The Role of Digital Technologies in Achieving Industrial Growth in Arab Countries

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Chapter 10 of the new *Unified Arab Economic Report (2025)* examines the vital role of digital technologies in achieving industrial growth within Arab countries, emphasizing how the Fourth Industrial Revolution has fundamentally transformed the global economy and the production landscape. The chapter notes that industrial revolutions have always been closely tied to economic prosperity, as each stage of technological advancement has led to higher productivity and rising per capita income. The First Industrial Revolution started from 1750 to 1850 marked the rise of mechanization through steam power, transforming textile and manufacturing industries. The Second Industrial Revolution launched in 1850 to 1914 was driven by electricity, steel, and mass production, ushering in rapid industrial expansion. The Third Industrial Revolution started in 1945 until 2010 introduced computers, electronics, information technology, and the internet laying the groundwork for automation and the digital era. In the case of the Fourth Industrial Revolution, digital technologies are not merely tools of automation but rather agents of deep transformation, altering the very structure of industries and economies. They have created interconnected systems that facilitate rapid innovation and adaptive production, allowing firms to integrate smart technologies into all stages of manufacturing and service delivery. Consequently, digitalization is now viewed as a core driver of sustainable industrial growth and competitiveness in Arab economies.

Digital technology, as defined in the chapter, encompasses a wide range of tools and systems that enable the generation, processing, and exchange of information. It includes information technology, communication systems, the Internet of Things, and multimedia platforms that merge text, sound, and visuals. These technologies collectively serve as the foundation of digital transformation, allowing information to be stored, analyzed, and shared efficiently across networks. By digitizing operations and improving the flow of information, industries can enhance decision-making, productivity, and innovation capacity. The chapter stresses that

the rapid expansion of these technologies, particularly in the context of the Fourth Industrial Revolution, has given rise to advanced applications such as artificial intelligence, block-chain, virtual and augmented reality, robotics, cloud computing, and big data analytics – all of which redefine how industrial processes are managed and executed.

Artificial intelligence, for example, has become a key element in optimizing production and managing supply chains by predicting patterns and automating complex tasks. Big data enables firms to analyze vast volumes of information to improve forecasting and resource allocation, while block-chain ensures transparency and security in digital transactions. Cloud computing, on the other hand, facilitates remote access to industrial data and applications, reducing costs and improving efficiency. Similarly, the integration of virtual and augmented reality enhances industrial design, training, and simulation processes, while cybersecurity plays a protective role by safeguarding data and preventing digital threats. The combination of these technologies has created new business models that support flexibility, innovation, and competitiveness across multiple sectors.

The chapter goes on to explore the applications of digital technologies across different areas of the Arab economy. In agriculture, smart systems and sensors powered by artificial intelligence are used to monitor soil quality, weather patterns, and crop yields, contributing to resource efficiency and sustainability. In transportation, digital platforms have improved logistics, navigation, and mobility through smart traffic management and real-time tracking. The trade sector has benefited enormously from e-commerce and online platforms, which facilitate sales, secure transactions, and global market access. Artificial intelligence is even employed to tailor consumer products to specific preferences, enhancing marketing effectiveness.

The healthcare sector, especially after the COVID-19 pandemic, has witnessed a surge in digitalization, as telemedicine, electronic medical records, and digital diagnostic tools have expanded access to care and improved service efficiency. Similarly, the education sector has embraced digital learning, enabling remote instruction, virtual classrooms, and skill development through interactive platforms. The financial sector stands out as one of the most transformed industries, as banks and financial institutions have adopted Fintech solutions, digital payments, and online banking, leading to faster transactions and enhanced accessibility. The energy sector also benefits from digital systems that monitor energy use, optimize production, and promote renewable energy integration. Even in cultural fields, digital tools have contributed to preserving heritage, promoting creativity, and engaging youth in cultural innovation. Across all these sectors, however, the industrial sector remains the largest beneficiary, as digital technologies directly boost productivity, product quality, and the overall competitiveness of Arab manufacturing.

To evaluate the progress of digital transformation in the region, the chapter reviews several international indicators that measure technological readiness and digital adoption. According

to data covering the period from 2015 to 2023, Arab countries have witnessed a notable increase in internet penetration, mobile usage, and access to digital infrastructure, particularly within the Gulf Cooperation Council (GCC) states. The United Arab Emirates, Saudi Arabia, and Qatar rank among the highest in the world on the Government AI Readiness Index, reflecting their commitment to developing smart governance and digital public services. The E-Government Development Index published by the United Nations also places GCC countries in advanced positions globally, with the UAE and Saudi Arabia leading in infrastructure and online service provision. In contrast, countries such as Lebanon, Jordan, Tunisia, Egypt, and Morocco show moderate but steady progress, constrained by limited investment and weaker infrastructure. Conflict-affected nations like Yemen, Syria, Libya, and Sudan, however, face the greatest challenges, given their fragile digital environments and restricted access to technological resources.

