



Bridging the Digital Divide: Gender and Skilling in the Middle East and North Africa Region

Rasha Hassan

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Introduction

The digital economy is currently witnessing unprecedented growth, especially in the aftermath of COVID-19 pandemic which forced the world to conduct contactless transactions and adopt technology in everyday life. Digital connectivity has a key role to play not just in the economy and for education, but also in addressing social issues and accessing vital information, products, and services such as those related to health, as the pandemic demonstrated.¹

It is anticipated that the digital economy will contribute approximately US\$1.2 trillion to the US economy and approximately \$3.8 trillion to the Chinese GDP. According to an International Data Corporation (IDC) study, the digital economy in the Asia Pacific was valued at \$1.16 trillion in 2021, accounting for 60 percent of the total GDP (GDP). Similarly, Europe's Digital Single Market opens up new avenues for entrepreneurs while also allowing current businesses to generate jobs and transform public services (LAS, 2020). According to International Labour Office data, between 2010 and 2016, the demand for digital jobs expanded two to three times faster than the demand for traditional work. The total revenue of the sharing economy in 2015 was between \$110 billion and \$530 billion, with a growth rate of more than 25 percent expected by 2030.² In Middle East and North Africa (MENA), however, the digital economy accounts for a mere 4 percent of the region's GDP, a small number in comparison to the global average of 22 percent. Progress in this regard is vital for the region—when compared to other

traditional sectors, the impact of the digital economy on economic growth is five times greater.³

Countries in MENA possess the ingredients necessary to leapfrog into the digital future. They have large, well-educated youth populations that have already adopted new digital and mobile technologies on a wide scale, as well as a highly educated female population, a combination with the potential to drive future growth and job creation. This makes it critical for MENA countries to become “learning societies”: as the digital economy grows and modifies the types of jobs available, the demand for skills will also increase.

However, barriers to the implementation of digital transformation and government strategies persist. These include a lack of familiarity with digital technologies, a lack of awareness of the importance of digital transformation in the public sector and society at large, and an inability to appropriately assess their strategic value and potential in making the public sector more efficient.⁴ Furthermore, MENA's regional female labour force participation rate of 21 percent is among the lowest in the world, far below the global average of 50 percent. Further still, unemployment among young graduates of both genders in MENA is high, at around 35 percent. Young people lack employment opportunities, and rural women lack access to markets, as well as to raw materials, social services, health care, financing, and information.⁵ Driving innovation into the public education system is another challenge currently being addressed through PPPs for the private sector to support the digital transformation.⁶

Realisation of the benefits of the digital transformation requires that these challenges be addressed. To this end, a strong education system and soft skills, as well as the ability to solve problems, learn, and think creatively, are essential. The digital economy may demand of workers a larger set of skills, such as problem solving, ICTs, self-organisation, or interpersonal skills; in contrast, running machines and working on assembly lines require little more than literacy and numeracy ability. However, a considerable percentage of the workforce may lack the necessary skills in this new technology paradigm, putting them in danger of being left behind in a digitally intensive labour market.⁷ It is now evident that as new technologies are adopted by enterprises worldwide, skills shortages in digital skills and the skills needed for jobs of the future will become more pronounced—more so since populations have shifted to remote work, particularly after the COVID-19 pandemic.⁸

Against the backdrop of this digital transformation, our report, employing a gender perspective, seeks to highlight the challenges related to the digital economy, artificial intelligence, and automation that exist in the Middle East and North Africa region. In order to do this, it examines the current state of education—and skills required—in the MENA

region's digital economy by focusing on three case studies from the United Arab Emirates, Jordan, and Egypt. Importantly, the paper also seeks to review and assess various policies that consider digitalisation and automation, as well as policies that enable women's empowerment. We focus on three major research questions in this report: (1) What are the current levels of digital skills in the selected MENA countries based on gender statistics? (2) What policies and strategies have been implemented with respect to the digital economy? (3) How gender sensitive are these policies?

Accordingly, this report aims to achieve three goals:

1. Understanding the current states of education and skills required in the MENA region's digital economy.
2. Identifying existing skill systems in the context of the digital economy, as well as relevant policies and strategies, in three MENA case countries.
3. Examine how are policies and strategies, including access to skills training, reskilling, and upskilling, align with the demands of women and girls in the region

Methodology

To achieve the objectives outlined above, this study employed an exploratory-descriptive methodological strategy based on qualitative research methodologies. First, we reviewed all national and international statistics to identify the current state of digital economy and automation in the selected countries in the MENA region. This was followed by a mapping exercise on current strategies and policies aimed at enhancing citizens' capacities in the effective use of digital technologies, which necessitates a diverse set of skills such as ICT specialist skills, generic ICT skills, STEM, and artificial intelligence.

After mapping all relevant policies and strategies, selected policies were evaluated based on their relevance to the study objectives and gender responsiveness. Then, in each of the three countries, a semi-structured interview guide was produced to interview three education and technology policymakers or experts in order to uncover how policies were conceived and implemented with gender responsiveness in mind.

To select the case studies, this research adopted a systematic multi-step process:

First, According to World Economic Forum 2017 and Sami Mahroum 2021, the economy of the MENA region can be classified into four main groups. The Gulf Cooperation Council's natural resource-rich, high-income countries (GCC) have strong online penetration, high literacy rates, and relatively low youth unemployment in most cases. The second group includes Jordan and Lebanon, which have

higher internet penetration due in part to their compact, urban structure. The third group consists of low-income countries such as Egypt, Algeria, Morocco, and Tunisia, which have lower literacy rates and a total of 100 million individuals who remain unconnected. (4) In addition to the three groups mentioned above, there is a fourth group that includes conflict-affected countries such as Yemen, Iraq, Syria, Palestine, Sudan, and Libya, as well as least developed countries (LDCs). For the purposes of this study, the last group was excluded, and only the first three groups (high-, middle-, and low-income countries) were studied. (Comoros, Djibouti, Mauritania and Somalia).

Second, after dividing the MENA region countries based on the three groups mentioned above, countries were assigned a score based on their progress in some selected indicators that related to the study objectives, such that the region's progress in key metrics such as gender equality and digital economy (A, B, C) could be studied. The country with the highest score was as a case study in its representative economy. The main factors that utilised to analyse countries' gender equality and digital economy were as follows.

» Education Equality

» Economic Equality

» Human Capital Index

» ICT development Index

» Business and law index

Considering the criteria outlined above, the United Arab Emirates (UAE) was chosen to represent high-income countries in the Middle East and North Africa region, while Jordan was chosen to represent middle-income countries and Egypt chosen to represent low-income countries.

In the following sections, we first present an overview of the current state of digital economy in the Arab

region with a focus on the three selected countries (UAE, Jordan and Egypt), then explore each country's digital skills scenario and its relation to the socio-economic and educational context. After this, we map the related policies and strategies in each country, including access to skills training, reskilling, and upskilling, and evaluate if they consider women and their unique contexts.

An overview of the digital economy in the MENA region

The Fourth Industrial Revolution and recent global health crises have had a profound impact on the availability of and demand for skills. As a result, the labour market in many countries is seeing a skill mismatch.⁹ Digitisation and the increase in automated processes have led to greater demand for technical skills that promote problem-solving and innovation, especially in jobs involving science, technology, engineering, and mathematics (STEM). Additionally, the creation, use, and maintenance of technology is likely to necessitate specific occupational skills apart from mere technical abilities. These newly necessary cognitive abilities will need to be supplemented by a range of non-cognitive social and behavioural skills, commonly acquired in early infancy and at school. This is fundamental to promoting resilience to change and cultivating the adaptive capacity to consistently develop skills.¹⁰

It is now evident that digital skills are key to gaining access to a wide range of opportunities in the twenty-first century. Countries that implement comprehensive digital skills policies ensure that their populations have the skills to be more employable, productive, creative, and successful digitally while also remaining safe, secure, and healthy. Critically, digital skills strategies must be modified on a regular basis in tandem with the emergence of new technologies and their implications for the digital economy and society. (ITU, 2018)

According to World Bank data, the employment landscape of the Middle East and North Africa

(MENA) region does not include enough “jobs of the future”—tasks that demand non-routine interpersonal and analytical skills.¹¹ Only a quarter of the region's employed workers were in high-skill occupations in 2018, while over a half were in medium-skill occupations that could be automated. In the case of the private sector, the share of high-skilled employment is even smaller.

Countries in the region have implemented numerous digitalisation and artificial intelligence strategies and policies to address the skills gap, which can be accomplished by upskilling/reskilling the current workforce and matching educational programmes with employer needs. According to estimates, efficient worker upskilling/reskilling may increase global productivity by 3 percent by 2030, increase global GDP by at least \$6.5 trillion, and generate 5.3 million jobs worldwide.¹² Such strategies and policies have recently been implemented in our three case study nations: the United Arab Emirates, Jordan, and Egypt.

The UAE has developed policies to equip its younger generation with the skills required to address future challenges and reach the core goals of its economic visions 2030 and 2071.¹³ Furthermore, the region approved an advanced skills strategy aimed at strengthening the concept of lifelong learning for UAE citizens and residents, and launched the national programme for advanced skills, which encompasses soft skills and technical skills.¹⁴ Others that focus on promising sectors are the Artificial Intelligence

strategy, the national digital economy strategy, the National Program for Artificial Intelligence, the National strategy for science, technology and innovation.

In addition, a National Education 2020 strategy and the Abu Dhabi Center for Technical and Vocational Education and Training have been established to develop policies and standards that effectively regulate technical and vocational educational institutions, increase the number of skilled Emirati youth in rewarding career paths, and foster life-long learning and personal development.¹⁵

Jordan's digital transformation, digital economy, and entrepreneurship have been fuelled by the country's expansion of the portfolio of the Ministry of Communications and Information Technology to the Ministry of Digital Economy and Entrepreneurship in 2019.¹⁶ Acknowledging the leading role of Artificial Intelligence (AI) in the development of a sustainable digital-led economy, The Ministry of Digital Economy has developed the National Strategy for Artificial Intelligence and its action plan 2023-2027.¹⁷ The government of Jordan also developed the national strategy for public policy and entrepreneurship (2021-2025) to support entrepreneurs' aspirations.

