



## Skills trends in the Arab region in the wake of ChatGPT (Generative AI)



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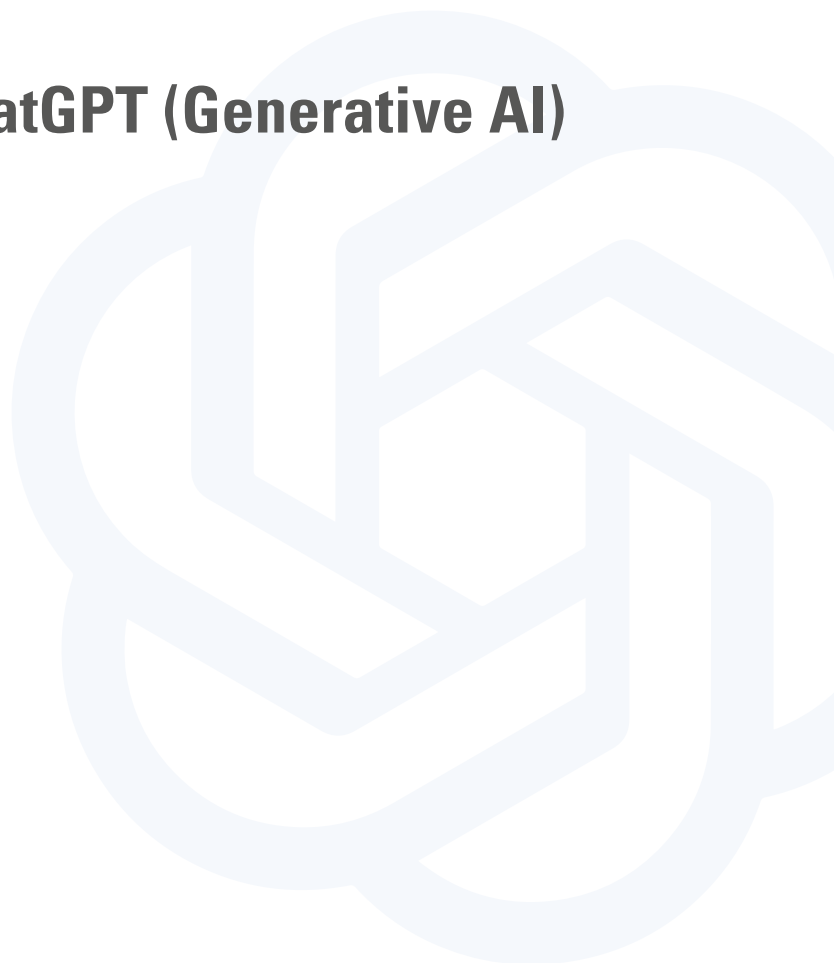
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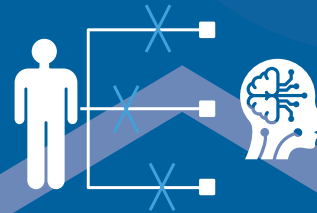
# Key messages



Although the virtual job market in the Arab region still shows strong demand for skills in traditional sectors, there is potential for jobs related to the future of work, specifically to large generative pre-trained transformers (GPT) models.



In 2023, demand for large language models is still less than 0.2 per cent, with Saudi Arabia and the United Arab Emirates demanding the most GPT-related jobs.



Based on the ESCWA Skills Forest, Fourth Industrial Revolution jobs exist in the virtual job market in the Arab region, but the skills needed for such jobs are not well connected.



Business administration-related fields generally exhibit the highest artificial intelligence (AI) augmentation scores in the region.

