

DIGITAL TRANSFORMATION AS A STRATEGIC LEVER FOR ENHANCING SUSTAINABLE DEVELOPMENT IN IRAQ: AN ANALYSIS OF REALITY, STRUCTURAL CHALLENGES, AND FUTURE DEVELOPMENT OPPORTUNITIES

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Abstract

This research aims to provide a realistic analysis of digital transformation in Iraq during the period 2015-2025 and explore the most important strategic differences for social development. This is achieved by examining the alignment between digital indicators and development indicators, identifying the overarching challenges facing these companies, and anticipating future opportunities for advancement. The research employs a descriptive and analytical approach, relying on data from the Central Statistical Organization, the Central Bank of Iraq, and the United Nations Development Programme, as well as relevant academic literature. The research found a strong correlation between social transformations and digital libraries, manifested in digital contributions to improving financial security, managing government services, and providing access to services and services. However, the impact of digital transformation remains below expectations due to a set of structural challenges, most notably the weakness of the digital infrastructure, the continued dominance of traditional methods in the Iraqi economy, the weakness of local resources, and the limited availability of digital skills. The research concludes that Iraq's success in achieving comprehensive development during this period hinges on establishing an integrated development model for companies based on investment and digital knowledge.

1. Introduction

Linear In recent decades, the world has witnessed fundamental transformations driven by the digital revolution and the rapid advancements in information and communication technologies. This has made digital transformation one of the most important drivers of economic, social, and environmental development. Digital transformation is no longer merely a technological option aimed at improving work methods and services; it has become a strategic approach that reshapes economic, administrative, and social systems, directly impacting countries' ability to achieve the Sustainable Development Goals (SDGs) and enhance their competitiveness in the global economy.

In this context, sustainable development has emerged as a comprehensive development framework that seeks to balance the requirements of economic growth, social justice, and environmental protection. This has made the relationship between digital transformation and sustainable development one of the most prominent issues in contemporary economic and development literature. Digital technology offers significant opportunities to improve resource efficiency, develop public services, enhance transparency and governance, and raise levels of productivity and innovation, thus contributing to the achievement of many SDGs.

In Iraq, the period from 2015 to 2025 witnessed a significant increase in interest in digital transformation, driven by the expansion of internet use, e-services, and digital financial systems. This coincided with the government's efforts to align its development policies with the Sustainable Development Goals. However, this transformation faced numerous structural and institutional challenges that limited its capacity to achieve comprehensive development. Hence, the importance

of this research lies in its attempt to analyze the current state of digital transformation in Iraq, assess its role in supporting sustainable development, identify the most prominent challenges it faces, and explore future opportunities that could contribute to maximizing its developmental impact in the coming years.

1.1. Research Problem

Despite the relative progress Iraq has witnessed in digital transformation in recent years, sustainable development indicators have not reached the expected levels of progress. This raises questions about the nature of the relationship between digital transformation and sustainable development, and the extent to which digitalization can address the developmental challenges facing the Iraqi economy.

1.2. Significance of the Research

The Significance of the Research are to highlight the strategic role of digital transformation in supporting sustainable development, to diagnose the reality of digital transformation in Iraq during the period (2015–2025), to analyze the impact of digital transformation on economic, social, and developmental indicators, and finally, to provide a future vision to support decision-makers in formulating digital and developmental policies.

1.3. Research Objectives

The objectives of this study are to define the conceptual framework of digital transformation and sustainable development, to analyze the reality of digital transformation in Iraq during the period (2015–2025), to measure the impact of some digital transformation indicators on sustainable development, to identify the structural challenges facing digital transformation, and finally, to explore future development opportunities related to the digital economy.

1.4. Research Hypothesis

This research is based on the main hypothesis that digital transformation, as a strategic lever, contributes to enhancing sustainable development in Iraq. However, the extent of its impact is affected by a range of structural, institutional, and economic challenges that limit its ability to achieve a comprehensive developmental impact. Furthermore: 1) There is a positive relationship between the development of digital transformation indicators and the improvement of sustainable development indicators. 2) Weak digital infrastructure reduces the effectiveness of digital transformation in supporting sustainable development. 3) Strengthening digital governance and financial inclusion contributes to maximizing the developmental impact of digital transformation.

