

A Conceptual Study To Make Research About Contribution Of Innovation And Competition Relation Over New Economy

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ABSTRACT

The globalization fact has gained more momentum together with development in free market economy. Together with this new formation, developed countries have opened their doors to competition and have started to take new steps at state-economy relations. While globalization which requires economic, social and political integration of all world countries is creating positive consequences especially in economic and political fields for developed countries, it has brought some negative effects for economies of underdeveloped countries which do not have a substructure proper for such an integration. Contribution of “Competition” and “Innovation” concepts over new economy forms the axis of this study and development of competition and innovation indicators are examined comparatively regarding Turkey and other selected countries.

Key Words: Globalization, new economy, competition, innovation, market economy,

INTRODUCTION

Economic activities at developed countries have been changed and a market structure at which knowledge based, advance technology products are highly demanded and entrepreneurial activities which are proper for such a structure and new company formations have caused a new economic system which is based on creativity and innovation to be emerged. Due to this transformation in these economies, knowledge has been started to be accepted as one of the most significant production factors. Economies which produce knowledge and which use this knowledge effectively during production process are mentioned as knowledge-based economy. At knowledge-based economies, potential of creativity, efficiency, competition and innovation is quite powerful. Knowledge and decrease in costs at communication technologies cause the consumer to buy the product in a cheaper price and manufacturer to obtain more profit. At the same time, role of knowledge and communication technologies is quite high for countries to acquire competitive capacity in international fields and for increase of quality for scientific research institutions.

Place and Importance of Competition and Innovation within New Economy

According to Adam Smith who is well known as the founder of the Economics, competition is an indispensable precondition for freedom of decision making and freedom of action for individuals who seek to maximize their own interests to achieve more fair and desirable market outcomes from a social point of view and to achieve optimal market outcomes economically instead of anarchy or chaos. (<http://www.ekodialog.com/Konular/rekabet-gucu-nedir.html>). R&D investments affect economic growth in many ways such as innovation, capital accumulation, development in human capital. R&D is the key determinant of long-term prosperity and productivity. Innovation plays a significant role in emergence of new products and techniques. While companies decide for R&D investments, they consider factors such as structure of the industry, profitability, capital inventory, payments made to workers, etc which are caused by their own structures and consider general factors such as commercial politics, tax rates, clarity degree of the market, etc. Total factor efficiency of a country depends on national and international R&D capital. If ever

adequate sources are allocated to R&D, this shall cause increase in efficiency and prices in the future (<http://www.ekodialog.com/Konular/rekabet-gucu-nedir.html>.)

New economy is such an economy that it brings continuous innovations in knowledge generation and in transformation of this knowledge to the product. Within this process, innovation can be to create a product or service or can be to prefer a brand new method in performance of a job or can be to activate a process which has existed previously but has never been discovered. Continuous innovation medium can only be possible by an entity adopting sustainable organizational education and innovative understanding. Continuity of the innovation process describes a cyclic entity required to exit from crisis situations. The shortening of the product life curves and the product development stages for consumer satisfaction must consist of successive and uninterrupted parts of the process. The most significant factor allowing growth within the new economy concept is innovation. Product differentiation provided by technology based innovation is the driving force of economic growth. The development of human capital will be achieved through increased investment in education and removal of obstacles in front of the knowledge-based society (Hobikoğlu,2016:291).

Turkey needs to improve R&D and innovation investments and outcomes obtained from these investments. Formation of strategic transformation required to be realized for this purpose by social sciences supported politics especially education and economy and by mechanisms aiming to obtain real usable outcomes has critical importance. Apart from increasing the R & D resources for the targeted economic transformation, it should be emphasized that the related projects should be result-focused and not duplicated, and in this context, coordination between the relevant institutions and institutions should be provided for the effectiveness of the works. In other words, the implementation of "integrated R & D activities" should form the basis of the strategy. Because, the achievement of scientific and technological development under the new economy, which Turkey aims to reach in the medium and long term, shall only be possible through the exchange of paradigm over this axis (Karagöl and Karahan,2016).

