

Economic impacts and historical factors of the technology development

Hasanova J.V.

Azerbaijan State University of Economics
Baku, Azerbaijan
hasanovacemile@mail.ru

Nadjafova K.A.

Azerbaijan State University of Economics
Baku, Azerbaijan
nadjafova_kamala@mail.ru

Abstract — The purpose of this research is to explain the relationship between the technological development and economic growth and to provide a systematic approach. That is why the concept of transfer of technology and economic expansion are discussed in accordance with different stages of historical development. Literature on that subject is estimated at varying periodicities on the basis of Turkey and world history. Studies have shown that technological advances may boost the economic growth. It was found that the technological development and economic growth are not the stand-alone concept and technological innovation does not provide the economic expansion with time.

Keywords — *transfer of technology, economic growth, technology history, historic importance*

I. INTRODUCTION

Economists have been studying the stages of the development of countries. The discrepancy always leads to different studies, which resulted in research chaos. According to this context, we consider the economic growth of countries in terms of the technological development and commercialization of these technologies. We tried to identify technological and measurable differences in technologies with the help of companies and countries as a result of our research.

The technology creates differences in industrial factors, methods and products, resulting in the increase production and productivity, profitability and competitive advantage. As we have studied different historic stages, the technological development is considered as parallel to the economic expansion, and investment in technologies is important in terms of production increase. The technology, especially after the middle of the 20-th century, become the third component after labour and capital, and joined the ranks of industrial factors. The technology is moving forward, increasing its influence share in this equation. It is important not only for companies and sectors, but also for countries. Countries also play the main role in determining the development level. That is why it is necessary to follow them, in accordance with national policy, to use the relevant technologies at the right time. We understand, in retrospect, that countries which were technologically advanced during the industrial revolution had reached a level of significant development, and were exemplary, in accordance with management and economics.

Technologies are the defining factors of competence between countries in today's globalized world economy. The efforts are being made in many developed countries to make

such the development useful for them and to contribute to the social and political progress.

II. METHODOLOGY OF RESEARCH

The rapid technology development has had the significant impact on human life. Every person undoubtedly has an account on social networks, and his/her close contact with technologies also influences the brain. Experts assume that people work hard on their brain if it is about this aspect.

How does this factor influence the brain?

Firstly, let us consider the short study on our brain. The speed of the nerve impulses reached the brain is 274 kilometers per hour. A copy of these impulses is comparable to a copy of sports cars. The energy of a 10 volt lamp is needed for the functioning of the brain. The human brain is capable of memorizing up to fivefold amount of information in an encyclopedia.

Technologies and our brain.

Researchers in this area believe that the use of the technological tools for long time can harm the brain. It disturbs electric activity and overall function of the brain. It was reported that the radiation, which is emitted by technologies to the environment, destroys brain cells. A lot of diseases arise or appear too early because of such injury.

For example, the disease called 'epilepsy' is a disorder which leads to the defected electric activity of the brain.

According to the external sources, the technology has the following impact on the brain. Those who are online and play video games better perceive visual content and symbols than the ones who do not do it. It is the technology advantage for the brain.

Thanks to technologies, we constantly get e-mails and messages. Thus, Western psychiatrists say that messages have a very emotional effect. A person wants to respond quickly. It is not positive effect.

They say that it becomes more difficult for many Internet users to read long texts and even newspapers after a while. Also we are being used for data collection.

According to the article of The Guardian, the technological tools may destroy the nervous system. That is why the more we read, the fewer facts we remember.

We get a lot of information for two days, especially with the Internet use, mobile phones and other technological tools. It can lead to a discernible reduction of attention. The technological dependence also keeps people out of the society. The comparison of 1960 and 2000 years shows that people used to spend 5 hours on watching TV in 1960s, but now this represents 12 hours for using technologies. Experts think that children are closely connected to technologies which prevent them to develop their brain.

Thanks to the technology, a physical structure of our brain changes every year. Researchers say that this factor will have a negative impact on our emotional condition and personal qualities.

Gary Small and his team of scientists who are working on the human brain in the United States studied how the modern technologies influence the young people brain. It is reported that the modern technologies, on the one hand, accelerate the education and provide creativity, and on the other hand, they create the social exclusion and lead to the Internet addiction. It is necessary to avoid potential obstacles and adapt to succeed in an era of the brain evolution. American researchers say that today, our brain is developing at this new rate along with the technological achievements.

They say that Internet-based communications lead to a lack of personal interaction skills by people. According to Stanford University research, every hour which we spend on a computer is decreased twice if we interact with people.