2. Method

The research adopted a descriptive-analytical approach, deemed most suitable for the nature of the study. This involved analyzing scientific literature and statistical data related to digital transformation and sustainable development indicators in Iraq during the period 2015–2025. Furthermore, comparative and interpretive analysis were employed to elucidate the nature of the relationship between the variables under study.

3. Results and Discussion

3.1. The Concept of Digital Transformation and Sustainable Development

3.1.1. The Concept of Digital Transformation

The concept of digital transformation has been defined in various ways by researchers and academics, but all perspectives focus on its impact on the organizational environment. Digital transformation has been defined as the cultural and organizational change of institutions through the seamless and intelligent integration of digital technologies, processes, and competencies across multiple levels within the organization. This concept encompasses the transformation of organizational operations, shifting them towards achieving established goals and strategies at a lower cost, with greater accuracy and quality (Bianchi, 2024).

It is also defined as a technological, cultural, and organizational development process undertaken by an organization to meet the specific needs of its customers, adapt to the demands of its employees' work, and leverage digital capabilities to build business models and digitize processes. This aims to improve functional and financial performance, as well as enhance competitive advantage. Furthermore, digital transformation represents a comprehensive approach to changing the ways in which an organization operates by introducing and utilizing digital technology to maximize the benefits of digital tools for improving production processes, enabling decision-making, and enhancing customer experience (Thompson, 2024). Therefore, digital transformation can be defined as the process of an organization shifting from a materialistic approach to one that prioritizes information, knowledge, and investment, creating and leveraging opportunities for achievement and efficiency by reducing costs and enhancing quality and performance.

3.1.2. Objectives and Importance of Digital Transformation

Organizations always strive to achieve strategic objectives through the implementation of digital transformation to improve performance efficiency, reduce costs, and enhance the work environment. Among its most important objectives (Hasan, 2025) are: 1) Creating an integrated information and data management system: This system unifies data collection mechanisms from various sources, ensuring accuracy and reliability for easy access, thus supporting the requirements of organizational work. 2) Enhancing the effectiveness of administrative decision-making: This is achieved by providing consistent and interconnected information and databases that contribute to improving the quality of decisions and reducing the challenges and obstacles related to knowledge. 3) Utilizing digital transformation technologies to develop the organizational environment: This fosters a culture of collaboration, interaction, and knowledge sharing among employees to raise the level of job performance. 4) Improved communication and coordination between administrative units: to ensure the smooth flow of information, enhance institutional integration, and achieve effective monitoring of resources and activities. 5) Increased efficiency of administrative and service processes: through automating and streamlining procedures to improve the quality of services provided to beneficiaries and reduce operational errors. 6) Optimization of resource utilization and operational cost savings: by reducing procedural costs and developing systems and electronic systems to achieve optimal resource use.

As for the benefits of digital transformation, they lie in (Boateng et al., 2021): 1) Enhanced efficiency of institutional performance and productivity: by improving operational processes and developing work methods that lead to higher quality outputs and ensure continuity of business and services. 2) Accelerated transaction completion and simplified administrative procedures: through redesigning processes and using modern digital work that reduces the time and effort required to provide services. 3) Improved quality of services for beneficiaries: by providing more accurate, objective, fast, and flexible services that enhance satisfaction and reduce operational errors. 4) Reduce operational costs and optimize spending: by decreasing reliance on traditional procedures and leveraging digital technology for more efficient resource management. 5) Enhance innovation and organizational development: by providing a flexible digital environment that supports the creation of new services and the development of existing ones. 6) Improve business management and decision-making efficiency: by providing information quickly and accurately, and by improving data flow between organizational units, thus supporting planning, monitoring, and evaluation.

3.1.3. The Concept and Objectives of Sustainable Development

The concept of sustainability has its roots in ecology, where it was used to describe how dynamic systems are formed and develop under structural changes that affect their characteristics, components, and patterns of interaction between their various elements. With the evolution of developmental thought, the scope of the concept of sustainability broadened to encompass the reciprocal relationship between economic activity and the natural environment. Both the concepts of economics and the environment share a common Greek root, "eco," meaning "home" or "nature." In this context, ecology studies the components of this habitat and the relationships between them, while economics focuses on managing and efficiently utilizing these resources and components (Al-Athari, 2016).

