adopting this approach gives stakeholders the ability to influence legislation and guarantees that policies are created with societal requirements in mind. [32]

The main goals of the digital government strategy of 2023-2030 are as below:

[29] Digital Regulation Platform, 'Digital Regulation Platform' (digitalregulation.org7 July 2023) https://digitalregulation.org/national-digital-transformation-strategy-mapping-the-digital-journey/.
[30] Awad Saleh Alharbi, Khaled nayef alkhaitan and Abdulellah A Alaboudi , 'The Role of E-Government in Increasing Transparency in Saudi Arabia' (2020) 12 American Academic & Scholarly Research Journal aasrj 1.
[31] Matthew Jenkins, Antonio Greco and Aram Khaghaghordyan, 'Transparency International Anti-Corruption Helpdesk Answer Transparency, Accountability, and Integrity of Public Procurement Systems' (2024) https://knowledgehub.transparency.org/assets/uploads/helpdesk/Transparency-accountability-and-integrity-of-public-procurement-systems_2024-English-Version.pdf.
[32] Council of Europe, 'ARMENIA Handbook on Transparency and Citizen Participation Council of Europe' (2020) https://rm.coe.int/handbook-on-transparency-and-citizen-participation-eng-final/1680a0c6e1.

- Adopting digital technologies and tools is an integral part of the transformation including automation, data analytics, and AI to ensure workflow. This step will not only reduce manual processes and errors but also promote productivity in all government agencies. [33]
- Integrating digital technologies in all governmental sectors is to create user-friendly interactions between governmental organizations and people. This includes technology to enhance service accessibility and reduce time and expenses such as governmental platforms, digitized services, and mobile applications. [34]
- The policy is designed to shift towards data driven governance to ensure informed and timely decisions, this involves using real-time data and predictive analytics. This should ensure effective resource allocations and swift response to emerging issues. [35]
- Aligning digital integration in the governmental sector with the strategic goals of vision 2030 in fostering innovation, drive inclusive and sustainable growth, in addition to enhance digital governance. [36]

The Digital Governance Strategy constitutes a forward-looking approach considering its pillars on transparency, efficiency and responsiveness. However, its success requires extensive investment in technology development and infrastructure, and robust cybersecurity measures. [37] This also entails a cultural shift between both society and public servants. And the Saudi efforts to overcome these challenges are clear and solid.

[33] International Trade Administration, 'Saudi Arabia - Digital Economy' (International Trade Administration | Trade.gov19 September 2024) https://www.trade.gov/country-commercial-guides/saudi-arabia-digital-economy 0.
[34] Sascha Kraus and others, 'Digital Transformation in Business and Management Research: An Overview of the Current Status Quo' (2022) 63 International Journal of Information Management 102466 https://www.sciencedirect.com/science/article/pii/S0268401221001596.
[35] I bid.
[36] (n 1 Asem Alnasser).
[37] Z.R.M. Abdullah Kaiser, 'Smart Governance for Smart Cities and Nations' (2024) 2 Journal of Economy and Technology 216.

### 2.3.1. Digital Inclusion Strategies:

The objectives of the third pillars of vision 2030 is to "An ambitious nation", emphasizing citizen role in policy and decision making. Thus, it calls to all government agencies to allow open access and transparent information system. Considering this purpose, the primary goal of the digital inclusion policy is to advance digital culture by fostering citizen development and enhancing society's digital skills and capabilities. [38] The strategy adopted two strategic objectives as below:

1. Strategic Objective 6.2: Foster Capabilities and Skills and Promote Digital Culture.
2. Strategic Objective 6.3: Enable Change Management, Communication and Governance. [39]

The importance of digital inclusion is reflected in the ICT strategy, which is a major sector in the transition. It acknowledges the need for modern technology, digital knowledge and awareness, and the need of boosting female participation in the industry.

