

# Determinates of innovation and its relationship with Economic growth in Saudi Arabia

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## Key words

Innovation, Determinates, Cronbach's Alpha, social factor

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## Abstract

*In this paper, researchers study the main important determinates of innovation in KSA in general and its role to increase GDP by referring to objectives of 2030 vision by encourage and promote small enterprise and encourage innovation. Therefore researchers distributed survey to the students of Jazan University and Innovation Center. Researchers used Cronbach's Alpha to determine the reliability of sample that equal to 90% also focus on correlation between variable. The results of hypothesis refer to the significance relationship between innovation and economic growth.*

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## 1. Introduction

There is no doubt that sustainable development requires improving the living conditions of the society without increasing the use of natural resources because it has a great positive impact on economic growth by creating new job opportunities and developing the community through supporting small enterprises, which increases the individual income for the social welfare of whole society. The observer for the global economy will find that innovation is a key role for countries to depend on economic development. This is what Saudi Arabia aims at through Vision 2030, which emphasized the role of innovation and small projects in developing the economy away from dependence on oil. Whereas Saudi Arabia has already begun to attract the attention of knowledge economy and the development of programs that encourage innovation, where Saudi Arabia ranks 55th among the world's countries in the global innovation index according to the last World Intellectual Property Organization report. By focusing on innovation in the Kingdom of Saudi Arabia, we find that there must be attention to productivity indicators and economic factors, which in turn affect and are influenced by, create more innovations.

Companies that pursue a technology and give utmost importance to innovation will impact positively on economic development. We can identify the reasons for the increase in productivity, which contribute to increase the innovations of companies in the following points:

The role of institutions in supporting innovation.

Infrastructure.

Make a change in human capital

## 2. Literature Review

Since the innovation has a fundamental role in the growth and development of nations, where innovation is represent success of business. Regarding to the possibility to implement innovation in organizations need to take proper measures to avoid its failure so, Jasmin Rebertson et al (2008) made a sample that demonstrates the need for an interaction between support for innovation and the availability of the necessary financial resources, not to mention climate and policies pursued and the integration of these stimuli to reach to desired innovation.

The fact that the increase in the productivity of any country and its growth is measured by adopting the technology and the development of innovative systems for the development of the country economically. So John Baptiste say(1803) Explained that technology has a negative role on workers and will affect the raise unemployment rates and this will only create new additions that will absorb

unemployment. In contrast James Steling (1767) noted that technology has a positive effect on commodity prices and negative on workers.

And the fact that innovation based on the growth and survival of organizations and their employees. So we find Klein, Coon & Sora (2001) interested in creating an appropriate environment for implementing innovation, Also Klein et al, knight (2005) Pointed out that the climate be appropriate for the application of innovation will be through the adoption of specialized agencies . On the level of competition, innovation has a constructive role . Where Brash, capozzi & Davidson (2008) Analyzed the questionnaire shows that innovation a key role in the survival of companies as well as to put the center of competitors and also Makinsey (2006) occurred in the field of competition in the markets. This is what Schumpeter's theory (1934) suggested that innovation always work with competition in same side.

According to Sun Ling (2012), based on a descriptive approach to describe the potential for interaction between innovation in technological fields and its impact on economic development, where the study found that the presence of innovations will reduce project costs, promote companies and increase their profits. As Hristea Anca Maria (2012), described the importance of innovation in EU and divides EU to four groups according to the importance of innovation.

Juliane de Bassi padilha et al (2017), described the vectors of innovation that will represent as an addition to the product and give it a competitive advantage, especially in the design stage that these additions will enable products to compete in the market It found it necessary to integrate innovation into the product development stages Thus contributing to the process of innovation. Taking into account the relationship between innovation and performance level Jasinski H.Andrzej (2011), analyzed the impact of innovation on macro-economic in Poland depend on three factors, size of modernized product in industrial products, number of high-tech product in export and density of innovation, Concluded a positive relationship between economic growth and innovation. In reference to Porter's theory (1990), Explained If the business environment has changed, it is necessary to re-evaluate the institution and the labor market and radical innovation one of the most important influences in the work environment, which led the researcher maximizing the role of radical innovation in emerging societies Because of its positive impact on economic development.

