Journal of Economics and Development Studies
December 2017, Vol. 5, No. 4, pp. 51-62
ISSN: 2334-2382 (Print), 2334-2390 (Online)

Published by American Research Institute for Policy Development
DOI: 10.15640/jeds.v5n4a4
URL: https://doi.org/10.15640/jeds.v5n4a4

Innovation in the GCC Countries: An Economic Analysis

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Abstract

Innovation means creating better quality products and services, which together create a better quality of life.The purpose of this research is to explain why the Gulf Cooperation Council (GCC) countries are still struggling in the field of innovation in spite of the fact that the council is made up of rich countries with high per capita income.The aim of this paper is to explain the reality of the situation with regard to innovation in the GCC countries and to identify the main obstacles and challenges facing these countries. The main finding, based on qualitative research methods, is that there are numerous obstacles facing GGC countries, obstacles such as low investment in research and development as a percentage of GDP, a very low number of high-tech exports as a percentage of manufactured exports and a low proportion of workers employed in knowledge-intensive activities.These findings confirm that the GCC governments need to make great efforts to develop innovation especially with regard to the indicators mentioned above.

Keywords: Innovation –GCC countries – obstacles- education- knowledge-Number of patents.

EL: O1- O30- O31

1. Introduction:

Modern economies are built on a basis of scientific research, innovation, and creative ideas: Knowledge-based development. It is not possible for states and societies to continue to develop their economies in isolation from the rivers of knowledge and innovation. Innovation currently plays a pivotal role in boosting economic growth and social development, it is contributing to economic transformations in many communities which could change their production methods from focusing on quantity to focusing on quality.Despite being able to boast that their per capita income rivals that of the most advanced countries of the world, the GCC countries have nevertheless failed to keep up with the rapid development of scientific and technological achievements that have taken place in other parts of the world. As a result, the GCC has lagged behind comparable countries in the world in terms of educational advancement, and the production of knowledge and research results.

The current era of technology has introduced new concepts regarding the elements of economic and social development. One of these is that improved innovation will boost development and secure prosperity in society and so help to achieve sustainable economic growth and to create new jobs. This has led a number of countries in the world to re-examine their policies in order to focus on the vital factors of production.GCC countries, too, have followed several policies which support specialized institutions for pioneering and innovative activities, but this progress is still not enough to have created an appropriate and influential paradigm in this area, particularly at the level of joint Gulf economic action.

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However, these institutions have faced a number of obstacles such as difficulty in obtaining funding, bureaucratic procedures and the gap between the nature of academic education and the actual needs of the labor markets. The main idea of this paper is despite the efforts devoted for this target, the Gulf Cooperation Council (GCC) are still challenging difficulties to address the social dimension, as required in order to line with the transition to a knowledge-based economy harmonize these policies to suit local conditions. In this context, the promotion of innovation may make these countries tend to reconsider their reliance on capital aimed at citizen's owner's policies, and seeks to develop incentive mechanisms that encourage citizens to play a key role in the development of a knowledge-based economy.This research will explain the efforts regarding innovation in the GCC countries, obstacles to innovation in the GCC Countries and how GCC countries can affect the role of innovation in their economies?

2. Literature review

There are many different definitions of innovation, depending on the different methods of scientific research and intellectual interests and schools. One definition (The Oxford Dictionary of English, 1989, p. 942) of innovation is "Making changes to something established by introducing something new". According to this definition, innovation would mean making changes to products which already exist in order, essentially, to create a new product. Another, wider definition of innovation is " the application of practical tools and techniques that make changes, large and small, to products, processes, and services that result in the introduction of something new for the organization, that adds value to customers and contributes to the knowledge store of the organization" (O'Sullivan, 2008,p.5).Innovation is, then, the process of making changes, creating differences and introducing novelty to goods and services to achieve economic and social benefits such as creating entrepreneurship (Mubaraki and others, 2010, 1). Innovation is the application of new knowledge to the production of goods and services; it means improved product quality and enhanced process effectiveness. Innovation generates large improvements in productivity, which is the primary source of enhanced well-being, higher real incomes, and resources for a government (BIS, 2011, p.7). The OECD has defined innovation as all the scientific, technological, organizational, financial, and commercial activities necessary to create, implement, and market new or improved products or processes (OECD, 1997).

