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Review

Developing knowledge economy at Saudi Universities according to a number of international experiences

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Abstract

This study seeks to develop knowledge economy at Saudi Universities according to some international experiences. It aims to provide decision makers with a group of recommendations and suggestions that make knowledge economy an important approach to implement policies in managerial and sustainable reform at Saudi universities, so as to establish a new beginning development and get closer to being international. Moreover, there should be an attention paid to build knowledge economy through the experiences of developed countries in this scope, where universities constitute the most basic pillars for economic and social sustainability, that are considered as indicators of the developed nations. This Study seeks to develop knowledge economy at Saudi Universities according to some experiences of developed countries. In addition, it intends to have an insight concerning into the most important information that knowledge economy rely on, in order to guarantee the Saudi competitiveness potential at the twenty-first century with an advanced developed education, interested in building knowledge economy in its' institution. The study ended with a number of recommendations to develop knowledge economy at Saudi universities.

Key words: Knowledge economy, Saudi universities.

INTRODUCTION

The world has witnessed in these few years massive changes un precedent in the last centuries. Knowledge has become the new universal currency, The progress of nations is measured by the ability to produce knowledge and to use it in effective ways. And building the human element is the best thing which enables it to drive the wheels of countries' investment in knowledge economy and information, so there would be an increase in countries investments by spending on education, training and development in both the public and the private sectors. The world is shifting towards knowledge economy, where the commodity presented or information goods are among the very important commodities, and information technology and communication help in its growth (Qasim, 2010).

Knowledge economy represents a trend in the global economic vision, where knowledge is the engine for the production procedure, and the most important good in it, which enables to play significant role in creating the wealth needed not depending on the traditional capital

neither on raw materials nor employees, but on knowledge capital, and the amount of available information, and the way that can be transformed it in to knowledge (Alkhatib and Ma'ya'a, 2009).

The knowledge economy form the prominent title of the twenty-first century, and is considered the enormous rate of economic transformation in the Western world towards knowledge economy, and the world is witnessing increasing steadily for the role of knowledge and information in the economy, became the engine of production and economic growth as it became the principle focus on information technology as a key factor in the economy (Kafi, 2009).

Knowledge economy is a recent special economy, not because of the present or past time conditions, but from its special role in the future, when knowledge economy would be linked to the demand and supply economy, and would be connected to new explorations, modernizing and improvements conditions, and because knowledge is among the most important and vital to projects, to all the humanity, it is connected to interactive systems, that make development a continuous process and that is what establishes for knowledge economy (AlMabalsi, 2011).

As a result, knowledge economy has a profit in employing knowledge and its outcomes to supply products and distinctive, new or modernized services and renewable energy that could be marketed, and profits that would be gained, doing that, this economy offers job opportunities at a wide range for creators and inventors. And that means that the role of knowledge economy is not restricted to generating profits, but also, offering new job opportunities (Alfantoukh, 2012).

Universities are considered a basic element in the shift towards the knowledge economy, through building education systems that have a role in meeting the demands of countries, from qualified manpower, emphasizing social and cultural mobility in the contemporary societies as well as supporting scientific research. So that it could meet the demands of the twenty-first century, because at the age of information revolution and international competition, the pioneering International Universities system is becoming the engine capable of leading local environments in to knowledge economy, with making the international knowledge local one, and the local knowledge international (The ministry of higher education, 2011).

The Problem of the Study

The source of the bestowal provided by knowledge economy relies on the knowledge improvement bestowed by that who is capable of being the first in different topics, and that is what reveals the knowledge economy in this age. And no doubt universities as knowledge institutions play a significant main role in competition that needs supporting and activation. Universities have to determine their knowledge priorities, and to do the best to excel and have the ability to compete in these priorities. They have to be interested in partnership with institutions that could hire their companions at local and international levels.

Saudi universities should focus on developing knowledge activities and building knowledge economy, which would never develop without improving the capabilities of human beings. This study looks in to the mechanism of developing knowledge economy at Saudi Universities according to some international experiences.

The problem of the study was identified by the following questions:

1. What is the reality of developing knowledge economy at Saudi universities ?
2. What are the international experiences in developing knowledge economy ?
3. To what extent did Saudi universities benefit from the international experiences ?