In a bid to strengthen digital skills acquisition, the Jordanian government passed the Vocational and Technical Skills Development Law and established the institutional framework for sector-specific skills development, especially in the digital or ICT economy. The law approved the establishment of the Vocational and Technical Skills Development Commission (VTSDC), which is responsible for the development of vocational and technical education and training. In addition, in February 2019, the government also

instituted a National Skills Council for ICT (NSC-ICT), which works as an advisory body to the VTSDC.¹⁸

The Arab Republic of Egypt is currently well positioned to emerge as a digital leader in the Middle East and North Africa (MENA) region.¹⁹ To fully embrace the digital economy for growth and job creation, the government launched the ICT Sustainable Development Strategy 2030 in 2019. Furthermore, it is working to promote the Information Technology industry and boost Egypt's global ICT competitiveness. To this end, the Information Technology Industry Development Agency (ITIDA) was established in 2004 with the goal of spearheading the development of Egypt's ICT industry to increase its global competitiveness, thereby contributing to the country's job creation and economic growth.²⁰

In November 2019, the Egyptian government established the National Council for Artificial Intelligence—a cooperation of governmental organisations, prominent academics and practitioners from leading businesses in the field of AI. In 2021, the National Artificial Intelligence (AI) Strategy to Create an AI Industry in Egypt came into being, encompassing the development of skills, technology, ecosystem, infrastructure, and governance mechanisms to assure its sustainability and competitiveness.²¹

To analyse policy frameworks aimed at structuring workforce development, especially their sensitivity to gender and their readiness for the Fourth Industrial Revolution, six strategies were chosen based on their relationship to digitalisation, automation, and artificial intelligence, and gender consideration. In each of the three countries, the following strategies were chosen

1: The United Arab Emirates (UAE)

1.1 Economic and Labour Force Participation Context

UAE, formally established in 1971, is a federation of seven Emirates. The economy of UAE enjoys a high degree of political stability, ranking the highest on various indices among fourteen countries in the MENA region. Moreover, it has an overall score that is significantly higher than the regional and world averages with an estimated GDP in 2021 of \$410.2 billion and a real GDP growth rate of around 2.2 percent. UAE also has six of the world's oil reserves and the seventh-largest proven natural gas reserves. However, diversification plans implemented so far have led to approximately 70 percent of GDP

generated by sectors other than oil and gas. Notably, the UAE launched 50 new economic initiatives in 2021 to boost the country's competitiveness and attract \$150 billion in foreign direct investment over the next nine years.²²

Global reports and statistics rank the UAE as having one of the best economies in the world and the Arab region. It has been ranked among the top MENA countries in the global human capital index (WB, 2020), as well as the business and law index (WB, 2022). Furthermore, it scored extremely well in terms of poverty reduction and quality education in the SDG index, although significant hurdles to attaining gender equality exist, as do challenges to decent work and economic growth.²³ In the areas of digitalisation and automation, the government of UAE has

Table 1
Selected MENA countries and their respective strategies

COUNTRY	STRATEGY					
UAE						
	The Digital Economy Strategy	Artificial Intelligence National Strategy	The National Strategy for Employment	The National strategy for Advanced Skills	National Strategy for Empowerment of Emirati Women	
	Jordan					
		The Digital Economy Strategy	Artificial intelligence National Strategy	The National Strategy for Employment	The National Strategy for Women Empowerment	
		Egypt				
The Digital Economy Strategy	Artificial intelligence National Strategy		The National Strategy for Technical and Vocational Education	The National Strategy for Women Empowerment		

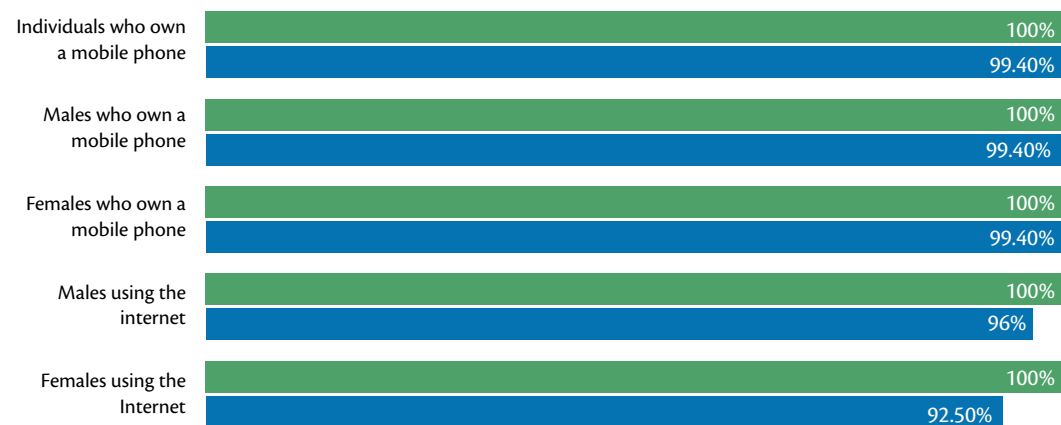
acknowledged that innovation and technology are the driving forces behind the country's economic and social stability. As a result, it ranks the highest in the digital economy in the Arab region (Arab digital economy, 2022), among the top ten countries globally in ICT adoption and digital legal framework, and the first in the Arab world.²⁴

Labour force participation: ILO estimates for people aged 15+ in 2023 revealed that female rates of participation are very low compared to male rates (52.6 percent for women and 90.3 percent for men).²⁵ Figure 1 indicates that women's participation rate in professional and elementary occupations jobs (24.9 percent and 35.7 percent, respectively) is higher than men's (16.4 percent and 8.4 percent). On the other hand, male labour force participation is increasing in technical occupations such as craft and related trades workers (16.3 percent compared to 0.4 percent for females) and as plant and machine

operators and assemblers (8.7 percent for men and 0.4 percent for women).²⁶

ICT and Digital Economy: UAE has made progress in its transition to a digital economy in the last five years. The digital economy contributes 4.4 percent to the GDP, helping reinforce the competitiveness of the national economy. According to the Global Entrepreneurship Monitor (GEM 2022), the UAE has been ranked as one of the best countries in the world in entrepreneurship and the leading Arab and regional e-commerce center. It is evident that the UAE's promotion of ICTs has been successful—100 percent of UAE residents use the internet. The country also has the highest number of residents owning smartphones, with 100 percent of mobile users possessing personal smartphones and social media usage found to be over 70 percent.²⁷ Finally, UAE has also made significant progress in e-government services in the recent past; it is ranked fourth worldwide in investment

Figure 1
Key indicators of ITC infrastructure by gender, 2017 - 2020, (UAE) in percentage



Source: The Telecommunications and Digital Government Regulatory Authority,

in telecommunications services and in the digital adaptation of its legal framework.

The Government of UAE considers itself the world's first fully paperless Government—a feat achieved through the complete digitalisation of the education, health, community development, economy, and security sectors. Among other initiatives, 525 of the country's 589 schools have participated in a self-evaluation process that will eventually allow for their conversion to smart schools.²⁸

1.1.1 Educational and TVET Context

The UAE recognises education as an area that demands total commitment from both the government and the private sector. Article 17 of the Constitution stresses the fundamental role of education in the progress of society and makes education compulsory at the primary stages, while ensuring that all girls and boys receive free, equitable, and quality primary and secondary education.²⁹ In general, the educational system is divided into four tiers covering 14 years of education: kindergarten (KG1-KG2), primary or elementary level (Grades 1-4, also known as stage 1), intermediate level (Grades 5-8, known as stage 2), and secondary level (Grades 9-12, known as stage 3).³⁰

Through cycles 2 and 3, specific streams offer more differentiation based on students' academic performance and inclination. Starting in Grade 6 up till Grade 12, the Elite stream caters to academically outstanding students, with a focus on mathematics and science. Students apply to join the Elite stream and get examined through the standardised, computer-based Advantage Emirates Standardised Test (EmSAT), administered in Grades 4, 6, 8, and 10.

After Grade 8, students may choose either to remain in a general stream or join an applied stream.

For students interested in applied learning and practical skills, this stream offers a curriculum that involves vocational skills, competency-based assessments, a focus on a specific sector (such as engineering, business administration, or health and social care), and two weeks of work placements in Grades 11 and 12.³¹ After finishing Grade 9, students in the general stream can choose to stay or to join the advanced stream, also depending on their academic performance.

The education sector in the UAE has improved significantly. In 2020, public schools numbered 954 (35.7 percent of total schools), while the number of private schools was 1716 (64.3 percent of total schools).³² Figure 2 indicates that approximately the same percentage of boys and girls was seen in most educational cycles, with the exception of the secondary vocational stage, where males outnumber females (63.03 vs. 36.97). The findings of this study may help explain the gender disparity in vocational and technical occupations shown in figure 2.

UAE statistics indicate that almost the same number of males and females are university graduates in the fields of information and technology, national science, statistics, and mathematics. However, as figure 3 demonstrates, there is a significant gender gap in certain specialisations, like engineering, manufacturing, and construction, and business administration and law.

Although some progress has been achieved in educating Emirati women, challenges persist in STEM education, including a lack of interest in STEM fields

Figure 2
Students By Level of Education and Gender, 2019/2020

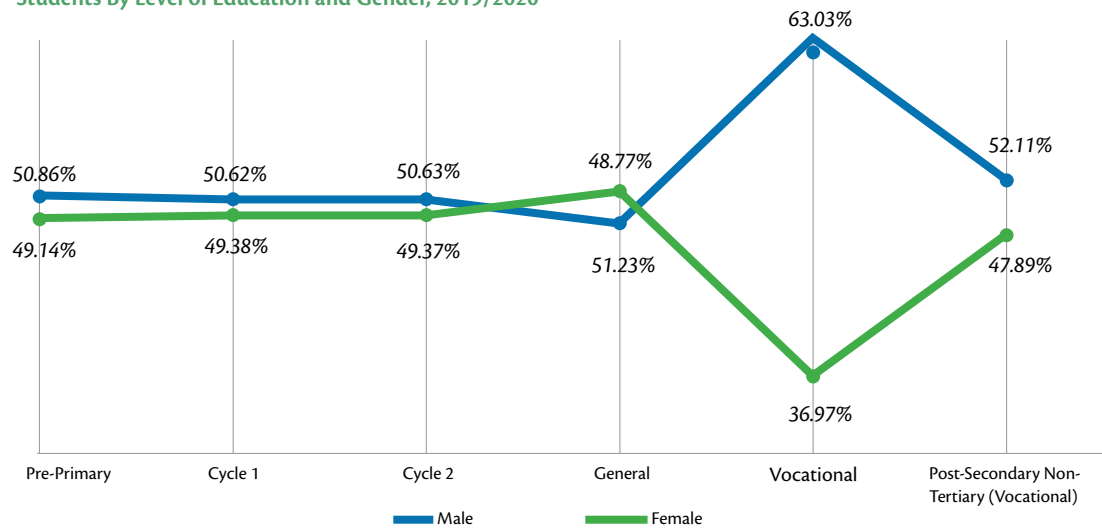
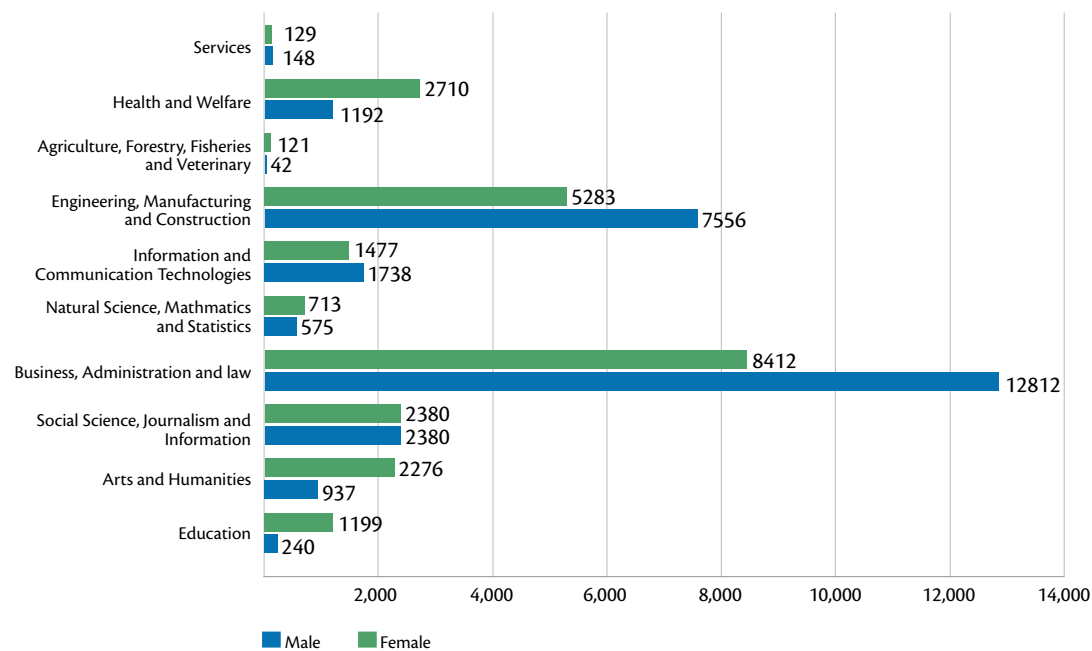


