Knowledge Economy in Arab Gulf Countries : The Support of an attractive environment for investment

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Received: 15/04/2020; **Revised:** 27/04/2020; **Accepted:** 28/11/2020

Summary: This study aims to analyze the contribution of the knowledge economy to improving the attractiveness of investment in the Arab Gulf countries.

The general index, which monitors the attractiveness of investment in the Arab Gulf countries, indicates an improved attractiveness of its investment climate, leading by Arab performance, and in advanced positions globally. Indicators that monitor the performance of the Arab Gulf countries in excellence and technological progress, human development and knowledge are crucial factors for attracting foreign direct investment. In general, it can be said that countries that have succeeded in achieving knowledge take-off and a shift towards a knowledge economy, UAE, Saudi Arabia, and Qatar have been able to enhance the growth and strength of their economy and create an appropriate and attractive investment environment by focusing on infrastructure construction. Information technology and communication, investment in human resources and the optimization of knowledge as a key factor in the production process. Statistics monitoring the reality of FDI in the software and IT services sector indicate that it is among the most important sectors attracting FDI in the Arab Gulf countries, especially in the U.A.E , Saudi Arabia, and Qatar.

Keywords: Knowledge economy ; The attractiveness of investment ; FDI ; Arab Knowledge Index ; Human development ; Information Technology and Communication.

Jel Classification Codes : O31 ; O15.

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I- Introduction :

Since the last quarter of the 20thcentury, the world witnessed the greatest change in the history of mankind which is the Third Transformation after the emergence of agriculture and industry. This transformation manifested in the revolution of high tech sciences where ICT are in its peak today. Information and knowledge became one of the essential economic resources but rather the new strategic one in the economic life complementing the natural resources, so the "knowledge economy" emerged.

Knowledge Revolution contributed to accelerating the speed of global economic integration through the increase of trade rates inflowing capital and the speed of achieving trade transactions and foreign investment. Therefore, the economic systems paid more attention to knowledge as an important element to attract more foreign flows and to better its investment climate.

Investment attractiveness is associated with a set of necessary factors and basics that enable the host country to attract foreign investment, and they focus on elements which the major investors rely on in their decision making especially multinational companies. Perhaps the most important factors are those related to the technological excellence and advancement, and to what extent the telecom and IT sector is developed in the host country, what is all considered as a critical element in attracting investments that are looking for the competitiveness advantage to diversify and distinguish the product so they can raise profitability.

Although the spread of the " knowledge economy" concept and factors of integration in it on a large scope, Arab countries still find difficulties and challenges to surf on the same wave of global economic development and to integrate into the new economy based on knowledge and technological development. However, the Gulf economies are classified as experiences worthy to look at during recent years when they occupied average positions according to Knowledge Economy Guidebook so they are the best compared to other Arab countries. The Gulf governments took initiatives in supporting scientific and technological research projects and in motivating creativity and innovation and developing human resources in order to establish the pillars of the knowledge economy and to build knowledge industries.

The problem of Study: Based on the foregoing, we may ask whether the development of Arab Gulf countries towards the knowledge economy has contributed to the improvement of its investment environment or not?

Study Hypothesis:

The achievement of a knowledge takeoff and the shift towards knowledge economy contribute to the improvement of investment attractiveness

Study objectives: This study aims to achieve a set of objectives:

- To examine the reality of the knowledge economy in Arab Gulf countries and the evolution of its indicators in recent years.
- To analyze the investment attractiveness in the countries of the group and to highlight the direct foreign investment's reality in them.
- To attempt revealing the contribution of the developing knowledge economy indicators to the improvement of the investment environment of those countries.

The importance of the study: The importance of this study derives from the importance of knowledge economy as the main driver for economic growth and a strategy that enables countries to improve their investment environment in the light of global changes and evolutions in which ICT and R&D operations became largely dependable in the production process.

Study approach: The methodology and means followed in this study, regarding the study objectives, are based on the analytical descriptive approach which depends on studies and researches related to:
Reading the study variable: knowledge economy, its importance, its indicators of measurements, and its role in improving the investment environment in the host country.
Analyzing indicators and their results that highlight the knowledge economy's reality in the Arab Gulf countries.
Analyzing the statics related to investment attractiveness in Arab Gulf countries and the reality if FDI in them.

Study division: Attempting to answer the problem proposed, the study has been divided into three main sections:
First: knowledge economy, a new global challenge in the 3rd millennium.
Second: towards building a knowledge economy in Arab Gulf countries.
Third: Knowledge-Economy: The Strategy of the Arab Gulf Countries to Improve The Attractiveness of Investment.

1. Knowledge Economy: New Global Challenge In 3rd Millennium.

This era is experiencing an increasing dependence on scientific and technological information and the widespread use of ICT in various applications in all areas of administration, management, economy, and society. This has led to the birth of a knowledge economy where the scientific information becomes the most important goods in the society, and organizing, updating, and responding to the changes of this information become one of the very basic elements of this economy. In the light of such new circumstances, the new economy acquired a new feature which is the production and marketing of knowledge.

