



منتدى الاستراتيجيات الأردني  
JORDAN STRATEGY FORUM

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## Readiness for Frontier Technologies Index 2021

January 2022

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## 1. Introduction

The “knowledge-based economy” can be considered as one of the key factors in the radical transformation in the structure of local economies. The United Nations Development Program (UNDP) defines the knowledge economy as an economy in which the production, diffusion and use of information technology are critical factors in enhancing economic growth, and creating Job opportunities, and enhancing competition and well-being.

The new technologies have contributed to exploiting natural resources in the best possible way, and have had positive effects on production, through accelerating production processes, increasing the level of production and reducing costs. These benefits have led to an increase in the overall production efficiencies, and hence, increased long-term economic growth and living standards.

The United Nations estimates that knowledge economies contribute at least 7% of global Gross Domestic Product (GDP), and grows by at least 10% annually. In addition, it is interesting to note that 50% of the productivity growth in the European Union (EU) is the direct result of the use and production of information and communication technology.

It is useful to note that the global trend during the next few years will be knowledge based, and education is considered a key element to promote innovation and align with trends, especially in light of the on-going and rapid advancements in the domain of information technology. No one should underestimate the importance of education in human and capital development, as it is a vital element to entering the new era of knowledge .

In the context of the above-mentioned observations, the Jordan Strategy Forum (JSF) sheds light on the “Readiness of Countries Index”, issued by the United Nations Conference on Trade and Development UNCTAD in 2021.

## 2. About the Index:

The United Nations Conference on Trade and Development issued the report “[Technology and Innovation](#)” was published in 2021. The report is an effective tool in guiding policies and strategies for the adoption of leading technologies.

In this report, UNCTAD ranks a total of 158 economies in terms of their respective “Country-Readiness Index”. The Index ranks economies in terms of their capabilities to equitably use, adopt and adapt “frontier technologies”.

### 3. The Pillars and Sub-Indices:

The index comprises five building blocks, as follows:

<b>ICT Deployment</b>	This block seeks to measure the level of the spread of information and communication technology to ensure access to all societies, and to evaluate the quality of infrastructure that allows for more use that is effective.	<ol style="list-style-type: none"> <li>1. Internet users (percent of population).</li> <li>2. Mean download speed (Mbps).</li> </ol>
<b>Skills</b>	This block seeks to measure the skills required to support the adoption of the concept of technology on the basis of acquiring knowledge through the educational environment, and acquiring skills through the work environment.	<ol style="list-style-type: none"> <li>1. Expected years of schooling.</li> <li>2. High-skill employment (% of working population).</li> </ol>
<b>Research &amp; Development</b>	This block is considered essential to measure the extent to which countries are able to improve technology and match it with the requirements of the local market.	<ol style="list-style-type: none"> <li>1. Number of scientific publications on frontier technologies.</li> <li>2. Number of patents filed on frontier technologies.</li> </ol>
<b>Industry Activity</b>	This block measures the ability of the local industry to manufacture advanced technology and export digital services.	<ol style="list-style-type: none"> <li>1. High technology manufactures exports (% of total merchandise trade).</li> <li>2. Digitally deliverable services exports (% of total service trade).</li> </ol>
<b>Finance</b>	This block seeks to measure the availability of financing to the private sector and the resources provided by other financial companies to the private sector.	<ol style="list-style-type: none"> <li>1. Domestic credit to private sector (% of GDP).</li> </ol>