### 2.3.2. E-Participation:

This aspect of the national strategy is most closely related to the digital inclusion strategies since it focuses on digital engagement between government, citizens and business, highlighting the importance of interactive communications and dialogue in achieving Vision 2030. [40] The policy follows the citizen centric approach aligning public services with public needs. [41] It is clear that the aim of the e-

[38] Jane Kinninmont, 'Vision 2030 and Saudi Arabia's Social Contract Austerity and Transformation' (2017) https://www.chathamhouse.org/sites/default/files/publications/research/2017-07-20-vision-2030-saudi-kinninmont.pdf.

[39] UNITED NATIONS HUMAN RIGHTS OFFICE OF THE HIGH COMMISSIONER, 'Treaty Bodies Treaties' (tbinternet. ohchr.org2 June 2023) <https://tbinternet.ohchr.org/_layouts/15/TreatyBodyExternal/Treaty.aspx?Treaty=CCPR&Lang=en>.

[40] UN E-Government Survey, 'Chapter 1 • a Digital Government MoDel Framework for SuStainable Development Chapter 1 People Principles of Effective Governance for Sustainable Development' (2024) https://desapublications.un.org/sites/default/files/publications/2024-09/%28Chapter%201%29%20E-Government%20Survey%202024%201392024.pdf.

[41] Linda Weigl and others, 'When Public Values and User-Centricity in E-Government Collide – a Systematic Review' (2024) 41 Government Information Quarterly 101956.

Participation is to ensure digital inclusion for all including vulnerable groups such as disable, elderly, women and migrant people. Measures adopted to ensure e-Participation include ensuring accessibility and connectivity which was achieved 100% in 2021. [42] These also include addressing digital literacy, affordability and e-consultation platforms. In addressing digital literacy, several initiatives were introduced, King Abdullah Project, Women Empowerment in Technology, and Misk foundation, Think Tech, Attaa Digital, Cyberbullying e-Learning.

It is evident that the policy is comprehensive and inclusive to cover multiple aspects of digital transformation. There is still a need to focus on usability and impact assessment because internet access does not necessarily equate to active digital participation.

### 2.3.3. The National Cyber Security Strategy:

The digital transformation of the country and the quick rise in technology usage have brought about new cybersecurity threats and vulnerabilities, and for this purpose, the National Cyber Security Authority was created in 2017 and tasked with strengthening cybersecurity to protect the State's national security and interests, essential infrastructures, and government services and activities. [43]

The first National Cybersecurity Strategy was created to guide the implementation of important national transformation projects and strike a suitable balance between boosting cybersecurity, boosting confidence, and advancing the Kingdom's development and prosperity. [44] The National Cyber Security Statute defines cybercity as:

- The protection of networks, information technology systems, and operational technology systems, including hardware and software, services provided thereby, and data included therein, against hacking, disruption, modification,

[42] Massimo Ragnedda, Maria Laura Ruiu and Felice Addeo, 'The Self-Reinforcing Effect of Digital and Social Exclusion: The Inequality Loop' (2022) 72 Telematics and Informatics 101852.
[43] National Cybersecurity Authority, 'Vision and Mission' (NCA) https://nca.gov.sa/en/vision-and-mission/ accessed 21 February 2025.
[44] Saudi Digital Government Authority, 'Policies and Strategies' (Saudi e-Government Portal) https://www.my.gov.sa/wps/portal/snp/aboutksa/digitaltransformation/dtcontentdetails/policies-and-strategies/a%201-1/ accessed 21 February 2025.

unauthorized access, and unlawful exploitation or use. Cybersecurity includes information security, electronic security, digital security, and the like". [45]

It is evident that the definition complies with global guidelines for protecting cyber security. Cyber security is also defined as including different forms of security (information security, electronic security, digital security, etc.). [46] This implies that legislation pertaining to cybersecurity must be consistent with other legal systems, including those pertaining to data protection, intellectual property, and criminal justice.