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# Introduction

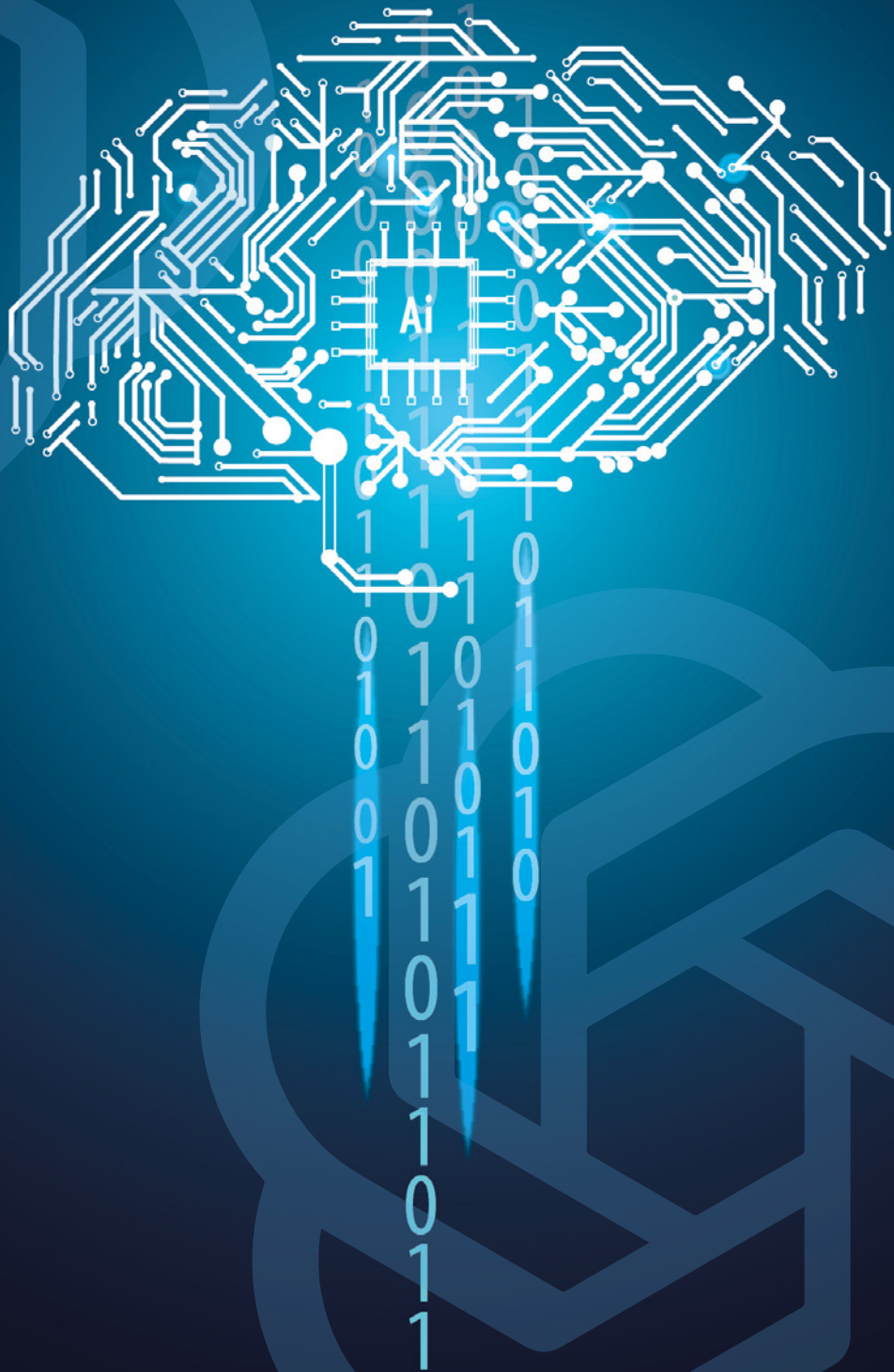
Between June 2020 and March 2023, the virtual job market in the Arab region advertised a total of 2,555,147 available positions. An analysis of e-job openings found that the region required 411 human-related skills (soft skills) and 16,765 technical skills (hard skills). The demand for skills related to the Fourth Industrial Revolution,<sup>1</sup> such as computer science, data analysis, Structured Query Language (SQL), problem-solving and innovation, was evident in the region. However, traditional industries, such

as banking, accounting, finance-related skills, hotel and restaurant services, and commerce still had the highest demand for skills. Digitized industries could present an opportunity for the Arab region to establish a more sustainable economy. Recent technological developments, especially in natural language processing such as ChatGPT, are expected to expedite the automation of many demanded skills in the Arab region.

## ESCWA Skills Monitor: summary

Total jobs analysed	2,555,147
Total demanded skills analysed	6,034,878
Unique demanded skills analysed (hard)	16,765
Unique demanded skills analysed (soft)	411
Percentage of professionals and technicians demanded	53.2%
AI augmentation score	33.5%