In Arabic, the concept of sustainability is linked to the verb "istadama," derived from the root "dawm," which denotes continuity, stability, and perseverance. From this root, the term acquired its

connotation of continuity over time. When translating the term "Sustainable Development" into Arabic, two common terms emerged: "التنمية المستدامة" (sustainable development) and "التنمية المستدامة" (sustainable development). Although often used interchangeably to denote the same meaning, some researchers consider the term "sustainable development" to be more linguistically accurate because it expresses an inherent quality based on continuity, while "sustainable development" refers to a state that is maintained or supported. Nevertheless, "sustainable development" has become the most common and widely adopted term in contemporary scientific literature and international reports (Al-Jawarin, 2015).

The concept of sustainable development has emerged on the international stage as one of the modern development concepts that has attracted increasing attention from researchers, policymakers, and international organizations, to the point that it has become a central focus in contemporary development literature. The definitions offered for this concept are numerous, reflecting the different intellectual frameworks and research objectives of the entities that have addressed it. International institutions and specialized bodies, as well as researchers in the fields of economics, sociology, and the environment, have contributed to enriching this concept and developing its theoretical and applied dimensions (Turki, 2010).

Sustainable development can be defined as a comprehensive development process aimed at meeting the needs of the present generation and improving their standard of living and well-being, without compromising the ability of future generations to meet their own needs. It is a development process that considers the rational use of natural resources, maintains ecological balance, achieves economic efficiency, and ensures social justice. It is also based on the principle of intergenerational responsibility through the preservation of natural, human, social, and cultural capital, enhancing the efficient use of available resources, and working to mitigate environmental degradation and reduce resource depletion, thus ensuring the sustainability of development opportunities and achieving well-being for both present and future generations.

Regarding the Sustainable Development Goals (SDGs), (Loumi, 2018): 1) No Poverty: End poverty in all its forms and ensure social protection and improved living standards. 2) Zero Hunger: Achieve food security, improve nutrition, and promote sustainable agriculture. 3) Good Health and Well-being: Ensure healthy lives and promote well-being for all. 4) Quality Education: Provide inclusive, equitable, and high-quality education and promote lifelong learning opportunities. 5) Gender Equality: Empowering women and achieving equality of rights and opportunities between the sexes. 6) Clean Water and Sanitation: Ensuring access to safe water and sanitation services for all. 7) Affordable and Clean Energy: Providing sustainable, reliable, and modern energy sources for all. 8) Decent Work and Economic Growth: Promoting sustainable economic growth and creating productive and decent employment opportunities. 9) Industry, Innovation, and Infrastructure: Developing infrastructure, promoting sustainable manufacturing, and supporting innovation. 10) Reducing Inequalities: Reducing economic and social disparities within and between countries. 11) Sustainable Cities and Communities: Making cities more inclusive, safe, and sustainable. 12) Responsible Consumption and Production: Promoting efficient resource management and reducing waste and pollution. 13) Climate Action: Taking effective action to combat and adapt to climate change. 14) Life Below Water: Protecting marine ecosystems and conserving water resources. 15) Life on Land: Protecting biodiversity and sustainably managing ecosystems and natural resources. 16) Peace, Justice, and Strong Institutions: Promoting the rule of law and justice and building effective and accountable institutions. 17) Partnerships for the Goals: Fostering international cooperation and partnerships to provide the resources and expertise needed to achieve sustainable development. Presents the research background, problem statement, research objectives, significance of the study, and relevant theoretical foundation or previous studies related to the topic.

3.2. The Reality of Digital Transformation and Sustainable Development in Iraq

3.2.1. The Reality of the Relationship

The relationship between digital transformation and sustainable development in Iraq is based on integration. Digital transformation is a modern tool that can contribute to accelerating the achievement of the Sustainable Development Goals (SDGs) in their economic, social, and

environmental dimensions. The higher the level of adoption of digital technologies in state institutions, the greater the efficiency of resource utilization, the better the quality of public services, and the stronger the principles of transparency and governance. This is directly reflected in the SDGs indicators.