### 2.4. Key Sectors Driving Digital Transformation and Development:

The Digital Experience Maturity Index for Government Services, which evaluated twelve priority government platforms in line with the viewpoints and themes in this report, shows the Kingdom's progress, with an overall score of 85% at the advanced level, which was part of its first cycle in 2024.[47] With an overall score of 85.04% at the advanced level in 2024, the Kingdom's growth is demonstrated by the Digital Experience Maturity Index for Government Services.[48] The Report evaluated 39 digital platforms according to four main perspectives that cover 20 themes including beneficiaries' satisfaction, user experience and platforms mechanisms to deal with complaints. [49]

The Kingdom is setting the foundation for achieving its Vision 2030 goals by creating vital digital platforms and infrastructure. These early investments ensure that the country has the digital resources and connectivity needed to support widespread digital transformation across industries, fostering economic growth

[45] Ibid.
[46] Marin Ivezic, 'Saudi Arabia Vision 2030: Cybersecurity at the Core of the National Transformation' (Defence.AI19 September 2023) https://defence.ai/perspectives/ksa-vision-2030-cybersecurity/.
[47] United Nations University. (n.d.). Digital Maturity Index Saudi Arabia. Retrieved from https://unu.edu/egov/project/digital-maturity-index-saudi-arabia.
[48] United Nations human rights office of the high commissioner, 'treaty bodies treaties' (tbinternet. ohchr.org2 June 2023) https://tbinternet.ohchr.org/_layouts/15/TreatyBodyExternal/Treaty.aspx?Treaty=CCPR&Lang=en.
[49] Tamara Almarabeh and Amer AbuAli, 'General Framework for E-Government: Definition Maturity Challenges, Opportunities, and Success. ' (2010) 39 European Journal of Scientific Research 29.

and modernization. [50] Key Industries Fueling Saudi's Digital Economy Powered by AI are as below:

- The health sector: the focus of the healthcare sector transformation program is to modernize the sector to ensure quality and accessibility to health services. [51] Thus the program focus has been at creating a comprehensive and integrated healthcare system through digitalization. [52] The integration of digital technologies varies widely in the health sector considering the definition of digital health as "a multidisciplinary domain that aims to enhance the efficiency of monitoring of the patients, diagnosis, management, prevention, rehabilitation and long term care delivery." [53] Such absorptive, adaptive and technological capacities transform healthcare but a crucial part of this transformation is sustainability and resilient, the issue that is challenging to be defined. [54]
- The finance and banking sector: As the premier financial and technological hub in the Middle East, Saudi Arabia is actively growing its digital economy by embracing Artificial Intelligence (AI) to enhance innovation, economic growth and productivity. [55] Vision 2030 recognizes the significant role of digital technologies in supporting inclusive growth and socio-economic development, ensuring alignment with its strategic goals.
- The Educationional sector: Saudi Arabia's Vision 2030 places a strong emphasis on digital transformation, with AI playing a critical role in realizing this vision.

[50] Digital Regulation Platform, 'National Digital Transformation Strategy: Mapping the Digital Journey' (Digital Regulation) https://digitalregulation.org/national-digital-transformation-strategy-mapping-the-digital-journey/ accessed 19 February 2025.
[51] Ministry of Health (Saudi Arabia), 'Vision 2030 and the Health Sector' (Ministry of Health) https://www.moh.gov.sa/en/Ministry/nehs/Pages/vision2030.aspx accessed 19 February 2025.
[52] Ibid.
[53] Alexeis Garcia-Perez, Juan Gabriel Cegarra-Navarro, Mark Paul Sallos, Eva Martinez-Caro, and Anitha Chinnaswamy, 'Resilience in Healthcare Systems: Cyber Security and Digital Transformation' (2020) Journal of Business Research < [insert URL if available]> accessed 19 February 2025.
[54] Ibid.
[55] Nabil Tarifi, 'The Role of Sustainability and Innovation in Small Business Transformation in Saudi Arabia' (2024) 14 American Journal of Industrial and Business Management 492 <https://www.scirp.org/journal/paperinformation?paperid=132635>., Nadia Naim, Alhanoof AlDebasi and David Price, Innovation and Development of Knowledge Societies (Taylor & Francis 2025).