1.1.Role of the knowledge economy in attracting foreign investments:

The importance of attracting foreign investment goes back to the services it provides for economic growth, as pointed out by "Porstein and De Giorgio": FDI increases economic growth when the level of education in the host country is high. Through which it is possible to transfer technology, modernize domestic industries and develop of export competitiveness of developing economies, and foreign direct investment also contributes to training labor, as domestic firms in developing countries cannot achieve this efficiently because of their technological gaps, thus the importance of technology transfer to developing countries has increased. By technology, it means all materials manufactured and capital goods of machinery and equipment, with the necessary design and implementation work, in addition to experiences and skills related to production arts, patents and operating programs, training and learning work.
Therefore, FDI is one of the main channels for technology transfer, since new technologies may not be commercially available, as manufacturers impose a monopoly on their products and may not allow their use through licensing agreements. The technology transferred by the branches is more modern than that sold through agreements. (Bilal, 2013, p. 143)
The investment environment benefits from the knowledge economy as a fundamental driver of economic growth:

- It has proved scientifically that there is a strong correlation between ICT and the acceleration of labor productivity growth during the second half of the 1970s, where technological innovations can increase the growth of labor productivity and thus increase output.
- Infrastructure based on knowledge society provides a favorable climate for attracting FDI. It aims to make information and communication technology more affordable and accessible and to reduce tariffs on technological products and increasing the competitiveness of national institutions.
- Investing in human resources, as intellectual and knowledge capital, to activate R&D operations since they are the driver for change and development.
- The transition of economic activity from producing and making goods to producing knowledge services relying on qualified and specialized workforce that, in return, contributes to providing a suitable climate for investment.

1.2.The role of FDI in knowledge transfer and settlement:

Several studies have emphasized the importance of FDI in the transfer and settlement of knowledge and there are lessons to be taken into account from the experiences of the corresponding countries in Eastern Asia, Eastern and Central Europe, that have made progress toward building knowledge economies and knowledge society through dealing with FDI by reducing its disadvantages and maximizing its advantages, building conscious standards of integration and cooperation between FDI and domestic efforts in development and building advanced technological industries that stimulate youth employment, and the dissemination of the culture of innovation, scientific research and development (Knowledge A. , 2014)

The transfer of knowledge from FDI companies to local ones is known as the spread of knowledge which leads to improved productivity and efficiency in local companies, thus contributes to economic growth. Spreading knowledge through the following: (Bilal, 2013, p. 144)

- ✓ This knowledge dissemination occurs simply when local companies boost their productivity by copying the technologies used by FDI companies working with them in the local market.
- ✓ Knowledge dissemination occurs when intense competition in the domestic market made by foreign firms against local firms, so they have to be more efficient in using their resources, and not being at risk of exiting the market.
- ✓ Knowledge is also prevalent when well-trained local employees who worked in foreign investment companies move to local companies or establish their own companies.
- ✓ An assessment reading of the knowledge economy reality in Arab Gulf countries, its challenges and its construction requirements.

2. towards building a knowledge economy in Arab Gulf countries.

2.1. The Knowledge Economy Reality in Arab Gulf Countries:

The world has witnessed major transformations, particularly since the eighth decade of the twentieth century, which have prompted many countries to adopt diverse community initiatives to keep pace with rapid transformations and changes, to establish an integrated knowledge-based economy. The Arab Gulf countries played key roles in this context, as they sought to improve the indicators of the knowledge society, and to this end they took serious steps to establish a knowledge and information base. It also adopted initiatives that allow the development of society and make it more productive and effective, based on the importance of knowledge as one of the products produced in society. This was reflected in the increasing interest of its governments in recent years in supporting scientific and technological research projects, stimulating creativity,

innovation and human resources development, aiming to transform the society into a high level of education at different levels; technical, academic, and in research, applied and social sciences with all their branches.

In recent years and the light of world changes, the knowledge industry became a pillar of the economy based on knowledge and innovation depending on high tech as a source of the added value. Arab Gulf countries paid special attention and care for knowledge industries as they have been emphasized in national and economic visions and the development strategies of the group countries. (Ella, 2015, p. 22)

These efforts have already yielded remarkable successes, most notably the progress of Saudi Arabia and the UAE in the global competitiveness index. For its part, the UAE seeks to make a qualitative leap in this field, where it has already made qualitative steps toward the smart government model after its being the first internationally in six indicators out of 114. It also makes regular efforts to shift in general performance to modern technology.

Arab knowledge Index:

During 2015, the UAE established an indicator that monitors the reality of knowledge in the Arab world on an annual basis, taking into consideration the status in the Arab region. The index includes several sub-indicators in the economic, social and knowledge areas that indicate progress to create knowledge-based economic societies and systems. The index is a practical tool to make knowledge available in Arab world and provides accurate and realistic information to decision makers, experts and researchers in Arab societies. The indicator contains 7 indicators within the main indicator are: (Knowledge, 2015, p. 08)

1. Pre-university education index.
2. Technical Education and Vocational Training Index.
3. Higher Education Index.
4. ICT index:.
5. Economy Index.
6. R&D and Innovation Index

2.2. Analysis of knowledge reality in Arab Gulf countries:

Knowledge indicators are improving in Arab Gulf countries in recent years as this group maintains the lead in Arab countries, despite a drop in knowledge indicators during the years 2017- 2018 compared to 2015 - 2016. The United Arab Emirates, Saudi Arabia, and Qatar are at the top of the group in the sub-indicators combining the knowledge Index and table summarizes Group countries' knowledge Index for the years 2015-2018.(see Table (1) from Appendices) .

The R&D and Innovation Sector: The overall scores of R&D index in the Group during the years 2015-2018 revealed that the UAE, Saudi Arabia, and Qatar surpassed the world average recorded annually, and the highest scores recorded in the UAE did not exceed 69.0 points This distribution shows the importance of the development conditions in the flourishing movement of R&D and innovation, especially as these countries are characterized by political and social stability and witnessed noticeable levels of economic growth. The Emirates, Qatar and Saudi Arabia can all be considered three experiences worthy of scores recorded.

We note from Table (1) that the UAE ranked first (31.3), followed by Saudi Arabia (30.3) and Qatar (24.8).