**Source:** ESCWA analysis based on data from the ESCWA Skills Monitor.





# 1

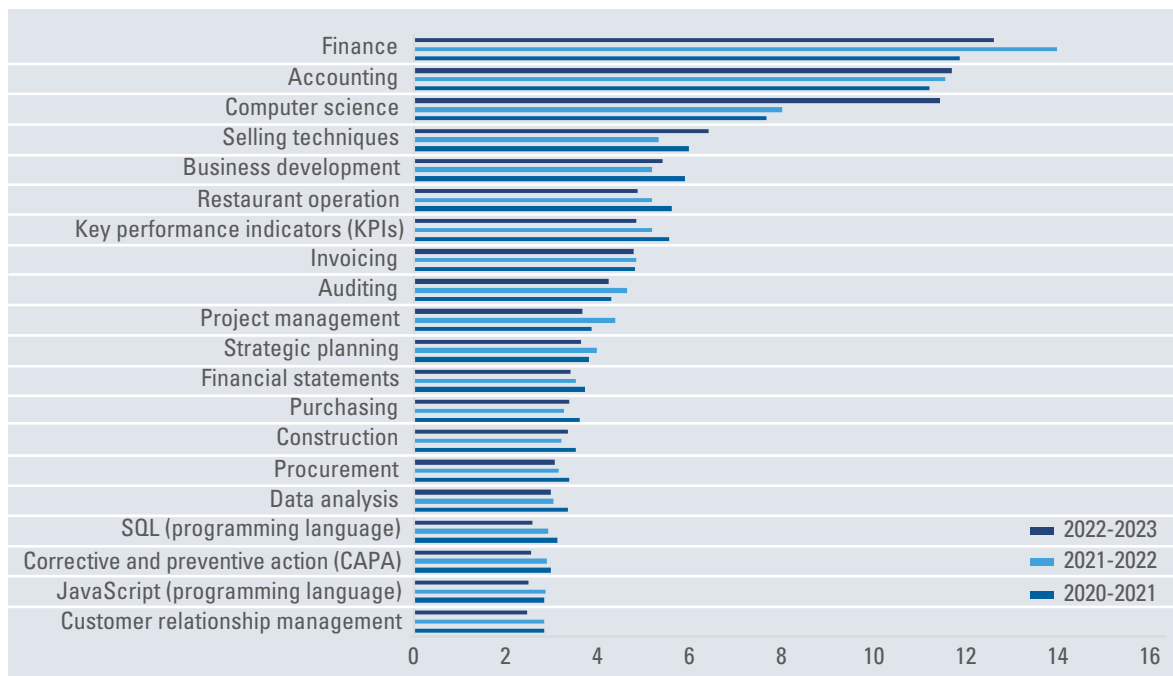
## Demand for skills in the Arab region

### A. Hard skills

Figure 1 shows the top-20 hard skills in demand in the Arab region between 2020–2023, according to the ESCWA Skills Monitor. The most sought-after skills are still those related to traditional industries, such as services and commerce. However, in 2023, there has been an increase in demand for hard skills relevant to the Fourth Industrial Revolution, such as computer science (third rank), data analysis, and programming languages. Linking to global trends,<sup>2</sup> the hard skills most demanded in developed

countries in 2022 predominantly focused on automation, AI, data science, and machine learning (DevSecOps, blockchain, Vue.js, cloud computing, Kubernetes, Looker Data Platform, TensorFlow, and UI/UX skills). Figure 1 shows that the Arab region recognizes the importance of hard skills relevant to the Fourth Industrial Revolution. This shift in demand indicates the region’s capacity to adapt to technological developments, and remain competitive in the global market.

**Figure 1. Top demanded hard skills in the Arab region, 2020–2023**



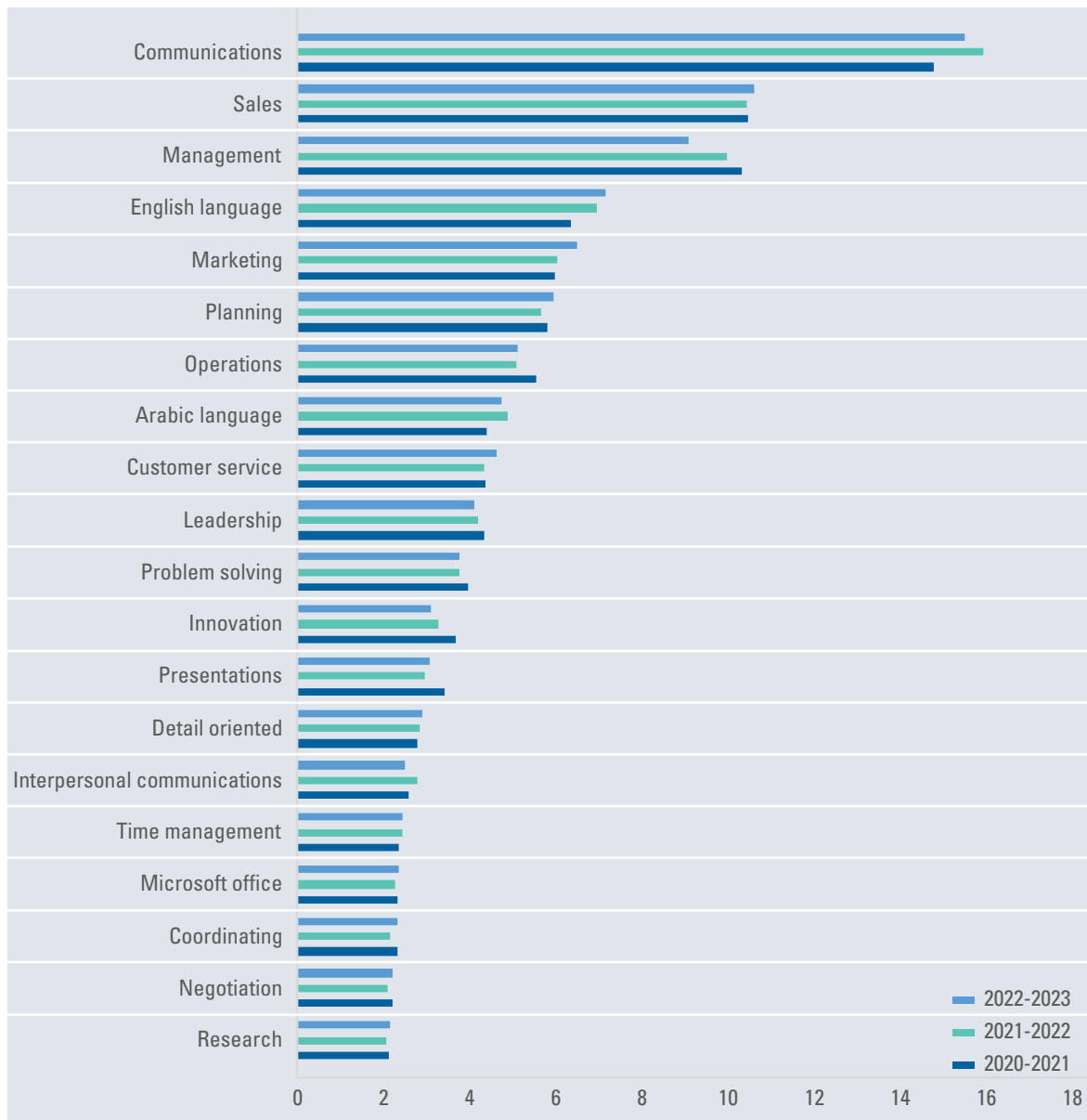
Source: ESCWA analysis based on data from the ESCWA Skills Monitor.

