

Bilgi Ekonomisi Yolunda Türkiye: Bilgi, İletişim Teknolojileri ve Politikalar

Turkey on the Path of Establishing Knowledge Economy: Icts and Policies

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Abstract

Economical development and knowledge are highly related to each other. In today's world, knowledge-based economy is redefining enterprises, empowering individuals and re-shaping the links between education and work. It is clear that advent of the knowledge economy shapes and changes the ways in which enterprises organize their activities in the market place. The application of knowledge is one of the main sources of growth in the global economy and it becomes the strategic factor for the success. This paper presents the concept of the knowledge economy and its framework. World Bank developed a methodology called "Knowledge Assessment Methodology" to measure the progress of countries towards having a knowledge based economy and provide a basic assessment of their readiness for the knowledge economy. It has 4 pillars including 83 structural and qualitative variables and 12 knowledge indicators. Countries can get reports of their relative performance and do benchmarks to see their similarities, differences, strengths, weaknesses. This paper introduces the analysis of knowledge economy from Turkey's perspective especially for the role of Economic and institutional regime and Information and Communication Technologies (ICTs) pillars in the development of Turkey.

1 Introduction

History has transitions as agricultural economy, industrial economy, post-industrial and mass production economy and finally knowledge based economy. One of the crucial elements of economic growth becomes knowledge in addition to physical capital and labor force in time. It is true that achieving sustainable development is possible with knowledge creation, knowledge flows, and the capitalization of knowledge. Knowledge becomes most important factor for capital assets that are needed to create wealth. Knowledge replaced and become most valuable assets when it compares to land, physical labor, machines and factories. Thomas Thomas A. (1997) asserts that wealth is production of knowledge in today's world. According to him, "knowledge and intellectual capital which is organized knowledge that can be used to produce wealth is becoming corporate America's most valuable asset and can be its sharpest competitive weapon. The challenge is to find what you have-and use it". He demonstrated how knowledge has become the most important factor in economic life instead of natural resources, machinery, or financial capital. In the knowledge society that we are in service/knowledge technologies have come into prominence. Computers triggered a new wave during The Second World War and knowledge age has started with the improvement of first programmable computer which is called ENIAC in 1945. Use of computers and communication technologies especially in academic and business world and in personal life has increased year by year. Therefore, major changes have been observed in social and economic structure especially in developed countries. Knowledge Society has witnessed to alteration and transformation of populations. Knowledge brings speed and effectiveness for production and it plays the key role for the world's economy. In the 21st century, the knowledge-based economy has become the major trend for international societies (George, et al., 2008).

Knowledge-based economy' driving forces are common use of the Internet, technological development such as the evolution of the Information and Communication Technologies and Globalization. Knowledge-based economy requires research, innovation, specialization and learning to achieve a success and create wealth. The change towards a knowledge-based economy is happening on a global scale, a transformation is taking place in all industrialized economies and many developing economies are also aspiring to reach this target. Daniele (2010) states that: "Governments must devise new and appropriate policies. At the same time organizational changes need to be introduced, processes have to be improved and strengthened to cope with increasing competition, while this increasing competition, in turn, call for improved co-ordination between institutions. Various institutional changes must be introduced and these institutional changes that need to be made will involve the public and also private sectors. Additionally, since the difficulties for the institutions to build and establish itself over time, it is necessary a certain degree of flexibility in the institutional regime and, hence, the ability to respond to uncertainties".

2 Literature Review

In this section primarily a literature study about the knowledge-based economy was carried out to give information about some studies in Turkey for knowledge economy. The first study we reviewed is Umut's (2001) study about constructing a new framework that utilizes assessment of possible strategies can be applied during the

transition to a knowledge based economy. A mixed integer programming model developed by him to determine the required levels of human resources and information and communications technology investments for given levels of R&D investment of the country. Results indicated Turkish government should increase R&D to considerable levels in order to trigger the transition to a knowledge-based economy.