Economy sector: Arab Gulf countries have taken the lead in the Arab knowledge Economy Index for the years 2015-2018. This indicates that there is a relatively good interest in developing the economic structures and competitive indicators of countries. The focus of competitiveness and innovative development also reflects the strong interest of the Group countries in improving their positions in the competitiveness index, as well as their interest in the advanced technologies area, smart government and innovation, especially the UAE which imposes itself as an interesting experience given the very high value of the knowledge economy index.
Technical Education and Vocational Training sector: Results of the Technical Education and Vocational Training Index showed the lead of Arab Gulf countries, scoring the world average and above. The UAE has been a leader in this field and it has been involved for years in a series of structural economic reforms based on linking development to the rehabilitation of human capital, allowing knowledge economy to occupy a privileged position as the most important source of competitiveness. Qatar is also in a leading position alongside UAE at high rates, where Qatar has achieved the best Arab position in training employees knowing that it is at the 5thrank globally.
Higher Education sector: the data of the Higher Education Sector Index indicate that the group countries did not exceed the annual global average index recorded during the years 2015-2018, except for UAE, Saudi Arabia, and Qatar. But, the decline in this index means that the group countries are required to further develop and improve their higher education systems so that they can rise to the global level.
ICT sector: The results revealed by the ICT Index reflect scoring above-average in all the Group countries, where the UAE achieved the best position on the use of ICT at various levels such as the extent to which social networks are used and the use of Internet between interpersonal and companies or among companies also in the range of enterprises absorbing modern technology. UAE has achieved also the first rank in putting ICT index in the future vision of the state.
Pre-university education sector: Arab Gulf countries head the pre-university education index, where the index scores in Saudi Arabia, UAE, Qatar, and Bahrain exceed the international average, reflecting the Group's interest in advancing the different pillars of the educational system.

3. Knowledge-Economy: The Strategy of the Arab Gulf Countries to Improve The Attractiveness of Investment.

The Arab Gulf group sought to provide a stable investment environment for foreign investors through its development plans and enhancing growth strategies. The group efforts focus on attracting foreign investments, so it affords in this regard incentives, privileges and facilitation to foreign businessmen (tax and customs exemptions, authorization to import materials needed for investment projects. To insurance of foreign capital against confiscation and to allow the transfer of investment revenues or returns with no obstructions, and other encouraging incentives to attract foreign investors. In the light of scientific and technological development and the information revolution, the knowledge economy has become an imperative necessity to provide an investment environment attractive to foreign capital, as it has characteristics that can be limited to:
It is heavy of knowledge which became one major factor of production and a basic element to achieve growth and sustainable development in our current time. Its possession and investment became a true addition to the economy on one hand, and on the other hand, it depends on investing in human resources as the intellect capital, as well it depends to a far extent on the qualified and trained workforce specialized in the new technologies so it enables workers to keep up with developments taking place in knowledge fields.
It also depends to a large extent on exploiting ICT which have been proven by many studies that they are the main fuel of economic growth through working on the increase of labor force's productivity and the support set for organizations to update, innovate and respond to the customer's needs thus the increase of the output.

3.1. Evaluation of the investment attractiveness in Arab Gulf countries

- **Gulf Arab countries' attractiveness for FDI:**

The attractiveness of countries to foreign investment is a multifaceted concept encompassing a range of economic, social and institutional areas. This has led to the existence of multiple visions among those interested in identifying and measuring the elements of attractiveness and the most appropriate and successful policies attracting a greater share of FDI. Measuring the attractiveness of countries to foreign investment means to enclose all factors affecting the ability and potential of a country to be attractive for investments from abroad.

- **Guarantee index of investment attractiveness**:

the guarantee index of investment attractiveness is a composite measure that shows the availability of potential for attracting investment to the world countries through monitoring a set of variables in various economic, social and enterprise areas, and based on the values of those variables in each country the index grants each country a certain rate out of a total 100 degrees and then ranks it from best to worst according to the values scored. (Dhaman, 2019)

The results of the general index of the attractiveness of investment show that the Arab Gulf countries, in general, topped the Arab performance with the best performance during the period 2014-2019, when it maintained the first Arab ranking throughout these years. However, this investment attractiveness in the group countries witnessed inconsistency during the study years, as it decreased by 0.97% during 2015 compared to 2014. During 2016, the investment attractiveness increased slightly by 0.1% comparing to 2015. It continued to increase until 2017. In 2019, the Gulf attractiveness for investment decreased slightly compared to 2018, despite that, the Arab performance was the best, with a score of 49.7 points (See the table (2) from Appendices).

- **FDI flows in Arab Gulf countries:**

The Group of Arab Gulf States continues to maintain the lead of the Arab countries in attracting the largest share of FDI flows in recent years. However, the World Investment Reports' statistics show that the FDI stock received by the Group declined significantly during 2015 compared with previous years when total FDI inflows were estimated at $15,967 million largely due to the divestment, worries, and uncertainty dominating investors' decision This was due to growing geopolitical risks, but it improved in 2016 as the FDI stock was estimated at $20,759 million. In 2017, however, it declined again with a decrease of 15.6% compared to 2016 ($ 17,460 million). Figure (1) shows the development of FDI inflows to Arab Gulf states during the years 2012-2018. The UAE heads the Arab Gulf group, with 47.06% of the total investments, followed by Saudi Arabia in the second place with a share of 33.56%, then Oman third with 7.80%. The figure (2) shows the distribution of the volume of foreign direct investment received between the Arab Gulf countries (See the figures (1) and (2) from Appendices).