This initiative aims to diversify the economy, reduce dependency on oil, and position the Kingdom as a global leader in technology and innovation.

## 3. Regulatory and Policy Consideration in the Kingdom's Digital Transformation

Since the beginning, Saudi has worked to create a transparent, agile, and enforceable legal framework that encourages digital innovation while managing significant risks and guaranteeing adherence to the demands of the digital transformation. [56] In this context, the policy and regulations have played a critical role in facilitating and speeding up digital transformation by fostering an environment that encourages technological innovation and adoption. The main policies developed focus on encouraging economic diversification while tackling issues like data privacy, cybersecurity, and digital inclusion. [57] Key components of the policy adopted are transparency, accountability and openness across all sectors and involving the public and private sectors through outreach. These policy principles were created to ensure alignment with national and international agendas, promote innovation, and offer clarity, since the legal and regulatory environment forms the foundation of digital transformation. A robust legal and regulatory environment not only drive innovation, but will also ensure that transformation takes place in a way that is planned, inclusive and sustainable. [58]

In doing so, Saudi government has positioned itself as enabler of technological and socio-economic development and facilitators of partnerships, and for this purpose, it has swiftly adopted more cooperative ways to regulation under the vision 2030 goals in order to gain support from players in the private sector and harmonies

[56] AlGhazzawi & Partners, 'DIGITAL TRANSFORMATION in the KINGDOM of SAUDI ARABIA' (AlGhazzawi & Partners8 July 2024) https://www.ghazzawilawfirm.com/insights/digital-transformation-in-the-kingdom-of-saudi-arabia/.

[57] Mame Astou Diouf and others, 'A Conceptual Policy Framework for Leveraging Digitalization to Support Diversification in Sub-Saharan Africa' (2024) 2024 IMF Working Papers https://www.elibrary.imf.org/view/journals/001/2024/123/article-A001-en.xml.

[58] ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, '«Public Sector Transparency and Accountability MAKING IT HAPPEN' (2002) https://www.oecd.org/content/dam/oecd/en/publications/reports/2002/09/public-sector-transparency-and-accountability_g1gh2c53/9789264176287-en.pdf.

policies and regulations across sectors. Agile regulation is further supported by the Saudi Communications Commission (CITC) which its latest policies, initiatives, consultations, and frameworks encourage investment and innovation in the information technology sector (ICT) and other industries. [59]

Looking at the institutional aspect, the Digital Government Authority (DGA) was created in March 2021. Although it has not yet put any significant policy into effect, the Authority is responsible for creating technological standards and regulating the government cloud. It is also responsible for creating the national e-government strategy and managing digital government websites and platforms.

### 3.1.1. Laws Facilitating Digital Transformation:

Starting with the key laws that enabled the digital transformation of the country, there were a bundle of laws and regulations that provided the initial infrastructure for digitalization. [60] The laws supporting transformation include:

- Electronic Identification (eID): the law was originally adopted to enable and ensure secure identification for individuals and businesses in the digital environment. This law is essential to foster efficiency and trust in online interactions. [61]
- Electronic Signatures and Public Key Infrastructure (PKI): This Act offers a thorough legal framework to control and promote the use of electronic signatures and transactions through its implementing regulations. If certain conditions are met, this framework guarantees that electronic signatures will have the same legal significance as handwritten signatures. [62]
- The Telecommunications Act: the aim of the Act is to develop the ICT sector in a way that will boost its infrastructure and efficiency, encourage digital transformation, and encourage the use of ICT services across all domains.