### 4. Where Does Jordan Stand?

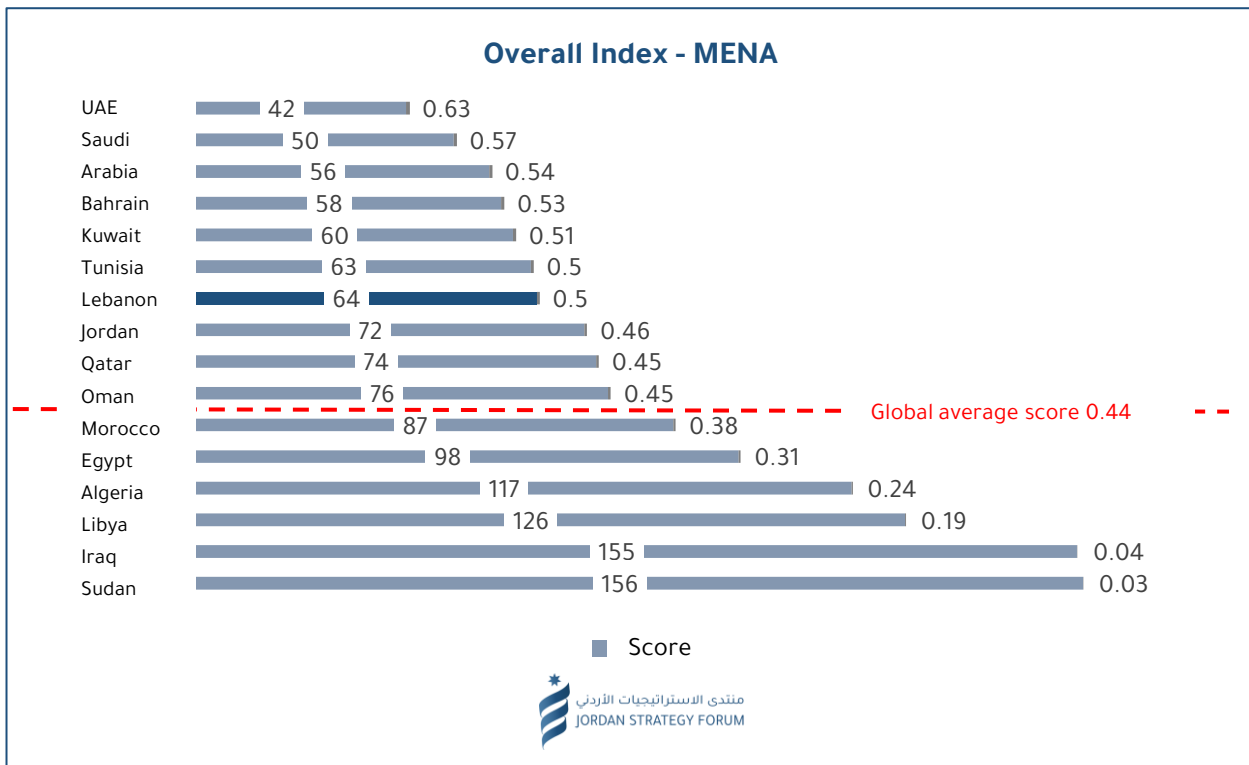
Jordan ranks 64<sup>th</sup> out of 158 countries on the overall index. As far as Jordan's performance on the main five pillars (blocks) of the index are concerned, the rankings are listed below:

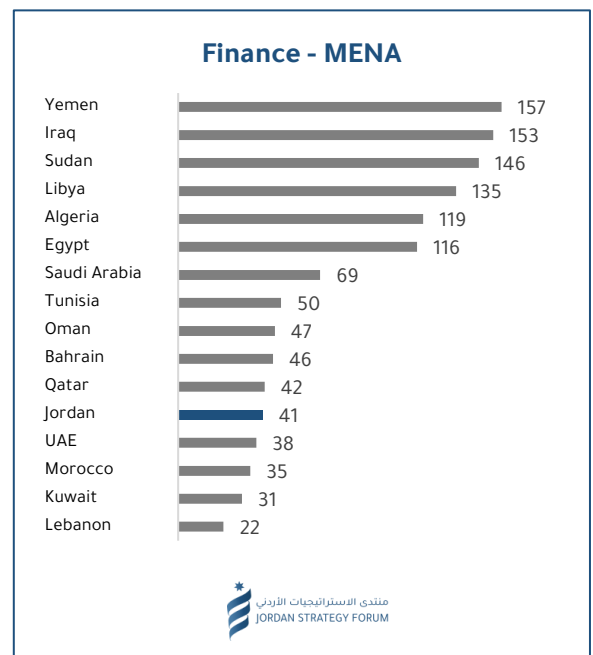
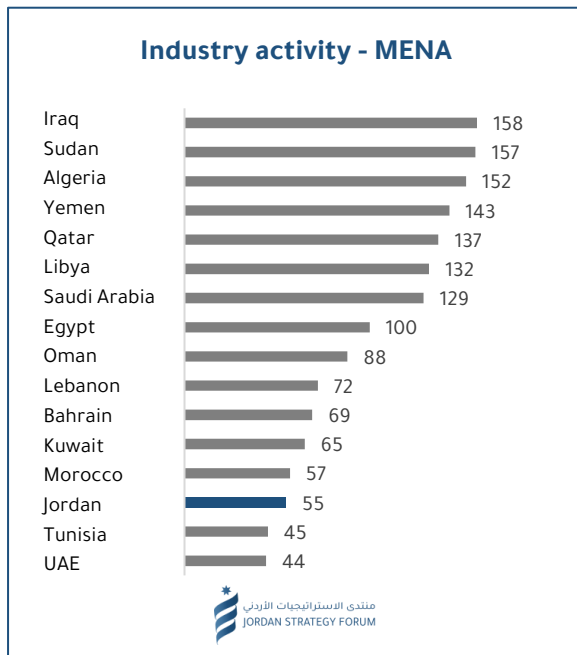
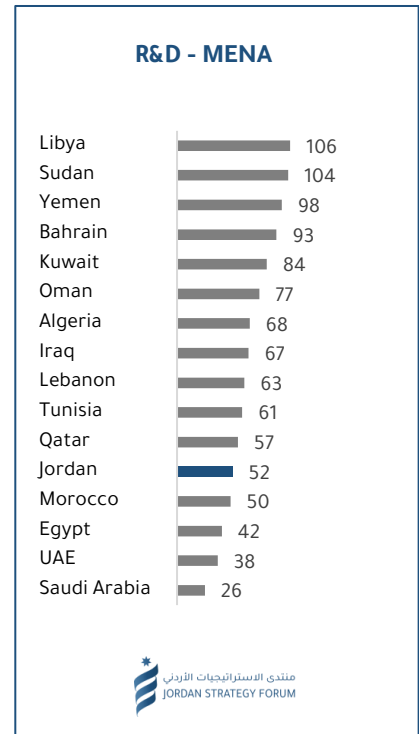
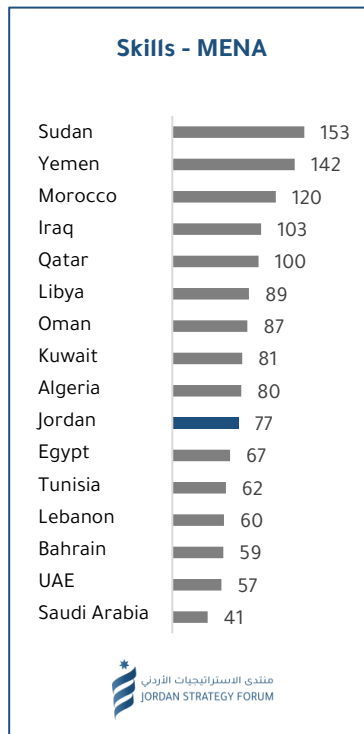
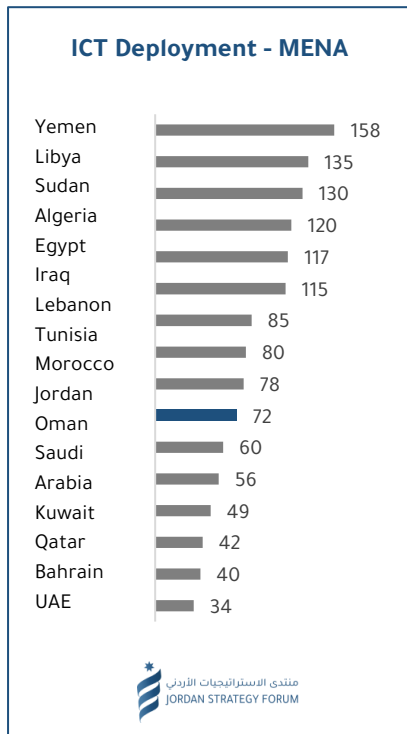
- ICT Deployment: Jordan ranks 72<sup>nd</sup>.
- Skills: Jordan ranks 77<sup>th</sup>.
- Research & Development: Jordan ranks 52<sup>nd</sup>.
- Industry Activity: Jordan ranks 55<sup>th</sup>.
- Finance: Jordan ranks 41<sup>st</sup>.