Figure 3
Number of New Graduates in Higher Education by Field and Gender, 2019/2020



Source: Federal competitiveness and statistics center, 2019.

among UAE nationals and the inaccessibility of STEM education across all age groups. Female student enrolment is particularly low in the field of information and communications technology (3 percent), while it is 5 percent in natural science, mathematics, and statistics, and 8 percent in manufacturing and construction. The highest enrolment is in health and welfare, at 15 percent.³³

Young people face several constraints in finding a job. In the UAE, the skills gap has become more and more evident over the last few years. According to The Middle East Skills Report conducted by Bayt.com, 44 percent of people from UAE were most likely to believe a skills gap existed in their country, 42 percent reported that job seekers did not know which skills employers were looking for, and 16 percent of respondents reported that educational institutions did not teach students the skills they needed to enter the job market.³⁴ The skills gap could also be attributed to the inability of educational programs to keep up with the requirements of the new workforce and, consequently, their incapability to impart requisite skills in certain fields.³⁵

Other studies echo this gap, revealing that employers, specifically in the private sector, believe that the education system does not impart the skills, training, and attitudes necessary for the workplace. Louise Patterson, et.al 2020 Moreover, specific gaps are seen between ICT skills and capabilities, when compared with innovation hubs among students and the wider workforce in UAE. The reasons for the existence of such gaps include a lack of funding in education (1.5 percent of GDP in UAE compared to 4-7 percent in leading economies) and limited capacity in teachers' quality and research institutes, particularly in

engineering and ICT disciplines (only one university, Khalifa, is ranked in the top 300 globally). UAE thus has to import much of its digital needs and has fewer domestic digital capabilities. Developing homegrown capabilities is, therefore, critical to UAE's transformation into an innovation hub.³⁶

1.2 UAE's Gender Policies and Strategies for Bridging the Digital Divide

To achieve its centennial plan of becoming the best country in the work by 2071, UAE aims to "invest in future generations and equip them with the skills and knowledge needed to keep pace with the global rapid changes". The main pillars of the centennial plan are:

- **A future-focused government:** The government should implement best practices drawn from a national strategy to offer long-term government non-oil revenues and investment capabilities.
- **Excellent education:** Increasing the professionalism of educational institutions by teaching advanced sciences and technology, space science, engineering, innovation, and health sciences.
- **A diversified knowledge economy:** Investing in scientific research and promising areas, focusing on innovation, entrepreneurship, and advanced industries, and crafting a national plan to position the UAE among the world's leading economies.
- **A happy and cohesive society:** Empowering youth and women, as well as embracing happiness and positivity as a style of living

To fulfill these aims, the UAE government has been

Box 1

Article (4), Equality and Non-discrimination

1. Any discrimination on the basis of race, colour, sex, religion, national or social origin or disability which would have the effect of nullifying or impairing equality of opportunity, or prejudicing equal treatment in the employment, the maintenance of a job and the enjoyment of its benefits, is prohibited. Employers are prohibited to discriminate against workers in jobs involving similar tasks.
2. Rules and regulations that aim to enhance the participation of UAE citizens in the labour market shall not constitute discrimination.
3. Without prejudice to the rights established for working women stipulated herein, all provisions regulating the employment of workers without discrimination, shall apply to working women.
4. A woman is granted a wage equal to the wages of a man if she performs the same work, or an alternative work of equal value. By a resolution of the Cabinet, upon the Minister's proposal, the procedures, terms, and standards necessary for evaluating work of equal value shall be issued.

Source: UAE, Federal Decree-Law Regarding the Regulation of Employment Relationship

developing national strategies and action plans with a focus on gender equality and increasing digital economy skills. The strategies discussed in this section fell into two categories: the first focusing on women empowerment specifically, and the second focusing on the improvement of educational skills for the digital economy in general. In the following section, both categories will be reviewed to better understand state policies towards bridging the digital divide.

1.2.1 Strategies for Gender Equality

Women in the UAE enjoy the same constitutional rights as men, and the government has undertaken many initiatives aimed at the empowerment of women. Article 14 of the UAE Constitution provides

for equality and social justice and the provision of security, tranquility, and equal opportunities for all citizens. Based on the principle of equality in this text, women are essential partners in the development process, and there is to be no discrimination between them and men.³⁷ In addition to the constitution, and in order to empower women in the workplace, the UAE law governing labour relations has made some significant modifications: Article 4 of Federal Decree-Law No. 33 of 2021, which governs labour relations, expressly mandates equal compensation for equal work for women.³⁸

As a response to the constitution, laws and international conventions, Sheikha Fatima Bint Mubarak, the Chairwoman of the General Women's

Union (GWU), launched the national strategy for the empowerment of women in 2015, hoping to improve the participation of Emirati women in the public sphere. One of the challenges the strategy acknowledges is the low participation of women technical vocation education, which affects their participation in all social and public fields. The strategic vision, therefore, is to allow for women to enjoy leadership in practical and sustainable development fields, which would improve their quality of life.

In the same year (2015), the UAE government established the Gender Balance Council, which seeks to reduce the gender gap in employment, strengthen the UAE's position in the Global Competitiveness Reports, and transform the UAE into a landmark for gender equality.³⁹ The UAE Gender Balance Council Strategy 2026 aims to further reduce the gender gap across all sectors, enhance the UAE's ranking in global competitiveness reports on gender equality and achieve gender balance in decision-making positions, as well as promote the UAE's status as a benchmark for gender balance legislation.⁴⁰ The strategy has four main pillars which are Economic Participation, Entrepreneurship and Financial Inclusion; Wellbeing; Protections; and International Partnerships and Leadership.

The aim of the first pillar—economic participation, entrepreneurship, and financial inclusion—is to close the economic gender gap by enhancing women's economic involvement and participation, employment, and leadership, and increasing women's financial literacy and presence in the entrepreneurial sector. Accordingly, The Gender Balance Council has created the gender balance guide in cooperation with the Organisation for Economic Cooperation and Development (OECD). The guide has been

prepared based on several OECD recommendations on gender equality in public life in 2015, and its recommendations in 2013 on gender equality in education, employment, and entrepreneurship. In addition, the Gender Balance Council has developed the Gender Equality Index (GII)⁴¹ which is issued annually by the United Nations Development Program (UNDP) to strengthen the UAE's efforts in women's empowerment and participation in various national and development works, in line with the UAE vision 2021.⁴²

1.2.2 National Strategies for Education and Skills Policies

To achieve its 2071 centennial plan of excellent education and a diverse knowledge economy, the Ministry of Education (MOE) launched the National Strategy for Higher Education 2030 in 2017 with the goal of developing an innovative educational system, enhancing student skills as the cornerstone of the educational process, and developing creative academic programs that boost the country's global competitiveness. Some of the main strategic objectives of the MOE include ensuring the quality, efficiency, and good governance of educational and institutional performance, including teaching delivery and preparing students to enroll in higher education both internally and externally, in light of labour market needs.⁴³

In addition, the strategy seeks to empower future generations with developed technical and practical skills which would help drive the economy in both the public and private sectors. To this end, the Government of the UAE established the Advanced Skills Strategy in 2018, targeting students in schools and universities, new higher education graduates, and experienced employees. To implement this strategy

the National Program for Advanced Skills (NPAS) was launched to equip students and employees in the private and public sectors with industry/sector-specific technical and vocational skills, and provide them opportunities to learn new skills, with the aim to meet future market needs.

The NSPAS program has four main initiatives: (1) My Skills, My Future, (2) My Skills 12x12', (3) Skills Cube: a platform to learn and share expertise, and (4) Advanced Skills Council. In addition, the UAE government also founded other initiatives to improve young people's skills in the digital economy.⁴⁴ These include the [future skills program](#), [the National Program for Artificial Intelligence](#), [ICT fund](#), [Ibtekr platform](#), [Implementing the Emirati School Model](#), [Madrasa - the eLearning platform](#) and [The Emirates Youth Professional School \(EYPS\)-a crowdsourcing model](#). However, there exists no evidence to demonstrate how the programme has contributed to increasing youth capacity in terms of digital skills. Furthermore, there is little data to determine if any of these initiatives explicitly target young women.

To achieve its goal of a comprehensive and sustainable knowledge-based economy, the UAE aims to be home to 10 Emiratis with vocational skills for every university graduate. As a result, it focuses on developing a national system to assure high-quality technical and vocational education and training (TVET). The government prioritises the development of relevant skills to match new and developing technologies, materials, and systems, while also providing equal access for all women and men to inexpensive and high-quality technical, vocational, and tertiary education materials and systems. It also intends to significantly expand the number of young people and adults with relevant skills, such as technical and vocational skills, for employment, good jobs, and entrepreneurship.⁴⁵ To achieve this goal, the UAE government has established the National Qualifications Authority (NQA) responsible for developing a framework for national qualifications and regulating the TVET sector. The Vocational Education and Training Awards Council (VETAC) was established under the umbrella of the NQA to manage and coordinate the TVET system in the region. By 2020, the National Qualifications Centre had endorsed 200 national qualifications.⁴⁶

The Kingdom of Jordan

1 Economic and Labour Force Participation Context:

Jordan is a middle-income country with an overall population of about 11.1 million, according to the most recent estimates.⁴⁷ The leading economic sectors in the Kingdom are trade, finance, mining, transportation and communication, manufacturing, and construction. The economy is also dependent on workers' remittances for foreign currencies. While its growth trends were remarkable before 2010, several factors have since affected the economic trajectory of the country, including the regional turmoil post-2011 and the large numbers of refugees who subsequently entered the Kingdom.⁴⁸

The most important challenges facing the Jordanian economy include the significant increase in the debt to GDP ratio that almost doubled in 2020 reaching 109 percent compared to 55 percent in 2009.⁴⁹ Furthermore, job creation also represents a pressing problem at a time when the country is currently facing higher unemployment rates.