Global dynamics of innovation economy have also modified the nature of the companies. "Desire of innovation" has become more and more important in present "innovation economy" at which rapid information share pushes the players continuously for innovation and adaptation. As a result, industrial value chains are also formed by an innovation which has continuity in product, service, process, business models and management approaches. Companies which do not share their information with outside world also close themselves to external innovation sources. Successful companies are the companies which are able to transform data to a value creating knowledge and which are able to use these knowledge effectively in order to perform innovation and to obtain more profit (Uçkan, 2016).

Basic Innovation Indicators

Some specific elements which are available as "input" and / or "output" within technological change (innovation) process are accepted as indicators of technological change and advancement process and they are compiled, observed, evaluated and used for analysis by whole world and especially by some international institutions such as OECD and (UNESCO). Some of the basic innovation indicators can be listed as follows (Kavak, 2009:619);

- Amounts of innovations performed within economy at some definite periods
- Patents, applications for patents and selling of patent usage rights
- Scientific publications
- R&D expenses and studies
- Numbers of researchers

R&D

The value and importance of knowledge is more and more increasing, and innovation and diversity are becoming one of the most important competitive elements. Developments in science and technology and knowledge based production shall continue to be the basic determinative power of growth. For this reason, some technological investments and R&D activities should not only be developed by free market

mechanism but also by guiding, regulatory and supportive approaches of the public (Official Gazette 2013). R&D activities can be described as regular studies performed to obtain new information which shall provide development in science and technology and to produce new materials, products or tools by existing information and to form new systems, processes and services including software or to improve the existing ones. R&D consists creative works performed based on a systematic foundation to increase knowledge accumulation of the person and the society and to provide this accumulation to be transformed to new implementations. It is possible to list activities of any professional R&D departments of the companies as follows:

- Obtaining new technical information that shall provide scientific and technical / technological developments in order to clarify the uncertainties in scientific and technological areas
- Research and development of new methods, processes and transactions for production,
- Development of new methods to make new products, substances and materials, tools and equipment, transactions, systems or production of new techniques,
- Research of new techniques / technologies which shall decrease costs of products and increase standards and performance,
- Software activities based on original design (Kavak, 2009:619).

Innovation (or technological transformation) includes a wider spectrum than R&D activities. Internal growth theory which is named as new growth theory has internalized technological transformation within long term economic growth process. Total factor efficiency has been tried to be obtained by using Cobb-Douglas approach in theoretical studies. In practice, R&D is used as a measure of capital stock in regression of total factor efficiency level to determine effect of innovation over total factor efficiency or a measure of R&D density is used in a regression of total factor efficiency level. R&D expenses can be considered as an investment for information which may transform into new technologies and which may cause current sources to be used more efficiently. As a result, higher R&D expenses cause higher growth rate. For this reason, it is seen that share of R&D expenses within gross domestic product increases in time (Ertekin, 2005). At the following table, data related with expenses of G7 countries for R&D activities within gross domestic product are given;

Table 1. Ratio of R & D Expenditures to GDP (%) – G7 Countries

Gross domestic spending on R&D		Total, % of GDP, 2010 - 2014				
		Source: Main Science and Technology Indicator				
Show:	Chart	Map	Table			
Location ▼	▼ 2010	▼ 2011	▼ 2012	▼ 2013	▼ 2014	
Canada	1.838	1.799	1.794	1.690	1.613	
France	2.175	2.191	2.229	2.243	2.256	
Germany	2.714	2.796	2.872	2.826	2.897	
Italy	1.223	1.210	1.271	1.308	1.289	
Japan	3.252	3.381	3.342	3.482	3.588	
OECD - Total	2.299	2.330	2.336	2.370	2.377	
Turkey	0.843	0.860	0.922	0.945	1.007	
United Kingdom	1.695	1.691	1.622	1.664	1.700	
United States	2.740	2.763	2.699	2.742	..	