S. Metin (2003) analysed “Knowledge economy and Turkey” in his master thesis. He studied knowledge economy concept and stated that information communication technologies dramatically effected economic system, production and relations and resulted to birth of a new economic revolution. Information technologies have become the major actor of the economic sector's structural change. Since then, instead of the terminology of developed - nondeveloped or developing - underdeveloping countries, it has been started to use the societies of the agriculture, industry and information society.

Kerim (2007) studied organizations extent to be knowledge-based in UK and Turkey to do a comparative analysis. Results indicated organizations of Turkey has capability to compete with top knowledge economies in terms of awareness on strategic importance of knowledge. Unfortunately, in terms of innovation organizations in Turkey are behind organizations in UK.

Burcu (2008) studied Turkey's shift of labor towards knowledge intensive industries, knowledge occupations and ICT utilization. Results showed that although there is an increase in knowledge and services employment in Turkey, manufacturing employment also continues to increase and middle knowledge intensity sectors shows the largest employment growth. Also despite the increase in utilization of main ICTs, Turkey is still behind usage level in developed countries.

Çiğdem (2008)'s paper' which is named as “An analysis of the present situation in Turkey as a result of changing to a knowledge economy” purpose is to explain the main changes in the new economical structure, called knowledge economy, to analyze the situation in Turkey and in the world in relation to these changes according to statistically data, and to determine priority goals.

Selahattin (2008) studied the meaning of knowledge economy and the economic effects of it in Turkey. He used World Bank's KAM (Knowledge Assessment Methodology). He analyzed 83 parameters with Basic Score-card, Custom Score-card and Knowledge Economy Index for Turkey. The results indicate that Turkey had a moderate performance.

Tuncay (2008) studied the place and importance of knowledge economy in the economic growth process. an augmented Cobb-Douglas production function, which is an approach based on neo-classical theory is used in investigating the effect of knowledge on the economic growth of Turkey and thus the direction and size of the relation between investments in knowledge communication technology and economic growth in Turkey during years between 1980 to 2006. The results showed that the investments in communication technology knowledge have a positive effect on economic growth for Turkey.

Hatice Ş. (2009) studied the importance of human capital and knowledge economy for economic development on Turkey. Changing development process of the economic development conditions were reviewed by relationship between human capital and the knowledge economy. After explaining the concept of human capital and knowledge economy, the ways that how human capital and knowledge economy contribute for the economic development given and the structure of the human capital and the proximity to the knowledge economy for Turkey tried to be determined with social and economic datas provided.

Senem (2011) studied discussions on clarifying of relationship with knowledge economy and growth and productivity paradox by linking the presence of threshold effects. “being over of a specific level of some factors that countries have, leads to differences in the relationship with knowledge economy and growth” is the hypothesis. The panel data set is analyzed consisting of 39 countries with different level of development with fixed effects method for years 1995, 2000, 2007, 2008, 2009. In growth model which is per capita income is dependent variable; Knowledge Economy Index (KEI), R&D, capital, employment ratio are explanatory variables examined for the threshold effects for KEI and R&D variables as well as the numerical and statistical chancing of KEI coefficient is examined for indexes containing human capital, technological knowledge and innovation capacity, information and communication technologies (ICT).

Memişoğlu (2012) studied major factors of knowledge-based economies between years 2000-2010 based on World Bank Knowledge Assessment Framework, on economic performance indicators such as Gross Domestic Product (GDP), GDP per capita and economic growth rate in Brazil, Russia, India, China, South Africa and Turkey (BRICST). Secondary education and ICT infrastructure are found to be important infrastructure factors affect GDP per capita positively for BRICST countries. Country's ability to innovate, benefit from ICT and enhance economic performance can be affected by accumulation of educated people in Research and Development. Also personnel number of R&D which is an indicator for innovation potential has positive influence on the GDP. The major things affect economic performance found as ICT infrastructure expansion together with educated R&D personnel in the BRICST countries.