It is important to mention that the country is adopting an economic modernisation vision that is based on prioritising five core elements: fostering the tourism sector, focusing on sustainable resources, enhancing high-value industries such as food, chemical and textile products, logistics, as well as future services such as financial services, ICT, healthcare, and creative industries. Finally, the modernisation vision promotes the adoption of smart technologies in all levels of education including technical and vocational

education & training, in addition to the areas of entrepreneurship & "early childhood development".⁵⁰ Jordan's economy has managed to overcome the economic repercussions associated with COVID-19 and is projected to achieve a growth rate of 2.7 percent in 2023.⁵¹

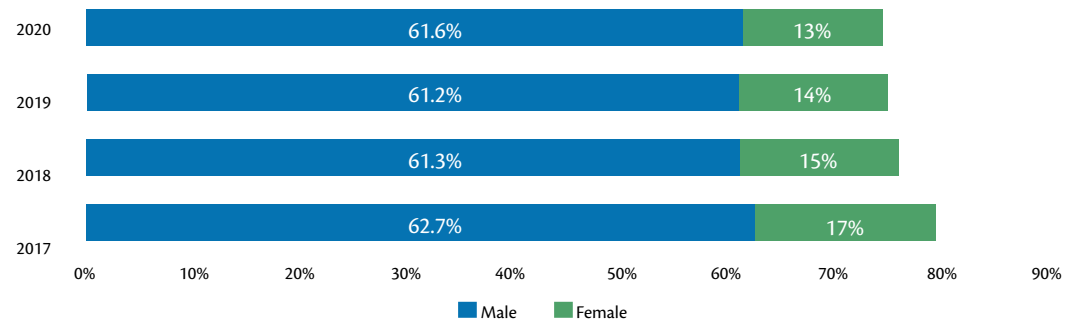
Jordan's labour market dynamics are characterised by a drastically low level of female labour force participation, considered one of the lowest in the MENA region.⁵² There is also a significant discrepancy between the participation rates of males compared to that of females. Figure 4 below demonstrates this phenomenon along with the decline in the recorded participation rates for females over the past years.

Several factors have been identified as the main contributors to the considerable low rates of female labour participation in Jordan. Among them are the wage disparities between males and females that amounted to 17 percent in the private sector in 2020, as per World Bank estimates. Moreover, the lack of suitable access to public transport and legal constraints impede the participation of women in the labour market.⁵³ Finally, the lack of adequate childcare services and the constraints on women's abilities to acquire new skills also contribute to the disadvantaged status of women.⁵⁴

As for the sectoral distribution of men and women among the different economic activities, it is quite evident from figure 5 that women are highly concentrated in the education sector, whereas males are concentrated in public administration-related jobs.

Figure 4

Labour force participation rate, males and females
(percent of male and female population ages 15+) (national estimate)



Source: World Bank Data Jordan

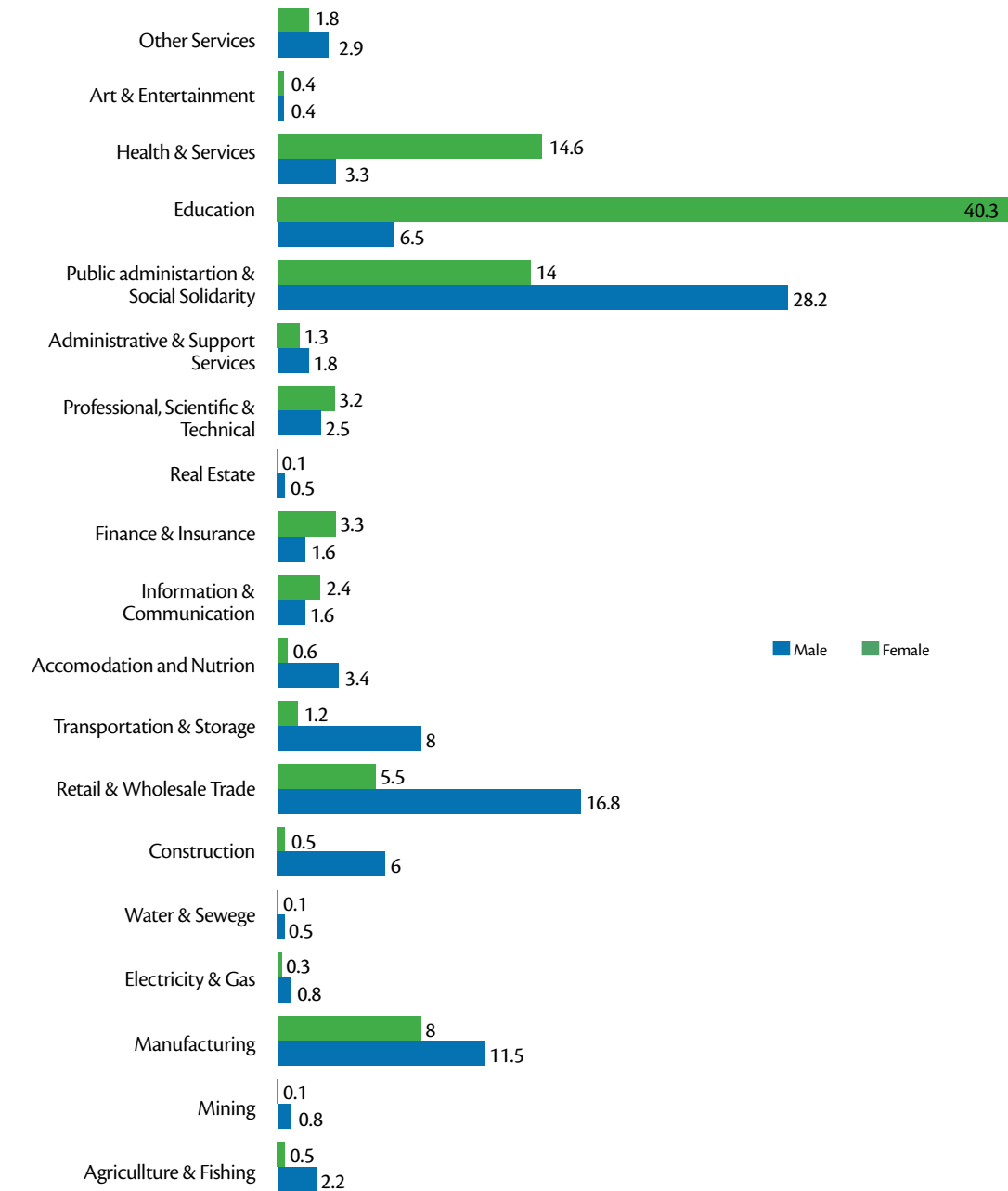
The Information and Communication Technology sector (ICT) is a promising one for the region; this is despite the fact that the country's ranking in the ICT development index was 70 out of 171 countries worldwide. The ICT sector's contribution to GDP was estimated at 3.8 percent in 2017, 90.3 percent of Jordan's households have smart mobile phones, and 88.8 percent of them have internet services at home.⁵⁵ The sector is composed of the following segments: telecom, IT infrastructure, IT software, digital services, outsourcing, gaming, online and mobile, and IT-enabled business process outsourcing.⁵⁶

How do women fare? A study by the information and Communications Technology association in Jordan revealed that at the national level, only 33 percent of the employees in the ICT sector are women, compared to 67 percent who are men in 2018.⁵⁷ Also, a survey conducted under the Erasmus Office revealed a huge difference in the numbers of men and women employed at the different establishments working in the ICT sector, as figure 6 makes clear.

In line with these figures, a recent study based on a survey distributed among university students revealed that a gender digital divide—"the unequal opportunity for ICT use between men and women in social, political, economic, and cultural domains"—exists in Jordan. The study focused on dimensions of internet and technology usage, the difficulties in using them, and educational establishments' role in endorsing the gender digital divide. The results of the study revealed that about 26 percent of the surveyed men were against the full usage of the internet by females (this result was stronger in rural areas) and 51 percent advocated the limited usage option. Furthermore, the results of the study indicated that the gender digital divide is mainly driven by social norms, cultural traditions, and the current educational system structure, of which the last two factors were perceived by surveyed women.⁵⁸

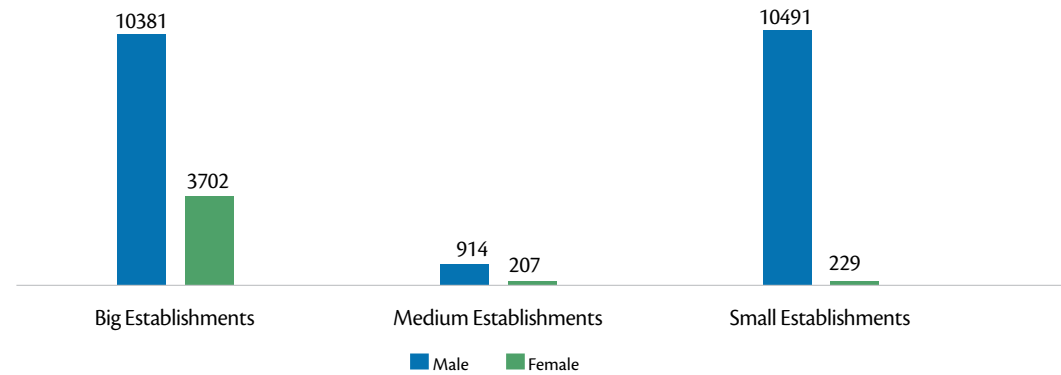
Figure 5

The sectoral distribution of males and females in 2021



Source: Jordan Department of Statistics

Figure 6
Numbers of men and women in ICT's different establishments



Source: National Erasmus + office Jordan

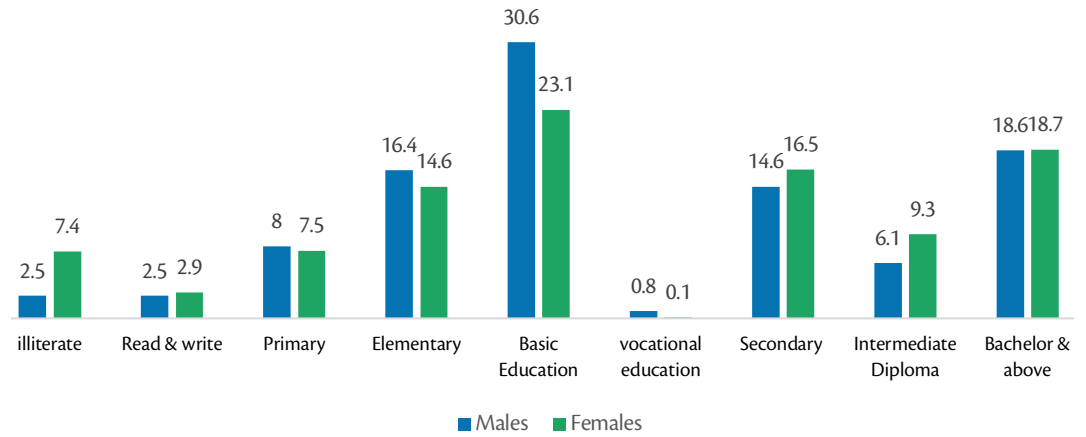
2 Education and TVET context:

The educational system in Jordan underwent several reform plans, including the one covering the period from 1989 to 1995 and from 1996 to 2002. One of the important and recent developments in this respect was the creation of the “Technical and Vocational Skills Development Commission” (TVSDC) in 2019 incorporated in article number 31 of the constitution.⁵⁹ This commission targets the achievement of different goals, including upgrading the quality of TVET programs, raising funds through different schemes for the sector, and enhancing the level of skills on the fronts of educational attainment and employment. The Vocational Training Corporation (VTC) aims at strengthening the TVET sector, providing training opportunities for TVET staff members that also cover the areas of “occupational health and safety”, and paying special attention to small entities by means of extending different kinds of support.⁶⁰

The current educational system in Jordan can be divided into three main levels that end with two pathways. These three levels are pre-school, basic, and secondary which leads to either a comprehensive secondary system or a vocational training path.⁶¹ The duration of the primary school cycle is six years, while lower secondary and upper secondary take up four and two years respectively. Moreover, Jordan’s status in the gross enrollment of both males and females in upper secondary education lies in the 23rd and 27th percentile ranks with respect to all countries in 2017, which implies the need for improvement in the future.⁶² Finally, spending on education in Jordan constitutes 10 percent of total government expenditures.⁶³

It is also important consider the educational attainment of males and females in Jordan for a full analysis of gender disparity. The chart in figure 7 below is constructed based on data obtained from Jordan Department of Statistics.

