Technology Patterns in Nanochemistry Based on GII Indicator

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Article

Technology Patterns in Nanochemistry Based on GII Indicator

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Abstract: Trends focused on the Global Innovation Index (GII) as a measure for progress of nanochemistry. This paper provides projections of recent developments in the word in nanochemistry based on the Global Innovation Index as a predictor for certain Arab countries. The GII is an annual ranking of countries by its ability and performance in innovation and is calculated on a basic average from five and two pillars in two sub-indexes, the Innovation Input Index and the Innovation Output Index. Each pillar represents a trait of creativity and consists of up to five measures, with a weighted average formula for measuring their ranking. In 2008, the GII rose to 36.3 in 2016 from 0.5. The GII is smaller than the GII in Arabic countries worldwide. During the years 2013-2016, the worldwide GII was increasing while for the same period, for Arabic countries, this decline could be explained by economic and industrial wars in the Arab region.

Keywords: Global Innovation Index; nanochemistry; development; GII; technology patterns

1. Introduction

The highly effective, scalable and multi-ordinated global developments for the production of science-intense systems and technologies. These fundamental technologies, novel materials and components focused on microelectronics, radio, optoelectronics, laser technology, computing equipment, information technology, and finally molecular biology or nanotechnology technologies shall be aimed at innovation. The special object involving continuous analysis as well as a particular methodology during economic evaluation, initial approaches for production and deployment controls is high technology (Almatarneh, et al., 2019).

Such innovations typically need substantial economic assistance in previous stages because, in fact, conventional manufacturing processes cannot support economic competence. The success of previous actions is seen only in more processes. Initial science research requires a crucial cost benefit, which demands special financial structures for securing financial capital. Today, development of nanochemistry is very important for countries' development, and implies direct use of intelligent systems paradigms. However, the application shall be based not only on the global nanochemistry framework, but also on the creation of intellectual machinery, instruments, robotics, devices and separate elements (Alkhawaldeh, 2021).

More thorough knowledge of the human aspects behind innovation is important for the development of local policies that encourage economic development and climate that are more innovative. Such developments typically require substantial financial help in previous stages, as conventional methods of production in particular are not capable of sustaining economic competence in this era. The productivity of prior decisions is only seen in additional phases. The Global Innovation Index (GII) rates countries annually in terms of innovation potential and performance (Alkhawaldeh, 2020)

It is published in collaboration with other organizations, and relies on both subjective and quantitative evidence from a variety of outlets like the International Telecommunications Union, the World Bank and the World Economic Forum (WEF) by Cornell University, INSEAD and the World Intellectual Property Organization. The Global Innovation Index (GII) seeks to capture multi-

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dimensional dimensions of innovation and to provide the tools to adapt policies that encourage long-term production growth, productivity gains and workforce growth (Altwaiq, et al., 2020).

The GII aims to create an ecosystem in which creativity variables are consistently analyzed. It is a main instrument and a rich database of comprehensive economic indices, spanning 128 economies in 2016, comprising 92.8% of the world's population and 97.9% of global GDP (Altweiq and Alkhawaldeh, 2019). It is therefore necessary to study such field of science as nanochemistry.

2. Experimental

Cornell University, INSEAD, and the World Intellectual Property Organization are co-publishing the Global Innovation Index 2016 (GII) in its 9th edition (WIPO, an agency of the United Nations). The center of the GII report is the ranking of the innovation and efficiency capacities of global economies. Over the last nine years, the GII has developed itself as a leading benchmark for creativity. (Matthews and Brueggemann, 2015) as well. The Globle Innivation Index (GII) is determined using two sub-indices, the Innovation Input Index and the Innovation Output Index, which consist of five and two pillars, respectively, to take a clear average of the scores. Each of these pillars represents a creativity feature, which includes up to 5 measures and the weighted average approach determines their ranking.