Ümit (2014) assessed the potential impact of the worldwide emerging information and communication technologies in tourism sector in Turkey. In the result of the study, it is understood that there is a parallelism

between tourism movements and technological growth in Turkey. But, besides technological development, the attitudes of the country are important factors. These factors can be achieved with analysis of internal and external environment in economic, social, cultural, political, technological, implementation issues.

Vuslat (2014) studied reviews institutional transition in particular universities around the world by means of knowledge-based economy. The aim of her study is to comprehend the institutional transition by means of knowledge-based economy in general and transition of universities is investigated deeply among institutions as an important part for innovation and knowledge in 4 Turkish Universities as Istanbul Technical University, Boğaziçi University, Sabancı University, and Istanbul Bilgi University. Also some universities from the world are examined about their management, productivity, and academic change.

Hayal (2014) studied how technological improvements that altered economic and social parameters of 21st century are getting reflected in the literature and how these economic and social dynamics are interacted with the notion of e-government. She first discussed the terms "economy of knowledge" and "e-government," and then investigated the advancement of e-government system at both domestic (Turkey) and global level with the help of statistical data. In essence, e-government means to provide public services in an electronic medium. Evolution of e-government has been affecting public life positively in many respects.

3 Knowledge-based Economy

The economic structures called as agricultural society, industrial society and knowledge society define the three important conversions of the economic structure until 21st century. Rapid developments on information technologies and knowledge led to redefine the concept of "knowledge" and resulted in the introduction of a new concept "knowledge economy". Knowledge is increasingly considered to be a commodity. By this recognition a new focus raised about role of technology, learning in economic performance and information. The current conditions of the information society have been created the knowledge economy. The knowledge economy can be defined as "In the use of knowledge to generate tangible and intangible values. Technology helps to transform a part of human knowledge to machines and tools. This knowledge could be used by decision support systems and generate economic values in various fields". Besides, emerging technologies and changes in the production structure have changed the demand structure significantly (Sadık, 2000). As Charles Leadbeater (2000) states, more of the value of manufactured products will come from the software and intelligence that they embody, and more of what we consume will be in the form of services in the new economy. The knowledge across all sectors, content of products and processes is ascending. Everything is getting smarter from computers and photocopiers to cars and corn." (p. 43).

It is emerged as a result of intensive knowledge in economic activities, globalization of economic activities and improvements in information and communication Technologies (ICTs). OECD (Organisation for Economic Cooperation and Development) defines knowledge economy as: "Economy in which knowledge is being used in distribution and production." (OECD, 1996). According to OECD Knowledge-Based Economy Report (1996), the new driver of productivity and economic growth was defined as knowledge. The new global economy is very distinctive in terms of its strategies of flexible production organized around principles of knowledge based economy that knowledge is accepted as the main drive of the economic growth.

Susan (2005) sets the essence of the knowledge economy as:

- the balance between knowledge and resources (labor and capital) has shifted toward knowledge;
- securing long term economic growth will be much more dependent on knowledge
- education will play a critical role in economic growth;
- in order to play this critical role, education systems will need to respond in new ways to the demands of knowledge economy.

Knowledge economy features have been determined by Don Don (1998) as follows:

- Knowledge is the basic production factor,
- Knowledge economy is a digital economy,
- Virtualization plays an important role in the knowledge economy.
- Developments in information and communication technologies affect all economic units.
- The economic structure becomes very dynamic, complex and difficult to predict.

We can say that use of intensive knowledge in economic activities, improvements in Information and Communication Technologies, and globalization of economic activities emerged the knowledge economy. Technology has an effect on the nature of production organization. The narration of globalization through knowledge-based economy and information communication technologies have taken place to take attention to the vital role of education in providing human capital that is equipped with the capacity and capability to produce knowledge both as an economic advantage and as a way to cultural development.