Figure 7
Males’ and females’ educational levels in 2021



Source: Jordan Department of Statistics

The results indicated that the percentage of Jordanians who obtained a Bachelor’s degree or higher is almost the same for both men and women in 2021; the share of Jordanians who were enrolled in vocational education is modest, and there is a gender gap in the percentage of illiterate people—illiterate females are about 5 percent more than illiterate males.

It is also important to highlight the results of the Global Skills Report of 2022 which provide important insights with regard to the status of skills in Jordan and its position at both the regional and global levels. The report indicated that Jordan’s position is the sixth regionally out of 13 countries and its global ranking moved downwards by eight places to 76. It also stressed the importance of advancing the skills of Jordanian learners in the area of Data Science and Technology, in order to help facilitate digital transformation. Furthermore, Jordan’s performance in the Programme for International Student Assessment (PISA), which concentrates on skills in the areas of reading, mathematics, and science for 15-year-old students, provides some useful insights.

Jordan’s mean scores in mathematics and science were 400 and 429 in 2018, compared to mean scores of 489 in both subjects in OECD countries. Although, these figures are lower than that of OECD, they demonstrate Jordan’s improvement in these fields over the past years, when the country scored 384 and 422 in mathematics and science in 2006. Finally, the recorded gender gap for Jordan in mathematics was six in 2018 which is very close to the OECD average of five, whereas the gender gap in science was as large as 29 points compared to two in OECD.⁶⁴

Technical and Vocational Education and Training (TVET) has become an integral part of Jordan’s different strategies over the past years. One of the main reasons for such concern with TVET in strategies’ articulation is the current low shares of TVET graduates in the country. Such strategies include the “National Strategy for Human Resource Development (2016-2025)” which targeted the provision of adequate training in order to the upgrade the quality of TVET along with skills advancement, in addition to promoting innovation and widening

the scope of public-private partnerships. TVET was also an indispensable element of the Ministry of Education Strategic Plan of (2018-2022) which aimed at bolstering the scope and quality of TVET programs through expanding the enrollment of students in vocational education, along with the inclusion of all teachers in the established training programs (UNESCO, 2019).

In addition, a national E-TVET strategy was first introduced over the period (2008-2013) with the objective to foster female labour force participation via apprenticeship programs, campaigns and “gender sensitive” training schemes.⁶⁵ It was then complemented with another E-TVET strategy in 2014-2020, which targeted the inclusion of refugees within the TVET programs, the creation of sound funding channels, and helping citizens achieve their career goals.⁶⁶

Several entities in Jordan are responsible for providing vocational training. They are the National Employment and Training Company, the vocational training corporation which welcomes 10,000 students on a yearly basis and across different vocational levels and programs that amount to 15 different programs,⁶⁷ private training centers, and the Ministry of Education’s vocational schools.⁶⁸

Studying and investigating the reasons behind the low numbers of students enrolled in vocational education is of paramount importance for developing vocational programs in Jordan. A research study based on data from questionnaires distributed to a sample of 10th grade students sought to evaluate the reasons for low enrollment rates. These reasons were grouped into four different categories: personal (including the students’ interests, capabilities and

ambitions), educational (including the academic content, reputation, and the societal perceptions of vocational education), economic (including job prospects and expected income levels) and finally vocational (including all the working conditions of the jobs in the sector). The results of the study revealed that the vocational factors, mainly the nature of the jobs offered, were most cited as reasons by the students, followed by the existence of a gap between the students’ academic aspirations on the one hand and the status of the vocational jobs on the other hand. There were also social and economic reasons that were perceived as impediments to enrollment in vocational education, as per the students’ responses.⁶⁹

It is worth noting that the percentage of females enrolled in secondary vocational education recorded only a minor increase from 38 percent in 2008 to 40 percent in 2018, according to the figures released by the [World Bank in 2018](#). Several policies have been suggested to increase the participation of females in vocational training programs. One policy includes connecting the outcomes of the educational programs with the requirements of the labour market through the establishment of career development centers, assigning certain specific shares for women in E-TVET programs, in addition to encouraging private sector entities to assign for women a specific percentage of their workforce.⁷⁰

Jordan’s Gender Policies and Strategies for Bridging the Digital Divide

This section will provide an overview of the strategies articulated by the Jordanian government in the areas of fostering women empowerment, digital transformation, and artificial intelligence, while examining governmental efforts in improving the

status of women over the last two areas. These strategies are directly linked to the achievement of Jordan’s vision for 2025.

2.1 Strategies for Gender Equality

Several indicators of gender inequality, in addition to the ones above, demonstrate the inferior position of women in the country which ranked 133 in economic participation and opportunity 2021. Moreover, Jordan was placed in the 56th and 131st ranks in wage equality for similar work and the Global Gender Gap indices respectively.⁷¹ Given this performance, notable and continuous efforts in promoting gender equality and empowerment are crucial to enhance the status of women in Jordan.

The national strategy for women in Jordan has been updated several times over the past two decades. The first strategy was released to cover the period from 1990 to 1993, after which it was updated, spanning the period from 2006 up till 2010. The most recent strategy covers the period from 2020 to 2025. The first strategy mainly focused on assessing the legal environment with respect to women’s status, and introduced different laws that could help improve this status. The 1990 strategy managed to record considerable achievements on the health services front.

The 2006-2010 strategy focused on segmenting its targeted objectives. The first domain, under the umbrella of human security and social protection, assigned different objectives in the areas of education, health, poverty, violence, female headed households, special needs, food security, environment, and housing. The other domains set down objectives in the areas of media and

communication, economic empowerment, and participation in the public domain.⁷²

Finally, the newly released strategy in 2020 highlighted the status of Jordanian women in different areas including health, gender-based violence, political participation, educational opportunities and economic empowerment. It also focused on the challenges posed to women in each of these areas, especially in the educational and economic participation domain. The strategy established four main objectives to help women realise their humane, political and economic rights and effectively participate in a society that is not characterised by gender discrimination or the prevalence of gender-based violence. Moreover, it focused on endorsing gender equality and women empowerment within norms, social roles and institutions, which should design policies supporting such equality and empowerment (The Jordanian National commission for women, 2020)

2.2. National Strategies for Education and Skills Policies

The Kingdom of Jordan has, in the last few years, made efforts towards the adoption of digitalisation and the articulation of well-defined strategies and policies to bolster the status of Jordan in its digital transformation. This was even reflected in the 2019 rechristening of the Ministry of Information and Communication Technology to the Ministry of Digital Economy and Entrepreneurship ([MoDEE](#)).

As a result, Jordan has launched The National Digital Transformation Strategy & Implementation Plan (2021-2025), which highlighted the challenges to the implementation of digital transformation in

all sectors of the country. These include the lack of strong calibers in organisations that are equipped with the expertise and tools to be responsible for digital transformation schemes; inadequate funds for the execution of government-related digital transformation programs; the prevalence of bureaucracy; and obstacles associated with modifying laws and regulations related to the digitalisation of different services.⁷³

The government also identified factors that would enable digital transformations and overcome the constraints highlighted above. These pillars are: Digital Government Services, Data, Youth, Technology and Jobs, Innovation and Private Sector, E-participation, Change Management, and Government Resource Management.

Furthermore, the strategy assigned specific key performance indicators including: the progress in the status of Jordan in the Arab digital economy index, e-government development index, global entrepreneurship index, the GDP share, revenues and exports of the ICT sector in Jordan, and the number of people enrolled in national up-skilling programs, in addition to the number of new jobs in this area.

Finally, the strategy comprised the creation of a national digital transformation committee whose roles involve the evaluation of current practices, keeping up with international trends in designing the key performance indicators (KPIs), introducing policies and recommendations regarding the status of the enablers in the public sector and government bodies, and the provision of procedures that help digital transformation-related projects overcome constraints.

In 2020, the Kingdom of Jordan published the Artificial Intelligence Policy and Strategy, along with the digital transformation plans. The country's efforts to develop capabilities in the arena of AI also started with articulating a special policy for AI in 2020. This policy had different objectives ranging from raising awareness regarding AI, creating an enabling business environment for it, enhancing the capacities of the country's digital infrastructure, and upgrading the skills of the citizens in the artificial intelligence field, to making use of AI applications in the country's different sectors (Ministry of Digital Economy & entrepreneurship, 2020).

Following this, Jordan's Strategy and Executive Plan for Artificial Intelligence was launched to cover the period 2023-2027. This strategy focuses on achieving five strategic goals, along with conducting a SWOT analysis on the status of AI in Jordan. The first objective is related to developing citizens' skills and capabilities and raising their awareness of AI, in addition to leveraging the potential of the private sector in this field. The second goal is to encourage Research and Development (R&D) in the arena of AI through the provision of different kinds of incentives for researchers and projects. The third objective aims at promoting entrepreneurship and investment opportunities in AI by establishing business incubators, providing technical support and training programs, and extending tax exemptions and other facilities to attract companies and start-ups to work in AI. This is followed by the fourth objective, which is related to the preparedness of the legal environment for supporting AI activities considering the rule of law and human rights. Finally, the fifth objective aims at upgrading the potential and capabilities of the public sector and prioritised sectors by making use of AI applications.