The Significance of the Study

The importance of the study lies in developing knowledge economy at Saudi universities in the light of some of the international experiences. Decision makers and teaching staff at Saudi universities who might benefit from that.

Objective of the Study

The study aimed at illustrating the reality of developing knowledge economy at Saudi universities, the international experiences in developing knowledge economy and recommending suggestions to Saudi universities to benefit from the international experiences.

METHOD

This study adopts the analytical descriptive approach that depends on determining the problem and being certain about it, and forming its questions, and trying to find solutions and generalizing them and drawing comparisons, after referring the previous studies. In addition, getting exposed to the basics and ethics of working in this field, since it is considered of a theoretically categorized, that highlights many developed countries experiences in the field of developing knowledge economy, and to be exposed to the experiences in order to benefit at Saudi universities. Also, to provide an approach to universities atmospheres that is concerned with developing knowledge economy.

The Terms of the Study

Many researchers suggested a number of definitions for knowledge economy, Alsmadi (2011) defines it as "a recent economy that depends on producing knowledge and using its' advantages and achievements and consuming it in the literal meaning of word (p.125). And Zitek and Kilmona (2011) define it as "the economy that depends on generating and utilizing all the knowledge in

order to generate and produce wealth" (p.822). Knowledge economy is "the way knowledge becomes the engine for economic sustainability and makes money through changing the investment from tangible concrete to the abstract like knowledge" (Karahan, 2012,22).

The World Bank defined knowledge economy as "the economy that achieves a dynamic usage of knowledge in order to reach economic and social sustainability, in addition to adjust and form knowledge in order to meet its special needs" (Kafi, 2009,140).

Moreover, it is defined as "the economy that knowledge plays a basic role so as to make profits and where knowledge occupies a greater and deeper space" (Abu Ashamat, 2012,596).

In addition, it is defined with different names, such as "economy based on knowledge" and "the international economy based on knowledge" or the "new network economy" or "the new network" with the purpose of renewing the abilities of human, organizational potentials, and creating atmospheres that lead to creativity, invention and learning (Wong and Millar, 2013).

Review of Related Literature

Sandra & Dragana (2015) conducted a study entitled "Achieving Sustainable Development and Knowledge-Based Economy in Serbia" that aimed to analyze the progress in achieving sustainable development and knowledge-based economy in Serbia, a EU candidate country. A comparative analysis of conducting sustainable development and knowledge- based economy has been performed between Serbia and the EU(28). The focus is on economic aspects of these two concepts. The results differ. The goals that were initially set for achieving sustainable development and knowledge-based economy were either not reached or were hindered due to the global economic crisis and redirected towards solving more urgent economic issues. This is particularly noticeable in Serbia, which is carrying out economic reforms in order to achieve economic progress and meet the requirements for getting access to the EU.

Shah, B. & John, T. (2015) conducted a study entitled "Universities and the Knowledge**-**Based Economy: Perceptions from a Developing Country" in which they considered the role of universities in the creation of a knowledge**-**based economy (KBE) in a developing country, Pakistan. Some developing countries have moved quickly to develop a KBE, but progress in Pakistan is much slower. Higher education plays a crucial role as part of the triple helix model for innovation. Based on the perceptions of university leaders and academic staff, the paper examines how the transformation towards a KBE in Pakistan is viewed within higher education and identifies some of the blockages and contradictions that hinder development. In particular, the paper suggests that a more integrated education system bringing together primary, secondary and tertiary education to work for a common purpose will be essential.

Philip, A. (2013) conducted a study entitled "Advancing the National and Global Knowledge Economy: The Role of Research Universities in Developing Countries" in this study he stated that Research universities are a central part of all academic systems. They are the key points of international contact and involvement. Research is produced, disseminated and in many cases imported. For developing countries, the mechanisms for the involvement of research universities in the global knowledge economy is complex, and includes issues of mobility, the use of technology, collaboration, and other elements.

Otieno, J. (2013) conducted a study entitled "African Universities in the Global Knowledge Economy: The Good and Ugly of Internationalization" This paper discusses the developments of internationalization in Africa and its consequences on African universities**.** It presents some of the responses by the African higher education sector and concludes with some implications and considerations for the future.

