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INNOVATION AND THE DIGITAL ECONOMY

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Annotation

The allocation of innovations and investments in digital economy plays an important role in the development of the this area. The introduction of innovations in the field of digital economy implies the practical application of digital technologies and modern software tools, the results of experimental and design solutions, and requires constant investment in this area. One of the main directions in the development of the digital economy is the analysis of investments and innovations of the world's leading countries and the definition of the main directions of development in this area, strengthening training in the field.

Introduction

In the context of the development of the digital economy, the problem of introduction and development of innovative technologies in the world remains a constant problem. For the development of the digital economy, the issues of improving the introduction of innovative technologies in the field of telecommunications, ensuring the attractiveness and financial sustainability of innovative technologies in telecommunications are receiving global attention. President of the Republic of Uzbekistan Sh.M.Mirziyoev in his Address to the Oliy Majlis of the Republic in 2020: “In order to further develop science in our country, to provide our youth with deep knowledge, high spirituality and culture, to continue working, we have begun to form a competitive economy and raise it to a new modern level. I propose to call the year the “Year of Science, Education and the Development of the Digital Economy”. The application of innovations and innovative technologies in various fields, the application of scientific and scientific developments in production is a key catalyst for development. Today, the introduction of innovations that improve process efficiency and product quality is becoming a

requirement of a market economy around the world. At the same time, the implementation of innovations must be tailored to socio-economic and cultural needs. An example of the introduction of innovations is characterized by the introduction into the market of products with new consumer characteristics or aimed at increasing the production efficiency of certain products (2). Innovations in the digital economy will stimulate the development of the digital society, allow new developments to be applied in many areas, and lead to dramatic changes in the economy.

Research methodology

The word and concept of "innovation" was first used in scientific research by the Austro-American scientist J.W. The chapter that emerged in Schumpeter's scientific work was, in his definition, "Innovation is not any innovation or novelty, but the only thing that significantly increases the efficiency of production is a functioning system" (2). There are many scholarly studies on the problems of innovation, one of which B. Twiss describes in his study innovation as "the process by which an invention or new idea acquires economic content" (3). Another scientist, M. Khucek classifies innovations as a combination of technical and natural science material (4). Prigojin A.I. and other scholars view innovation as a complex process involving the production, introduction, and commercialization of new consumer values, such as goods, equipment, and technology, organizational forms (5). B. B. According to Santo, innovation is a socio-economic process that leads to the creation of the best products and technologies according to their characteristics through the practical use of ideas and inventions. Ultimately, it brings economic benefits and its appearance in the market can bring additional income (6). From the above, it can be said that innovation consists of new inventions, ideas and developments and processes that serve to significantly increase the efficiency of production, and research and development will be necessary to create it. This research and studies require a certain amount of investment in this area. In particular, new inventions, ideas, proposals, scientific research and studies play a key role in the development of the digital economy.

Research methods

To study the role and importance of innovation in the development of the global digital economy, the methods of scientific abstraction, logical thinking, comparative analysis, monographic research, study in dynamics, data grouping, comparison, correlation and regression analysis were used.

Analysis and results

The study of the factors associated with the development of the digital economy in the world, we see that the introduction of innovation and investment in the development of this sector is one of the key factors in its development and it is expanding from year to year. For example, the annual research costs of the world's 1,000 largest companies in 2005 were estimated at $ 400 billion. US $ 700 billion by 2017. We see that the US dollar and it has grown by 4.8% per year in recent years

(Figure 1).