3. Results and Discussion

The current pattern of global growth and GII will calculate the development and widespread use of nanochemistry for all social classes. This means that the GIIs of the Arabic countries have been compared over the last few years.

3.1. The Global Innovation Index

The Global Innovation Index, whose dynamic is presented in the Figure 1, is characterized by high-technological construction level and its position on world high-technology markets.

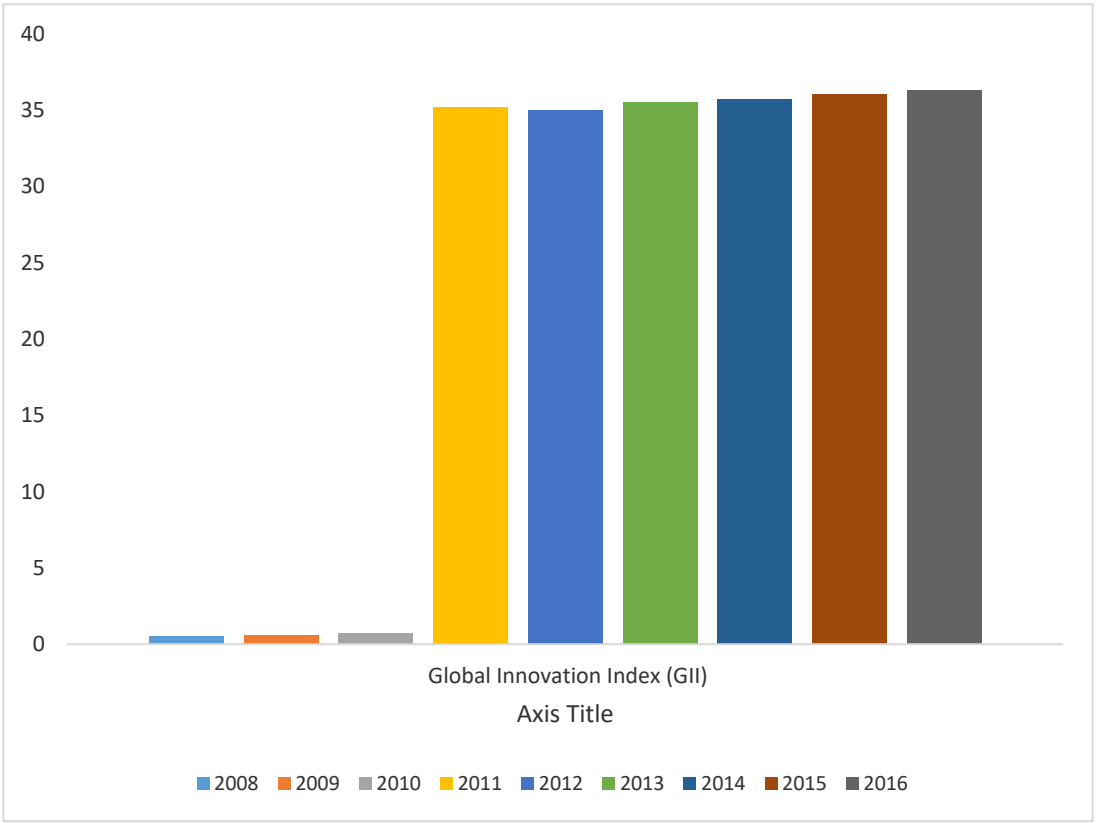

Figure 1. The Global Innovation Index.

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As seen in Figure 2, GII has risen from 0.5 in 2008 to 36.3 in 2016. The sudden leap can be explained by adjusting its estimate method at the cost of index growth. Moreover, every year the number of countries used to measure the index rises. In 2008, the index was calculated for just 108 countries, with 142 in 2013.