There are a number of different categories of innovation (c.f.Potecea and Cebuc, 2010, p.158):

1) Product innovation: "introducing a good or service that is new or significantly improved in terms of their characteristics or intended uses."
2) Process innovation: implementing new or significantly improved methods of production (new manufacturing processes or technology flows) or a new method of delivery).
3) Marketing innovation: implementing a new marketing method involving significant changes in product design or packaging, new sales methods, product placement, product promotion or pricing on the policy.
4) Organizational innovation: implementing a new way of organizing a company's business practices in employment organization or external company relations.

Adam Smith identifies innovation as requiring the investment of money and as an important economic activity which leads to gains (Smith, 1937).Schumpeter also states that innovation plays a vital role in developing the quality of goods and services and this has a large effect on economic growth.During the 1950s and 1960s, Robert Solow developed a formal neoclassical model of growth based on the concepts of the production function, where an output is a function of inputs (capital, labor, management services, and materials), and reaches equilibrium in the long term. If the population grows, then increasing all inputs in the appropriate proportions increases output until equilibrium in goods markets is achieved, at which point the capital stock is in a steady state, and investment is made only to cover depreciation. In the long run, growth in per capita output depends only on the rate of technological progress (resulting from improvements in outputs or the efficiency with which inputs are transformed into outputs). This theory, however, offered no account of how this occurred: technological improvements emerged outside the economicsystem and were not shaped by decisions within it (BIS, 2011, p.8-9). The importance and definition of innovations can be explained from several points of perspectives. From the point of view of customers, innovation means products of better quality and better services, which together mean a better quality of life. From the point of view of businesses, innovation means sustainable growth and development, and the realization of larger profits. For employees, innovation means a new and more interesting job, which requires more mental faculties, brain power/expertise, which results in higher salaries. With regard to the economy as a whole, innovation brings greater productivity and prosperity for all (Gerguri and Ramadani, 2010, 3).

3. Efforts to promote innovation in the GCC countries:

The GCC countries invested significant amounts in higher education as education was seen to be one of the main contributory factors in fostering innovation in developed knowledge-based economies. The GCC countries established branches of international universities to bridge the gap and to add to the work in their own public universities in striving to find and support talent and offer the kind of experience which hones graduates and gives them the special skills necessary for the knowledge-based economy. In the United ArabEmirates, they established Dubai International Academic City (DIAC) which is the world's largest Free Zone dedicated to Higher Education. Established in 2007 as part of the TECOM Group, DIAC aimed to develop the region's talent pool and establish the UAE as a knowledge-based economy by 2102 (DIAC). DIAC currently has a large selection of multi-tiered International Branch Campuses (IBC's) from 10 different nationalities and is host to a community of over 24,000 students (covering 145 nationalities) who have access to over 400 Higher Education programs (c.f.: http://www.diacedu.ae).

Foundation is a non-governmental, non-profit civil institution working to support scientific research and technological innovation, to contribute to the efforts to build a knowledge society and economy in the UAE. The institution's headquarters is in Sharjah City. It was founded in April 2000, on the advice of 375 scientists from Arab countries and abroad (http:www.astf.net). The ASTF has focused on knowledge transfer, employment, and production in the UAE and it has established more than 30 companies and supported 750 researchers working in 142 research projects. The institution is also concerned with the program of the Technology Transfer Offices (TTO) as well as programs to encourage innovation and creativity (http://adenobserver.com/read-news/4315).

Entrepreneurship and technological innovation are historically the two engines that propel a nation's economic growth. With a majority of the businesses in the UAE comprising of SME's, the UAE government firmly believes that economic growth can be encouraged by supporting SME growth. Dubai Internet City (DIC) which is the largest business park and incubation center in the Middle East and North Africa was set up in 2000 to help the UAE in providing the necessary environment to foster both entrepreneurship and technological innovation in the ICT sector (DIC, 2012, p.2).In October 2014, the UAE government launched, the National Strategy for Innovation, which aims to make the UAE among the most innovative countries in the world with a seven-year strategy comprising of four tracks. The first phase of this strategy (2014 -2017) has begun and includes the introduction of new legislation designed tosupport incubators of innovation, and build specialized national capacities. There is also a set incentive for the private sector, to encourage building global partnerships and conducting research. The governments themselves will work towards creating systems conducive to stimulating more innovation in seven key sectors: renewable energy, transport, health, education, technology, water and space (Look:http://www.uaecabinet.ae/en/the-national-strategy-for-innovation).