Technology transfer, in conceptual terms, is a transfer of technologies from the one organization to another one in need. Technology transfer is carried out by people or agencies which cannot produce such technologies or want to use the current technologies and take part in their own productive processes. The technology transfer mechanisms are usually implemented by the following means:

A patent and a license agreement allow an inventor to sale his/her product which was invented over a period of time. According to a license agreement, the licensor can make his/her products in another country, in other words, invest abroad. Know-how as a term is not understood well by foreign organizations and, in particular, the Turkey doctrine but is used in many countries. It can be considered as commercial secret which makes the use of a product easier and more effective. A lease is a contract outlining the terms under which one party agrees to rent property owned by another party. There is a way of studying the product design using another engineering concept.

Universities have to transfer the technologies to industry. The reason of it is that there is the external dependence on technology transfer and production. Such transfer to universities is important for new technologies implementation. The acquisition of machinery is technology transfer which occurs while machines and equipment are being imported from abroad in the selection of production technology. The recruitment and training of staff is also technology transfer.

III. RESULTS OF RESEARCH

The economic growth is a concept which had started developing since the 15th century. Of course, the economic growth as other concepts in economics is differently interpreted by economists over the course of history. If we try to explain the economic growth in parallel with the schools of economic development, the first mercantilism school will be created and will work before the neoliberal one. Mercantilist points of view are based, as a rule, on public administration. The economic and state growth forms the basis of it. The main theme of mercantilism is foreign trade. Export, in other words, should be greater than import for the economic growth. The mercantilism mindset is based on three key factors. It is the quest to strong public precious metals and need for external trade. William Petty (1623-1687), an English economist, considered the population as the basis of wealth. He noted that the advantages of overcrowding in financial, administration and economic areas and stated that colonialism had to be supported by the population. Migrants, in this regard, were provided by several possibilities (Bashar, 2010: 11).

We see that physiology appeared in response to mercantilism. According to physiologists' opinion, the state should not prevent economics. Physichemistry is a Greek word which means 'nature law'. John Locke is famous as an innovator of this idea. Physiocracy argues that a key to growth is through agriculture because a product gives you more than harvest. Unlike mercantilists, they did not engage in the foreign trade.

The main factor of the classic persuasion appearance is the industrial revolution. The predecessors of this persuasion are D. Ricardo, A. Smith, and T. Malthus. A. Smith in his work indicted that the economic growth in countries is not only important for capital but also for the technological development. It is not the concept of growth. He said that among them there were deconstructed periods. D. Ricardo and T. Malthus advocated the sustainable economic growth. They characterized recession as a disadvantage. J. Schumpeter was the first economist who stated that the technological progress would encourage the economic growth.

Most of the means of production in the socialist system are State-owned. Public life, production and consumption are always determined by state. Since private property does not work, people enjoy the same wealth. According to socialists, private property is unfair division and a feature that the working class will be exploited. The theories of socialism development are based on K. Marx's ideas. According to him, labour defines the cost of production and is increasing.

Neoclassical economics is another approach to economics R. Solow, an American economist, has two studies on the economic growth. Firstly, he highlights capital accumulation and implies declining of its profitability. According to this model, per capita income does not change in the long term and stabilizes. Per capita income constantly changes, at present, and the population must increase if we talk about the economic growth. But since the economic growth is considered as per capita income expansion, the right model of such the growth should explain how long-term income expansion occurs. Thus, according to this model, the

technology is the economic growth based on the technical progress.

R. Solow defines the connection between the technological development and classic economic growth for the first time. He considers this technology abroad in assessing. According to economic literature, the models of the inner development cooperate with the technological achievements which Solow's model accepts as an external one. The first studies on the inner development theory were implemented Lucas and Romer. Romer defined the technological achievements as an integral economy factor. Lucas included human capital in the Romer's model as an inner factor.

J. Schumpeter considered the role of entrepreneurs in the development of the capitalist system and adaptation of their technical progress to production, i.e. as the most important factor. Innovations suggest that other inventions are beginning to be used for commercial purposes. The appearance of the technological innovations is connected to creativity. Capitalists invest in technologies which are produced by them. Then they profit and become monopolists (Will, 2016: 97).

IV. DISCUSSION OF THE RESULTS

According to Marxist theory, the connection between the technology and economic growth are fully explained by the class structure. The technology is the basis of the capitalist production process. The appearance of labour because of people creativity in the production process was connected with the capitalism development. The use of labour in production is an exchange value. That is, production is being implemented for capital accumulation. Capitalists used the labourers to achieve the key production factors. More labour, more income. Capitalists fully controlled their workplaces. We can increase production and technologies to maximize income. Thus, they used technologies to increase productivity of labour.

The development economics describes the technology as an element of dependency. The central countries use technologies which are directed to developing countries and make them independent. The central country-producer is a monopoly. Countries tend to access to technologies used for data and help other countries which work in area of environmental protection to control their economics. Countries which refused to agree with it have decided to be interested in technologies. Thus, production of local technologies became a necessity at this stage.