The Impact of Digital Transformation on Supporting the Economic Dimension of Sustainable Development: During the period (2015–2025), digital transformation in Iraq contributed to improving economic performance by automating government procedures, developing electronic payment systems, reducing operational costs, and minimizing administrative waste. It also supported the business and investment environment by facilitating procedures and reducing bureaucracy, which aligns with SDG 8 (Decent Work and Economic Growth) and SDG 9 (Industry, Innovation, and Infrastructure). However, the weakness of the digital infrastructure and the Iraqi economy's dependence on oil have limited the full economic impact of digital transformation.

The Impact of Digital Transformation on Supporting the Social Dimension of Sustainable Development: On the social front, digital transformation has contributed to expanding access to essential services such as e-learning, digital healthcare, and government services, thereby improving social justice and reducing development gaps. This is directly linked to Sustainable Development Goals (SDGs) such as quality education (Goal 4), good health and well-being (Goal 3), and equality (Goal 5). However, the digital divide between urban and rural areas remains a significant challenge that limits the comprehensiveness of this impact.

The Impact of Digital Transformation on Supporting the Environmental Dimension of Sustainable Development: Digital transformation contributes to enhancing environmental sustainability by reducing paper consumption, improving environmental data management, and developing smart monitoring systems for natural resources. It can also support efforts to adapt to climate change and manage water resources, in line with SDGs 12 (Responsible Consumption and Production) and 13 (Climate Action). However, the applications of environmental digital transformation in Iraq remain relatively limited.

A Critical Assessment of the Relationship: Despite the significant potential of digital transformation in supporting sustainable development in Iraq, the practical reality indicates that this relationship is still in its formative stages. Digital transformation has not yet become a primary driver of development due to weak digital governance, limited technological investment, restricted institutional integration, the persistent digital divide, and inadequate infrastructure.

It can be concluded that digital transformation represents a strategic lever for achieving sustainable development in Iraq during the period 2015–2025, but its utilization remains partial. Therefore, enhancing this role requires adopting a comprehensive national digital strategy, developing digital legislation, and investing in infrastructure and human resources to ensure that digitalization becomes an effective tool for achieving sustainable development in its three dimensions.

3.2.2. The Impact of Digital Transformation Indicators on Sustainable Development in Iraq (2015–2025)

Digital transformation and sustainable development indicators in Iraq during the period 2015–2025 reveal an interconnected relationship between the gradual development of digital infrastructure and the relative improvement in some development indicators. However, this relationship has not yet reached the level of structural impact necessary to bring about a comprehensive developmental transformation. During this period, Iraq witnessed a significant expansion in the use of information and communication technologies, a rise in internet penetration rates, an increase in the number of ATMs and electronic financial services, and growing government interest in e-government projects and digital transformation. This reflects a gradual shift from traditional systems to an environment more reliant on digital technology for service delivery and resource management.

From a sustainable development perspective, improvements in digital transformation indicators have coincided with relative improvements in some social and economic indicators,

particularly in access to education, health, and banking services. This has contributed to enhancing financial inclusion and improving access to information and public services. Digitalization has also helped improve administrative efficiency and reduce the time and effort required to complete transactions, which supports the principles of good governance and transparency—key pillars of sustainable development (Al-Sayyid, 2016).

On the economic front, digital transformation applications have supported economic activity by facilitating financial transactions and expanding the scope of electronic banking services, as well as creating a more favorable environment for investment and digital entrepreneurship. However, the impact of these developments has remained limited due to the continued dominance of the oil sector in the structure of the Iraqi economy and the weak contribution of other productive sectors to the GDP. Therefore, during the period under study, digital transformation has not been able to achieve the required economic diversification, which is one of the most important requirements for sustainable development (Naama et al., 2019). On a social level, the increasing spread of the internet and digital technologies has provided broader opportunities for accessing knowledge, education, and government services, and has contributed to improved communication between institutions and citizens. However, the digital divide between governorates and between rural and urban areas remains a major challenge, limiting the equitable distribution of development gains resulting from digital transformation. Furthermore, the limited digital skills of some segments of society reduce individuals' ability to fully benefit from the opportunities offered by modern technology. Regarding the environmental dimension, digital transformation has significant potential to support the sustainable management of natural resources through smart systems, environmental data management, and reduced reliance on paper documents. However, the application of digital technologies in the environmental field in Iraq is still in its early stages and has not yet reached a level of tangible impact in addressing chronic environmental problems such as water scarcity, desertification, and pollution (Al-Waeli et al., 2026).