The Arab Republic of Egypt

1 Economic and Labour Force Participation Context

Egypt is the most populous country in the Arab Region and is the 14th most populous globally.⁷⁴ In 2022, its population exceeded 102 million inhabitants and is growing at an annual rate of 2 percent.⁷⁵ In 2016, Egypt experienced progressive economic growth, supported by economic reforms to curb declining revenues, a ballooning deficit, a devaluating currency, and downturned capital inflows. In 2020, the World Bank considered Egypt the number one destination for Foreign Direct Investment (FDI) in Africa and the second in the Middle East North Africa (MENA) region in 2019.⁷⁶

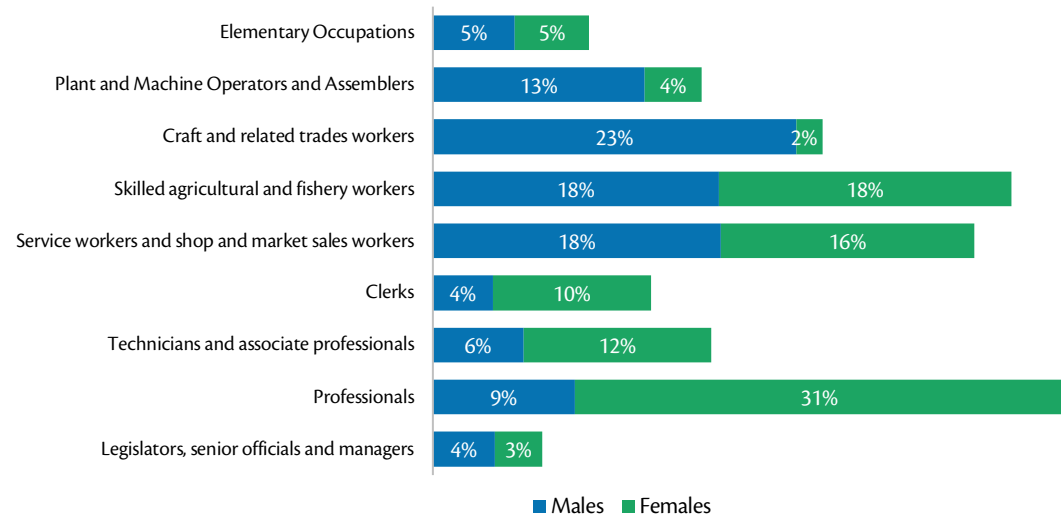
As a low-income country, Egypt made minor improvements with regard to its global ranking in the Human Development Index in which it moved from the 116th rank out of 189 countries in 2019 to the 97th out of 191 countries in 2021.⁷⁷ Egypt also achieved significant progress with respect to its score in the women, business, and law index.⁷⁸ However, Egypt's rank did not change in the Global Gender Gap index 2022 where the sub-indices pulling Egypt's score down were Economic Participation and Opportunity and Educational Attainment. In terms of women's labour force participation, Egypt had an unbalanced decline in women's participation where their percentage of legislators, senior officials, managers, professionals and technicians decreased. Finally, in the area of educational attainment, the gender gap in secondary school enrollment has narrowed marginally.⁷⁹

According to the Egyptian Labour Force Survey of 2021, estimated labour force participation has increased from 28.5 percent in 2020 to 29.4 percent in 2021. Male participation rates have declined from 83.2 percent in 2020 to 82.8 percent in 2021, while female participation grew marginally from 16.8 percent to 17.2 percent. According to released statistics, the unemployment rate has declined from 7.9 in 2020 to 7.4 in 2021. Male unemployment rates have also declined from 6 percent in 2020 to 5.6 percent in 2021, while female unemployment rates have declined from 17.7 percent in 2020 to 16 percent in 2021. Notably, over 75 percent of those unemployed held technical intermediate, above intermediate, university, or postgraduate degrees.

Figure 8 indicates that higher percentages of women work as professionals, skilled agricultural and fishery workers and service workers, and shop and market sales workers jobs (31 percent, 18 percent, and 16 percent), respectively. On the other hand, the majority of men are craft and related trades workers, service workers and shop and market sales workers, and skilled agricultural and fishery workers (23 percent, 18 percent and 18 percent) respectively.⁸⁰

Egypt's well-established information and communication technologies (ICT) sector is one of the largest in the region and is poised to accelerate digital transformation across the board.⁸¹ The Egyptian Ministry of Communications and Information Technology (MCIT) has been pursuing a strategy to develop a strong ICT sector, seeking to achieve the Egyptian vision 2030 and drive necessary

Figure 8
Percentage Distribution of Employed (15 years and More) by Gender and Major Occupation Group, 2020



Source: Jordan Department of Statistics

change. According to MICT, the ICT sector achieved the highest growth rate among the state sectors, with a growth rate of about 16 percent in the fiscal year (FY) 2020/2021, compared to 15.2 percent in 2019/2020. This is in addition to an increase in the ICT sector's contribution to the Gross Domestic Product (GDP) from 3.2 percent in 2017/2018 to 5 percent in FY 2020/2021, as well as the growth of digital exports from \$3.6 billion in 2018/2019 to \$4.5 billion in 2020/2021.⁸²

Egypt is investing considerably in order to improve the digital economy across all sectors. The digital economy has grown at a rate of 2.5 times that of the world GDP. Its size ranges from 10 percent to 35 percent of the GDP in rich economies and 2 percent to 19 percent of the GDP in emerging economies, with the digital economy expected to reach \$23 trillion

by 2025, or 24.3 percent of global GDP. The overall volume of the Arab economy is approximately \$3.841 trillion of the global economy, while the volume of the Egyptian economy is approximately \$361.875 billion, making Egypt the second-largest economy in Africa among the Arab states in 2020.⁸³

In 2018, the ICT Sustainable Development Plan was established to fully integrate the digital economy for growth and employment creation by adopting Egypt's vision 2030 and building Digital Egypt (MCIT 2018). Key commitments under this strategy include (a) reaching 12 percent real GDP growth; (b) becoming a regional digital powerhouse; (c) ranking among the top 30 nations in the World Economic Forum's Global Competitiveness Index; (d) lowering the unemployment rate to 5 percent; (e) raising female labour force participation to 35 percent;

and (f) putting an end to extreme poverty. The goal is to accelerate digital transformation through a multi-ministerial effort that uses digital technology as a primary change engine to improve economic performance, business models, productivity, and general social well-being. It is worth noting that Egypt ranks 56th out of 172 countries in the Government Artificial Intelligence (AI) Readiness Index.⁸⁴

As a result, Egypt moved up five spots in the Inclusive Internet Index 2021, ranking 73rd out of 120 countries (compared to 78th in 2020), and fourth out of 29 African countries, according to a report by the Economist Intelligence Unit (EIU). Furthermore, Egypt's fixed broadband Internet speed rose from 6.5 Mbps in January 2019 to 45.67 Mbps in November 2021, according to Speedtest Global Index, placing Egypt in fourth place in Africa for internet speed, compared to 40th in January 2019. Moreover, in 2020, Egypt was among the Top 10 Improvers in Digital Inclusion, jumping eight places in Roland Berger's Digital Inclusion Index (RB DII) compared to 2017. Egypt also scored an overall of 60 points, becoming the third in the list of top 10 improvers of the 82 nations assessed.⁸⁵ Finally, Egypt scored 59.8 in its Mobile Internet Connectivity Index in 2022, which is based on measuring the country's mobile internet adoption, infrastructure, affordability, consumer readiness, content, and services.⁸⁶

2 Educational and TVET Context

Education is a right for every citizen in Egypt and it is compulsory until the general secondary stage's completion. According to the Egyptian Constitution, the government is required to dedicate

at least 4 percent of its budget to education and is committed to fostering, improving, and increasing technical education and vocational training (TVET). Furthermore, the Constitution ensures university independence, the provision of university education, and its development in accordance with global quality standards, as well as assigning a percentage of government spending to it of no less than 2 percent of the GDP.⁸⁷

Egypt's primary education system begins at the age of six. After six years of primary school, students move on to three years of preparatory (lower secondary) school, the completion of which marks the end of mandatory schooling. Students who continue their formal education following preparatory school are assigned to either vocational secondary or general secondary school, based on their preparatory school test scores.⁸⁸ General secondary school (*Thanaweya Amma*) is a three-year programme that begins in Grade 10 and prepares students for work and future education. Graduates of this track typically enter higher education institutions through a highly competitive process based on their secondary school leaving exam results. On the other hand, technical secondary education includes four main specialisations (industrial secondary, industrial agricultural, industrial hotel, and industrial commercial) and two strands. The first strand is a three-year technical secondary school that offers technical education, whereas the second offers more advanced technical education in a five-year integrated format. The first three years of the second type are like the first, while the last two years prepare graduates for work as senior technicians. Graduates from both tracks may continue further education.⁸⁹

Egypt is improving in terms of key educational indicators. In 2019, female net enrollment in primary school reached 97.0 percent, while gross enrollment in secondary school increased to 89.9 percent and upper secondary enrollment increased to 77.6 percent. Egypt also boasts an extensive and well-developed tertiary education system, with 35.2 percent of Egyptians taking advantage of it (gross enrolment rate in tertiary education in 2018). More than two million students were enrolled in vocational and technical schools during the academic year 2021-2022. Figure 9 shows that the majority of women are enrolled in commercial secondary schools, while the majority of men are enrolled in industrial and agricultural schools.⁹⁰

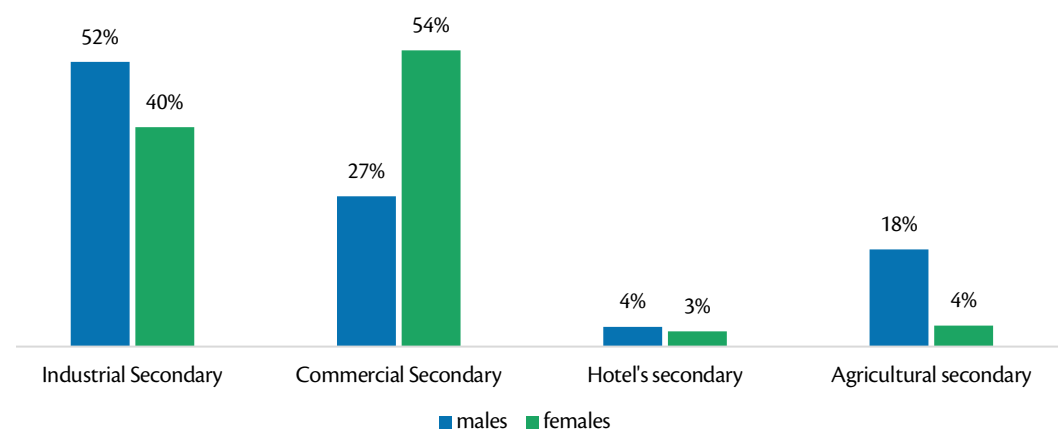
Moving on to higher education university graduates, Egyptian statistics show a considerable gender differential in educational specialisations between males and females. Figure 10 demonstrates

that most men received degrees in computer and communication technologies, business administration, and law, while most females received degrees in art and humanities, health and welfare, and education.⁹¹