Economic incentives and institutional regime, policies and information and communications technologies (ICTs) are pillars of the knowledge-based economy. Access to networking is essential in acquiring and disseminating knowledge and the Internet is one of the key drivers of ICT, resulting in new approaches to doing things. We are witness to arising of new important definitions and drivers for economic performance. Such as information society with increasing communication and computer networks, learning economy with the need of workers to acquire a range of skills and to steady adapt these skills, and national innovation systems with the raising importance of knowledge and technology diffusion requires better understanding of knowledge networks are defined in knowledge-based economy (OECD, 1996). There has been a knowledge explosion because of new inventions especially in the last five decades by growth in technological researches and in the usage of the technical tools and equipments.

Knowledge-based economy also leads collaboration opportunities for information and communication technologies to conceive high qualified products with low costs (European Commission, 2001). Economic model in which knowledge comes into prominence, drives existing business processes and way of doing works to be more qualified (Oytun, 2013). As a matter of fact, any kind of production is knowledge-based. Economy's main elements which are production, consumption, distribution and their relationships also new market structure have been restructured based on knowledge. Consumers began taking goods and services faster, without being limited by time and location. Researchers can analyze consumer behaviors better and more accurate with more datum in digital environments. Barriers to market entry and exit reduce and information becomes a function of competition (Oğuz, 2005). Since barriers have been removed, producing innovative goods and services have become a must. The economic effects of physical distances, geographical differences and the cost of access to information have been decreased result of using ICTs. Moreover, new startups costs are declining and the advantage to compete in new markets is increasing. Despite financial capital has accepted as a formerly scarce resource, in today's world qualified human resources become scarce resources (Kamil, 2007).

Since knowledge has no fixed capacity, shows more rapid change in that sense and tends to be obsolete in a short period of time, it is difficult to calculate knowledge's market value. Additionally, knowledge is difficult component to quantify. The first attempt for the assessment of knowledge and development of a framework to interpretation of data related to science, information, technology, communication and innovation has been made by OECD. The OECD (1996c) report notes that OECD countries continue to evidence a shift from industrial to post-industrial knowledge-based economies. Here productivity and growth are largely determined by the rate of technical progress and the accumulation of knowledge. Of key importance are networks or systems which can efficiently distribute knowledge and information. Learning on the part of individuals and firms is crucial for realizing the productivity potential of new technologies and longer-term economic growth (p. 18).

Many other institutions like World Bank, Eurostat Eurostat, UNESCO, International Telecommunication Union and United Nations have introduced a range of indicators in order to analyze country's potential for knowledge and knowledge based economy. They have been built several indexes. Well-known institutions which develop these indexes are The World Bank, Harvard University International Development Center, McConnell International, The Economist Intelligent Unit, UNCTAD, The United Nations Development Program, World Economic Forum and The Mosaic Group (Leila, et.al, 2007).

4 Pillars of Knowledge Economy

Main pillars of knowledge economy are Economic incentives and institutional regime, Information and communication Technologies, innovation and Education according to the World Bank (World Bank, 2010). They developed KAM (Knowledge Assessment Methodology) which is a method aims to show opportunities countries and provide identifying problems may them face towards transition to knowledge economy in 1999. In order to facilitate countries in the phase of transition to the knowledge-based economy, the Knowledge Assessment Methodology (KAM) was developed. KAM is designed to supply basic assessment of countries' readiness for the knowledge economy, and identifies sectors or specific areas where policymakers may need to focus more attention or future investments. The KAM is currently being widely used both internally and externally to the World Bank. Additionally, it frequently facilitates engagements and policy discussions with government officials from client countries.

KAM is an online interactive tool that produces the Knowledge Economy Index (KEI)—an aggregate index representing a country's or region's overall preparedness to compete in the Knowledge Economy (KE). That methodology has 69 structural & qualitative variables on 4 pillars and normalized from 0 (worst) to 10 (best) for 100 countries. The unique strength of the KAM lies in its cross-sectoral approach that allows a holistic view of the wide spectrum of factors relevant to the knowledge economy.