## B. Soft skills

Figure 2 sets out the essential soft skills that were in high demand in the Arab region between 2020 and 2023, based on the ESCWA Skills Monitor. The Future of Jobs Report 2023 of the World Economic Forum identifies several core soft skills that are sought after worldwide, including analytical and creative thinking, resilience and flexibility,

motivation and self-awareness, empathy and active listening, technological literacy, and leadership and social influence. However, the most demanded soft skills in the Arab region deviate from global trends, with the exception of leadership. Notably, proficiency in both Arabic and English is consistently demanded in the region.

**Figure 2. Top demanded soft skills in the Arab region, 2020–2023**



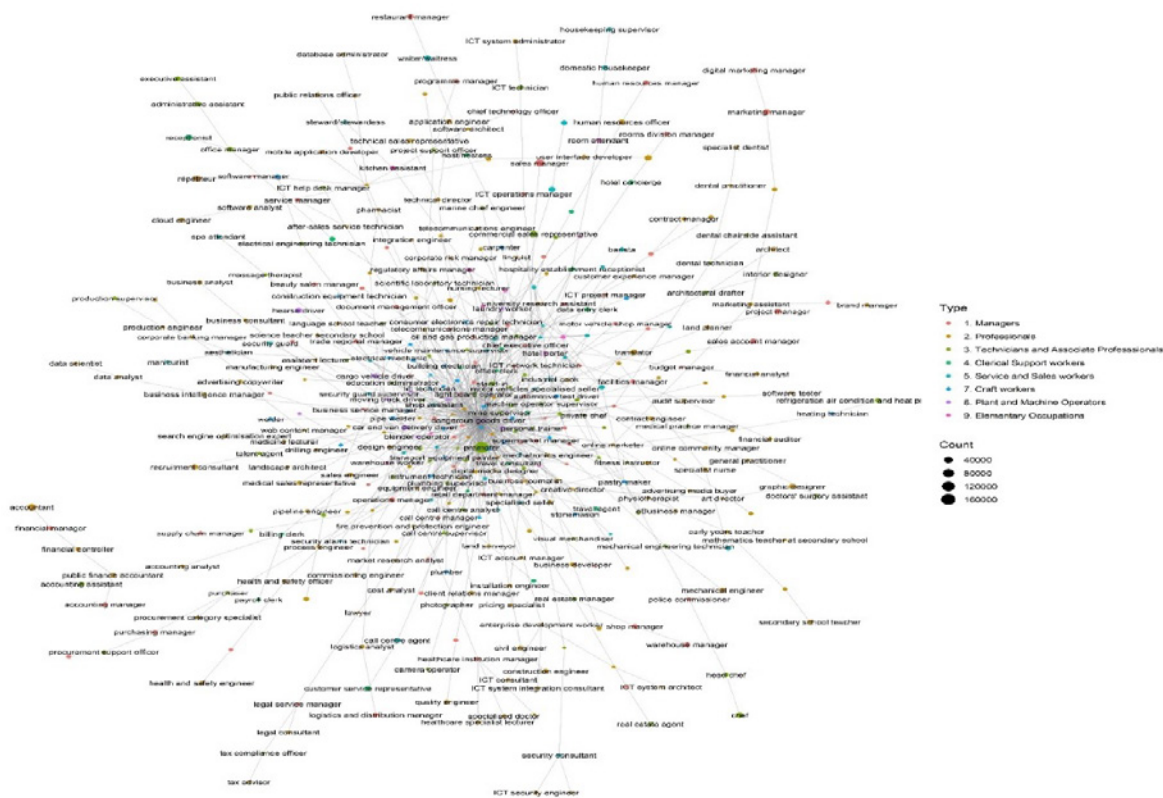
Source: ESCWA analysis based on data from the ESCWA Skills Monitor.