[59] Country review: Saudi Arabia's digital transformation and collaborative regulation19
[60] DIGITAL TRANSFORMATION, 'Legal Parameters of Digital Transformation' (Digital Transformation | Erasmus+ Project2024) https://digital-transformation-tool.eu/legal-parameters-of-digital-transformation/.
[61] European Commission, 'EIDAS Regulation | Shaping Europe's Digital Future' (digital-strategy.ec.europa.eu4 April 2024) https://digital-strategy.ec.europa.eu/en/policies/eidas-regulation.
[62] United Nations, 'United Nations Uncitral Model Law on Electronic Signatures with Guide to Enactment 2001' (2002) https://uncitral.un.org/sites/uncitral.un.org/files/media-documents/uncitral/en/ml-elecsig-e.pdf.

Central to this is to foster innovation, entrepreneurship, and technical and research development in the ICT sector. [63]

- Electronic Transactions Act: this Act is of crucial importance since it establishes the validity of online transactions in the same manner as traditional, paper-based transactions. The Act aims to facilitate efficient and secure electronic exchanges in different sectors including banking, online commerce and e-governance. The Act also enables the introduction and development of new financial technologies and helps reduce the administrative burdens associated with paperwork and thereby promotes innovation and creative solutions. [64]
- E-Commerce Law and its implementing regulations: the digital transformation is about the strategic adoption of technology to enable e-business to access new markets and opening more opportunities. Thus, the E-commerce Law and its Implementing Regulations is designed to promote confidence in e-commerce transactions The E-Commerce Law and its Implementing Regulations are designed to develop e-commerce activities in Saudi Arabia, giving customers the protection they need against fraud and disinformation, and thereby strengthen confidence in eCommerce transactions. [65] The goal of the law is to give entrepreneurs and consumers legal certainty. To accomplish these goals, the law addresses concerns related to data protection, consumer rights, intellectual property, and digital advertisements in addition to defining commercial activity in the digital environment.

[63] Department of ICT, 'PNG DIGITAL TRANSFORMATION POLICY PNG Digital Transformation POLICY' (2020). https://www.ict.gov.pg/Policies/Digital%20Transformation%20Policy/PNG%20Digital%20Transformation%20Policy_21122020_updated.pdf.

[64] commonwealth, 'Electronic Transactions Act | the Commonwealth Connectivity Agenda Repository of Digital Policies and Regulations' (tradecca.thecommonwealth.org2012) https://tradecca.thecommonwealth.org/document/electronic-transactions-0.

[65] Alan A Ahi, Noemi Sinkovics and Rudolf R Sinkovics, 'E-Commerce Policy and the Global Economy: A Path to More Inclusive Development?' (2022) 63 Management International Review 27 https://link.springer.com/article/10.1007/s11575-022-00490-1.

### 3.1.2. The National Strategy for Data Protection:

The adoption of the Personal Data Protection Law and AI constitute the cornerstone in the digital transformation of the country by securing data privacy, responsible adoption of AI, and ethical governance. This legal and regulatory framework is in line with the international standards of fairness, accountability and transparency. [66]

Similar to technological infrastructure aspects, the Personal data protection law forms one of the major step in the nation digital transformation because it offers the guarantees that facilitate the growth of digital transformation by safeguarding people's rights and liberties with regard to their personal data. [67] The fundamental principle of data protection is designed around the idea that any use of personal data that harms people also harms the digital transformation. [68] The PDPL establishes strict data protection and privacy standards for the kingdom citizens and residents. The key protection principles adopted include fairness, lawfulness and transparency in data collections and use. It also provides individuals with greater control over personal information and privacy. [69]

### 3.2. Digital Transformation and Contextual Policy Challenges:

Digital transformation is one of the main pillars for achieving Saudi Arabia's Vision 2030, thus it has been the main goal of a number of national strategy documents including the Smart Government Strategy, ICT Strategy 2023, National Strategy for data and AI, Cyber Security Strategy and Digital Health Strategy. [70]

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[66] Oecd Artificial Intelligence Papers, 'AI, Data Governance and Privacy Synergies and Areas of International Co-Operation Oecd Artificial Intelligence Papers' (2024) https://www.oecd.org/content/dam/oecd/en/publications/reports/2024/06/ai-data-governance-and-privacy_2ac13a42/2476b1a4-en.pdf.