In inventing a city the U.A.E has changed the concept of innovation. We are used to hearing about the invention of things like mobile phones, mini labs, or other new machines but inventing a city is unheard of. Twenty years ago few people had heard of Dubai. Then it was a poor city which stood in the middle of a desert, but now Dubai is one of the most famous cities in the world: with (14.26) million visitors a year it is ranked as the fourth city globally after London, Bangkok, and Paris, and these millions of visitors spend about 12 billion U.S. Dollars (Master Card, 2015, p.8) Dubai also boasts the tallest building in the world (the BurjKhalifa at 828meters), and it has also "The Palm Jumeirah" the world's largest artificial island which is shaped like a palm tree. Dubai has shared a lot in diversification the structure of GDP in UAE.z

In Qatar, Education City was established in 1997 by the Qatar Foundation. The aim of this private non-profit organization is to support and operate programs in three main areas: education, science and research, and community development. Several US schools teach and conduct research in English in different disciplines in this city, schools such as Weill Cornell Medical University, Georgetown University for International Affairs, Carnegie Mellon University for Business Administration and Computer Science, Northwestern University journalism and media, OH Texas A& M University of Engineering, Virginia Commonwealth University School of design and Arts.

In addition to the city, Qatar also established a Science and Technology Park (QSTP) in March 2009. QSTP is a home for technology-based companies from around the world, and an incubator of start-up enterprises. The park's support programs provide premises, facilities, and services to help organizations develop and commercialize their technology. In 2014, the indicator of the quality ofthe educational system (WEF, 2014, 298) ranked Qatar 3rd globally.Saudi Arabia established the BADIR Program for Technology Incubators at the King Abdul Aziz City for Science and Technology in 2006. The program focuses on supporting jobs based on technical development and technical projects. Today, it supports a program for three incubators; for Information and Communication Technology (BADIR ICT), for Biotechnology (BADIR BIO), and Advanced Production Technology (BADIR AMI). BADIR vigorously strives to advance, promote and support technology innovation and entrepreneurship across Saudi Arabia through comprehensive national programs and strategic policy initiatives supporting entrepreneurship in cooperation with governmental entities, the private sector, and universities (cf: https://www. Badir .com.sa/ en /about/overview).

Saudi Arabia also established King Abdulaziz City for Science and Technology, Saudi Arabia (KACST). This city represents the national scientific agency in Saudi Arabia and also its national laboratories. The function of the KACST includes the drafting of scientific and technology policies, data collection, foreign research funding and services such as the patent office. Among the KACST's main responsibilities is to support national innovation and technology transfer between research and industry institutions.Oman offers a pioneering model in entrepreneurship and in encouraging creativity and innovation within the process of achieving comprehensive and sustainable development in Oman. Oman has focused on projects by entrepreneurs and encouraged young entrepreneurs to penetrate this area. It provides them with all the facilities via the state's economic and administrative institutions. In order to keep pace with technological advances in the world, the Scientific Research Council of Oman founded the project "Oasis of Innovation" in order to establish a qualified environment for community innovation and building local capacity in various fields, in coordination with the public and private sectors. The estimated cost of the project is around 16 million dollars for the activation of four programs to support innovation. The first is to support the academic program of innovation, the second to support the community innovation program, the third is to support the marketing of innovative ideas and the fourth is a program to support innovative communities locally and internationally. Oman also established The Academic Innovation Assistance Program (AIAP), which is an offshoot of the Innovation Hub Project designed by the Research Council (TRC) to drive innovation at academic institutes in Oman. Sultan Qaboos University (SQU) has agreed to host and pilot the first Program and it is intended ultimately to aid the introduction of similar programs in other higher academic institutions (cf: http://www.squ.edu.om/aiap).

In 2015 in Kuwait, the Kuwait Foundation for the Advancement of Sciences (KFAS) established a program (Challenge Innovation). The KFAS Innovation Challenge 2016 has been developed, in collaboration with the prestigious University of Cambridge Judge Business School, specifically for Kuwait's private sector companies. Cambridge Judge Business School has substantial capabilities and expertise in delivering customized executive education programs for companies around the world.

The program offers 10 Kuwaiti companies an opportunity to develop their innovation capabilities. Teams will learn from Cambridge experts in workshops held in Kuwait and Cambridge, England. They will put innovation into practice through team-based action learning workshops, innovation projects and mentoring (cf.:http://www.jbs.cam.ac.uk/programmes/execed/custom-programmes/kfas-innovation-challenge-2016).

In Bahrain, the Bahrain Development Bank and the E-Government Authority announced the start of the first batch of Technopreneur Bahrain, a holistic development program jointly initiated by the E-Government Authority and the Bahrain Development Bank with the aim of supporting and facilitating the growth of the ICT sector in Bahrain. Technopreneur Bahrain offers entrepreneurs with a technological focus a comprehensive platform that includes capacity building, coaching, mentorship, and funding and other services to support the development of theirICT concepts and transform them into commercial business ventures (cf.: https://www.bbicbahrain.com/joomla/index.php?lang=en).All these efforts in GCC countries interested in innovation have led to an enhancement of the innovation situation as the data from a number of utility patent applications filled in the USA show.