Ranking of Arab Countries in the Government Artificial Intelligence Readiness Index for 2023

Country	Index Value	Rank		2022 Ranking	+
		Arab Ranking	Global Ranking		-
United Arab Emirates	70.42	1	18	22	+
Saudi Arabia	67.04	2	29	39	+
Qatar	63.59	3	34	36	+
Oman	58.94	4	50	52	+
Jordan	56.85	5	55	63	+
Bahrain	56.13	6	56	56	---
Egypt	52.69	7	62	65	+
Kuwait	49.86	8	69	69	---
Lebanon	47.62	9	76	73	-
Tunisia	46.07	10	81	70	-
Morocco	43.34	11	88	87	-
Algeria	35.99	12	120	111	-
Iraq	33.40	13	133	131	-
Palestine	33.14	14	134	---	---
Djibouti	29.95	15	155	144	-
Mauritania	27.09	16	168	150	-
Libya	25.31	17	173	149	-
Sudan	24.51	18	177	169	-
Comoros	22.62	19	181	166	-
Somalia	21.98	20	183	---	---
Yemen	19.89	21	188	179	-
Syria	18.12	22	192	180	-

Source: Oxford Insights Report for 2023

The table clearly demonstrates the wide digital divide among Arab nations, with Gulf countries leading the region and ranking within the top global quartile, while others lag

significantly behind. The UAE ranks number 18th globally with a score of 70.42. This reflects major government-led initiatives in artificial intelligence and smart governance. In contrast, Syria ranks last in the region due to conflict and weak infrastructure. The data highlight the urgent need for coordinated efforts to close these gaps through investment, education, and policy reform.

The chapter finds that this disparity in digital performance underscores the need for greater investment in technological infrastructure and human capital across the Arab region. It highlights that the adoption of digital technologies not only enhances industrial output but also strengthens export performance by improving efficiency and reducing costs. Digital platforms and block-chain-based systems have made it easier to conduct cross-border trade and logistics, thereby expanding market reach for industrial goods. The data presented in the chapter show a positive correlation between ICT development and industrial exports, particularly in countries that have heavily invested in digital transformation, such as Saudi Arabia, the UAE, and Qatar.

Lastly, the chapter offers a comprehensive conclusion and set of recommendations aimed at accelerating digital industrial growth in Arab economies. It acknowledges that despite significant progress, especially in the Gulf region, most Arab countries still exhibit modest industrial digitalization due to limited infrastructure, financial constraints, and a shortage of skilled workers. Nonetheless, the experiences of the more advanced economies in the region demonstrate the potential for digital technology to act as a catalyst for economic diversification and industrial competitiveness. The chapter identifies several key priorities for Arab governments and industries. First and foremost is the need to enhance digital infrastructure by expanding broadband networks, establishing data centers, and promoting cloud and communication systems that support industrial activity.

Equally important is investing in human capital, as the digital transformation of industries requires a workforce capable of operating, maintaining, and innovating with advanced technologies. This entails designing national programs for education, training, and reskilling that align with the demands of the modern digital economy. In addition, the chapter stresses the necessity of strengthening cybersecurity to protect digital industrial systems from cyber threats and data breaches. Updating strategic national plans is also deemed essential to ensure alignment with international technological developments and to increase the flexibility of industrial policies.

Furthermore, the chapter calls for improving the legal and regulatory frameworks governing data protection, e-commerce, and intellectual property to foster an environment of trust and innovation. It highlights the need for modernized laws that accommodate rapid technological change, especially in areas such as electronic transactions and digital platforms. Another major recommendation is to promote Arab cooperation through joint digital projects, regional partnerships, and shared research initiatives, as collective efforts can reduce the technological

gap and enhance regional competitiveness. The chapter also emphasizes the importance of establishing sustainable financing mechanisms, including joint Arab funds and partnerships between public and private sectors, to finance digital industrialization and technology-driven development projects.

Finally, the chapter outlines the broader implications of digital transformation for industrial policy, noting that technology is no longer optional but a prerequisite for economic progress. Digitalization strengthens production systems, enhances competitiveness, and enables countries to better face global challenges. It extends benefits beyond the industrial sector to include education, health, finance, and culture, thereby contributing to comprehensive and sustainable development. **The chapter concludes that Arab governments must treat the digital economy as a national priority, investing in infrastructure, people, and innovation ecosystems to achieve long-term industrial growth. Hence, the region can transform its economic structure, reduce dependency on traditional sectors, and position itself as a competitive player in the global digital economy.**

In essence, the chapter affirms that digital technologies have become the cornerstone of modern industrial development in the Arab world. They represent both a challenge and an opportunity: a challenge because they require deep structural reforms, strategic investment, and capacity-building, yet an opportunity because they hold the key to achieving inclusive, innovative, and sustainable economic growth. With a shared vision, regional cooperation, and commitment to technological advancement, Arab countries can harness the full potential of digital transformation to build resilient, future-oriented economies capable of thriving in the digital age.

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