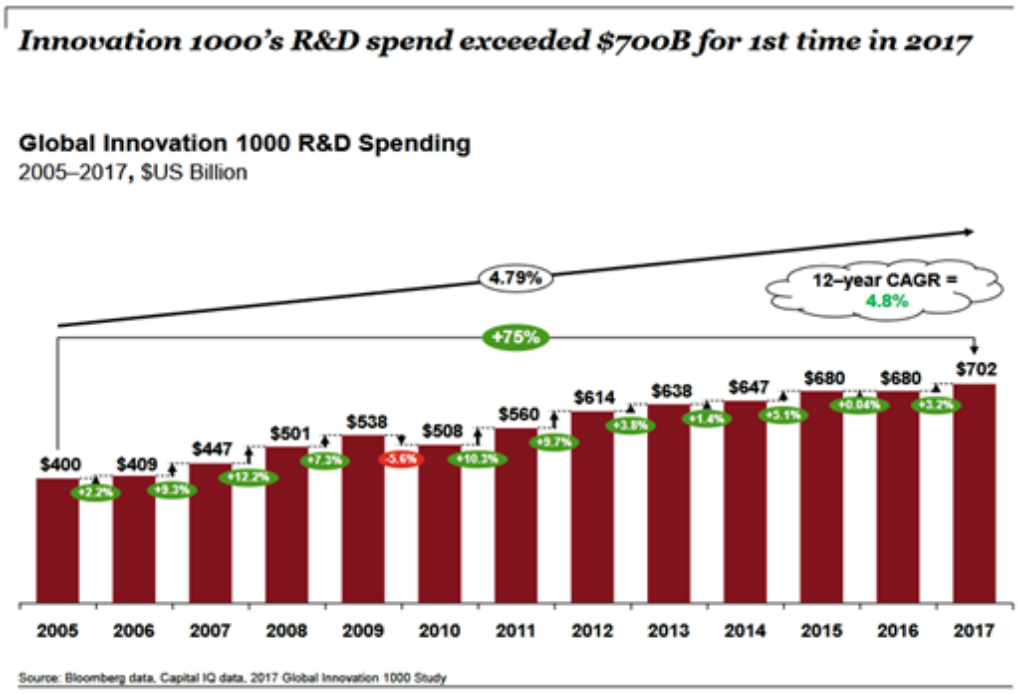


Figure 1. The annual research costs of the world's 1,000 largest companies are projected to reach $ 700 billion in 2017. dollars

Source: https://www.strategyand.pwc.com/uk/en/media/2017-global-innovation-1000-fact-pack.pdf

Competition in various markets is steadily growing, new companies and industries are being created, so the cost of research and development is increasing year by year. The graph shows that spending on research has been growing steadily since 2005 and has declined slightly since the 2009 crisis. On average, the growth rate of research and development is 4.8%. As can be seen from the graph, the world's largest companies are investing heavily in innovation, the introduction and development of new technologies, research and innovation in the era of competition.

If we look at the spending of the top 25 companies among them in this area in recent years, we can see that most of them are U.S. companies and there are many IT companies among them and they are world famous (Figure 2).

A study of the composition of R&D, i.e., research and innovation costs, shows that most costs are focused on solving the following goals and objectives:

- increase in productivity;
- improving product quality;
- product adaptation for a specific market;
- create a product with unique features;
- creation of cheap products for production (reduction of costs);
- creation of products that are universal for different markets;
- increase the speed of product launching;
- increase in the number of inventive products, etc.