Table 1 Number of utility patent applications filled in the USA by GCC countries (2010-2014)

Country	2010	2011	2012	2013	2014	*Total
Bahrain	4	2	5	7	7	25
Kuwait	58	86	97	116	85	442
Oman	7	4	8	1	9	29
Qatar	6	15	19	18	53	111
Saudi Arabia	317	328	465	649	650	2409
U.A.E	52	61	98	135	123	469
*Total	444	496	692	926	927	3485
*Average	74	82.66	115.33	154.33	154.5	580.5

(*) Calculated by the author.
Source: U.S. Patent and Trademark Office, Number Of Utility Patent Applications Filed In The United States By Country Of Origin Calendar Year 1965 To Present, June 2015, pp. 4-14.

The table shows that there has been an increase in the number of utility patent applications filled in the USA from (444) patents for all GCC countries in 2010 to (927) in 2014, but a comparison of these data with Germany, Israel, Japan, and Sweden reveals that there is a very big gap between these countries and GCCcountries. For example, the number of utility patent applications in 2014 was 86691 in Japan and 7352 and Israel. This exceeds the total number of patent applications for all GCC countries over five years (3485).

The Global Competitiveness Report assumes that there are three stages of development, which include 12 pillars of competitiveness. In the first stage, the economy is based on natural resources and countries compete on the basis of resources available to each of them. These resources are divided mainly between unskilled labor and natural resources. The basic pillars at this stage are a republic and private institutions (1st pillar), a well-developed infrastructure (2nd pillar), a stable macroeconomic environment (3rd pillar), and a healthy workforce that has received at least a basic education (4th pillar). As a country becomes more competitive, productivity will increase and wages will rise with advancing development. Countries will then move into the efficiency-driven stage of development, based on competence In this stage the development of production processes become more efficient and the companies increase the quality of production. The basic pillars at this stage are the following: better education and training (5th pillar), efficient goods markets (6th pillar), well-functioning labor markets (7th pillar), developed financial markets (8th pillar), the ability to harness the benefits of existing technologies (9th pillar), and a large domestic or foreign market (10th pillar). Finally, as countries move into the innovation-driven stage, they can maintain the highest levels of wages and living standards based on the ability of their companies to compete through new and unique products. In this competitive stage, companies must be innovative and provide new and different products and services using the latest design, production, management, and finance operations and marketing. The main pillars of this stage are using the most sophisticated production processes (11th pillar) and innovating new ones (12th pillar). Among 38 economies in the world at the stage of innovation, the GCR boasts three, Bahrain, Qatar and United Arab Emirates have reached this stage. Oman is in a transition from stage 2 to stage 3, and Kuwait and Saudi Arabia are in transition from stage 1 to stage 2 (WEF(a), 2015, 5-6, 38).

The Global Innovation Index is an index concerned not only with measuring the inputs and outputs of the innovation process, but also with the wider innovation policies that aim at creating innovation links through the partnership between industry and knowledge, and through the formation of innovative groups and the spread of knowledge. This index ranked GCC countries as shown in Table 2.

Table 2 Rank of GCC countries in the Global Innovation Index 2016

Country	Score (0-100)	Global Rank (among 141 Countries)	Arabian Rank (among 14 Countries)*
U.A.E	39.35	41	1
Saudi Arabia	37.75	49	2
Qatar	37.74	50	3
Bahrain	35.48	57	4
Kuwait	33.61	67	5
Oman	32.21	73	7

(*) Calculated by the author.
Source: WIPO, INSEAD and Johnson Cornell University, Global Innovation Index 2016, Geneva, pp. 20-21.