Regarding to achieve high level of economic growth Lei Weng et al (2012), tested the relationship between patents and economic growth based on the following variables (Gross Domestic Product, the number of patents - foreign direct investment - trading volume). They reached to a positive relationship between technology represented in innovation and economic growth. And also Lei Zhag et al (2012), Examined variables that illustrate the relationship between scientific technology and economic growth in Beijing by using (human capital, labor, technology) taking in consideration the effectiveness of investment in China. Economic growth will be determined by increased reliance on technology.

There is some literature linking innovation with economic policies and its contribution to increasing welfare and reducing unemployment rates such as Germany, Denmark, Spain, etc. where Miguel Martin et al (2012) estimate a function that illustrates the relationship between innovation and some economic and social variables . Also reached to the social climate has a main role in generating innovations. In addition to there are incentives to increase innovations such as income and training. Regarding to Ricardo Moutinho (2015), pointed out that research and development does not contribute to support the economic market. Also focused on that if reliance on innovation policy to solve the economic problems will have a positive impact on unemployment and thus increase investment, increase economic growth and sustainable development of all society. Sonia paroling (2013), analyzed the determinants of innovation according to industrial organizations through restructuring production with the demand or need of the market and after knowing the need of the market will be innovated in light of it

To preserve the environment from various pollutants Mihaela Diaconu (2011), described the environmental benefits of using technology and relying on innovation as contributing to reduce environmental damage due to the use of pollutants. It showed the importance of the role of organizations, research and development to have a positive relationship with the advancement of the environment and has given utmost importance to bring about innovations in the field of environment. Because innovation has an important role in financial development Wen feng Zhao (2016), tested the impact of financial growth as security market, FDI on local innovation output among different cities in China. The results

refer to there is a positive effect of the financial growth on the regional innovation output and this effect is different among the regions in china .also there is a positive effect of R&D and FDI on local innovation output. And at the level of achieving sustainable development .Viorel Cornescu , Cecilia Adam (2013), Provided a theoretical description of the role of innovation to achieve sustainable development through the role of innovation in meeting the needs of consumers without wasting resources. This can be achieved only through approaches to increase the efficiency of economic resource utilization.

And the importance of the role of innovation as a catalyst for small enterprises Barbara Scozzi et al, (2005) investigated techniques which used in SMEs to support innovation inside enterprises . It has reached to a clear weakness of communication within institutions and between the institution external environments in addition, inability of management all these factors effect on encourage and support innovation in SMEs . Carol poon Man Wai (2017),described the impact of innovation and social impact on universities , Recently universities must be prepared incubators of innovation , Universities have effective role to serve the community and must be the nucleus of innovative education.

Investment in innovation has become one of the most important factors that positively affect on local development and also increase the economic growth of the country so Shun Zhang ,lining Dong (2016) analyzed the relationship between increasing venture capital and its impact on increasing innovation .The results showed that venture capital has a positive impact on local innovations and that capital increase will increase the efficiency of innovation.

Luan carlossantiosilva et al (2012) Analyzed stages of technological companies in Brazil, which illustrate the basic dimensions that affect innovation by using a questionnaire that determines the challenges facing innovation in organizations. Also Matthew coates ,Lydia bals (2013) analyzed the factors that encourage pharmaceutical organizations to apply innovation and the reasons for the disparity between the performance of these organizations in addition to measuring the innovative climate in these organizations.

### **3. Factors of successful innovation and development**

#### ***(3-1)Institutions and innovations in Saudi Arabia***

Saudi Arabia is currently undergoing a transition phase at the economic, social and cultural levels. In the framework of this change, we observe the growth of non-oil economic activity and the focus on the knowledge economy, based on the innovations. So it has been allocated special initiatives to support innovations within the budget of the Kingdom.

Where the panels initiative was launched in several chambers of commerce in most cities of Saudi Arabia and supported by teams headed by the Ministry of Commerce and Investment.

On the other hand, the educational, intellectual and cultural readiness of the members of the society in the Kingdom is the main foundation upon which the success of spreading the culture of innovation. It is not easy to transfer the culture of the society from the thought of consumption to productive thought so it is necessary to include the culture of innovation in educational institutions, both basic and university, and this is what worked on the Saudi universities, which created many centers ,units and incubators supporting business innovation

Regarding to King Abdulaziz City for Science and Technology (KACST) is the best example of supporting institutions for scientific research and providing the environment for innovators, which will serve the society at all levels "medical, engineering, technological, etc. "This is in addition to the Communications and Information Technology Commission (CITC), which launched the Saudi Innovation Program, which aims to benefit from the experiences of previous countries in the field of innovation. Also will provide visas and licenses to 21 non-governmental organizations from outside the Kingdom to be in the Kingdom.