Information on data for Israel: <http://oe.cd/israel-disclaimer>

Source: <https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm>, “Gross Domestic Spending on R&D”, Date of Access:15/11/2016

Data which are available in the Table show that in general countries have increased the budget allocated for R&D within Gross Domestic Product. For the other European Region countries which are not available in the table, the following situation is observed;

Table 2. Ratio of R & D Expenditures to GDP (%) – Other Europa Onion

Gross domestic spending on R&D <small>Total, % of GDP, 2010 – 2015</small>					
Location ▼	▼ 2010	▼ 2011	▼ 2012	▼ 2013	▼ 2014
Austria	2.738	2.682	2.929	2.964	3.067
Belgium	2.051	2.155	2.363	2.431	2.466
Czech Republic	1.340	1.560	1.790	1.910	1.997
Denmark	2.937	2.966	3.001	3.057	3.051
Estonia	1.581	2.307	2.114	1.715	1.436
Finland	3.726	3.639	3.419	3.287	3.172
Greece	0.598	0.672	0.700	0.813	0.838
Hungary	1.147	1.196	1.270	1.397	1.371
Ireland	1.607	1.533	1.564	1.536	1.492
Luxembourg	1.527	1.495	1.288	1.301	1.256
Netherlands	1.725	1.903	1.939	1.958	2.002
Poland	0.721	0.746	0.881	0.871	0.940
Portugal	1.533	1.457	1.378	1.326	1.287
Romania	0.452	0.493	0.483	0.387	0.383
Slovak Republic	0.618	0.665	0.808	0.827	0.886
Slovenia	2.058	2.424	2.579	2.604	2.386
Spain	1.350	1.325	1.284	1.262	1.231
Sweden	3.216	3.249	3.281	3.306	3.161

Source: <https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm>, “Gross Domestic Spending on R&D”, Date of Access:15/11/2016

Number of Patent Applications

Patent numbers show how much effort is spent over innovation in a specific country. There is a close relation in between R&D activities and numbers of patents. For this reason, number of patents give information about new technologies of the countries or about the productivity of the products.

Table 3. Countries Which Have Most Patent Applications according to 2012 Data

Rank	Country	No. of Patent Applications
1	 Japan	472,417
2	 China	435,608
3	 United States	432,298
4	 South Korea	187,454
5	 Germany	172,764
6	 France	65,349
7	 United Kingdom	49,938
8	 Switzerland	37,477
9	 Netherlands	32,376
10	 Russia	31,433
11	 Italy	27,679
12	 Canada	24,528
13	 Sweden	21,480
14	 India	15,717
15	 Denmark	11,565
16	 Finland	11,516
17	 Belgium	11,427
18	 Austria	11,393
19	 Australia	11,348
20	 Israel	10,821

Source: <http://deneyimpatent.weebly.com/ana-sayfa/patent-top-20-listesi>, “Top Patent Countries”, Date of Access: 15/11/2016

Whenever Table 3 data are analyzed, it is seen that Japan, China and United States are the countries who have applied for patents most among all other countries. At Table 4, it is shown how many of these patent applications have been approved.

Table 4. Top Patent Countries according to 2012 Data

Rank	Country	No. of Patents Granted
1	 Japan	238,323
2	 United States	224,505
3	 China	172,113
4	 South Korea	94,720
5	European Patent Office	62,112
6	 Russia	29,999
7	 Canada	20,762
8	 Australia	17,877
9	 Germany	11,719
10	 Mexico	11,485
11	 France	10,213
12	 United Kingdom	7,173
13	 Italy	6,380
14	 North Korea	6,290
15	 Singapore	5,949
16	 South Africa	5,296
17	 India	5,168
18	 Israel	5,104
19	 Hong Kong	5,050
20	 New Zealand	4,710