Markus, R. (2013) conducted a study entitled "Accounting for Scholarship in the University 2.0: Knowledge Production and Dissemination under the Conditions of Global Knowledge Economies" this study explores historical models as the source of strength for humanities, and social organization considered as a space according to the idea of Alan Liu. It discusses the role of humanities and enlightenment in understanding and communicating the imaginary of knowledge production in information economy and society.

Shuang-Ye, C. (2012) conducted a study entitled "Contributing knowledge and knowledge workers: the role of Chinese universities in the knowledge economy" This paper reviews historically the changing role of Chinese universities from the planned economy to the knowledge economy, analyses their contribution of knowledge and knowledge workers, and critically reflects on the mechanisms driving or confining their future contribution to the knowledge economy**.**

Fowler, D. (2012) conducted a study entitled "Building Knowledge Exchange Capacity in a Small UK University: Outcomes of Action Research" This paper reveals some of the opportunities and pitfalls in making that objective a reality in the context of a single university. The findings and organizational development resulting from an action research project undertaken in a small learning and teaching oriented university in the UK are outlined. The aim of the research was to facilitate an increased capacity for knowledge exchange and participation in enterprise activity. Action research was undertaken in a single organization and in collaboration with the university's academic workforce. The outcomes of an initial survey and a series of interviews were used to create a strategic proposal for developing knowledge exchange. The data revealed that a predominantly professionally-oriented academic staff was prepared to accept external engagement and was not averse to commercial outcomes for knowledge exchange. In contrast, the senior management was unwilling to establish systems and

processes or enable organizational learning for knowledge exchange until a complete system restructure had been implemented; and this resulted in a very senior appointment (Pro Vice-Chancellor) being made, to lead external engagement.

RESULTS OF THE STUDY

In order to answer the first question in the study: "**What is the reality of developing knowledge economy at Saudi universities** ", the reality of knowledge economy at Saudi universities is as follows:

The number of registered students	1,206,007
The number of graduate students	141,196
The total percentage of joining (Saudi).	63,3
The total percentage of joining	48,5%
The number of the students abroad	148,583
The percentage of students joining universities abroad	5,10%%
Teaching staff	59,442

The numbers of universities has increased between 2006 and 2014 by a percentage of 75%, and there was a noticeable increasing growth in the number of private Universities in the previous period of time. The approximate number of Universities reached35, and ten of them are private. The number of students registered in the ministries of higher education, in the period between (2009-2012), for in 2009 (714,87) students and it became(1.206,007) in 2012 with an overall percentage of (68,2%), In the past five years the students numbers increased in Masters and PhD programmers in a percentage of %172), and the number reached (37,473) students in 2012, and the amount of money paid on scientific research(public and private) and development (24.22)trillion Riyals, of which 15,2 trillion from the kingdom budget, and (0,9) from the private sector, that constitutes around 0,9% of the gross domestic product which is (2,7) trillion riyals. The research expenses have grown in the kingdom in the past five years 68% according to ISI international database with a growth in percentages of 193% according to international Scopus data base, and that was a result of the increasing number of researchers and the increase in their products, average percentage, and consequently The Kingdom oil earnings were (311) trillion riyals. The imports of Samsung and Apple according to Scopus the international data base together were (357) trillion dollars, and both spend on research and development in a total of (15) trillion dollars, and the kingdom in all its sectors spending is (6) trillion dollars (Alfantukh, 2014)

There is a high political decision to make a quality transformation towards knowledge economy, and that was clear in the establishment of many institutions and assemblies, whose job is considered among the first of them is King Abdul-Aziz city for technology, the greatest nursery at Saudi Arabia to knowledge productions, and the first drawing the policies of intellectual property and exploration, among these images is engaging Universities in the field of knowledge economy, through creativity agencies, leadership institutions, and business schools, it provided(The Saudi Universities) in this place a pioneering role model that enabled it to achieve distinguished achievements at the level of obtaining patents and the Universities pioneering projects, and one of the strongest potentials that the kingdom is having is the human potential, for 79% of the kingdom citizens are between 19 and 21 years old, a characteristic that is lacked among most of the economically developed countries, a characteristic that makes generating knowledge by this young generation more promising, especially the custodian of the two holy mosques for external scholarships that unleashed thousands of cognitive young potentials (Assas, 2013).