3 Egypt's Gender Policies and Strategies for Bridging the Digital Divide

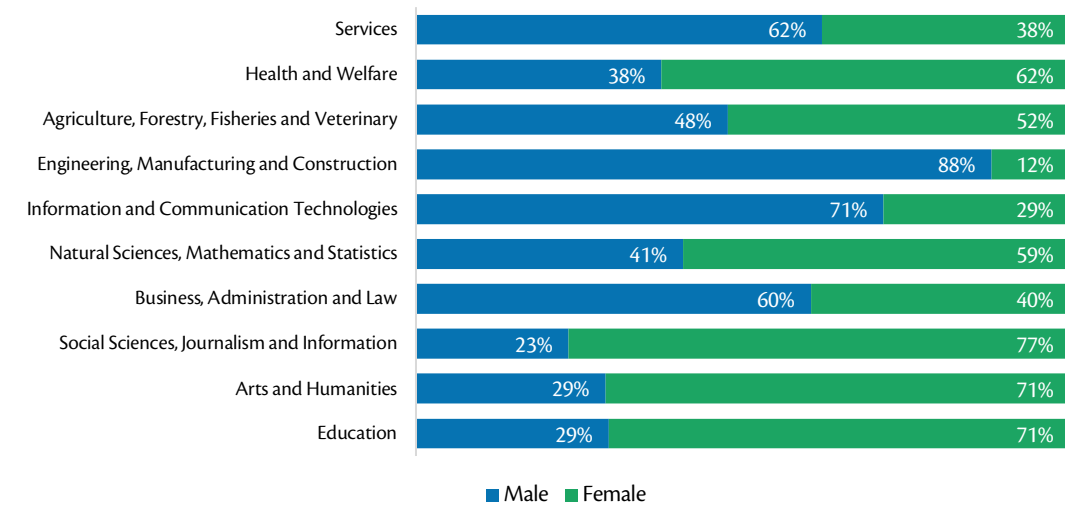
According to Egypt's Vision 2030, the new Egypt "will achieve a competitive, balanced, diversified and knowledge-based economy, characterised by justice, social integration, and participation, with a balanced and diversified ecosystem, benefiting from its strategic location and human capital to achieve sustainable development for a better life to all Egyptians." To achieve this vision, three main dimensions were identified and developed in a detailed action plan with measured indicators:

Figure 9
Percent of students enrolled in TVS by Gender (2021-2022)



Source: National Erasmus+ office Jordan

Figure 10
Number of New Graduates in Higher Education by Field and Gender, 2021



Source: National Erasmus+ office Jordan

- **The Economic Dimension:** divided into four pillars and targeting economic development, energy, knowledge, innovation and scientific research, and transparency and efficient government institutions.
- **The Social Dimension:** including four pillars targeting social justice, health, education and training, and Culture.
- **The Environment Dimension:** including two pillars targeting environment and urban development.

Empowering women economically and in the fields of education and digital skills is an essential and cross-cutting component of such a vision; it cuts across the three dimensions horizontally and can effectively contribute to the achievement of the performance

targets. Several strategies have been undertaken in accordance with Vision 2030.

3.1 Strategies for Gender Equality

In article 11 of Egypt's constitution, "the state is committed to achieving equality between women and men in all civil, political, economic, social, and cultural rights in accordance with the provisions of this Constitution."⁹² As a response, the National Council for Women (NCW) launched the National Strategy for the Empowerment of Egyptian Women 2030 in 2017, making Egypt the first country to adopt a strategy in line with Egypt's Vision 2030 as well as the 2030 SDGs. In this context, the national strategy is divided into four pillars (political empowerment and leadership; economic empowerment; social empowerment; and protection).

According to the economic empowerment pillar, Egypt aims at enhancing women’s capacities to expand their economic participation and realise equal opportunities for women’s employment in all sectors. To attain this goal, the NCW developed a thorough action plan to support working women, improve female employment rates, and provide women with economic resources and opportunities to develop their capacities. As a result, one of the primary projects mentioned in the strategy was “training and skills enhancement programs in various sectors”.

In line with this goal, the NCW, in collaboration with several entities, has launched a number of programs. These are in the areas of information and communication technology, vocational training, and entrepreneurship for small and medium-sized enterprises and new graduates, in which competencies and capacity of youth in government agencies and youth groups are increased. Furthermore, the first Social Innovation Hub was formed in 2016 and capacity development programs in the field of software and information technology were implemented in collaboration with Microsoft Egypt. These programs will increase the capacity of female graduates of public universities in the field of computer science and raise awareness of the prospects in the field of software and of their role in entrepreneurship. The Egypt-based initiative has reached one million young men and women, helping them enhance their skills and delivering services to them. Additionally, a “Programming Hour” initiative was developed to impart the fundamentals of computer science and programming to women.⁹³

Egypt has also launched the first “[ICT for Women](#)” portal. The portal’s vision is to empower girls and improve their ability to use ICT in all aspects of life,

Box 2

Training and skills enhancement programs in various sectors

- Expand digital technology programs for women and integrate it into vocational training and capacity-building programs;
- Provide different types of technical education that reflect the needs of Egyptian society and the market;
- Expand programs targeting female-headed households that help them find work and earn a sustainable income;
- Provide training opportunities and develop the skills of women with lower levels of education to qualify them for work;
- Ensure women’s access to information and communication technology
- Develop mechanisms to expand financial inclusion and women’s access to various financial services;
- Develop training programs for women working in the agricultural sector to improve their productivity and provide them with new market opportunities.

help them profit from their abilities or enter the ICT profession, and assist them in overcoming any challenges they may face. Finally, in collaboration with the NCW, the Ministry of Communications and Information Technology has launched many initiatives like [Qodwa Tech](#), [ICT clubs](#), and [the Women ICT Excellence Award](#) to encourage women to enter the ICT economic sector.

3.2 National Strategies for Education and Skills Policies

To achieve Egypt’s Vision 2030 and encourage and develop technical and technological education and vocational training in Egypt, the Ministry of Education and Technical Education (MoETE) launched the National Strategy for Technical and Vocational Education “Technical Education 2.0”. Its vision: a technical education system of international standards that could address the skills linked to the future of work. This strategy aims at adopting five major pillars, including technical education quality, transforming the current technical education system to Competency-based Curricula (CBC), enhancing teachers’ qualifications, involving employers in the development of the current education system based on market skills requirements, and Work-based Learning (WBL), as well as challenging the prevailing societal preconceptions about technical education.

The Ministry established many programs towards these aims. It worked on developing 70 percent of the current curriculum, in which 29 programs were created with a focus on ICT, cyber technology, digital gaming, renewable energy, art technologies, and so on. In 2018, the MoETE launched a national effort for young people’s digital literacy in partnership with the Egypt Knowledge Bank. Furthermore, the Ministry of Education, in collaboration with IBM, launched the Pathway in Technology Early College High School (P-TECH) Egypt initiative, which provides students with skills and experience for technology-related jobs in fields such as cybersecurity, cloud computing, digital design, data analytics, and artificial intelligence.⁹⁴ The MoETE has also several education platforms such as [Egyptian Knowledge Bank](#), and

[Edmodo Egypt](#), which house several digital materials for higher and pre-university education.

The Technical and Vocational Teachers’ Academy (TVETA) was established in addition to the approval of the draft of The Egyptian TVET Quality Assurance and Accreditation National Authority (ETQAAN) in September 2020. This quality assurance authority will help pave the way for a unified approach to ensuring the standard of technical education and vocational training across various providers in Egypt.⁹⁵

It is also worth noting that in line with Egypt’s vision 2030, the Ministry of Communication and Information Technology (MCIT) has launched two main strategies for enhancing young people’s skills in the digital economy. The first strategy was the National AI Strategy, which was followed by the formation of the National Council for Artificial Intelligence in November 2019 as a partnership between governmental institutions, prominent academics, and practitioners from leading businesses in the field of AI. The second was the ICT 2030 strategy, which contributed to establishing the national project [Digital Egypt](#). The objectives were to create ICT infrastructure, boost digital inclusion, achieve the transition to a knowledge-based economy, build capacity and encourage innovation, combat corruption, ensure cybersecurity, and promote Egypt’s position at the regional and international levels. Digital Egypt is based on many key pillars including digital transformation, digital skills and jobs, and digital innovation.

In the area of digital skills and jobs, the MCIT approach includes focusing on digital literacy, intermediate technology training programs, and advanced technological training programs, with the

goal of preparing a generation of skilled technicians capable of competing in the labour market. Moreover, thousands of learners each year are awarded a specialised practical master's degree through the Digital Egypt Builders Initiative (DEBI), which was launched in 2015. As a result, the following Digital Egypt programs are available to students and young graduates: Digital Egypt Cubs Initiative, Digital Egypt

Builders Initiative, Egypt University of Informatics, Youth Enablement for Freelancing, Basic Digital Skills Development Programs, and Digital Tomorrow. This is in addition to Practical Data Scientist Academy—Amazon Web Services, Our Digital Opportunity Initiative, German Training Initiative in Upper Egypt, and Egypt Future Work is Digital and Next Technology Leaders.⁹⁶



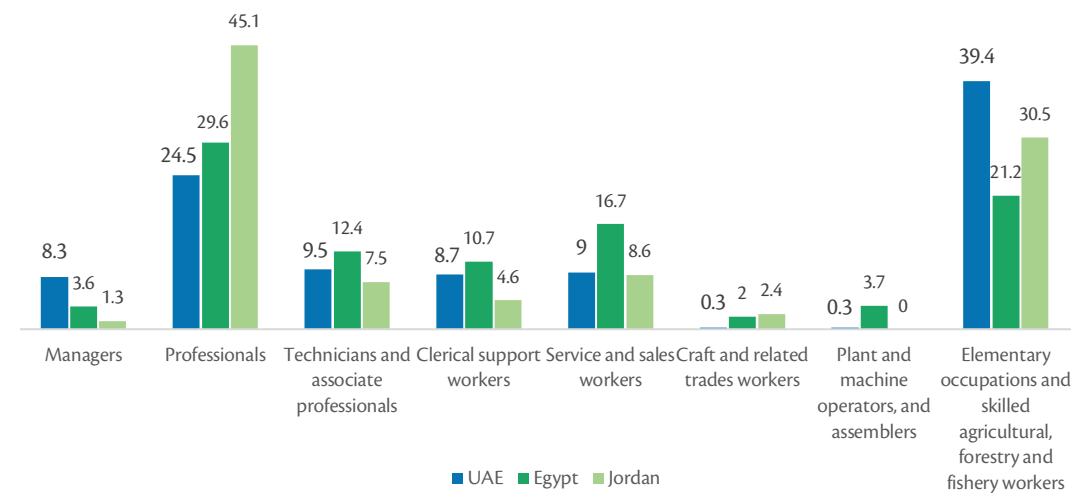
Conclusion

The study reveals that significant improvements have been made in the three selected countries in women's access to education. In all educational stages, males and females are roughly equal, except for the intermediate vocational stage, where males outweigh females. However, an examination of the labour market reveals that female labour force participation was found to be low. According to the estimated figures for the year 2021, the status of women in the UAE labour market (52.6 percent of females to 90.3 percent of men) is better than that of Jordan and Egypt where women make up 14.3 percent and 13.8 percent of the labour force, compared to men who make up 67.4 percent and 60.7 percent in Egypt and Jordan respectively.⁹⁷

Significant disparities also exist. For example, the female to-male ratio in the professional and technical jobs is the lowest in the UAE (24.5 and 9.5 respectively) compared to Jordan (45.1 and 7.5 respectively) and Egypt (29.6 and 12.4 respectively).