# 2 Skill-based job map: ESCWA Skills Forest

The ESCWA Skills Forest was developed to assess whether the skills demanded in the Arab region were diversified (figure 3). The Skills Forest sets out ESCWA mapping of demanded skills at the national level. It indicates the proximity between jobs demanded (nodes) based on the similarity of skills. Each branch connecting two nodes in the Skills Forest measures the similarity of skills between the corresponding pair of nodes. The densely populated area at the centre of the Skills Forest

represents the highest interconnectedness among demanded jobs in the virtual market, the “core of the Forest”, meaning that it is easier to reskill and/or upskill in the core compared with the periphery. The core skills in demand in the region are a mix of managers, professionals, technicians, and associate professionals. The Skills Forest shows that business administration-related skills are the most common, and make up the only dense core of the Skills Forest for the region.

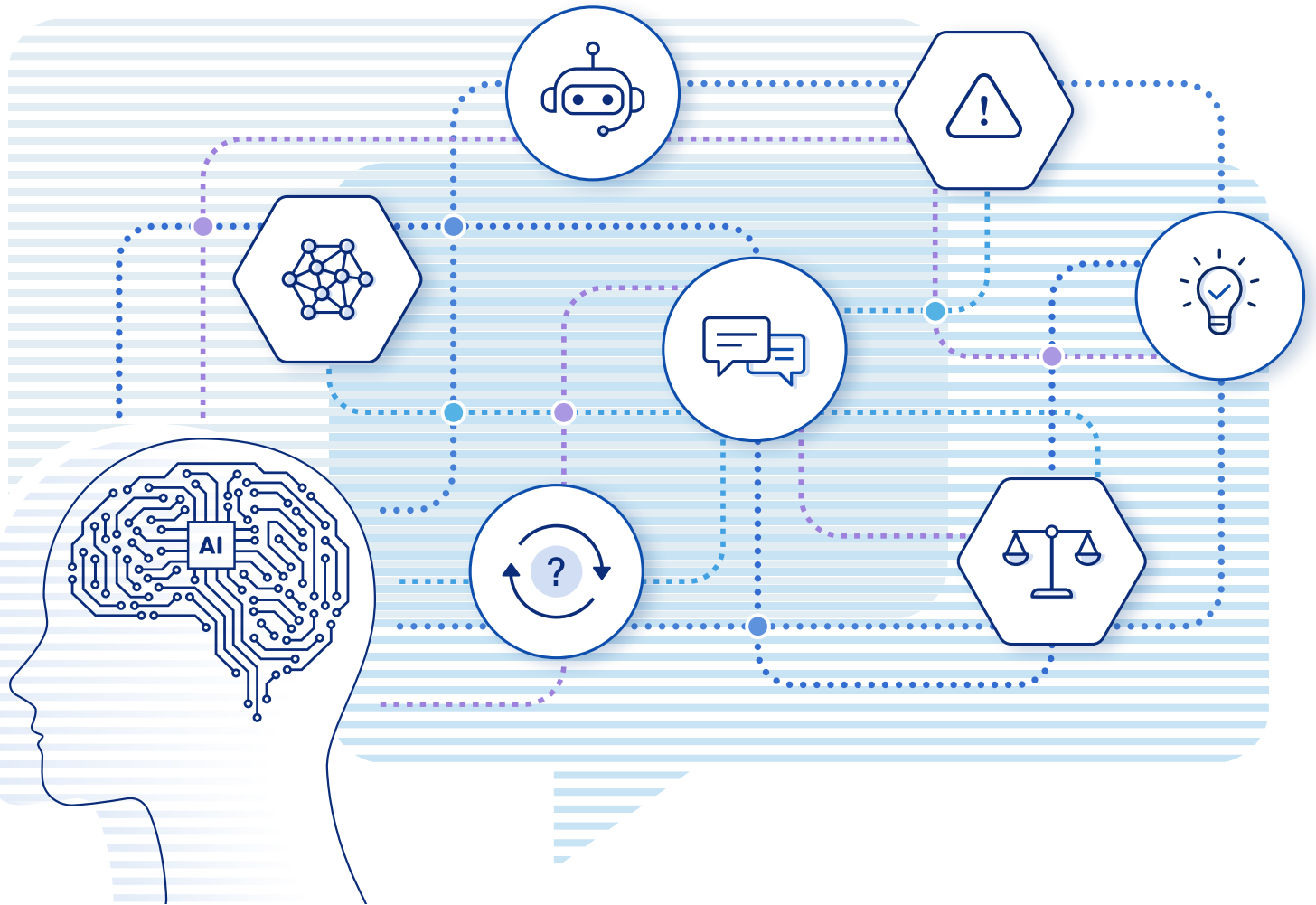
Figure 3. ESCWA Skills Forest



Source: ESCWA analysis based on data from the ESCWA Skills Monitor.

Figure 3 sets out the positions of information and communication technology (ICT), data analyst, and developer occupations, which are commonly associated with Fourth Industrial Revolution skills and the future of work. In general, jobs located farther away from the core of the Skills Forest have fewer common skills with other occupations in the job market. In figure 3, the Arab region has a single,

with Fourth Industrial Revolution jobs largely situated on the periphery boundary or the edge of the core. Specifically, developer jobs are typically found at the Skills Forest boundary. These observations indicate that Fourth Industrial Revolution jobs in the Arab region require skill sets that differ from those that are in high demand in the job market, as outlined within the core of the region's Skills Forest.