#### ***(3-2)The role of infrastructure and environment in supporting innovation.***

The decision-makers in the Kingdom seek to balance the promotion of economic growth and the maintenance of financial sustainability through the adoption of several measures to control public spending by reducing or postponing projects of lower priority while continuing to implement important investment programs in both human capital and infrastructure, It is worth noting that Saudi Arabia's

adoption of a future strategy besides the economic transformation programs 2020 that aim to increase the levels of economic diversification and the adoption of many initiatives that encourage innovation and provide many jobs. Which will increase the income of individuals who will revive the areas where these projects exist as a whole, where it is based on the Arab Economic Report) is expected to Saudi Arabia's economy will achieve growth of around 0.7% in 2017 and expects to increase this growth in 2018 to 1.5% . The observer of the intellectual environment in Saudi Arabia , and if the situation is compared to the current intellectual situation of the situation two decades ago, we will find a terrible transformation, especially with regard to the development of services, especially technology as a whole and would not have been achieved without the existence of innovative centers in most Saudi universities, But There are still many difficulties that stand in the way of innovation as:

**Internal factors:**

Lack of financial support.

Weak cooperation between educational institutions and supporters of non-innovation.

**External factors:**

1. To convince the public and society of the effectiveness of innovation.

2. Marketing and presentation of innovations.

Elements Affecting the Innovation Environment:

1- Quality of scientific research bodies.

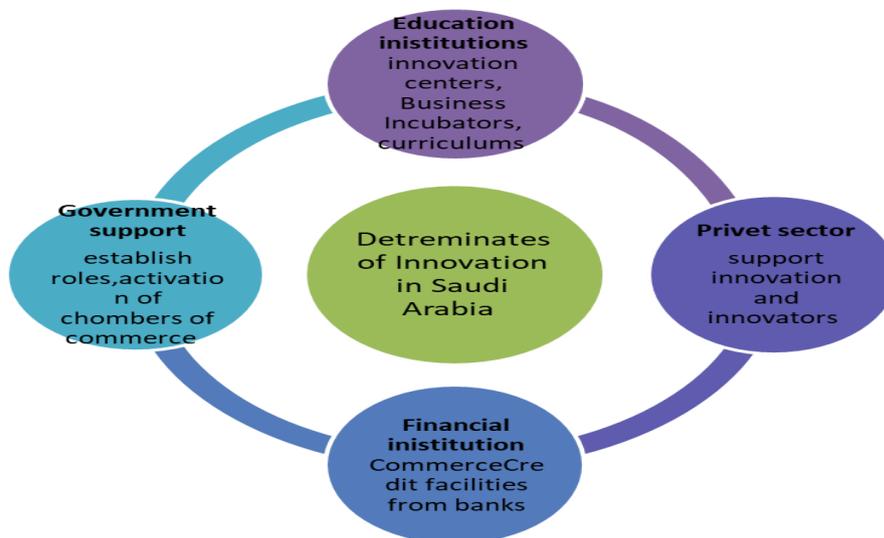
2- The level of companies' spending on R & D activities.

3 - Cooperation between universities and industrial companies in the field of research.

4. Government acquisition and promotion of high-tech products.

5 - Availability of scientists and engineers and management.

6. Patents of benefit and Protection of intellectual property.



The results of the study show that social factors play an important role in increasing innovation. Social factors are represented in several axes: educational institutions, both basic and university, as evidenced by the existence of many educational institutions Such as King Abdulaziz City for Science and Technology (KACST) as an educational institution that provides the community with innovative cadres. It also highlights the effective role of government agencies in the Kingdom, which encourages innovation as a solution to the unemployment problem. Many ministries adopt many initiatives that support innovation such as Saudi Innovation Initiative, a national initiative that fosters innovation and stimulates creativity as a sustainable extension of the national economy. Culture of innovation in society, partnership and cooperation between local and international companies.

In line with the vision of 2030, one of whose aims was to transform into a knowledge-based economy, many of the organizations that financed innovations in the Kingdom emerged but are rather

shy. This is what the study results proved, which indicated that the funding factor is the biggest challenge facing innovation in Saudi Arabia.

#### 4. Research Methodology

This paper, researchers used the analytical methods which is based on the collection of facts and information to analyze the role of innovation to achieve economic growth.