Overall, the findings indicate that digital transformation in Iraq during the period 2015–2025 played a supportive role in sustainable development, but it has not yet become a primary driver of it. This stems from a range of structural and institutional challenges, most notably weak digital infrastructure, limited investment in technology and innovation, a lack of integration among government institutions, and the need to develop legislation regulating the digital economy, cybersecurity, and data governance.

Based on the above, it can be concluded that the relationship between digital transformation and sustainable development in Iraq is a positive one with an increasing impact. However, maximizing this impact requires moving from a phase of quantitative expansion in technology use to a phase of comprehensive digital transformation based on innovation, institutional integration, and human capacity building. Furthermore, Iraq's success in achieving the Sustainable Development Goals in the future will depend largely on its ability to leverage digital transformation as a strategic tool to improve economic efficiency, enhance social justice, and achieve environmental sustainability within a comprehensive, long-term development framework. This can be illustrated through the following table, which shows the impact of digital transformation on some sustainable development indicators in Iraq.

Table 1 was collected by the author based on the Central Statistical Organization in Iraq, the Central Bank of Iraq, and the United Nations Development Programme. The table data reveals a significant development in digital transformation indicators in Iraq during the period 2015–2025. Internet usage increased from 38% in 2015 to 82% in 2025, and the number of ATMs rose from 580 to 2,800 during the same period. This reflects a gradual improvement in digital infrastructure and the expansion of electronic and financial services. This development coincided with a relative improvement in some sustainable development indicators, as the poverty rate decreased from 22.5% to 18.5%, and the Human Development Index rose from 0.668 to 0.696, indicating an improvement in the level of social and economic well-being. Conversely, the unemployment rate fluctuated throughout the study period, influenced by local economic conditions and global challenges, particularly the repercussions of the COVID-19 pandemic in 2020. These findings indicate a positive relationship between digital transformation and sustainable development. The expansion of digital technologies and electronic financial services has contributed to enhancing financial inclusion, improving access to public services, and boosting economic and social performance. However, the

pace of improvement in sustainable development indicators has been slower than the growth rates recorded in digital transformation indicators. This reflects a set of structural challenges that have limited the translation of digital impact into more inclusive development outcomes. These challenges include continued reliance on oil revenues, weak economic diversification, and disparities in digital access levels across governorates. Therefore, it can be concluded that digital transformation, during the study period, has been a supporting factor for sustainable development in Iraq. However, maximizing its developmental impact requires strengthening the integration between digital transformation policies and economic and social development programs. This integration will ensure that digital technology is utilized as an effective strategic tool for achieving long-term, inclusive, and sustainable development.

Table 1. Impact of Digital Transformation on Sustainable Development Indicators in Iraq

Year	Internet usage %	ATMs	Poverty rate%	Unemployment rate%	HDI
2015	38	580	22.5	15.2	0.668
2016	41	650	22	15.4	0.671
2017	45	760	21.8	15.6	0.673
2018	49	900	21	15	0.676
2019	55	1100	20.5	14.8	0.679
2020	60	1350	24.8	17.5	0.674
2021	66	1650	23	16.8	0.68
2022	70	2050	21.5	16	0.685
2023	73	2300	20	15.5	0.689
2024	78	2550	19.2	15	0.692
2025	82	2800	18.5	14.6	0.696

3.2.3. Structural Challenges and Future Development Opportunities for Digital Transformation in Iraq

Weak digital infrastructure and institutional integration, manifested in the limited quality of telecommunications and internet services, inadequate data centers, and the lack of electronic connectivity among government institutions. This limits the efficiency of digital services and weakens the effectiveness of digital governance and development decision-making (Al-Ali, 2024).

Deficiencies in the legislative, regulatory, and cybersecurity environment, resulting from incomplete legal frameworks related to the protection of personal data, signatures, and e-commerce, along with cybersecurity challenges. This affects trust in digital services and limits the expansion of the digital economy.