According to the table, no GCC countries have reached 50 points. The Arab Countries, however, have performed better than the others in this respect. This is due to a large extent to the weakness of some sub-indices such as market sophistication, creative outputs, and knowledge of technology outputs. This indicates a major gap in the innovation indices and knowledge indices in the GCC countries and this is reflected in the value, rank, and progress of the "Global Innovation" indices, and explains the weakness of innovation in the Arab world in general and GCC countries in particular. The table also shows a large gap between GCC countries themselves, for example between U.A.E and Oman. This gap exists because the GII consists of seven major indicators (Institutions, Human capital and research, Infrastructure, Market sophistication, Business sophistication, Knowledge and technology outputs and Creative output, so differences in rankings for these indicators result in this large gap. For example, in the business sophistication indicator, the UAE was ranked4th while Oman was ranked 124th and this large gap was due to the great interest that the UAE attaches to the business sector and the great investment opportunities, as well as the facilities it gives to foreign businessmen. In addition to that the UAE has a major problem with innovation output; in this index, it is ranked 75 and this is surprising because its strategy depends on sustained competitiveness through the recruitment of skilled workers from abroad and the creation of innovative groups within the city. Another important indicator for innovation is the Capacity for Innovation Index which measures to what extent companies have the capacity to innovate. Table 3 shows the ranks of GCC countries according to this indicator.

Table 3 Rank of GCC countries in Capacity for Innovation Index 2015

Country	Score (1-7)	Global Rank (among 143 Countries)	Arabian Rank (among 14 Countries)*
Qatar	5.3	12	1
U.A.E	4.7	28	2
Saudi Arabia	4.1	57	5
Bahrain	3.9	70	6
Kuwait	3.6	101	7
Oman	3.4	119	10

(*) Calculated by the author.
Source: World Economic Forum, The Global Information Technology Report 2016,p. 247.

The table indicates that companies of three of the GCC countries (Bahrain, Kuwait, and Oman) have a weak capacity to innovate, and this means that companies in these countries, for a number of reasons, do not have enough capacities to innovate. The most important problems are funding and a lack of skills and administrative capabilities.The Global Entrepreneurship Monitor (GEM) is the largest ongoing annual study of entrepreneurial activity in the world, exploring the role of entrepreneurship in economic growth within nations by unveiling detailed national features and characteristics associated with their entrepreneurial activity. In the report of 2015-2016, there were no GCC countries among the 54 countries covered by this report (WEF(b),2015).It appears that the situation regarding innovation and entrepreneurship in the GCC countries has progressed slightly, with the persistence of discrepancies of different importance from one country to another and from one field to another. This is because some countries (Qatar, UAE, and Saudi Arabia) give more attention to a number of innovation-related activities and set out future plans and strategies such as Qatar Vision 2030, UAE Vision 2021 and Saudi Vision 2030.

These future plans include developing indicators for innovation. Other countries (Kuwait, Bahrain, and Oman) do not have a focus on developing such indicators. This results in a widening of the gap between the GCC countries and the comparison countries.

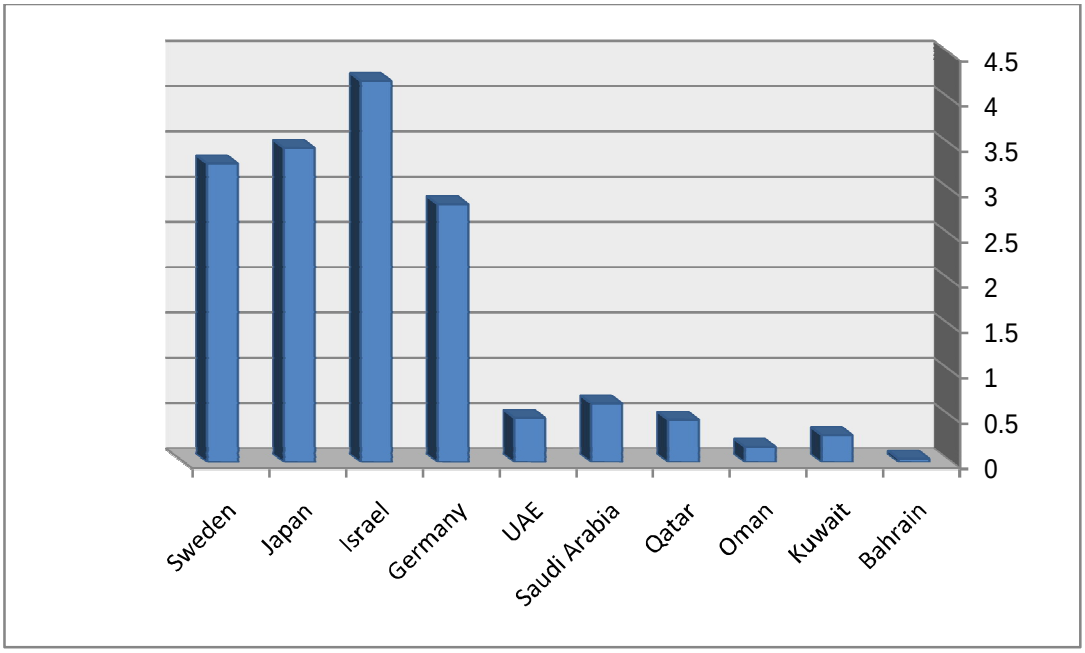
4. Obstacles to innovation in the GCC Countries:

The main obstacles to innovation in the GCC countries are the following:

1- The biggest challenges for the GCC countries lie in the transition from a traditional oil-based economy to an economy based on a system driven by the knowledge economy. These include, for example, diversifying sources of income, modernizing production rules and restructuring various economic sectors. This entails a good preparation of national human resources, as well as the establishment of sound controls to attract expatriate labor commensurate with the requirements of the current phase.