3.3. The role of the knowledge economy in improving the investment's attractiveness in Arab Gulf countries:

The knowledge economy has many elements and pillars supporting its existence as a strong economy and contributing to any economy by putting it among advanced economies and attracting FDI. Perhaps, the most important elements and pillars provided by knowledge economy to the investment environment are those related to factors of excellence and technological advancement which enhance the state's constituents at the level of its integration in the global economy. This goes through developing the R&D system and active innovation technology, as well as enhancing the effectiveness of the organizational context of knowledge production what ensures the consistency of innovation based on efficient management to transfer and absorb technology, and

stimulates the production of knowledge to generate new technologies, therefore, the efficient productivity and human development are both achieved.
In its evolution and growth, the knowledge economy's dependence on the knowledge revolution and ICT revolution made them the main driver for the economy's growth and development. This requires building technological infrastructures to facilitate the use of ICT in all its forms: internet, telephone lines, and computers in order to build an information society as a first step towards facilitating the effective communication and processing and spreading information.
The huge technological development in the current time requires a social infrastructure represented in the high intellectual qualifications which are strong components of the knowledge economy. Thus, it needs to focus and invest in education and to work on supporting rehabilitation and continuous learning and to establish qualified institutes and centers to raise the level of the existing academics to produce workers and knowledge makers who enjoy knowledge and the ability to understand new technologies effectively on one hand, and to push the development wheel and improve the organizations' performance on the other hand.
Therefore, if all these elements; ICT and human competence, are available it is so possible providing an attracting investment environment and a strong advanced economy able to respond to developments and updates especially in the light of globalization on one hand, and on the other hand, being able to face obstructions and difficulties can be seen by any economy.
Among the studies dealt with the role of the knowledge economy in attracting FDI, we find the study of (Mahmoud, 2014)which sought to analyze the role of the knowledge economy in attracting FDI in the first 10 countries that attract FDI in each continent. The study came out with a result saying that FDI is distributed according to regions and countries sometimes on the basis of the development of knowledge economy, and sometimes on the basis of the available natural resources in other regions and countries of the research sample. The correlation of FDI to the knowledge economy index is a positive correlation in advanced countries like Germany, UK, whereas in developing countries it is not necessary to be a positive correlation, but it can be weak like India and China.

3.4. The role of excellence and technological progress factors in attracting foreign investments in the Arab Gulf states:

The factors of excellence and technological progress are a critical element in attracting investments that are seeking a competitive advantage to diversify and distinguish the product as a way to maximize profitability. Subsequently, a special index of factors of excellence and technological progress was designed, and it includes 5 main types of variables, namely: the market development index, business performance environment index, Knowledge Index, e-government index, and the participation in total direct design requests through the Hague system .

3.5. The performance of Arab Gulf Group in the index of excellence and technological progress factors during the period 2014 – 2019:

The Arab Gulf countries headed the Arab countries as the best Arab performance in this index in recent years, as they were distinguished by a performance of 38.1 points and above the world average recorded in 2019 which is estimated at 37.9 points, ranking the 51st globally, and in In 2018, the group topped Arab groups with a slight increase from the world average of 39.7 points. This improvement is due to the efforts made to develop the business environment and e-government. During 2017, it remained in the lead by 36 points, up from the global average of 34.5 points. In 2016, the group performance in this index decreased compared to the previous years 2015 and 2014. The figure (4) shows the evolution of the group performance in the index of excellence and technological progress factors between increase and decreases during the years 2014 – 2019 (See the figure (4) from Appendices).

3.6. The performance of Arab Gulf countries in ICT index:

The performance of Arab Gulf countries in the ICT index witnessed a noticeable improvement during the years 2014 - 2019, with the exception of 2018, where the index experienced a slight decline compared to 2017. By and large, the group countries topped the Arab countries as the best performance in this indicator during the period 2014 - 2019 and they were known by a distinguished performance higher than the global average recorded every year in the components of Internet users and mobile subscriptions.

The performance index of the group during 2019 recorded 52.1, an increase over the global average, which is estimated at 41.8 points, and ranked 40 globally, while, during 2018, the performance index was estimated at 51.7 points, outperforming the global average with 20.89% (40.9 points). It decreased slightly by 0.58% compared to 2017. The figure (5) presents the improvement in the performance index of the Arab Gulf countries in the ICT sector during the years 2014-2019 (See the figure (5) from Appendices).

3.7. The Arab Gulf performance in the human development index:

Arab Gulf states are still ranked 38th globally in the human development index since 2015, when the group was known by a distinguished and excellent performance above the world average recorded annually, heading the list of Arab countries as the best Arab performance. The human development index, on the other hand, has witnessed an improvement during the recent years 2014 - 2019 except for 2017, where it declined by 0.6 points compared to 2016. The human development index reached 80.3 points during 2019, outperforming the global average and by a large difference, as it experienced a considerable improvement compared to 2018 when it scored 79.8 points. In 2016, the index recorded its highest value of 80.3 points in recent years. The figure (6) shows the development of the group's performance in the human development index during the years 2014 – 2019 (See the figure (6) from Appendices).

3.8. The Arab Gulf performance in knowledge index:

Arab Gulf group topped the Arab countries as the best Arab performance in knowledge index during the period 2014-2019 and was distinguished by a distinct performance which is superior to the global average recorded annually, as the group maintained the rank 60 globally throughout this period. Knowledge index witnessed an improvement during 2015 with 3.86 points compared to 2014. However, it decreased by 27.91% in 2016 compared to 2015. During the years 2017 and 2018, the index witnessed a noticeable improvement reaching 31.9 points, which is its maximum value in recent years. The figure (7) clarifies the performance of group countries in knowledge index between decline and rises during the years 2014 – 2019 (See the figure (7) from Appendices).

3.9. The world ranking of Arab Gulf countries in the "ICT", "excellence and technological advancement factors" and "human development" indexes for the year 2019:

In 2019, the UAE topped the group states in the index of "excellence and technological advancement factors" by being 27th globally, then Saudi Arabia 46th, followed by Bahrain 53rd globally, then Kuwait 57th globally, Qatar 59th globally, and the last was the Sultanate of Oman as 66th globally.