In the area of technical and vocational education (TVET), data from Egypt shows that higher percentages of female students are enrolled in secondary vocational schools than in the United Arab Emirates and Jordan. However, most of them are concentrated in the commercial and hotel sectors, while most male students are found in the industrial and farming sectors. In the area of STEM education, important international assessments like the Programme for International Student Assessment

Figure 11
Female Employment +15 by Occupation in UAE, Egypt and Jordan- ILO Modelled estimates, Nov 2022



Source: ILO STAT

(PISA) offer useful trends about the status of women and the gender gap in these fields. According to reports in 2018, girls in Jordan scored, on average, 6 points higher than boys did in mathematics, 29 points higher in science, and up to 50 points higher in reading. The figures also revealed similar trends for girls in the UAE; their scores were better in reading (by up to 57 points), science (by 26 points), and mathematics (by 9 points).⁹⁸ Finally, culture, social norms and lifestyles were found to be the main factors responsible for discouraging females from enrolling in STEM-related majors at the higher education level in all three countries. Moreover, the job location and working hours were found to be among the most important concerns regarding women's ability to actively participate in ICT related jobs.

Some positive measures are being taken in this direction. More governmental efforts are being made to enact significant top-down sponsorship across the region to align with the global sustainable development agenda and their national visions. The countries under study have established national councils for women and gender balance, and have launched several strategies to empower women in the social and economic arenas. However, a review of their strategies reveals the existence of gaps between policies established by women's national

organisations and strategies and policies established by other ministries.

The national women's strategies in Egypt and Jordan only focused on the levels of women enrolment in education and female labour force participation. However, with the exception of the UAE, such strategies failed to consider the percentages of women in technical or STEM education, or the share of women in technical occupations. The strategy in the UAE did take into account the ratio of women in professional and technical education in its economic pillar. On other hand, the strategies for women economic empowerment in the three countries did not incorporate indicators to measure how to enhance women's participation in the digital economy, automation, and artificial intelligence.

Finally, the analysis revealed that the digital economy strategies in the three countries failed to incorporate any indicators related to closing the gender gap in the digital economy. The same issue applies in the case of vocational and technical education and artificial intelligence strategies. This is an area of concern as countries' efforts in closing the gender gap hinge on coordination and collaboration between strategies implemented by women's organisations and those launched by other governmental entities.

Annex

Study Methodology

Country selection

This study will adopt a systematic multi-step process to identify the countries (figure 1) included in this study as the following:

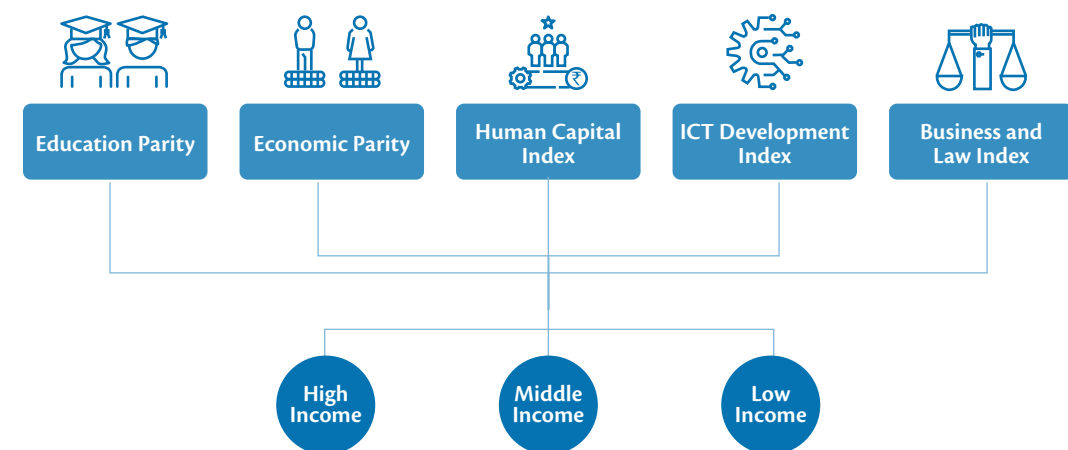
First, The MENA area will be divided into three major groups based on economic income.

Second, countries will be assigned a score based on their income and progress in main indicators such as gender equality and digital economy to understand the region's progress in key metrics such as gender equality and digital economy (A, B, C). The country

with the highest score will be chosen as a case study in its representative economy. The main factors that will be utilised to analyse countries' gender equality and digital economy are as follows.

- Education Equality
- Economic Equality
- Human Capital Index
- ICT development Index
- Business and law index

Figure 1
Criteria for identifying sample countries



FIRST:

The economy of the Middle East and North Africa region can be classified into three main groups. The Gulf Cooperation Council's natural resource-rich, high-income countries (GCC) have high online penetration, high literacy rates, and relatively low youth unemployment in most cases. The second group includes Jordan and Lebanon, which have higher internet penetration due in part to their compact, urban structure. The third group consists of low-income countries such as Egypt, Algeria, Morocco, and Tunisia, which have the same GDP generate as their relatives but lower literacy rates and a total of 100 million individuals who are unconnected. In addition to the three groups mentioned above, there is a fourth group that includes conflict-affected countries such as Yemen, Iraq, Syria, Palestine, Sudan, and Libya, as well as least developed countries (LDCs), and for the purposes of this study, the last group is excluded. We focus only on the above three groups (high, middle, and low-income countries) (Comoros, Djibouti, Mauritania and Somalia).

SECOND:

Equality in Education

Countries in the Middle East and North Africa (MENA) have made significant progress toward gender equality in education in the last few decades. The rates of completion of lower secondary school for girls and boys in the Middle East and North Africa are nearly the same as the global rates (females: 77.3, males: 76.7). The United Arab Emirates, Egypt, Saudi Arabia, Kuwait and Qatar have closed their gender gaps in primary education. While Jordan has a 98

percent gender gap in primary enrollment, the share of enrollment for both girls and boys is significantly lower than in other countries. Only Oman, Morocco, Tunisia, and Algeria have closed less than 95 percent of the gender gap in the region. Regarding secondary education, the UAE, Algeria, Bahrain, Jordan, Kuwait, Lebanon, and Tunisia have all achieved parity, despite Jordan and Lebanon having a far lower overall proportion of enrolment. All nations in the area have eliminated gender disparities in tertiary education.

Equality at Economic Participation

Despite advances in decreasing the gender gap in education, gender equality in labour force participation is a critical issue for women in the Middle East and North Africa (MENA) region to address. The gap in economic participation has increased slightly, from 44 percent to 46 percent in the MENA region in 2022. Kuwait and Jordan are at the top of the regional rankings, while Morocco, Tunisia, and Egypt are among the bottom.

Beyond the labour force participation rate, there was widespread improvement in key economic indicators. Six countries increased their share of women in technical roles, leading by the UAE, Kuwait, and Oman; however, only Oman improved its share of women in senior roles. Over last year and 2022, the gender gap in labor-force participation increased in Saudi Arabia, Morocco, and Tunisia, while most other nations in the area decreased. The most negative variation was found in Bahrain and Egypt.

Human Capital Index:

According to the World Economic Forum's Human Capital Index (WEF, 2017), Three Gulf states

outperform the rest of the region and rank in the middle of the Index overall: the United Arab Emirates (45), Bahrain (47), and Qatar (55). Saudi Arabia (82) and Kuwait (83) were the lowest-ranking Gulf countries (96). Jordan was placed (86) among middle-income countries, whereas Egypt was ranked (97), Algeria (112), Tunisia (115), and Morocco (118) were ranked last, ahead of Mauritania (129).

ICT Development Index (IDI)

Bahrain (31), Qatar (39) and the United Arab Emirates (40) ranked first in the MENA area in the IDI, while Lebanon outperformed Jordan in the index (63 versus 70), and Mauritania (72) ranked first among low-income countries, followed by Tunisia (99) and Morocco (100)

Business and law Index

According to the Index, the United Arab Emirates leads the MENA countries with 85.5 percent of economic reforms completed, followed by Saudi Arabia (80) and Morocco (75.6). Qatar and Oman were ranked at the bottom of the index (29.4). (38.3).

According to the criteria outlined above, the United Arab Emirates will be chosen to represent high-income countries in the Middle East and North Africa region, while Jordan will be chosen to represent middle-income countries and Egypt will be chosen to represent low-income countries.

Figure 1
Criteria for identifying sample countries

Country	Education enrolment ¹	Economic Parity ²	Global human capital index	ICT Development Index ³	Business and law	Selected Country
High income Countries (Gulf Countries)						
United Arab Emirates	49	132	45	40	82.5	UAE
Saudi Arabia	93	128	82	54	80.0	
Kuwait	47	123	96	71	-	
Bahrain	54	131	47	31	65.0	
Oman	113	137	-	62	38.3	
Qatar	83	133	55	39	29.4	
Middle Income Countries						
Jordan	66	125	86	70	46.9	Jordan
Lebanon	90	135	-	63	58.8	

Country	Education enrolment ¹	Economic Parity ²	Global human capital index	ICT Development Index ³	Business and law	Selected Country
Low Income Countries						
Egypt	103	142	97	103	50.6	Egypt ⁴
Tunisia	115	140	115	99	64.4	
Algeria	126	138	112	102	57.5	
Morocco	114	139	118	100	75.6	
Mauritania	-	-	129	72	48.1	

■ A⁴ ■ B ■ C

¹ WEF, Global Gender Gap report, 2022.

² WEF, Global Gender Gap report, 2022.

³ ITU, 2017

⁴ Despite the fact that Morocco topped the progress rankings, followed by Tunisia and Egypt, Egypt has made significant progress in the fields of gender equality and digital economy in recent decades.

- "A" category represents the countries with the highest scores in women's progress, "B" represents the countries with the second highest scores, and "C" represents the countries with the lowest scores in comparison to the other MENA countries.

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Arabic Resources:

- يعان طص الاء كذلل لة ندرأ الة يجي تارت سال اة رازو - (2023-2027) ة يذيف ن التا طخال او في حاتم - ة دايرل او يمقرل دا صت ق ال
- ندرأ الة في ة أرم لل ة ينطو الة يجي تارت سال اة 2020-2025 - ة ينطو الة ن ج لل ال - في حاتم - ة أرم لل نوئشل <https://www.women.jo/ar/node/7935>
- عا طقل او تاعما ج ال نيب ة مءاوم ال لوح ة سارد ايجول ونك وتو تال اص تال اصاص ص ت ل صاخ ال سوم ساري إ بتكم ندرأ الة في تام ول عم الة في حاتم ال م ت - 2020 ندرأ الة - طول سل ب <https://erasmus-plus.org/jo/Portals/0/Report%20on%20linking%20universities%20with%20labor%20market%20in%20ICT%20v%2028-Dec-20.pdf>

JustJobs

NETWORK

JustJobs Network is an applied research organisation finding evidence-based solutions to one of the most pressing challenges of our time: How to promote better work in a rapidly changing 21st-century economy. We produce research on good job creation and workforce development, focusing our work on the critical knowledge gaps in the employment landscape.

JustJobs convenes a global network of diverse stakeholders—including policy shapers, academics, and grassroots leaders—to deepen the practical implications of our research and amplify its impact. Through the combination of cutting-edge research and global knowledge sharing, we aim to forge a fresh, dynamic channel for policy dialogue on employment at national, regional and international levels. Our team members are based in New Delhi and Washington, D.C.