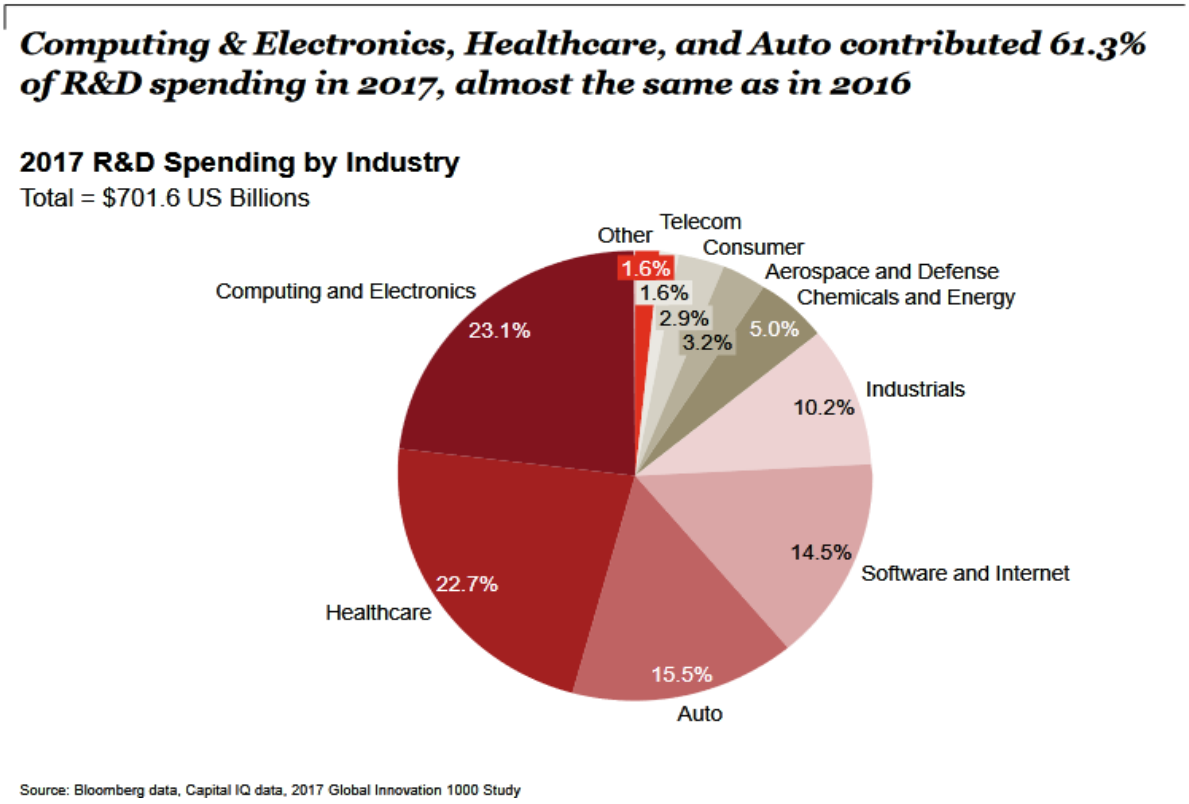
				R&D Expenditures ($US Billions)		Revenue ($US Billions)		R&D Intensity	
2018 Rank	Company Name	Country	Industry group	2017	2018	2017	2018	2017	2018
1	Amazon.com, Inc.	United States	Retailing	16.1	22.6	136.0	177.9	11.8%	12.7%
2	Alphabet Inc.	United States	Software and Services	13.9	16.2	90.3	110.9	15.5%	14.6%
3	Volkswagen Aktiengesellsc…	Germany	Automobiles and Compone…	13.8	15.8	260.9	277.0	5.3%	5.7%
4	Samsung Electronics Co., L…	South Korea	Technology Hardware and …	14.3	15.3	189.0	224.3	7.6%	6.8%
5	Intel Corporation	United States	Semiconductors and Semic…	12.7	13.1	59.4	62.8	21.5%	20.9%
6	Microsoft Corporation	United States	Software and Services	13.0	12.3	85.3	90.0	15.3%	13.7%
7	Apple Inc.	United States	Technology Hardware and …	10.0	11.6	215.6	229.2	4.7%	5.1%
8	Roche Holding AG	Switzerland	Pharmaceuticals, Biotechn…	11.8	10.8	54.0	57.2	21.9%	18.9%
9	Johnson & Johnson	United States	Pharmaceuticals, Biotechn…	9.1	10.6	71.9	76.5	12.7%	13.8%
10	Merck & Co., Inc.	United States	Pharmaceuticals, Biotechn…	10.1	10.2	39.8	40.1	25.4%	25.4%
11	Toyota Motor Corporation	Japan	Automobiles and Compone…	9.8	10.0	267.4	259.8	3.7%	3.9%
12	Novartis AG	Switzerland	Pharmaceuticals, Biotechn…	9.6	8.5	49.4	50.1	19.4%	17.0%
13	Ford Motor Company	United States	Automobiles and Compone…	7.3	8.0	151.8	156.8	4.8%	5.1%
14	Facebook, Inc.	United States	Software and Services	5.9	7.8	27.6	40.7	21.4%	19.1%
15	Pfizer Inc.	United States	Pharmaceuticals, Biotechn…	7.9	7.7	52.8	52.5	14.9%	14.6%
16	General Motors Company	United States	Automobiles and Compone…	8.1	7.3	149.2	145.6	5.4%	5.0%
17	Daimler AG	Germany	Automobiles and Compone…	7.8	7.1	184.0	197.3	4.2%	3.6%
18	Honda Motor Co., Ltd.	Japan	Automobiles and Compone…	6.5	7.1	137.5	131.8	4.7%	5.4%
19	Sanofi	France	Pharmaceuticals, Biotechn…	6.2	6.6	41.7	43.5	14.9%	15.1%
20	Siemens Aktiengesellschaft	Germany	Capital Goods	5.8	6.1	94.1	98.2	6.2%	6.2%
21	Oracle Corporation	United States	Software and Services	6.8	6.1	37.0	37.7	18.4%	16.1%
22	Cisco Systems, Inc.	United States	Technology Hardware and …	6.3	6.1	49.2	48.0	12.8%	12.6%
23	GlaxoSmithKline plc	United Kingdom	Pharmaceuticals, Biotechn…	4.9	6.0	37.7	40.8	13.0%	14.8%
24	Celgene Corporation	United States	Pharmaceuticals, Biotechn…	4.5	5.9	11.2	13.0	39.8%	45.5%
25	Bayerische Motoren Werke…	Germany	Automobiles and Compone…	5.2	5.9	113.1	118.5	4.6%	5.0%