[67] World Bank, 'Data Protection in Development: Where Are We Headed?' (World Bank Blogs2025) https://blogs.worldbank.org/en/digital-development/data-protection-in-development--where-are-we-headed--.

[68] Digital Economy, 'The Importance of Data Protection for the Digital Economy' (2022) https://www.gra.gi/uploads/documents/data-protection/Privacy%20Awareness/Social%20Media%20Campaigns/The%20Digital%20Economy%20-%20Infographics.pdf .

[69] Data Protection Commission, 'Principles of Data Protection | Data Protection Commission' (Principles of Data Protection | Data Protection Commission2022) https://www.dataprotection.ie/en/individuals/data-protection-basics/principles-data-protection.

[70] Digital Regulation Platform, 'Digital Regulation Platform' (digitalregulation.org7 July 2023) https://digitalregulation.org/national-digital-transformation-strategy-mapping-the-digital-journey/.

A well- defined DX strategy at the national level can act as roadmap offering a framework for decision-making, aiding in the prioritization of national goals, and directing the distribution of resources in the direction of intended results. Additionally, it can improve stakeholder coordination and collaboration and assist in navigating uncertainty, even in times of change and difficulty. Additionally, it is commonly acknowledged that attaining the 2030 Agenda for Sustainable Development requires digital transformation.

The process of developing a national digital revolution, however, is intricate and involves many players and their interests in a number of areas, including government, energy, transportation, health care, education, and the environment. In order to be relevant in the rapidly evolving digital ecosystem, it necessitates constant modification, substantial investment, and the resolution of difficult ethical and legal dilemmas. It will probably be difficult to navigate the procedure, requiring the use of the right tools as well as thorough and well-coordinated approaches. [71] White recognised these challenges and divided them into the following four major categories:

- Complexity of perspectives and stakeholders.
- The fast and exponential growth of technologies.
- The boundaryless nature of digital transformation.
- The disruptive nature of digital transformation.

In this context and despite recent establishment, the Digital governance authority (DGA) identifies fragmentation in the public sector as a critical challenge for digital transformation, this is in fact due to the number of policies and institutions involved in digital transformation including the Digital Economy Policy and the National Committee for Digital Transformation (NCDT). [72] To address this fragmentation gap, the DGA prioritizes a holistic tracking approach above a specific strategy. The significance of considering digital transformation as an

[71] I bid.
[72] Development Sector, 'Country Review: Saudi Arabia's Digital Transformation and Collaborative Regulation' (2022) https://digitalregulation.org/wp-content/uploads/21-00770_R3_Saudi-Arabia-digital-transformation_E_web.pdf.

integrated system impacted by diverse technologies, industries, and difficulties rather than as a discrete initiative. [73]

This example illustrates how digital transformation presents a serious policy challenges and this in fact due to multiple reasons. These reasons are internationally.

## 4. Conclusions

Agile, inclusive and transparent policy framework is crucial to guarantee a sustainable and inclusive digital transformation. Such legislative and policy frameworks facilitate the adoption of rapidly changing technologies and the transformation's corresponding complexity, remarkable interdependencies, and unpredictability. This journey underpinned a comprehensive framework of laws and policies that promote innovation, economic growth, and security. The three main aspects of the national policy are to provide the digital and physical infrastructure for digital transformation, and to ensure globally competitive policy and regulatory frameworks. As a result, the adoption of an enabling legislative framework occurred early in the digital transformation journey, and this legislative framework can be characterized as successful and effective considering their role in establishing the legal infrastructure.

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[73] Dmitry Plekhanov, Henrik Franke and Torbjørn H Netland, 'Digital Transformation: A Review and Research Agenda' (2022) 41 European Management Journal https://www.sciencedirect.com/science/article/pii/S0263237322001219.

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