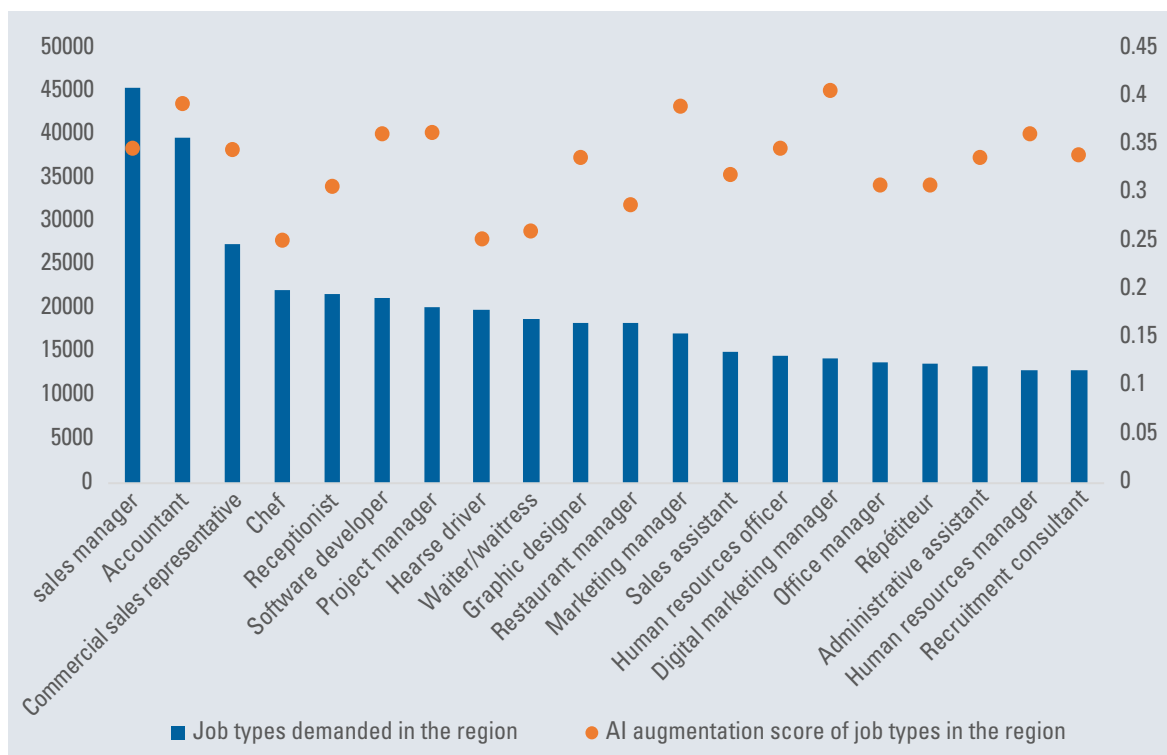
# 3

## Jobs and AI augmentation

In figure 4, the bars illustrate the most demanded jobs in the Arab region, while the orange dots indicate their AI augmentation scores. Based on the ESCWA Skills Monitor, the region's most in-demand jobs are sales managers, accountants, and commercial sales representatives, which are primarily associated with traditional service or customer-based industries, and not necessarily linked to innovation-related activities, except for accountants. Accountants have the highest AI augmentation scores, indicating that