These factors defined by World Bank are briefly summed up as follows:

- Information and Communication Technologies: Here, some of the important indicators are the number of phone subscriptions, the number of computers and use of the internet.

- Appropriate business environment that the knowledge economy can be developed in: Here, some of the important indicators are scheduled and unscheduled barriers, quality and applicability of the regulations, local loans given to the private sector, the number of days to start a business, the intensity of local competition, and political stability
- R&D and Innovation: National Innovation System which contains innovation policies aiming development and commercialization of local and global innovations, R&D system, institutions and support mechanisms. Here, some of the important indicators are the number of patents, royalty payments and scientific publications.
- Education: Knowledge economy information specialists as the most important element of knowledge economy, an innovative and dynamic educational system that contains public and private education institutions in training technology literate workforce and qualified human resources. Here, some of the important indicators are the adult literacy rate, participation in secondary education and participation in higher education.

Four pillars of knowledge economy are briefly summed up in the following table.

Indicators	Pillars
Regulatory quality Rule of law Tariff and non-tariff barriers	Economic and Institutional Regime
Internet users per 1.000 people Telephones per 1,000 people Computers per 1,000 people	Information and Communication Technologies (ICTs)
Rate of: Gross tertiary enrollment Adult literacy Gross secondary enrollment	Education and Skills
Patents granted to nationals by the U.S. Patent and trademark office per million people Royalty payments and receipts, US\$ per person Technical journal articles per million people	Innovation

Table 1. Pillars of Knowledge Economy. Source: WorldBank

Knowledge economy concept is measured by using the basic score card, the knowledge economy index and specific score card models of knowledge assessment methodology. KEI stands for knowledge Economy Index which is used to produce economic performance and to possibility of making comparisons through knowledge based indicators. Basic score card determines the performance by using four basic factors of knowledge economy. Knowledge Economy Index indicates a country's or a region's overall level of development in terms of knowledge economy. Specific score cards are used when making more flexible comparisons are needed.

Another performance analysis related to use of information and communication technologies in a country which was developed by World Economic Forum is "Networked Readiness Index" (NRI). Index aims to measure preparedness level of countries for using information and communication technologies. It is one of the studies which measures to what extent these countries internalize these technologies (World Economic Forum, 2014). Measurement method has been evolved since it was configured; studies have been carried out to make it more inclusive. This index has 4 factors such as Environmental Conditions, Preparedness, Use and Impact and its sub-components are as follows:

- Environmental Conditions: Appropriateness of the policy environment and regulatory environment; Terms of business and innovation.
- Preparedness: Infrastructure and digital content; Accessibility and compliance with purchasing power; Skills and abilities.
- Use: Individual usage, Use of businesses; Use of public administration.
- Impact: Impact on economy; Impact on society.

Since 2001, when the index was first published, Turkey is among countries which have taken in scope of analysis. NRI table and Turkey data given in below table.

Years →	2006-2007	2007-2008	2008-2009	2009-2010	2011-2012	2012-2013	2013-2014
Number of Countries	122	127	134	133	142	144	148
Turkey's place on the rank	52	55	61	69	52	45	51
Percentage	0,43	0,43	0,46	0,52	0,37	0,31	0,34
NRI	3,86	3,96	3,91	3,68	4,07	4,22	4,30

Table 2. Turkey's Place on the Rank through Years. Source: WEF, 2014

5 On The Path of Establishing Knowledge Economy and Turkey

Turkey would be count as to be a young industrial country by the courtesy of policies such as protectionism and incentives. Turkey owes partial change to the law of diminishing returns. Law of diminishing returns, gives developing countries a chance to learn producing goods with high added value. However, law of increasing returns is valid in knowledge society. Thus, specialization in the production of goods with high added value and making production more efficient through knowledge are required (Sadık, 2000).