2- The second important and urgent obstacle is the low spending on research and development as a percentage of GDP, compared to developed countries. This is shown in the diagram below.

Figure 1 Spending on research and development as a percentage of GDP



Source:http://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS/countries

The graph shows a very big gap between GCC countries and Israel, Japan, Sweden, and Germany. This is because the GCC governments did not give appropriate importance to research and development. So if the GCC countries want to develop innovation they should raise this percentage.

3. The weakness of production channels in the GCC countries (except in petrochemical industries) creates a wide gap in technology. This can be seen in the very low level of high technology exports as a percentage of manufactured exports. This percentage did not exceed an average of 0.50 for 2011 for any GCC countries, while this percentage reached 16% in Germany and Israel, 17% in Japan and 14% in Sweden (World Bank Data).
4. The GCC countries are considered to be an IT consumer, not a producer and not a homeowner. The ICT goods exports as a percentage of total goods exports accounted for 0.2% on average for GCC countries. In 2011, it accounted for10.7% in Israel, 9.2% in Japan and Sweden and 4.6% in Germany (World Bank Data).
5. In the GCC countries, 80-90% of applications for patents are made by individuals rather than by companies. These inventors aim to exploit inventions for their own benefit with the help of marketing institutions. Motivation to invent and innovate arises in individuals rather than being encouraged by companies.

In contrast, in the industrialized countries 80-90% of applications for patents are made by companies; few of them are made by individual inventors. Educational establishments are not producing the kind of workforce which the labor market requires. This is reflected in the low share of the workforce employed in knowledge-intensive activities. This data is presented in Table 4 below:

6.

Table 4 Share of workforce employed in knowledge-intensive activities (%) in GCC Countries 2015

Country	(%)	Global Rank (among 143 Countries)	Arabian Rank (among 14 Countries)*
U.A.E	36.1	31	1
Saudi Arabia	26.6	54	4
Oman	24.3	64	5
Bahrain	23.1	67	6
Kuwait	18.7	83	8
Qatar	18.2	84	9

(*) Calculated by the author.
Source: World Economic Forum, The Global Information Technology Report 2015,p. 327.

The table above showsthat the GCC countries need to devote great effort to raise the percentage ofhe workforce employed in knowledge-intensive activities due to its crucial role in innovation and entrepreneurship. Qatar' low ranking is because a large proportion of the workforce is concentrated in production and services, while the proportion of professionals and technicians who are committed to achieving the desired development transformation is still low, at only 9%. The construction sector is the largest sector of the labor force, according to the study, 37.20% of the total jobs in the national economy, followed by the social services sector at 23.70%. The same is true in Kuwait.

7. Acquiring funds is one of the main obstacles faced by firms in GCC countries, especially by new firms during the early stages of life This is because the traditional form of bank financing, such as loans, may not be available in a broad and flexible form to start-ups unless there are guarantees for these loans, such as property or fixed assets. Often in GCC countries, such guarantees cannot be provided.This has caused these countries to lag behind in the rankings of the Doing Business Report with respect to getting credit. This is shown in Table 5.

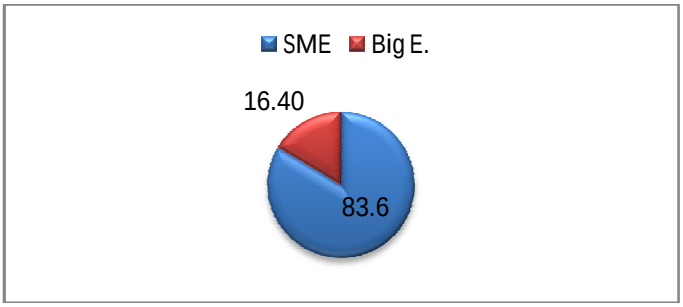
Table 5 Ranks of GCC countries in Getting Credit 2015

Country	Global Rank (1-189)
Saudi Arabia	71
U.A.E	89
Bahrain	104
Kuwait	116
Oman	116
Qatar	131

Source: World Bank Group, Doing Business 2015, World Bank, 2014, different pages.