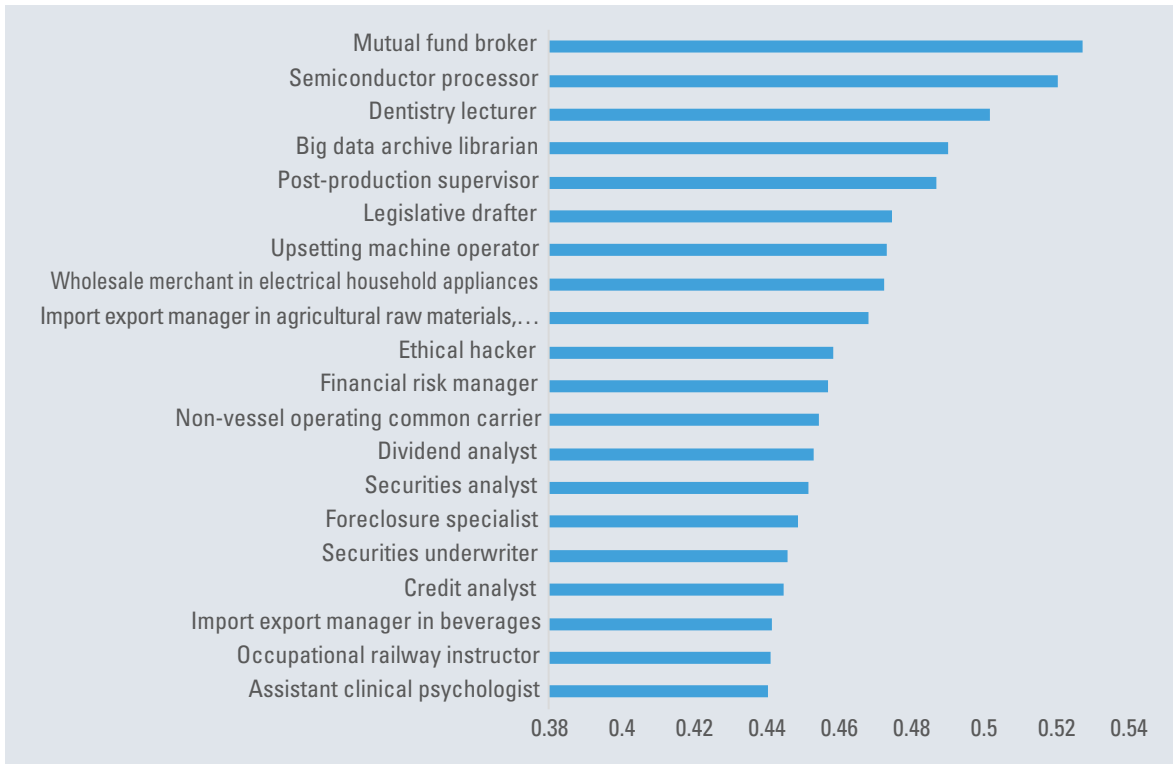
various tasks in these fields can be AI-augmented. Conversely, jobs with lower AI scores suggest that technology may not be as readily applied to such jobs compared with others. Figure 5 shows the top 20 jobs with the highest AI augmentation scores in the Arab region, none of which were among the top 20 demanded jobs in the region. Business administration-related fields generally have the highest AI augmentation scores in the region.

**Figure 4. Top 20 jobs demanded in the Arab region and their AI augmentation score**



Source: ESCWA analysis based on data from the ESCWA Skills Monitor.

**Figure 5. Top 20 jobs in the region by AI augmentation score**



**Source:** ESCWA analysis based on data from the ESCWA Skills Monitor.

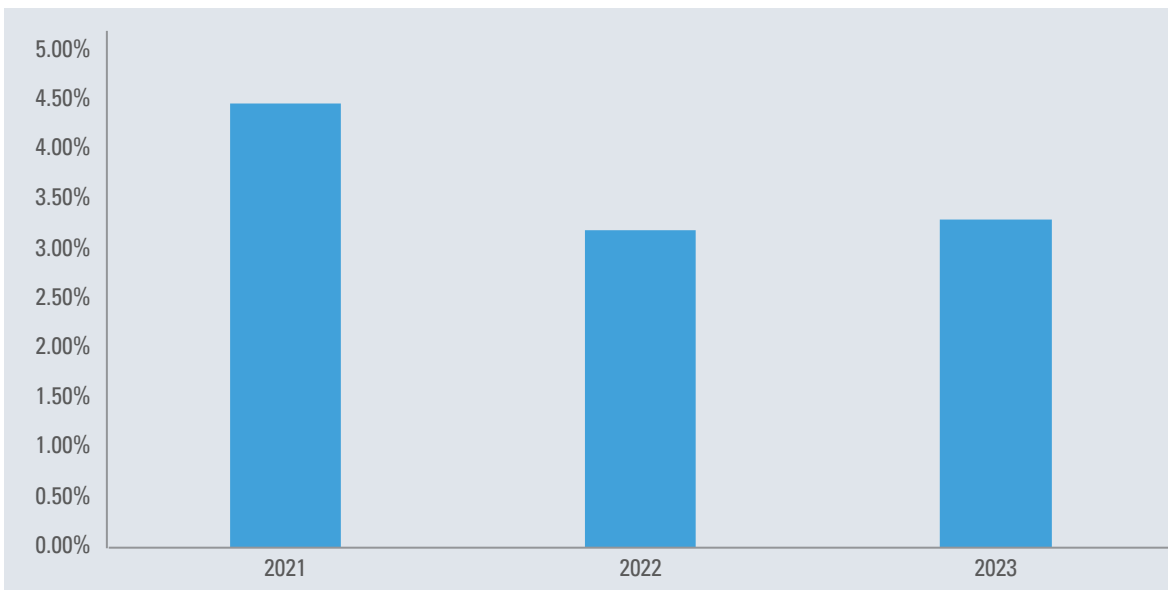
# 4

## Fourth Industrial Revolution jobs

Figure 6 illustrates the percentage of Fourth Industrial Revolution jobs in the region from 2021 to 2023. During that period, the percentage of such jobs has remained stable, not exceeding 5 per cent of total jobs. Egypt, Lebanon and Morocco emerge as the leading countries in terms of the percentage of Fourth

Industrial Revolution jobs for the period 2021–2023. The top Fourth Industrial Revolution job roles in the region include virtual reality and augmented reality (VR/AR) content storytellers, big data analysts, automatic assembly line and industrial robot operators, and bioenergy researchers and developers.