Turkey's government aware that role of information and communication technologies will be more important in the future. According to the Turkey Prime Ministry Investment Support and Promotion Agency, development and search for solutions that appropriate for age's requirements which growth brought along and today's economic and social life's access to the most current and fast solutions as soon as possible underlie the information and communication technologies. In this respect, Turkey has increased the interest ICT since past decades. The most obvious ones in this study are new incentives for investors and Research and Development Laws. Forecasts are as follows:

- Expenditures for information and communication technologies are expected to grow faster than average of the world. When potential and large domestic market is taken into account, sector is expected to grow with a 7% compound rate of growth during 2012-2017.
- As the young population and the online market grow, the number of mobile phone subscribers is expected to reach 75 million by 2017.
- Computers with internet access are available in more than half of the households in Turkey; this rate is expected to rise by 65.6% in next five years.
- Expenditures for hardware, software, information and communication services and telecommunication services are expected to rise to \$ 25 billion by 2016.
- Rate of Internet users in Turkey is about 42%; this rate is expected to rise over 47% in 2017.

According to the "Information and Communication Technologies toward 2023 Goals" report of International Investors Association, it is expected that impact of 1 unit of growth in information and communication sector will be 1.8 units of growth in whole economy. In 2011, ICT sector size at the global level has reached \$4.1 trillion. And the size of the sector in Turkey is estimated to be \$ 30, 3 billion. Turkey's country's share in global information and communication sector remaining at 0.75% indicates the sector's growth potential. When the sub-sectors of the market in Turkey are analyzed, it is seen that the growth potential of ICT industry whose share is 0.4% in global market, is much higher. In case of reaching targeted 8% share of ICTs in \$2 billion GDP, merely to be provided contribution through total factor productivity growth is estimated to be over \$71 billion (YASED International Investors Association, 2014).

In accordance with Turkey's vision for year 2023, ICT sector is expected on higher goals. These goals include as follows:

- Become one of ten biggest countries in e-transformation.
- Have 80% of population gained ability of computer using.
- Increase the number of broadband subscribers to 30 million.
- Provide 14 million households Internet connection at 1000 Mbps.
- Increase the share of sector in GDP from 2.9% to 8%.
- Increase the number of companies which operates in Technology Development Zones to 5500; increasing the number of employers to 65000; increasing the export to \$10 million.
- Make size of Information and communication technologies sector reach \$160 billion with a market growth by about 15% every year.
- Increase the share of Research and development expenditures in GDP from 0.85% to 3% (Turkey Prime Ministry Investment Support and Promotion Agency, 2014).

5.1 Turkey and World Knowledge Economy Comparisons

The underlying reasons behind differences in countries' long-term growth performances are grouped under four main headings such as investment (fixed capital, and information and communication technology sector), non-formal education, innovation and structural change. According to our study, relationship between the Knowledge Economy Index (KEI) and GDP founded as positive. According to our regression test depicted below, the correlation between KEI and economical performance is about 85%.