8-Low contribution of SME's even though they make up the largest proportion of the total number of companies, as shown in the following diagram:

Figure (2) The number of SME's in the GCC countries in 2012



Source: Database of Gulf Organization of Industrial Consulting (GOIC).

The diagram shows that SMEs make up 83.60% of the total number of companies in GCC countries, while Investments in SME's amounted to approximately 4.2% of the total investment in the industrial sector in the GCC countries in 2012 (GOIC, 2012).It is noted that investments in SME's are very low and there is a need to invest more in small and medium-sized industries, as is the case in developed countries. Total employment in small and medium industries accounted for 46.1% of total employment in industrial projects. GCC countries must raise this percentage especially since most of them need to raise the employment rate of their own citizens in the SME's to tackle the problems of unemployment and to achieve development goals in the medium term (GOIC,2012)

9- The absence of democracy and political freedom: Research evidence suggests a positive correlation between democracy and technology development, suggesting that political rights are conducive to the most advanced economy in growth sectors. In the absence of real political rights, the desired development in the field of innovation and entrepreneurship cannot be achieved. The following table shows the situation regarding political freedom in the GCC countries.

Table 6 Freedom in the GCC countries 2015

Country	Political Rights (1-7)*	civil liberties (1-7)*	Aggregate score (0-100)	Freedom Status	Freedom of the Press 2015 Status	Freedom on the Net 2015 Status
Bahrain	7	6	14	Not Free	Not Free	Not Free
Kuwait	5	5	36	Partly Free	Partly Free	
Oman	6	5	25	Not Free	Not Free	
Qatar	6	5	27	Not Free	Not Free	
Saudi Arabia	7	7	10	Not Free	Not Free	Not Free
U.A.E	6	6	20	Not Free	Not Free	Not Free

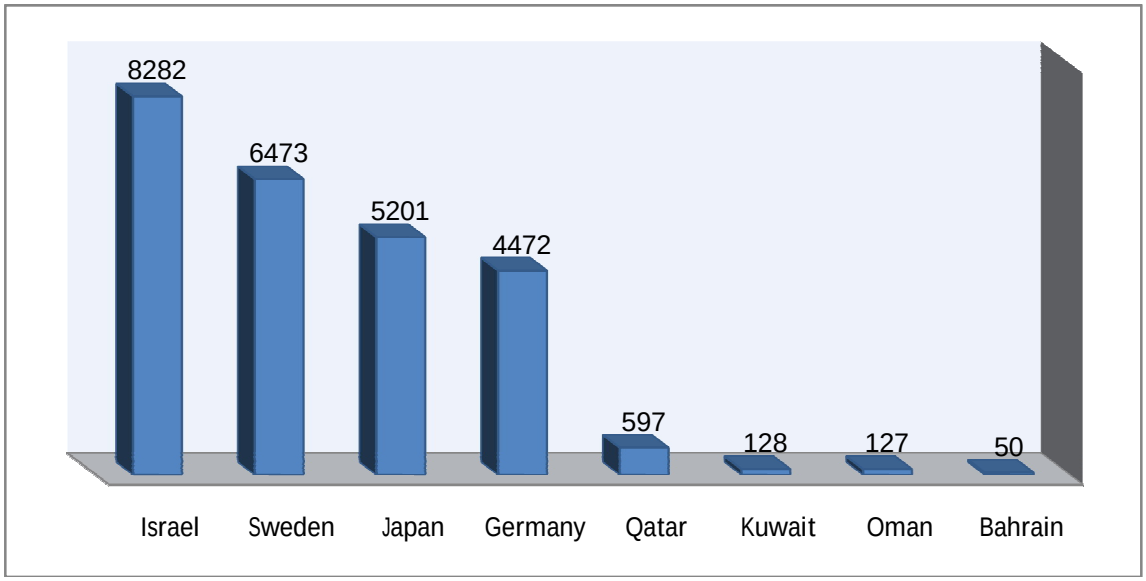
(*) 1 represents the freest and 7 the least free rating.

Source: Freedom House, Freedom in The World 2016, from website: https://freedomhouse.org/sites/default /files/FH_FITW_Report_2016.pdf

The table above illustrates that the freedom situation in the GCC countries is very modest. It shows that none of the GCC countries enjoys the freedom and there is no freedom of the press except in Kuwait, which enjoys a greater level of freedom than the others. This is due to the absence of parliamentary elections in these countries, except in Kuwait, and strict legal procedures in the event of criticism of the government or the ruling family even if this criticism is expressed only by means of social communication. Such criticism has led to the prosecution of many online bloggers.