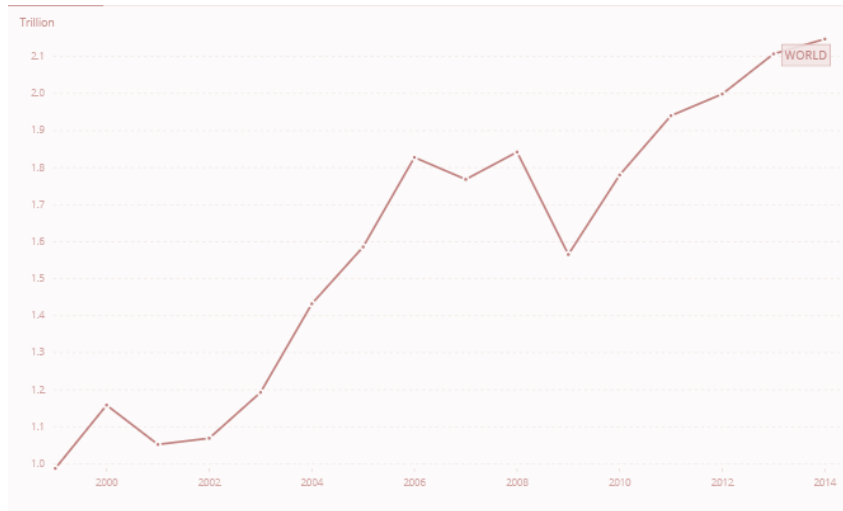
Source: <http://deneyimpatent.weebly.com/ana-sayfa/patent-top-20-listesi>, “Top Patent Countries”, Date of Access: 15/11/2016

Advanced Technology Export

According to OECD, a product is assumed as high technology product depending on intensity of R&D investments used in manufacturing of this product. At this classification made by OECD, space and

aviation products, computer, medicine, scientific tools, electrical devices, sensitive measurement devices and electronic office supplies, etc have been included within this scope. R&D budgets of countries present important data related with manufacturing or export of high technology products. At OECD countries, 3 percent of GDP is allocated in average for R&D but in Turkey this ratio is around 1 percent. On the other hand, at some of developed countries this ratio is as high as 6 percent (Turkishtimedergi, 2016). Whenever data in Table 5 are analyzed, it shall be seen that export volume of high technology products has been 1.560 trillion \$ as of 2009 and has been 2.147 trillion \$ as of 2014.

Table 5. Advanced Technology Export according to 2014 Data (current US\$)



Source: <http://data.worldbank.org/indicator/TX.VAL.TECH.CD?end=2014&start=1999&view=chart>, “*High Technology Exports*”, Date of Access: 04/11/2016

Whenever advances technology export rates are considered, it is seen that Turkey has lower rates compared to other countries and this shows that Turkey has not reached at required levels. At the table prepared by UN based on statistical information of World Bank, it is understood that ratio of advanced technology products within total export products of Turkey has been constant at 1,8 % at 2002 and at 2012. According to Turkish Statistical Institute, ratio of advanced technology products within export goods has been declared as 3,3 % for 2014 August (Doğrulukpayı, 2016).

CONCLUSION AND ASSESSMENT

Together with globalized economies, administrations have got into international markets as well as national markets and this has caused increase in competition. This result has caused administrations to exhibit joint competition behavior. Specializing in fields where the administrations are at their best performance increases their efficiencies at macro frame. On the other hand, if ever administrations work in coordination with consumers, suppliers, retailers then their effectiveness shall also increase. If they act like this, they shall have the opportunity to closely monitor the demands and expectations of their customers and it shall be possible to take feedback for potential customers. Finally the success of businesses in a global competitive environment depends on a continuing change and openness to innovation. Because the only thing that does not change is the change itself and an effective change can not be created without innovation. At the same time, it is necessary for developing countries to produce and export advanced technology products with high added value in order to achieve a sustainable economic growth. For this reason, it shall be an important factor to allocate more share for R&D expenses from domestic income in order the future national interests to be obtained.

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