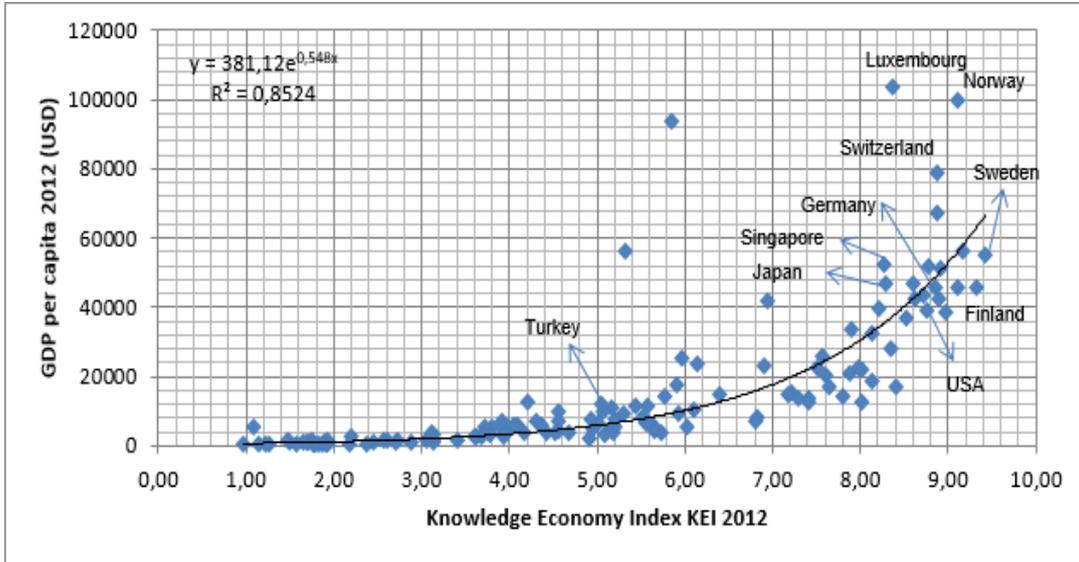


Figure 1: GDP per Capita & KEI Relation. Source: World Bank, 2014.

Knowledge Economy Index of Turkey pillars graphic and KEI table are given below.

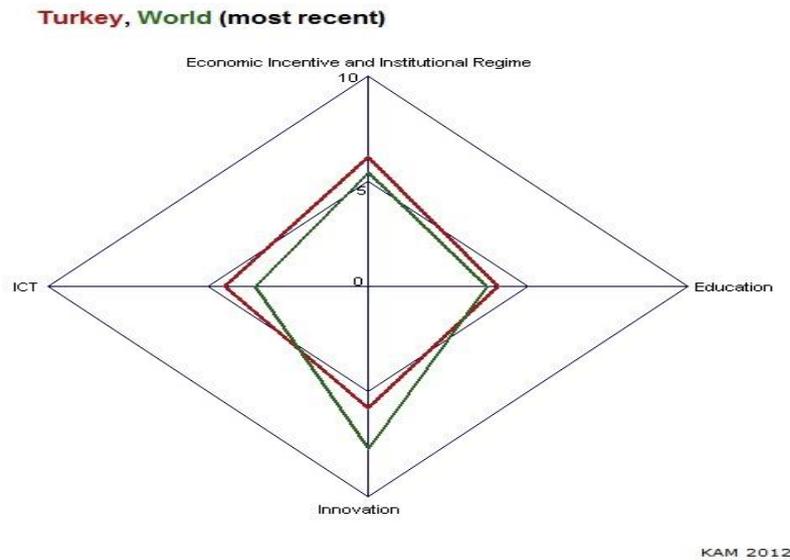


Figure 2. Turkey and World KEI Source: World Bank.

According to "Informatics for Breakthrough, Turkey for Economics Information and Communication Technology Sector-Breakthrough Strategy 2023" report, while Turkey's competitiveness in the information and communication sector (ICS) is poor, some other developing countries' competitiveness is high. While South Korea, Singapore and Brazil don't show any alteration, in China and India there has been a significant increase in competitiveness in the last three years. ICS's productivity in Turkey is four times of total private sector productivity. Despite this importance, it is seen that contribution that ICSs should make in increasing productivity in Turkey hasn't occurred. A conclusion shouldn't be drawn like there is no effect of ICS in increase in productivity. The underlying reason of this is ICS' small share in whole economy and this small is decreased rather than increase in the examined period. Taking into account all variables of Turkey's KI and KEI ranks, results are: fixed capital investment and information and communication sector investments are not enough; Research & Development expenditures fall behind the fast developing countries, but increase in production efficiency by innovating could be achieved; develop the educational level of human capital not achieved, tendency to high-tech products in the

structure of production remained limited. In below table knowledge related indexes are given for World and Turkey.