## 5. Countries' Performance: Regionally and Globally

### Regional Comparison

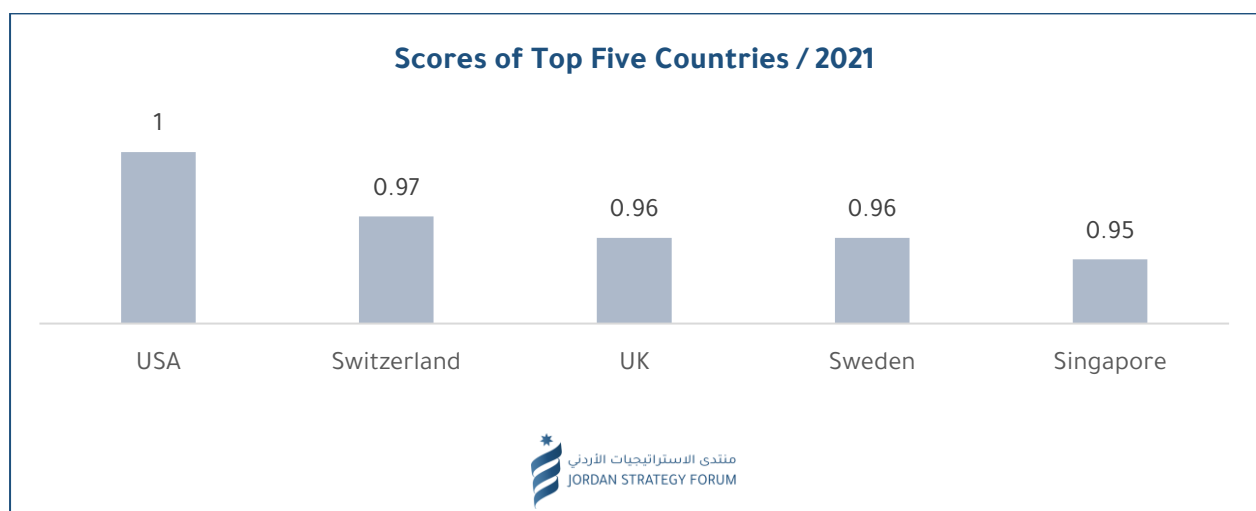
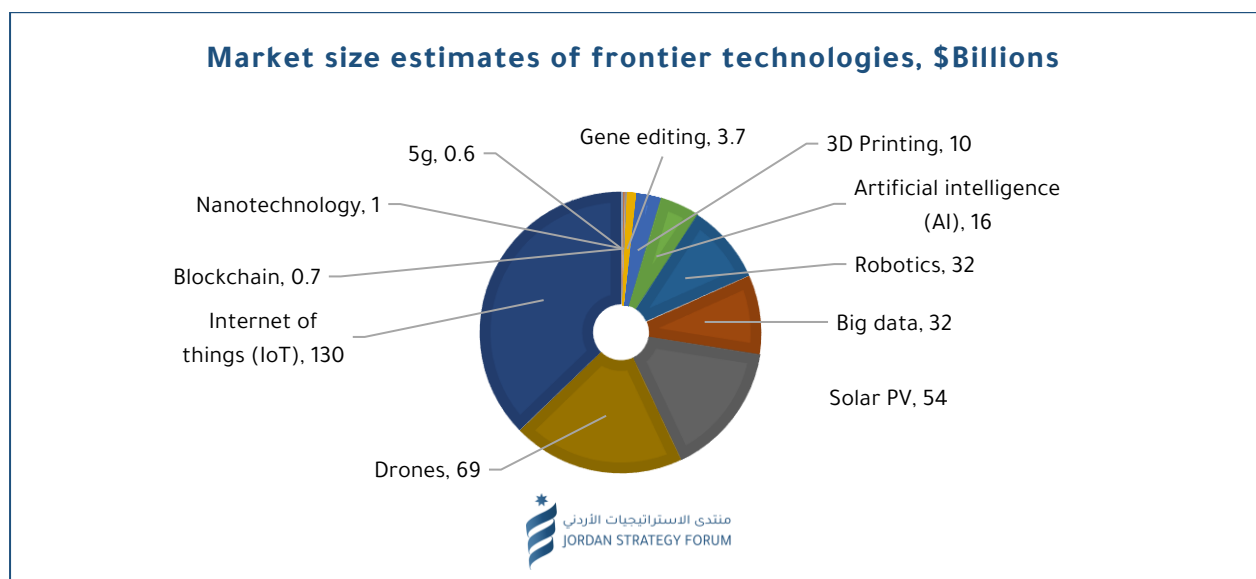
1. The majority of the Arab states fall in the upper-middle group of countries (above the world average).
2. Jordan ranks 7th regionally, with a score of 0.50 (out of 1). A score of 1 indicates the best performance, and a score of 0 indicates the lowest performance.
3. The United Arab Emirates (UAE) topped all the Arab countries on the overall index, and is very close to the of high-performing countries group.





## International Comparison

1. The report shows that “frontier technologies” already represent a \$350 billion market, and this is expected to increase to \$3.2 trillion by 2025. This observation offers a great opportunity for those ready to catch-up with this technological wave.
2. The report indicates that only a few countries currently produce frontier technologies and in the short run, this is unlikely to change. The two major players are the United States and China.
3. The top five best-prepared countries are the United States, Switzerland, United Kingdom, Sweden, and Singapore.