**Figure 6. Percentage of Fourth Industrial Revolution jobs in the Arab region**



**Source:** ESCWA analysis based on data from the ESCWA Skills Monitor.

Although the region has started incorporating Fourth Industrial Revolution jobs in the virtual job market, it still has a long way to go to keep pace with global trends. Currently, there is ample room for Fourth Industrial Revolution jobs to grow and align with the worldwide trajectory, with such jobs and skills expected to grow by almost 35 per cent in 2023

worldwide. An assessment of current jobs in the Arab region reveals some demand for large language models. According to the ESCWA Skills Monitor, of 338,016 jobs in 2023, 652 are related to GPT. Most of these jobs are in Saudi Arabia and the United Arab Emirates, followed by Egypt.



## Endnotes

- 1 The Fourth Industrial Revolution represents a fundamental change in the way people live, work and relate to one another. It is a new chapter in human development, enabled by extraordinary technological advances commensurate with those of the first, second and third industrial revolutions. These advances are merging the physical, digital and biological worlds in ways that create both huge promise and potential risk. The speed, breadth and depth of this revolution requires a re-evaluation of how countries develop, how organizations create value, and even what it means to be human. The Fourth Industrial Revolution is about more than just technology-driven change; it is an opportunity to help everyone, including leaders, policymakers and people from all income groups and countries, to harness converging technologies so as to create an inclusive, human-centered future.
- 2 According to EMSI-Burning Glass, Indeed and LinkedIn.



# Annex 1. Education and employment statistics in the Arab region

Table A1.1

Education		Employment	
Educational attainment (at least upper secondary) <sup>a</sup>	51%	Labor force participation rate, 2021	25.35%
Educational attainment (at least short-term tertiary) <sup>b</sup>	25.8%	Employment – population ratio, 2021	40.82%
Educational attainment (doctorate or equivalent) <sup>c</sup>	0.42%	Employment-population ratio (female), 2021	15.1%
Gross enrolment (tertiary – all), 2020	40.97%	Labourers' share in the Industry, 2019	26.92%
Gross enrolment (tertiary – male), 2020	39%	Labourers' share in the services, 2019	58.36%
Gross enrolment (tertiary – female), 2020	40.03%	Unemployment rate, 2021	9.93%
Quality of Education, 2018 <sup>d</sup>	62nd	Unemployment (youth), 2021	25.54%
Quality of education (maths, eighth grade), 2019 <sup>e</sup>	34th	Unemployment (female), 2021	17.25%
Quality of education (sciences, eighth grade), 2019 <sup>f</sup>	31st	Unemployment (youth and female), 2021	42.79%

**Source:** International Labour Organization statistics, Institute of Statistics of the United Nations Educational, Scientific and Cultural Organization (UNESCO), and the World Bank's World Development Indicators.

<sup>a</sup> The percentage is for seven countries in the region in 2017, namely Bahrain, Egypt, Kuwait, the State of Palestine, Qatar, Saudi Arabia and the United Arab Emirates.

<sup>b</sup> The percentage is for five countries in the region in 2017, namely Egypt, Kuwait, the State of Palestine, Saudi Arabia and the United Arab Emirates.

<sup>c</sup> The percentage is for six countries in the region in 2017, namely Bahrain, Egypt, the State of Palestine, Qatar, Saudi Arabia and the United Arab Emirates.

<sup>d</sup> Only four Arab countries were included in the PISA 2018 ranking, namely the United Arab Emirates, Saudi Arabia, Qatar and Lebanon.

<sup>e</sup> Only nine Arab countries were included in the TIMSS 2019 ranking, namely the United Arab Emirates, Qatar, Lebanon, Jordan, Egypt, Oman, Kuwait, Saudi Arabia and Morocco.

<sup>f</sup> Only nine Arab countries were included in the TIMSS 2019 ranking, namely Bahrain, the United Arab Emirates, Oman, Jordan, Kuwait, Saudi Arabia, Morocco, Egypt and Lebanon.

# Annex 2. Core skills in the region

Table A2.1

Skill	Ranking
Finance	1
Accounting	2
Restaurant operations	3
Key performance indicators (KPIs)	4
Selling techniques	5
Marketing	6
Safety training	7
Invoicing	8
Corrective and preventive action (CAPA)	9
Purchasing	10
Mechanical engineering	11
Environment health and safety	12
Business development	13
Front office	14
Construction	15
Product knowledge	16
Housekeeping	17
Strategic planning	18
Auditing	19
Food safety and sanitation	20

Source: ESCWA analysis based on data from the ESCWA Skills Monitor.



The present regional profile discusses the virtual job market in the Arab region, emphasizing the potential for future work opportunities related to large generative pre-trained transformers (GPT) models. While there is still strong demand for skills in traditional sectors, jobs connected to GPT models show promise.

In 2023, the demand for large language models remains below 0.2 per cent, with Saudi Arabia and the United Arab Emirates leading in demand for GPT-related jobs. Business administration-related fields generally exhibit the highest artificial intelligence augmentation scores in the region. However, despite the existence of Fourth Industrial Revolution jobs in the virtual job market, there is a lack of well-connected skills for these positions, according to the ESCWA Skills Forest.