Concerning ICT index, UAE maintained the top position in the group, with a better ranking than its one of the previous index being the 11st globally, followed by Bahrain 34th globally, then Qatar 41st globally, Kuwait 44th globally, Oman 54th globally, and finally Saudi Arabia as the last in the group 56th globally.

For the human development index, Saudi Arabia ranked first being the 4th globally, followed by Qatar 5th globally, then Kuwait ranked 6th globally, then UAE ranked 22nd globally, Oman 25th and finally Bahrain as the last in the group 43rd globally (See the table (3) from Appendices).

3.10. Software sector, IT services, and FDI in the Arab Gulf states:

As we saw previously, the ICT infrastructure is the most important factor determining to what extent any country is able to transform and integrate into the knowledge economy. Building technological infrastructures in the frame of knowledge economy require investments in ICT like making software and hardware where investing in this latter costs less than not investing in it.
The software and IT services sector have become among the most important sectors attracting FDI to Arab Gulf states in recent years, as it acquired a share of 1.81% of the total FDI received at a total cost of $4838 million during the period 2010 - 2018.
UAE heads the group of Arab Gulf states by acquiring the largest share of FDI at a total cost of $ 3314 million, with a share of 68.50% of the total investment in coming to the group, and with a share of 3.71% of the total foreign investment incoming there during the period 2010 - 2018. The software sector in UAE ranks 7 among the top 10 sectors that attract foreign investment. Then Saudi Arabia follows, at a total cost of $ 937 million, with a share of 19.36% of the total investment in coming to the group, with a share of 1.06% of the total foreign investment. The software and IT services sector in the Kingdom ranks 10 among the most important sectors attracting foreign investment. Qatar is ranked third with a total cost of $ 319 million, or 2.10% of the total foreign investment received, and it ranks 5th as the most important sector attracting foreign investment.
Whereas in Bahrain, Kuwait and Oman, the software and IT services sector is not considered among the sectors that attract foreign investment, as its acquisition rate of investment flows does not exceed 0.80% of the total incoming foreign investment (See the table (4) from Appendices).

3.11. Software sector, IT services, and inter-Arab investment in Arab Gulf states:

The software and IT services sector in Arab Gulf states are not attracting for inter-Arab investments compared to its FDI where the total cost of inter-investment projects in the software sector during the period 2003 - 2018 was estimated at 592.5 million as it does not exceed 0.50% of the total incoming inter-Arab investments.
UAE acquired 50.23% of the total of these investments what is estimated by $ 297.6 million, followed by Saudi Arabia with a share of 24.81% of the total investment received at a total cost of $ 147 million, then Qatar with a share of 8.62% of total investment received at a total cost $51.1 million, and Kuwait comes last with a share of 5.01% of the total Arab inter-investment (See the table (5) from Appendices).

III- Conclusion:

The transformation towards the knowledge economy is one pillar of economic sustainability. The huge technological development became a magic wand ruling the current economy in a way that eliminates difficulties and obstacles which may face any economy. So Arab countries are required to join these economies to keep pace with the rapid changes and updates especially in the light of globalization.

While some Arab Gulf countries (UAE, Saudi Arabia, and Qatar) succeeded in setting their positions as economies based on knowledge, where other countries(Bahrain, Kuwait, and Oman) are still far from the leading positions. The limited advancement achieved by this latter is mainly because of the challenges related to the enabling environment of ICT and education, training and innovation system, the infrastructure of the knowledge economy.
Knowledge indicators in Arab Gulf countries refer that UAE is the leading country in the group, and Saudi Arabia and Qatar are in transformation and integration process in the knowledge economy, where these countries are considered as interesting experiences, indicators recorded in these countries can be summarized as the follows:

- R&D and innovation index reflects the prosperity in this circle especially as those countries are distinguished by social and political stability and witness remarkable levels of growth.
- Concerning the knowledge economy index, it refers to the relatively good interest in developing economic structures, competitive indicators and high technologies, and smart governance precisely in UAE.
- Whereas, the technical education and vocational training index refer to the interest of these countries in qualifying the human capital and relating it to development.
- While the ICT index explains or reflects what extent organizations absorb new technologies.
- The pre-university education index reflects the interest of the group in promoting the education system.

The general index, which tracks the investment attractiveness in Arab Gulf countries, refers to the improvement of their investment climate so they are leading the Arab performance and ranking advanced positions globally. Indicators that track the Arab Gulf performance in excellence and technological advancement also refer to the human development regarding it as critical factors to attract FDI. Generally, it can be said countries which achieved the knowledge takeoff and transformed into knowledge economy " UAE, Saudi Arabia, and Qatar" were able to enhance their economies and to create a favorable attractive investment environment through focusing on building ICT infrastructures, investing in human resources and the optimal use of knowledge as the main factor in the production process. Nevertheless, statics of the FDI reality refers that the software and IT sector is one of the most important and prominent sectors attracting FDI in Arab Gulf countries especially in UAE, Saudi Arabia, and Qatar.

Since the evolution towards knowledge economy is the main driver for economic growth and the support to improve the investment attractiveness, this pushes Arab Gulf countries far from the join to the forefront of the group and transform them to knowledge economies what imposes, in return, a set of reflections at the level of policies in order to provide a favorable stimulating organizational economic environment through:

- The need to have an organizational body able to create an organized competitive environment for the companies working in the ICT sector, which ensures the existence of fair competition policies and ensures the consumer's freedom.
- Encouraging and enhancing partnerships between public and private sectors can be considered as a major incentive to develop information and the telecom sector.
- Establishing organizations specific to developing ICT and business environment.
- Establishing organizations specific to organize the telecom sector and activate their role.
- Providing a favorable investment environment to the ICT sector by developing qualified tech-regions to attract local and foreign companies, and giving them tax and investment incentives.
- The need for governments to interest in building an enabling legislative environment to develop the active sectors in the knowledge economy context.