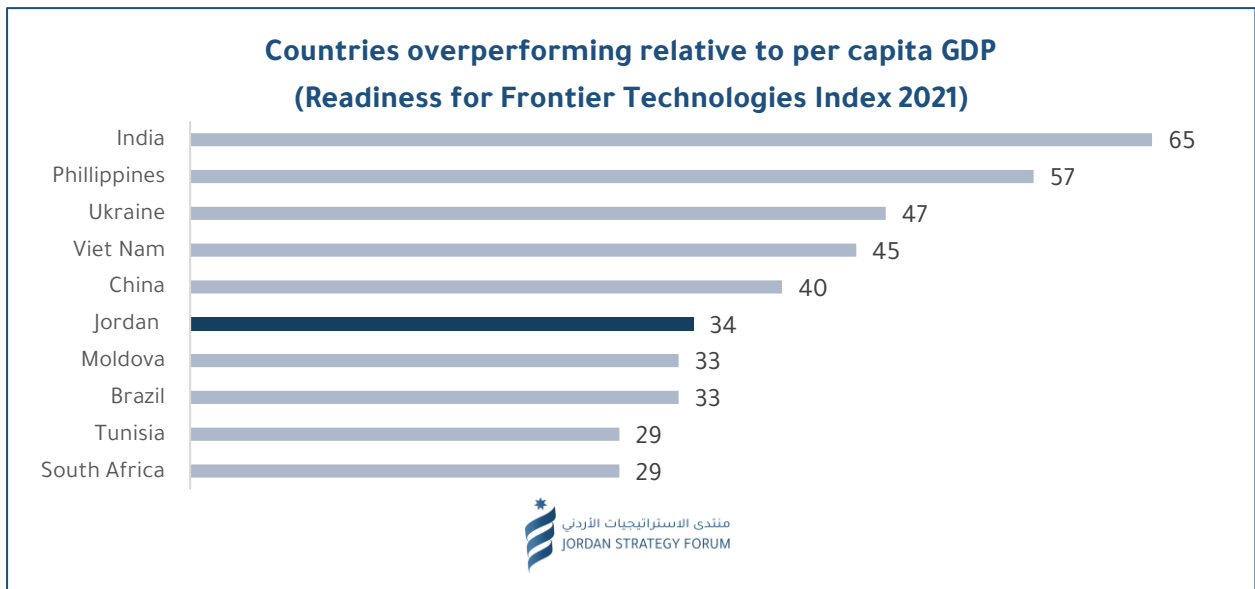


## 6. The Way Forward

Relative to the above-mentioned observations, it is encouraging to note that Jordan is among the top ten countries whose performance on the index is better than expected,

given the economy's per capita income. The expected index value is measured by the difference between the economy's "actual index ranking" and its "estimated ranking based on per capita income".

1. While Jordan ranks 64<sup>th</sup> on the actual index, the estimated ranking, based on per capita income, is 98<sup>th</sup>. In other words, Jordan over-performed other countries by 34 ranking positions.



Relative to the above-mentioned observations, it is worth stating that while the choice between "frontier innovation" and "catch-up innovation" are not mutually exclusive, policy-makers should realize that the engagement in frontier innovation is a costly process, and entails a high-risk of failure. Within this context, it is useful to note that the top 2,500 companies in the world in R&D activity spent a total of \$ 908.9 billion in 2020 on R&D. The top 30 companies spent 30.5% of this total amount. Moreover, it is unfortunate to note that no Arab company, never mind a Jordanian company is found among the top 2,500 companies in the world in terms of R&D spending. For these reasons, policy-makers are advised to concentrate their efforts on making Jordan a "frontier innovation economy". To be practical, policy-makers should strive to make Jordan a "catch-up innovation economy".

## 7. In Nutshell

If policy-makers succeed in improving the quality of higher education, this sector will not only improve Jordan's score and rank on the "readiness index", enhance the ability of the economy in becoming an advanced "catch-up innovation economy", but also increase its contribution towards the growth and development process of the country for years, if not generations, to come. We should not allow this opportunity for change go to waste. It should be a windfall.



# Jordan's Performance on the "Readiness for Frontier Technologies Index 2021"

Readiness for Frontier Technologies Index is part of the "Technology and Innovation" report published by the United Nations Conference on Trade and Development (UNCTAD) in 2021. The Index ranks 158 economies in terms of their capabilities to equitably use, adopt and adapt "frontier technologies".



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- While Jordan ranks 64th on the actual index, the estimated ranking, based on per capita income, is 98th. In other words, Jordan over-performed other countries by 34 ranking positions.