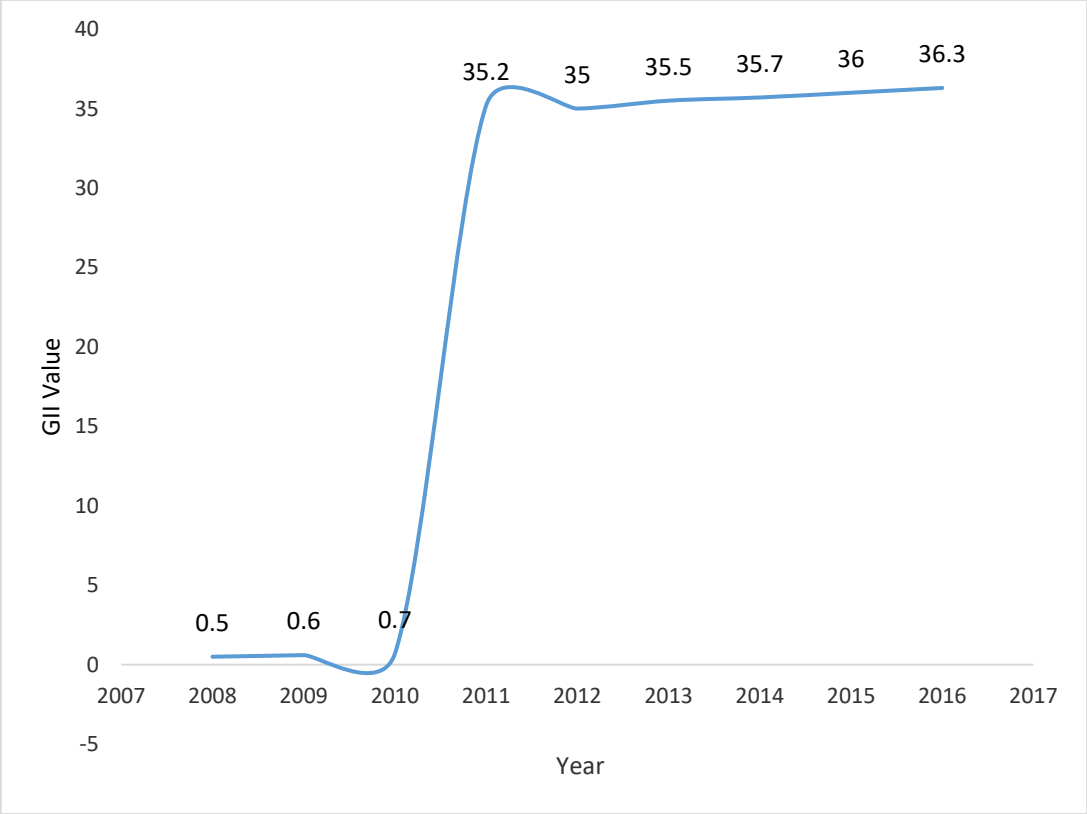

Figure 2. Worldwide mean GII value transition.

In general, the progress of high-tech world markets indicates the rise of index dynamics. Currently, as seen in the approximate results for 213 statistical data from 2000 to 2016, the structure of the global high-tech industry is still not established. Cluster analyzes were performed in this situation. The hypothesis was drawn that internal markets for high-tech in various countries are at different stages of growth before a cluster study was carried out. However, the pace of growth for States was not consistent with previous years and that is why in the period from 2000 to 2016 the composition of the world's high technology markets was modified.

3.2. Listed Arabic Countries Global Innovation Index

During the period, 2013-2016, all the Arab countries fall under the global innovation index. In 2016, Sudia Arabia dropped to 49th, down from 42nd in 2013. Jordan has sunk by seven places since 2015 to 82nd position in the Global Innovation Ranking. Figure 3 displays the score and positions of other nations.