The continued dominance of a rentier economy and weak investment in research, development, and innovation. This limits the diversification of the economic base and reduces opportunities for building a knowledge-based economy capable of producing local digital solutions and promoting long-term economic sustainability.

The widening digital divide and weak digital financial inclusion, whether between governorates, urban and rural areas, or between different social groups, limits equal access to technology and financial and electronic services and affects the inclusiveness of sustainable development.

Limited digital skills and competencies, resulting from the weak alignment of education and training outputs with the requirements of the digital economy and the Fourth Industrial Revolution, negatively impacts the ability of institutions and the labor market to adopt modern technologies and improve productivity.

Environmental and climate challenges and the weak use of technology in managing them. Iraq faces increasing problems related to water scarcity, desertification, and climate change, given the limited use of smart digital solutions for managing natural resources and supporting the environmental dimension of sustainable development.

3.3. Future Vision and Digital Transformation Scenarios for Promoting Sustainable Development in Iraq

Based on the reality of digital transformation in Iraq during the period (2015–2025), and the indicators showing a gradual improvement in the levels of use of digital technology, electronic services, and financial inclusion, it can be affirmed that digital transformation possesses real potential that qualifies it to be a strategic lever for promoting sustainable development in the coming phase. However, the extent of the future impact of this transformation will depend on the state's ability to address the structural challenges related to digital infrastructure, governance, human capital, and economic diversification. From this perspective, the future vision is based on building an integrated digital development model that leverages modern technology to support economic growth, improve quality of life, and enhance environmental sustainability, in line with the Sustainable Development Goals and Iraq's long-term development vision.

This future vision entails a gradual transition towards a knowledge-based and innovation-driven digital economy, characterized by advanced digital infrastructure, electronically interconnected government institutions, and a supportive legislative environment for digital transformation. This will contribute to increased resource management efficiency, improved quality of public services, and enhanced transparency and good governance. The vision also aims to build an inclusive digital society that ensures equitable access to technology and digital services, fosters digital skills, and promotes innovation and entrepreneurship, positively impacting human development indicators, employment levels, and productivity. Based on current data, three main scenarios can be envisioned for the future relationship between digital transformation and sustainable development in Iraq.

3.3.1. Optimistic Scenario (Comprehensive Digital Transformation Scenario)

This scenario assumes the state's success in implementing broad institutional and legislative reforms, increasing investments in digital infrastructure, strengthening public-private partnerships, and developing digital skills and enhancing human capital efficiency. Under this scenario, digital transformation becomes a key driver of sustainable development by diversifying the national economy, improving the business environment, promoting financial inclusion, and developing smart government services. This is expected to lead to a tangible improvement in human development indicators, a decrease in poverty and unemployment rates, and an increase in productivity and economic competitiveness, thus placing Iraq on a more sustainable and stable path.

3.3.2. Baseline Scenario (Gradual Improvement Scenario):

This is the most realistic scenario given the current data. It assumes the continuation of government efforts in digital transformation, while some structural challenges remain unresolved. According to this scenario, digital transformation indicators will continue to improve gradually, particularly in the areas of e-government services and financial inclusion. However, its impact on sustainable development will remain relatively limited. This leads to gradual progress in human and economic development indicators, but at a slower pace than the developmental ambitions required to achieve a comprehensive structural transformation.

3.3.3. The Pessimistic Scenario (The Digital Stumbling Scenario)

This scenario assumes the continuation of structural imbalances and weak investment in technology and digital infrastructure, along with continued over-reliance on oil revenues and delays in institutional and legislative reforms. In this case, digital transformation will remain limited in its impact and its ability to contribute to achieving sustainable development will diminish, leading to a widening digital divide and the persistence of challenges related to poverty, unemployment, and low productivity. Iraq may also lose some of its competitiveness amidst the global acceleration towards a digital economy.

The preceding scenarios indicate that the future of sustainable development in Iraq will be closely linked to the success of digital transformation and its integration into development and economic policies. The more efficient the digital infrastructure, the better the digital governance, and the stronger the investment in human capital and innovation, the greater the ability of digital

transformation to fulfill its role as a strategic driver of sustainable development. Therefore, the most sustainable scenario is to adopt a comprehensive digital development model that links technology and development, and transforms digital transformation from a supporting technological tool into a strategic engine for economic growth, social welfare and environmental sustainability in Iraq.