The International Bank report mentioned that Saudi outscored most world countries in its rating, and it jumped 26 scales since 2000, which enabled Saudi Arabia to occupy the 50th amongst 146 country included in the world classification, the International bank rating for knowledge investment is considered a tool to asses knowledge economies in the world. And it added that The kingdom was for the first and only time on the Arab region in the international map of scientific research in 2012 after getting the accreditation gained by the criteria needed that depends on the percentage of spending on scientific research divided by the national product, and the percentage of engineers and scholars divided by the population number, and the size of spending on scientific research according to what was mentioned in the famous magazine "Pateil" for research and development issued by "Pateil" organization for studies at the United States of America, as for preventing threats of "intellectual property", that the number of patents from Saudi Arabia was 294 demands over the previous two years, so that it exceeded all the Arab countries, that had 197 demands, and "Webo" has shown that Saudi Arabia has achieved a remarkable increase in the number of demands over the past two years, that the increase was from 81 demands submitted in 2010, to 294 in 2012, so as to register an increase of one hundred percent.

In the previous four years, there was an establishment of (154) colleges, and all in applied sciences, medicine l and engineering, at all public universities and the establishment of King Abdullah University for information technology and it is an international university for higher education specialized in research and enhancing the field of upper education in the fields of information and technology and establishing programs majoring in more than one field. Like Nano technology, biotechnology and petro chemistry. Also the establishment of centers for excellence in research at universities, and this program aims at excellence at universities in different fields and the number of these centers was14 excellence centers, divided at all universities with an approximate budget of six hundred million riyals. And the ministry supported

strongly the universities in establishing and supporting the research seat. And also the university signed contracts with 14 scientists who won the Nobel Prize. Over the past forty years, the number of research seats at king Saud was 113 seats that increased the growth of scientific research in few years between 2007 and 2010 with a percentage of 217% compared to some countries like China with a percentage of 155% and Iran of the percentage 184% and Turkey with the percentage of 144% with a percentage of international quotation from the kingdom universities with a percentage of 7,1% where as China 5,4% and Turkey 4.91% , the number of papers in the Kingdom 2500 papers, and to double in 2010 to become more than 5000 scientific papers (AlMusa,2012).

In order to answer the second question of the study: "**What are the international experiences in developing knowledge economy** "?
The most distinctive international experiences were from the following countries:

Knowledge Economy in the United States of America.

The economic gross development in the USA was 50%mfrom the overall gross development product. Furthermore, the number of workers in the field of knowledge economy was three quarters of the **American** manpower, and they gain twice as workers in traditional industries (Yusif,2012).

The highly reputable Universities are considered institutions that are not intended to make profits, and they are established to manage the higher education that benefits from the society. And the support of these universities comes from the contracts signed with the private sector regarding research priority, and forming the relationship between companies and Universities to achieve information and economic competitiveness (Fehr and et al., 2009). 75% of the growth of job opportunities in America is from education through some industries, and health care relying on information (Glazer and Grime, 2011). Four companies only with a market value of 513 trillion dollars, providing an annual income of 76 trillion dollars for the American economy. Which is a successful role model for knowledge economy products that provided excellent job opportunities, and big national income to the American economy, Google company market value was 340 trillion dollars with earnings of 60 trillion dollars, and facebook with a market value of 100 trillion dollars and earnings of 7 trillion dollars, and yahoo with a market value of 33 trillion dollars and earnings of 4,5 trillion dollars. And twitter with a market value of 40 trillion dollars and earnings of 4,5 trillion dollars. (Alfantukh, 2014).