We can measure the technological accomplishments as one achievement in area of research and technological development (RTD) and computer technologies. The economic growth as one of the most fundamental problem of the macroeconomics is important to influence the standard of living and human well-being (Miroslav V.D., 2009: 2). RTD had been a key decoder of well-being and production for a long time (Jones and Williams, 2000). The investment in the Extractive Industries Transparency Initiative (EITI) creates a lot of new innovations. It contributes to the economic growth. The industrial innovations have played the important role on the economic and regional development lately (Shefer and Frenkel, 2005).

The 20th century is characterized by the rapid development of Science and Technology, Scientific and Practical innovations, information and communication technologies as an era of science and education. The development of science and education is, in general, a premise for creating of civil society all over the world, and we also take part in this creation. Thus, each of us should understand responsibility and try to carry out it with dignity.

In the early decades of the twentieth century the information and communication technologies become one of the main factors influenced the society development. The sphere of influence covers government structure and institutions of civil society, economic and social spheres, science and education, culture and people lifestyle, in general. Many developing and developed countries take the advantages of information and communication technologies. That is why the way to the information society is a way to the human future.

The most important factor of human development is science, education and modern knowledge. The use of the modern technologies including the information and communication ones for the transfer of knowledge and information is also the key condition of the development on a global scale. Today, the consistent and systematic measures are implemented in different countries to transform the economic capacity to human capital. The Baku International Humanitarian Forum is important in terms of this issue.

V. CONCLUSIONS

It is necessary to note, taking into account the examination of the materials, that the management of small and medium-sized enterprises should meet the following requirements and questions: 1) In the solution of what management tasks is it advisable to use marketing information technology? 2) What are the goals and expected results of the introduction of the information technology in the companies? Large companies have special sectors which can help to answer these questions. This task primarily falls to the heads in small business, as a rule [7]. Therefore, to sum up, it is important to say that depending on the choice of a model of relations between information and technological structures and ways to maintenance such relations, the success and adequacy of the modern business IT-support, quality of work and functioning of an enterprise will develop in the future

References

- [1] Davidson, R., Mackinnon, J. G. (1993). "Estimation and Inference in Econometrics". Oxford: Oxford University Press.
- [2] Dickey, D., Fuller, W. (1981). Likelihood Ratio Statistics for Autoregressive Time Series with a Unit Root. *Econometrica: Journal of the Econometric Society*, 49(4), 1057–72
- [3] Falk, Martin (2007), "R&D spending in the high-tech sector and economic growth", *Research in Economics*, 61 (2007), s.140–147
- [4] Institutional Settings and the Source of Funds of R&D Matter?", *Oxford Bulletin Of Economics And Statistics*, 66, 3 (2004), s.0305-9049
- [5] Hasanova J.V. (2019) The transformation of human needs in the digital economy. *AEBMR-Advances in Economics Business and Management Research T*: 81 p. 753-756
- [6] Jones, C. I. ve Williams, J. C. (2000). Too Much of a Good Thing? The Economics of Investment in R&D, *Journal of Economic Growth*, 5 (1), 65-85

- [7] Jalil , Abdul ve Syed Mahmud (2009), "Environment Kuznets curve for CO2 emissions: A cointegration analysis for China", *Energy Policy*, 37, 5167–5172.
- [8] Griliches, Z. ed., *R&D, Patents and Productivity*, Chicago of University Press, Chicago, 1984.
- [9] Miroslav, V., Boris, M. ve Mitja, C. (2009). *R&D and Economic Growth in Slovenia: A Dynamic General Equilibrium Approach with Endogenous Growth*, Munich Personal RePEc Archive, 17819.
- [10] Nelson, C. R., Plosser, C. R. (1982). Trends and Random Walks in Macroeconomic Time Series, *Journal of Monetary Economics*, 10(2), 139–162. [http://doi.org/10.1016/0304-3932\(82\)90012-5](http://doi.org/10.1016/0304-3932(82)90012-5)
- [11] Phillips, P. C. B., Perron, P. (1988). Testing for a Unit Root in Time Series Regression. *Biometrika*, 75(2), 335–346
- [12] Samimi, A.J. ve S.M. Alerasoul (2009), "R&D and Economic Growth: New Evidence from Some Developing Countries", *Australian Journal of Basic and Applied Sciences*, 3(4), ISSN 1991-8178, s.3464-3469.
- [13] Samimi , Babanejad (2010) *ICT and Economic Growth: New Evidence from Some Developing Countries* *Australian Journal of Basic and Applied Sciences*, 4(8): 3086-3091, 2010 ISSN 1991-8178
- [14] Shefer, D. ve Frenkel, A. (2005). *R&D, Firm Size and Innovation: An Empirical Analysis*, *Technovation*, 25 (1),25-32.
- [15] Wang, Eric C. (2007), "R&D Efficiency and Economic Performance: A Cross-Country Analysis Using The Stochastic Frontier Approach", *Journal of Policy Modeling*, Vol. 29 (2), s.345-360.
- [16] Zachariadis, Marios (2004), "R&D-induced Growth in the OECD?", *Review of Development Economics*, Vol. 8 (3), s.423–439.