- Appendices:

Table (1): Knowledge Indicators in the Arab Gulf States during 2015-2018

	Qatar				U.A.E				Saudi Arabia			
	2018	2017	2016	2015	2018	2017	2016	2015	2018	2017	2016	**2015**
Pre-university education index	45.1	47.2	74.0	66.23	72.7	70.3	75.0	68.55	52.9	48.4	68.0	**67.39**
Technical Education and Vocational Training Index	51.4	53.2	69.0	59.32	63.4	61.0	71.0	60.79	41.0	40.3	50.5	**56.01**
Higher Education Index	47.2	45.4	51.0	59.41	53.4	50.0	61.0	72.56	40.1	40.3	58.2	**62.43**
ICT index	64.0	65.5	81.2	76.22	74.1	71.3	86.1	77.48	56.8	59.2	69.0	**69.58**
Economy Index	50.9	50.1	60.8	75.58	67.7	69.9	80.2	77.59	49.9	45.0	60.2	**64.72**
R&D and Innovation Index	24.8	28.5	60.2	40.45	31.3	28.7	69.0	50.07	30.3	30.2	60.1	**56.84**
Arab knowledge Index	51.3	50.5	66.03	62.87	61.9	58.8	73.72	75.76	46.9	45.0	61	**62.83**
	Oman				Kuwait				**Bahrain**			
	2018	2017	2016	2015	2018	2017	2016	2015	2018	2017	2016	**2015**
Pre-university education index	54.95	50.3	62.0	57.39	60.2	63.5	70.1	63.03	58.1	58.9	71.0	**66.52**
Technical Education and Vocational	45.2	45.5	52.0	48.95	48.1	49.6	51.0	55.27	55.5	57.7	60.2	**51.52**

Training Index												
Higher Education Index	39.5	34.4	43.0	49.66	45.7	40.1	49	49.41	45.6	38.3	41.0	**28.68**
ICT index	53.7	52.9	58.0	55.10	53.7	47.7	58.0	56.21	62.8	66.8	74.0	**69.13**
Economy Index	50.2	46.2	59.0	56.25	49.9	45.9	50.2	42.75	56.8	51.5	59.0	**62.12**
R&D and Innovation Index	23.7	20.8	49	39.02	26.1	25.4	50.3	36.62	18.0	20.3	50.1	**36.28**
Arab knowledge Index	47.8	43.6	53.83	51.06	49.9	47.0	54.77	50.55	51.0	49.9	59.22	**52.38**

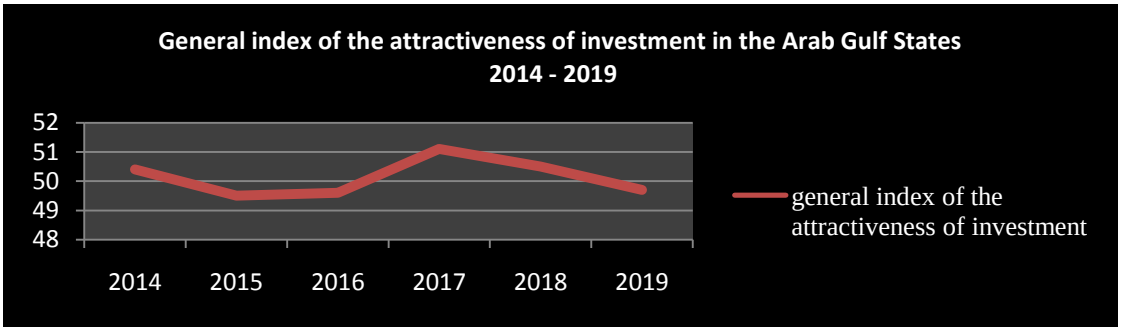
Sources : Prepared by the researcher based on Arab Knowledge Indicators Reports for 2015-2018 on : http://knowledge4all.com

Table (2) : The performance of the Arab Gulf countries in the Index guaranteed the attractiveness of investment during the period 2014-2019

	Oman		**Bahrain**		**Kuwait**		**Qatar**		**U.A.E**		**Saudi Arabia**	
	Global ranking	Index value	Global ranking	Index value	Global ranking	Index value	Global ranking	Index value	Global ranking	Index value	Global ranking	Index value
2014	51	43.2	41	62.2	43	46.0	38	47.6	33	49.9	53	42.1
2015	51	46.4	40	50.0	44	48.8	38	51.4	29	54.3	45	48.3
2016	50	46.6	40	49.6	47	47.8	34	52.0	29	53.7	46	47.9
2017	52	47	42	50	44	50	38	53	23	58	48	49
2018	52	48	40	52	49	49	38	54	23	60	41	51
2019	59	45	53	46	50	48	45	50	23	62	46	48

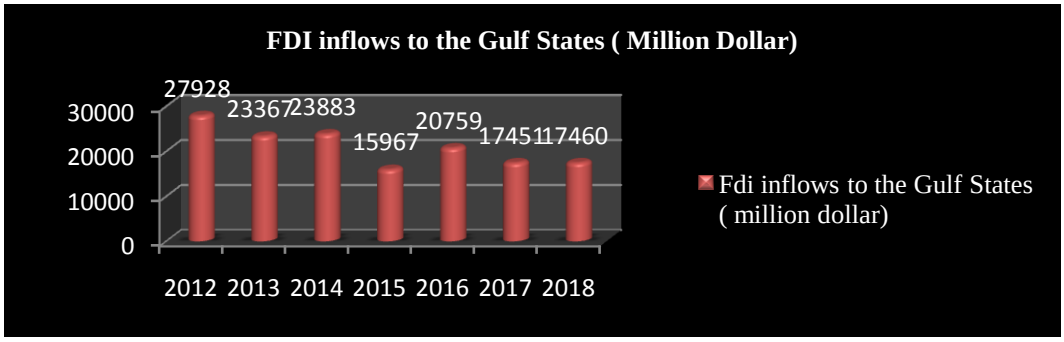
Source : Prepared by the researcher based on Investment Climate Reports in Arab Countries in 2014-2019, The Arab investment and Export Credit Guarantee corporation on http://dhaman.net/ar/