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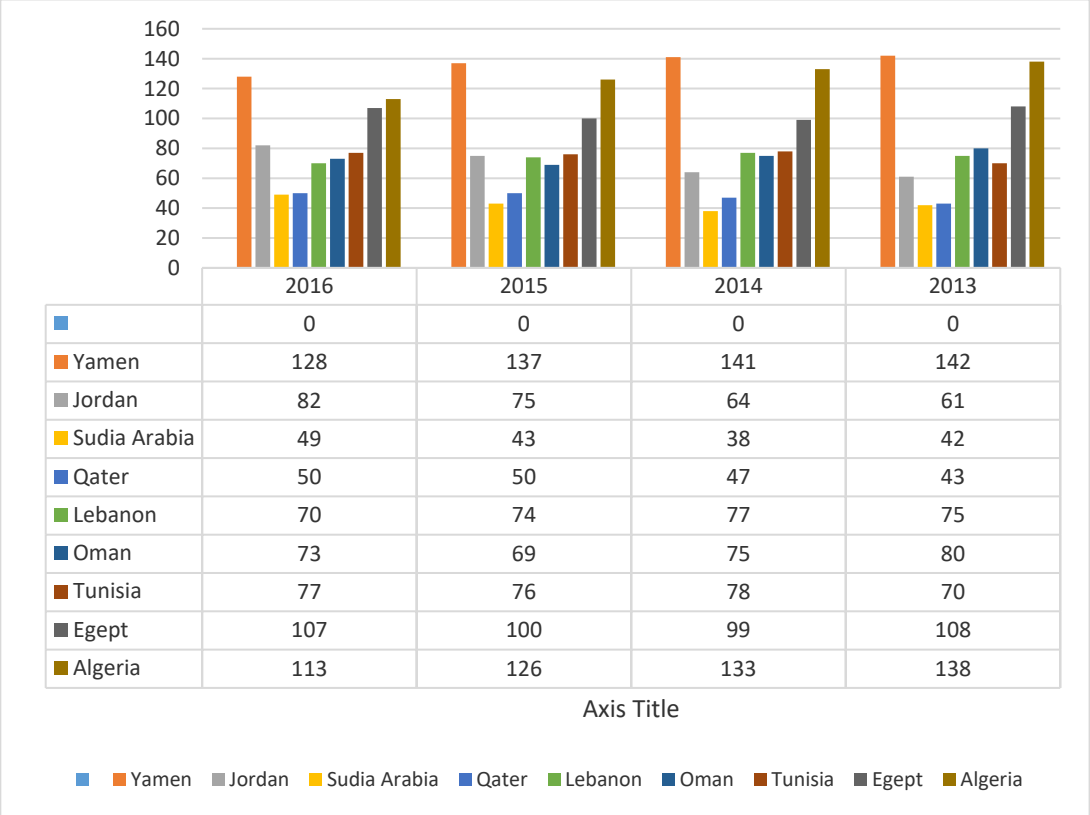

	2016	2015	2014	2013
	0	0	0	0
Yamen	128	137	141	142
Jordan	82	75	64	61
Sudia Arabia	49	43	38	42
Qater	50	50	47	43
Lebanon	70	74	77	75
Oman	73	69	75	80
Tunisia	77	76	78	70
Egept	107	100	99	108
Algeria	113	126	133	138

Figure 3. GII for selected Arabic countries ranking.

Sudia Arabia ranked first in GII among the Arab countries and then in Qatar, Lebanon, Oman, Tunisia and Jordan, and then in Algeria and Egypt (Figures 3 and 4). The GII is smaller than the GII in Arabic countries worldwide. During 2013-2016, the worldwide GII was increased because mechatronics advances have been growing in recent years compared with previous years. Although this decreased in the same timeframe in the Arab countries as seen in Figure 4, wars in some Arab countries, which have an impact on economic and industrial development, may explain this decrease.

4. Conclusion

Innovation is a core component of sustainable growth in the country and a crucial element of good government policies. The improvement of many Arab countries such as Sudia Arabia is attributed to achievements such as enhancing institutions and market-based sophistication, information technology, media, infrastructure and mechatronics, which are of crucial significance to the rise in population living standards and national economic competitiveness. In those countries with war in recent years, the global innovation index was decreased.

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