10- The decline in the number of researchers and in particular scientific researchers, compared to the world level. This decline has had a negative impact on these countries with regard to shifting towards knowledge economies. The following figure illustrates this fact :

Figure 3 Researchers in R&D per Million People 2013



Source: http://data.worldbank.org/indicator/SP.POP.SCIE.RD.P6.

Figure 4 indicates that the Gulf research centers lack the important facilities of modern scientific research centers. This is, in part, because of lack of funding. However, the main reason could be the educational system that does not do enough to encourage scientific research and development in all fields.

5. How can the GCC countries affect the role of innovation in their economies?

There are many challenges facing GCC countries in attempting to affect the role of innovation in their economies. The first challenge is to diversify the economy and revenues and to shift away from oil: Although economic diversification and the shift away from dependence on oil alone have been mentioned in national development plans in the Gulf region since 1980, the oil revenues still dominate the fiscal revenues of GCC countries. In 2016 it represented 88% of total revenues in Oman, 86% in Bahrain, 80% in Qatar and Kuwait, 77% in Saudi Arabia and 64% in UAE (IMF, 2016).The second challenge is a lack of highly skilled human resources, which arises from the weaknesses of education, training and scientific research institutions. Such institutions should provide the economies with highly skilled, well-educated human resources capable of carrying out the tasks which will lead to the development of innovation and entrepreneurship, but currently, they fail to do so.This has led to the weak base of human resources, which, in turn, has led to a lack of young people trained in knowledge management, a limited capacity for benefitting from advanced ICT, and a lack of information systems and databases for disseminating and employing knowledge. Furthermore, the new projects in the region were restricted to the transfer and use of technology rather than to the processes of the transfer and to the localization of knowledge and technology.

The lack of technical cadres has also led to the weakness of both research and development networks and also of innovation and renovation networks. This has resulted in the absence of relationships and networks of communication between research centers and universities and between research centers and production and investment sectors (UNDP&MBRF, 2014, 15-16). Based on the above, and in order to activate the role of innovation, GCC countries need to develop human capital resources, especially young people, through improving the educational system starting from primary education. To this end, it is important to create a stimulating education that develops capacity and helps young generations to be able to benefit from scientific development and knowledge and thus develop their creativity and innovation.Overall, unlike other countries which have achieved success in this area, the majority of the GCC countries have not taken into consideration the SMEs where there is no special law that encourages private and public financial institutions to provide financial support to this sector or offers the provision of technical support services. but recently, several initiatives have emerged in some GCC countries such as Qatar and the United Arab Emirates.

6. Conclusions

Various studies have confirmed that innovation has a vital role in economic development. The GCC innovation sector faces numerous obstacles that impede its improvement, such as little diversity of the economy, the low proportion allocated to spending on research and development as a percentage of GDP, the very low level of high technology exports as a percentage of manufactured exports, the low share of the workforce employed in knowledge-intensive activities and difficulties in getting access to funds. While GCC has started to focus more on the improvement of the innovation and entrepreneurial environment through semi-governmental agencies and through establishing academic free-zones, the overall environment is still riddled with numerous problems that hinder the achievement of this goal. GCC countries also still need to invest more effort in innovation and entrepreneurship to close the gap to developed countries.

Despite these obstacles, Qatar and the U.A.E have a good global ranking in innovation and related indexes because they have made greater efforts, and have given more attention to this sector than the other GCC States.

Recommendations:

Supporting and promoting the human capital capacity for creativity and innovation in GCC countries is essential. To this end a set of policies should be followed, to create a favorable environment and provide the appropriate capabilities to encourage and stimulate the creativity and initiatives of individuals, groups, institutions and of the private sector. The interest of talented and creative people should also be stimulated, especially in scientific fields care and technology, and to competitive conditions should be created to motivate them. The private sector should support and finance inventors and innovators. Mechanisms should be created which will attract talented creators and innovators and offer them incentives to work in research centers. The establishment of small and medium enterprises should be encouraged through their adoption by economic and technical incubators. Attention should be paid to the intellectual production of scientists and innovators. They should be motivated to market their work, and appropriate channels for publication should be provided. Scientific societies should be supported and strengthened and their role in the capacity development and in national creativity and innovation should be developed. Means must be found to vitalize the role of educational institutions, the family, and society in the discovery of the gifted and of innovators.

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