Figure (1): The evolution of the values of the general index of attractiveness of investment in the Arab Gulf countries during the period 2014 -2019



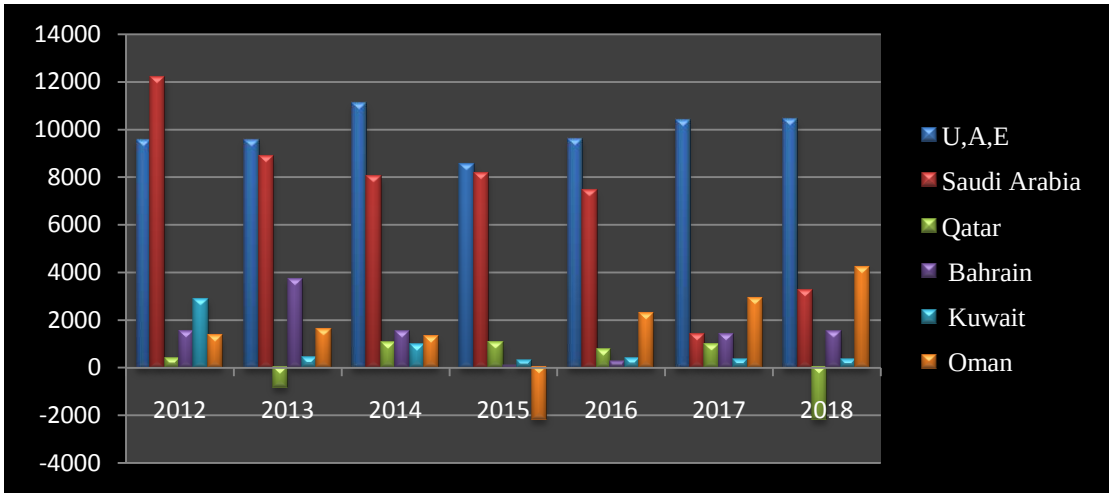
Source : Prepared by the researcher based on Investment Climate Reports in Arab Countries in 2014-2019, The Arab investment and Export Credit Guarantee corporation on http://dhaman.net/ar/

Figure (2): FDI inflows to the Gulf States (Million Dollar) during the period 2012 -2018



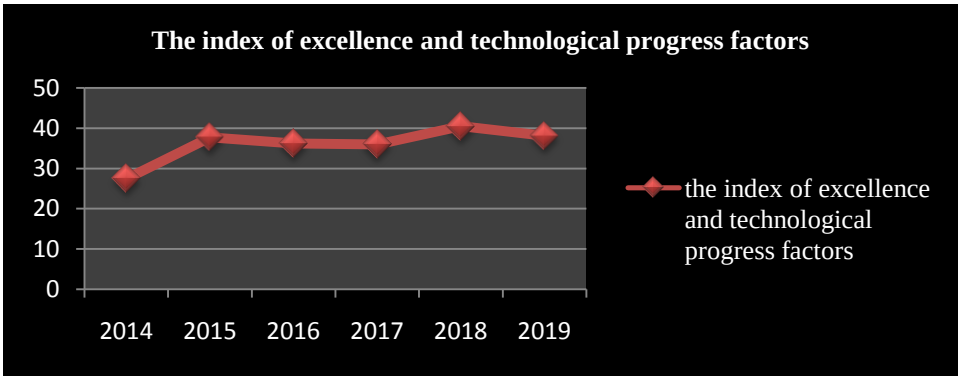
Source : Prepared by the researcher based on Investment Climate Reports in Arab Countries in 2012-2018, The Arab investment and Export Credit Guarantee corporation on http://dhaman.net/ar/

Figure (3) : Distribution of incoming FDI flows to The Arabian Gulf states during the period 2012-2018



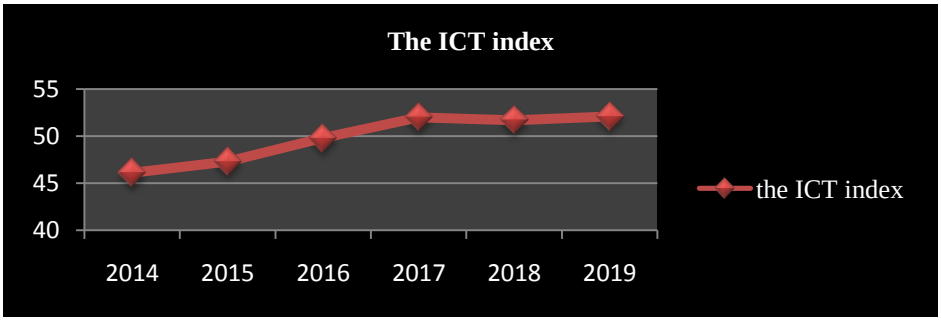
Source : Prepared by the researcher based on Investment Climate Reports in Arab Countries in 2012-2018, The Arab investment and Export Credit Guarantee corporation on http://dhaman.net/ar/

Figure (4) : The development of the performance of the Arab Gulf countries in the index of factors of excellence and technological progress during the period 2014 -2019