Knowledge Economy in Britain

Britain has strengthened its research potentials with universities, translating it in to an economic impact, and its universities are the best in research in the world since 1997, and the government doubled its investment in its database, and it's budget reached approximately 4 trillion sterling pounds in 2010 and 2011. By 2020, Britain is going to work on safeguarding the knowledge economy basics in it through an international assembly of workers in information lead by the continuous increase lead by higher education certificates holders, and improvements with attention to all fields of knowledge with the quality of sciences, technologies, engineering, mathematics and investments in scientific database at an international level supporting research, development, design and creativity, in addition to businesses led by information, so that it becomes pioneering world wide.(Levy and etal.,2011)

Moreover, in some scientific studies, some researchers in knowledge economy focused that they are going to pursue their job of focusing on industry based on knowledge economy at big central cities, and some regional British assemblies at all parts of the world as a contribution knowledge economy at Britain (Morris,2010).

Knowledge Economy in India

India is considered the greatest source of soft ware's, after the United States, and around 40% of soft ware's used in cell phones, and the government supports experience in the field of information technology through establishing of innovative ways, aiming at solving many sustainable issues it faces, and information technology participates in around 7,5% of the GDP so it plays a role in providing new job chances, and more receipts, and also it has a role in sustainability procedures in India (Alfarmawi,2013).

And it has a great chance in gaining potentials through knowledge economy, because it includes the greatest number of young educated English speakers, and that is due to India demography, and India also obtained the dynamics of the private sector with increasing projects on management skills, and free market economy is also considered another distinctive point in India added to its benefits. Furthermore, the banking and financial sector is growing well.

Also knowledge is becoming the most important tool to improve India as an enormous economic power. Industries based on knowledge are considered the thing that makes wealth and job opportunities (Raghwan, 2012).

Knowledge Economy in Singapore

Singapore plan depended on investment in technical sciences, and encouraging creativity and financing knowledge projects and spreading innovative culture and scientific research among young people, and the International Bank considers Singapore amongst the best countries that managed to upgrade its system of education in order to serve the change in to cognitive economy (Alfantukh,2014).

Singapore plan depended on advanced information in telecommunication infrastructure served by more than six thousand multinational corporations, and more than 100 thousand corporations, and the Swiss center for management sustainability classified Singapore as the third in the world in the field of scientific research and sustainability, and also the World Economic Forum indicated that Singapore proved a potential, innovativeness, economic rigidness, and it was classified continuously as one of the most competitive countries, and among the best places for business men in the world, and the sustainable economic council considers scientific research and development Singapore of an international level, that it includes 12 research centers varying between a number of majors. Like information technology, communication, nano technology, and industry techniques, so that it could be considered a variant society of local and foreign researchers capable of attracting the brilliant minds from the United States Europe, Australia and Asia (Karello, 2011).

Knowledge Economy in China

The economic development in China was synchronically occurring during republishing and translating of the Chinese culture treasures through its Universities and publishing, houses to a number of languages in the world, which helped in the growing cultural interaction between the east and west (Shig, 2012).

Therefore, China occupied the second on the ranking after The United States of America, as a global scientific and economic power, so that China achieved an enormous jump during the previous twenty years, and it is starting to compete with the developed countries on the first rank, economically and also knowledge wise, and also it performed a transformation procedure and restructuring for the policy related to Science research, and it's Universities relied on scientific research and transferring it from the theoretical scope to the applied one in industry and economy (Abuashamat, 2012).

In 2002, the number of companies established in it reached 20796 producing high technology, and 2,5 million person most with high qualifications worked in them (Wu and Chung,2014).

Pikkin and Shangahi universities had occupied the mission of economy built on knowledge, so the industry cities are associated with the universities as it is taking care of its graduates in order to push the production and technological process, and the vision of these industry cities varies according to the kind of activities in different locations (Leydesdroff and Zhou,2014).

Knowledge Economy in Germany

Germany is considered one of the ten greatest industrial countries in the world, although poor in its raw materials, and one of the pioneering industrial in the world, and the most important factors that helped in this economic achievement, are the managerial and technological skills in industry, and offering training and suitable education by the Universities and the ministry of higher education so as to suit the achievement, Akhen University has a complete group of technology, sciences and specializations and it is directed towards applied research in order to make the university campus encouraging to research and innovation, and the distinctive feature at the University campus is its innovative concept, because it depends on gathering academic centers and companies around different specializations, or shared challenges (Van,2010).