4. Conclusion

The study data showed a clear development in digital transformation indicators in Iraq during the period (2015–2025). Internet usage increased from 38% to 82%, and the number of ATMs increased from 580 to 2,800. This reflects the expansion of digital infrastructure and the increased adoption of electronic and financial services. The improvement in digital transformation indicators coincided with a decrease in the poverty rate from 22.5% in 2015 to 18.5% in 2025. This indicates that the expansion of digital services and financial inclusion indirectly contributed to improving living conditions and supporting some dimensions of sustainable development. The Human Development Index (HDI) increased from 0.668 to 0.696 during the study period. This reflects a gradual improvement in health, education, and income indicators, and confirms the positive impact of digital transformation on enhancing human development, albeit to varying degrees. The data revealed that the unemployment rate did not decrease proportionally to the growth achieved in digital transformation indicators, fluctuating between 14.6% and 17.5% during the study period. This indicates that digital transformation in Iraq has not yet become a primary driver of sustainable job creation due to the limited productivity of the digital economy and the continued reliance on traditional sectors. The year 2020 witnessed a temporary decline in some sustainable development indicators. The poverty rate rose to 24.8%, unemployment to 17.5%, and the Human Development Index (HDI) fell to 0.674, despite the continued growth of digital indicators. This reveals that the impact of digital transformation is affected by economic shocks and exceptional circumstances such as the COVID-19 pandemic. A comparison between the growth rates of digital transformation indicators and sustainable development indicators indicates that the pace of digital development was much faster than the pace of developmental improvement. This demonstrates a gap between technological expansion and the ability to translate it into comprehensive and sustainable development gains. The study's findings confirm that the relationship between digital transformation and sustainable development in Iraq is positive and growing. However, it remains constrained by structural factors, including weak digital infrastructure, the continued rentier nature of the economy, limited institutional integration, and disparities in access to digital services across governorates. The results indicate that digital transformation in Iraq during the period (2015–2025) played a supportive role in sustainable development, but it has not yet reached the level of a primary development driver. This necessitates a shift from the stage of quantitative expansion in technology use to a stage of comprehensive digital transformation based on innovation, digital governance, and economic diversification. Accordingly, the findings of this study provide a basis for several recommendations namely: 1) Accelerate the completion of the national digital infrastructure by expanding telecommunications and high-speed internet networks and improving the quality of digital services in all governorates, in line with the rapid increase in the number of internet users and to enhance the developmental benefits of this growth. 2) Enhance digital financial inclusion by increasing the deployment of ATMs, electronic payment systems, and digital banking services, particularly in underserved areas, thereby integrating broader segments of society into the formal economy. 3) Link digital transformation projects to poverty reduction policies by leveraging digital platforms to manage social protection programs, direct government support, and improve targeting of vulnerable groups, ensuring the maximization of the social impact of digital transformation. 4) Develop national digital training and qualification programs targeting youth, graduates, and public and private sector employees, aiming to enhance digital skills and align educational outcomes with the demands of the digital economy and the future labor market. 5) Stimulate investment in the digital economy and technology sectors to create sustainable job opportunities and reduce unemployment rates, especially in software, e-commerce, fintech, and artificial intelligence. 6) Strengthen the integration of digital transformation and human development by expanding e-learning applications, digital health, and smart government services, positively impacting the components of the Human Development Index. 7) Reducing the digital divide between governorates and rural and urban areas by directing digital investments towards underserved regions, ensuring equitable distribution of development opportunities and promoting social inclusion. 8). Diversifying the economic base and reducing dependence on the oil sector by directing digital transformation to support productive sectors and knowledge-based industries, thereby enhancing the sustainability of economic growth and mitigating the economy's vulnerability to external shocks. 9) Strengthening

digital governance and developing the legislative environment by enacting and updating laws related to data protection, cybersecurity, electronic signatures, and e-commerce, thereby increasing trust in the digital environment and encouraging investment. 10) Establishing a national system for monitoring and measuring the impact of digital transformation on sustainable development, based on periodic quantitative indicators, to enable decision-makers to evaluate performance, adjust course, and ensure that digital policies align with the Sustainable Development Goals.

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