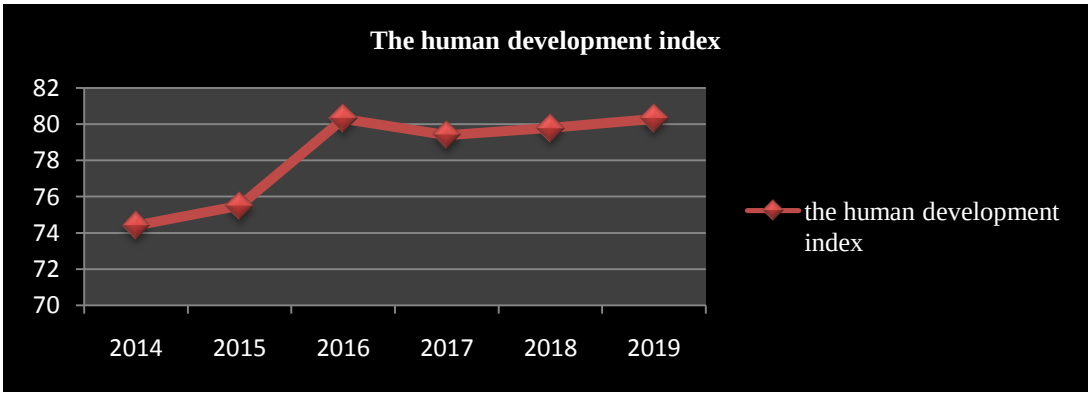
Source : Prepared by the researcher based on Investment Climate Reports in Arab Countries in 2014-2019, The Arab investment and Export Credit Guarantee corporation on http://dhaman.net/ar/

Figure (5) : The development of the performance of the Arab Gulf countries in the ICT index during the period 2014 -2019



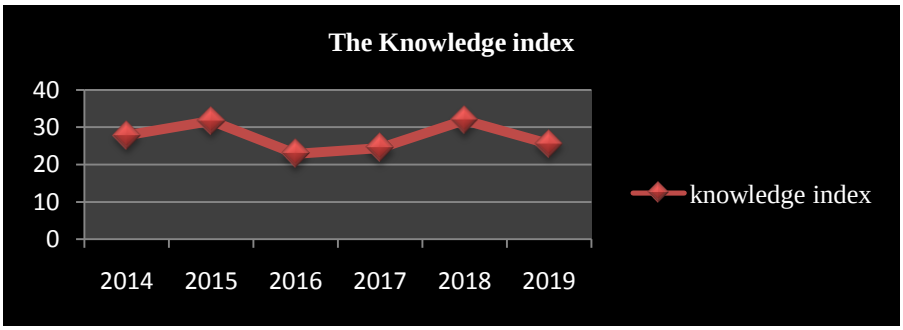
Source : Prepared by the researcher based on Investment Climate Reports in Arab Countries in 2014-2019, The Arab investment and Export Credit Guarantee corporation on http://dhaman.net/ar/

Figure (6) : The development of the performance of the Arab Gulf countries in the human development index during the period 2014 -2019



Source : Prepared by the researcher based on Investment Climate Reports in Arab Countries in 2014-2019, The Arab investment and Export Credit Guarantee corporation on http://dhaman.net/ar/

Figure (7) : The development of the performance of the Arab Gulf countries in the knowledge index during the period 2014 -2019



Source : Prepared by the researcher based on Investment Climate Reports in Arab Countries in 2014-2019, The Arab investment and Export Credit Guarantee corporation on http://dhaman.net/ar/

Table(3) : The Global Ranking of The Arab Gulf States in The Indicators of 'Communication and Information Technology', 'Factors of Excellence and Technological Progress' and 'Human Development' in 2019

	The human development index	The index of factors of excellence and technological progress	The ICT index
U.A.E	22	27	11
Saudi Arabia	4	46	56
Qatar	5	59	41
Bahrain	43	53	34
Kuwait	6	57	44
Oman	25	66	54

Source : Prepared by the researcher based on Investment Climate Report in Arab Countries in 2019, The Arab investment and Export Credit Guarantee corporation on http://dhaman.net/ar/

Table (4) : The cost of foreign direct investment projects received to the Arab Gulf countries in the software and IT services sector during the period 2010-2018 (million dollars)

	The sector ranks among the top 10 attracting sectors of FDI	The Percentage of total new foreign investment projects	The Cost of foreign direct investment projects (Million Dollars)
U.A.E	7	3.71 %	3314
Saudi Arabia	10	1.06 %	937
Qatar	5	2.10 %	319
Bahrain	/	0.77 %	134
Kuwait	/	0.53%	35
Oman	/	0.19%	99
Total	/	1.81 %	4838

Source : Prepared by the researcher based on Investment Climate Report in Arab Countries in 2019, The Arab investment and Export Credit Guarantee corporation on http://dhaman.net/ar/

Table (5). : The cost of Inter-Arab investment projects received to the Arab Gulf countries in the software and IT services sector during the period 2010-2018 (million dollars)

	The Percentage of total Inter-Arab investment projects	The cost of inter-Arab investment projects (Million Dollars)
U.A.E	1.34 %	297.6
Saudi Arabia	0.42%	147
Qatar	0.40%	51.1
Bahrain	0.21 %	31.2
Kuwait	0.76%	29.7
Oman	0.12%	35.9
Total	0.50 %	592.5

Source : Prepared by the researcher based on Investment Climate Report in Arab Countries in 2019, The Arab investment and Export Credit Guarantee corporation on http://dhaman.net/ar/

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How to cite this article by the APA method:

Manel LARBAOUI , Boumediene FILALI (2021), **Knowledge Economy in Arab Gulf Countries : The Support of an attractive environment for investment**, Algerian review of economic development, Volume 08 (Number 01), Algeria: Kasdi Merbah University Ouargla, pp. 399-416.