Index	World	Turkey
Knowledge Economy Index	5,12	5,16
Knowledge Index	5,01	4,81
Economic Incentives and Institutional Regime	5,45	6,19
ICT	3,58	4,5
Innovation	7,72	5,83
Education	3,72	4,11

Table 3. Turkey and World Knowledge Related Indexes *Source: World Bank, 2014.*

5.2 ICTs and EIR Pillars

Knowledge has always been important for development. The application of knowledge is one of the key sources of growth in the global economy. Unfortunately, a lot of developing countries fail to tap the vast stock of global knowledge and apply it to their needs. Countries must articulate their goals and develop policies and investments to achieve them. In the 21st century, we are in the midst of “knowledge revolution” that increased importance of education, innovations and also updated skills for sustainable economic performance and improvement.

The knowledge economy is transforming the demands of the labor market in economies throughout the world. In industrial countries, where knowledge based industries are expanding rapidly, labor market demands are changing accordingly (World Bank, 2003: 1).

ICT includes a dynamic information infrastructure-ranging from radio to the internet-is required to facilitate the effective communication, dissemination and processing of information. A dynamic information infrastructure is needed to facilitate the effective communication, dissemination, and processing of information. Information infrastructure that facilitates the communication, dissemination, and processing of information and technology. The increased flow of information and knowledge worldwide reduces transactions costs, leading to greater communication, productivity and output.

We can define Economic Incentive & Institutional Regime (EIR) pillar as a regulatory and economic environment that enables the free flow of knowledge, supports investment in Information and Communications Technology (ICT), and encourages entrepreneurship is central to the knowledge economy. The country’s economic and institutional regime must provide incentives for the efficient use of existing and new knowledge and the flourishing of entrepreneurship. Economic and institutional regime is conducive to the creation, diffusion, and utilization of knowledge that provides incentives that encourage the use and allocation of existing and new knowledge efficiently will help to foster policy change. The economic environment must have good policies and be favorable to market transactions, i.e. being open to free trade and foreign direct investment. Governments should protect property rights to encourage entrepreneurship and knowledge investments.

Today’s global competitive environment, becoming successful and increasing the productivity will be possible not only by structure-process and technological changes but also by using knowledge and utilizing of ICTs (Information and Communication Technologies) especially teaching and developing of high quality human sources and by preparing them for the new concepts. ICTs lower the costs of various aspects of knowledge activities. How intense countries use their knowledge and ICTs and contributions do these technologies becomes very important. In this context, Turkey has been reconstructing certain processes and policies to keep pace with alterations and to be competitive benefiting from advantages of the process (Eda, 2011).

When it comes to Turkey, by implementing good economic policies, adopting a high-growth development programme, and increasing social capital and improving the labour force through enhanced education, Turkey has been on the path of transforming itself into a knowledge economy. Contrary to expectations, information and communication technology was growing at a fast rate. Improvements to the information infrastructure still persist. Like globalization, knowledge is both a new problem and panacea for our times. If we don’t have enough of it, we are destined to become 3rd world countries.

6 Conclusion

Knowledge economy discourse borrows heavily from work developed by a group of 1960s intellectuals, futurologists and information economists, like Peter Drucker (1969), Fritz Machlup (1962) and Daniel Bell (1973) that industrial societies were in transition to becoming variously knowledge economies, post-capitalist and post-industrial societies. It is an economy in which knowledge is created, acquired, transmitted and used more efficiently and effectively by governments, enterprises, organizations, individuals and communities and it promotes economic and social development. In 1999 the World Bank Institute launched a project entitled “Knowledge for Development” (K4D). Its aims were to raise awareness among national policymakers about the

powerful growth effects of knowledge and to encourage economists to combine global and local knowledge in order to accentuate comparative advantages (World Bank, 2008). According to the Knowledge Economy Index factors, Turkey should increase investments in information and communication Technologies, also increase R&D expenditures, increase level of productivity in production by innovations, upgrade the level of education to have required necessary qualified human resources and should be directed to high-tech products in the production structure. Turkey should give special attention to innovation, education, cultural and intellectual production which is necessary for developing knowledge society and to be able to gain competitive advantage

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