Our questionnaire has been distributed to innovation center and collection of student in jazan university in order to know the impact of different mentioned factors on innovation, as well as, to concentration on information about the effect of innovation on economic growth in Saudi Arabia.

Researchers used the statistical technique of cronbach's Alpha to measure the credibility of sample's answers. The study depend on the following hypothesis:

**H<sub>01</sub>**- There is no significance between innovation and economic growth in Saudi Arabia.

**H<sub>1</sub>**- There is significance between innovation and economic growth in Saudi Arabia.

**H<sub>02</sub>**- There is no relationship between economic factors affecting innovation and economic growth.

**H<sub>2</sub>**- There is relationship between economic factors effecting innovation and economic growth.

**H<sub>03</sub>**- Social factors haven't effect on innovation and economic growth in Saudi Arabia.

**H<sub>3</sub>**- Social factors have effect on innovation and economic growth in Saudi Arabia.

#### 5. Finding and Analysis

The researchers investigated the reliability of the sample's answers by using Cronbach's Alpha where the questionnaire contain two sections, first section represented as economic factors and second is social factors. Sample's answers have been formative based on the quintuple Likert scale.

Cronbach's Alpha is equal to 90% as shown in figure No (1), and this value is acceptable and confirms the stability and reliability of the sample.

In order to get higher Cronbch's Alpha which reached the value of 90% , we recommended to remove few questions with low credibility which are q3,q4,q10,q20 from economic factors section , that asked the sample about the relationship between contribution of innovation and GDP , The role of innovation to reduce the unemployment rate in KSA , The economic return from innovation which implemented from universities' students and The fund is considered the most important barrier that face inventors . Therefor answers that given by respondents to the remaining questions have a high credibility and allow us to build strong conclusions. That means, results are stable and also if we distribute again the same questionnaire to same sample, we will achieve same results.

#### *The result of Hypothesis*

The schedule below is considered as summarized, where Researchers found that there is a strong positive correlation between social factors and total factors. But economic factors the correlation with total factors that determine innovation is average.

Our results evidence the confirmation of the hypothesis that innovation effects positively the economic growth in Saudi Arabia. In addition, there is a positive impact for social factors on innovation and economic growth in Saudi Arabia.

Item	Hypothesis	Result
H <sub>01</sub>	There is no significance between innovation and economic growth in Saudi Arabia.	Rejected
H <sub>1</sub>	There is significance between innovation and economic growth in Saudi Arabia	Acceptable
H <sub>02</sub>	There is no relationship between economic factors effecting innovation and economic growth.	Rejected
H <sub>2</sub>	There is relationship between economic factors effecting innovation and economic growth.	Acceptable
H <sub>03</sub>	Social factors haven't effect on innovation and economic growth in Saudi Arabia.	Rejected
H <sub>3</sub>	Social factors haven't effect on innovation and economic growth in Saudi Arabia.	Acceptable

#### *Conclusion*

Regarding to research's sample answers; social factors have significant impact on innovation and economic growth of Saudi Arabia. Thus, we can conclude that social factors and economic factors had an effective role to achieve economic growth . We can enrich the research with these recommendation:

- Focus on establishing an independent ministry to handle innovation and inventors.
- At the educational level of basic and university education, it is necessary to change traditional curriculum and focus on approaches that motivate innovation.

- Attention to technical education that will add to GDP.
- Employing the results of innovations presented by King Abdulaziz City for Science and Technology.

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### Appendix Figure (1)

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.902	.900	35

Figure (2)

## ANOVA

		Sum of Squares	Df	Mean Square	F	Sig.
Within People	Between People	2557.980	252	10.151	37.520	.000
	Between Items	1264.981	34	37.205		
	Residual	8496.162	8568	.992		
	Total	9761.143	8602	1.135		
	Total	12319.123	8854	1.391		

Grand Mean = 2.49

Figure (3)

## Correlations

			Total factor	Economic factor	Social factor
Spearman's rho	Total factor	Correlation Coefficient	1.000	.730**	.895**
		Sig. (2-tailed)	.	.000	.000
		N	253	253	253
	Economic factor	Correlation Coefficient	.730**	1.000	.384**
		Sig. (2-tailed)	.000	.	.000
		N	253	253	253
	Social factor	Correlation Coefficient	.895**	.384**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	253	253	253

\*\*. Correlation is significant at the 0.01 level (2-tailed).