Knowledge Economy in Malaysia

The Malaysian government has adopted a national strategy to build knowledge economy depending on developing the technical potentials to the Malaysian man power, and it has opened Malaysian markets to foreign investments, so the Malaysian economy shifted from being agricultural to industrial economy relying on knowledge. Because of this policy that was supported by procedures of developing potentials and human skills through improving education procedures and scientific research, and establishing scientific research centers, and vocational training institutions as a tool to build qualified and excellent manpower capable of building industrial and technological fields. Moreover, emphasizing innovativeness and creativity by investing in education and scientific research. In addition to constructing an infrastructure convenient to human and economic sustainability, becoming among the developing countries within a very short period of time (Nima, 2011).

Mahatir Muhammad said that "placing a basis that depends on knowledge economy is very crucial to the countries, in order to keep the fast economic growth and strengthening the international competitiveness, and we will need to improve our creativity potential and create local technology, developing and marketing new products (Abdulai,ND).

Knowledge Economy in Korea

The Korean President declared in (2000) his intention to transform Korea in to an economy based on knowledge, and three months after the presidential declaration, they start a strategic plan of three years to transfer Korea to an economy based on knowledge to implement Korea's vision towards knowledge economy. The Korean plan depended on developing human resources and industries based on knowledge, science and technology, and decreasing the numerical gap. So, it became one of most developing countries in the field of knowledge economy. In 1938, Samsung Company started as a commercial company selling rice and sugar, and transforming in the middle sixties to manufacture electronics, and it has built eight cities depending on technology for its factories and employees. In 2013, it has spent 40 trillion dollars on

research and development, and it has 50000 researchers, 3000 of them are PhD holders, and the company works in different sectors, and it is the second biggest software company after Microsoft. It obtained earnings of 269 trillion dollars. Samsung now considered the first worldwide in the field of industries depending on development and research (Alfantukh, 2014).

In order to answer the third question in the study: "to **what extent Saudi universities have benefited from the international experiences"**?

- Saudi universities should strengthen its research potentials at a national and international through developing partnerships with international universities to improve economy, and Saudi universities should sign contracts with the private sector in issues relevant to research priority, and establishing a reciprocal relationship with companies to achieve knowledge and economic competitiveness.
- Saudi universities should benefit from the experience of India that made English the education language, so that its young people are the most who speak English in the world. And offering greater and more job opportunities at Saudi society. Also, Saudi universities should focus on the training of all their students according to specialization in order to link knowledge with reality, so they gain an experience in sacrifice and bestowal.
- Saudi universities should benefit from the experience of Singapore in attracting people working in knowledge, similar to what King Saud university has done in attracting (14) of scientists with a Nobel prize for peace, opening gates to cooperate with international companies so as to improve its research potentials, and to improve the students' levels during their training and working in these companies, especially that we have two industrial cities, Jubail and Yanbu', which considered the biggest worldwide.
- Saudi Universities should focus on attracting the greatest number of companies with an industry relying on petrol derivative , and Saudi universities should reduce the number of theoretical studies and increase applied specializations in industry and economy, and to link Saudi Arabia outputs with what it has of industry cities like: Yanbu' and Jubeil.
- Saudi Universities should be opened widely to advanced financial systems, and to develop "twins ship" with other International Universities in order to enable Saudi students to receive their education in international universities.

RECOMMENDATIONS

1. Attracting the higher education excellent non Saudi students to study and work in programs, scientific seats and research laboratories.
2. Coming up with educational atmosphere that increases the necessity of being convinced that there should be a shift towards knowledge economy, through educational and media programs.
3. Assigning sections and managements concerned with applying and following the main indicators towards knowledge economy.
4. Increasing the interest in training and scientific research, and spreading knowledge economy, and its impact on the progress of the society.
5. Holding sessions on transferring towards knowledge economy, and starting from where the world ended in gaining knowledge, and building a strong knowledge economy.
6. Changing the managerial principles and plans at Saudi universities, and directing it towards knowledge economy, and changing education principles to principles that manage knowledge economy.
7. Complementation between Saudi and foreign universities in order to invest in knowledge economy.

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