Fig. 2 Table of cost analysis of the 25 largest companies in the world for 2017-2018

Source: 2017 Strategy & Global Innovation 1000

A study conducted by a sociological survey of America's 1,000 largest companies in the world shows that the largest amount is allocated to improve productivity and product quality. The analytical agency also shows in its research the share of various sectors of the economy, such as information technology and telecommunications (ICT), health, automotive and other areas, in total research expenditures. Figure 3 shows a pie chart of this distribution.

Distribution of research costs among sectors of the economy The three largest sectors in terms of expenditures on research and development are IT and telecommunications, healthcare and automotive. Also, the annual growth of research developments corresponds to the same structure.



Rice. 3. The structure of expenditures for research and development

Source: https://www.strategyand.pwc.com/uk/en/media/2017-global-innovation-1000-fact-pack.pdf

The analysis of the above data shows that in the structure of expenditures on research and development, 23.1% are spent on electronics and computers, 22.7% on health, 14.5% on programming and Internet development, and 15.5% on automotive. This means that the total expenditure on the development of electronics and computing, programming and the Internet is 37.6%, or 263.8 billion US dollars. Currently, 5.5% of world GDP is accounted for by the ICT sector, and McKinsey estimates that by 2020 this figure will reach 9%. However, the share of this sector in GDP does not fully reflect the huge impact of ICT on economic growth and all aspects of human activity, including various health, social and educational services, depending on the nature of the product.

The analysis shows that spending on electronics, the Internet and programming is increasing year by year, which ensures that the development of the digital economy grows in a highly competitive environment.

Analysis and results

The scope and self-spread of modern information technologies (high-speed Internet, mobile broadband, computer services, etc.) is the cause of self-economic growth, improving and accelerating the process of interaction between people, increasing labor productivity, additional socio-economic benefits gives According to McKinsey Consulting, even a single direction - raising the level of mobile broadband connectivity in developing countries to the level of developed countries - could increase global GDP growth to $ 300-420 billion and create about 10-14 million new jobs in various industries (e.g. and in the manufacture of equipment), offshore services and outsourcing. The role of the IT sector in ensuring economic growth has increased significantly during the period of sharp struggles of states with the consequences of the global financial and economic crisis. U.S. President Barack Obama, in particular, reported in 2009: "Increasing the cost of broadband, introducing health electronic records, investing in

green energy, new computers for schools and libraries are effective ways to keep America's investment and competitiveness new jobs." Former British Prime Minister Gordon Brown also announced his government's efforts to develop digital infrastructure "in the area of rail, road and bridge construction, which has been intensively carried out in recent years to stimulate the economy". The countries on the list are not alone in their aspirations. South Korea, for example, has long been a leader in broadband investment. Today, many countries, from Greece to Malaysia, are investing heavily in national IT development.

According to a recent study of consumer markets by international consulting firm McKinsey, ICT is one of the top four economic sectors in terms of the intensity of its impact on modern society alongside healthcare, agriculture and infrastructure. Figure 3 shows the sectors that have the greatest impact on social development.

A study of the level of development of the world's most innovative countries shows that per capita expenditures on innovation in these countries are high, averaging $ 50.8 thousand per year. In Uzbekistan, the figure is 2.1 thousand US dollars, which is 24.1 times less than the average. The Global Innovation Index of Innovative Development has a coefficient of 57.8 in developed countries and 29.1 in Uzbekistan, publication of articles in international journals is 4455.7 in developed countries and 11.2 in Uzbekistan. These analyzes show the need to strengthen innovative development in our country.

Countries	Level of evolution		Innovative development indicators		
	Gross domestic product (1000 $ per person)	Gross domestic product (PPS , 1000 $ per person)	Global innovation index	Export of high-tech goods (from industrial export %)	Articles in international journals
Switzerland	79,9	63,9	66,3	27,1	2534,4
United States	57,6	57,6	61,4	20	1265,7
Singapore	53,0	87,8	59,2	67,4	2007,0
Ireland	64,2	71,5	59,0	29,8	1431,8
The Netherlands	45,6	50,5	58,3	-	1759,8
Average value by country	50,8	53,8	57,8	21,4	4455,7
Uzbekistan	2,1	6,5	29,1	4,7	11,2
Difference between Uzbekistan and average (times)	24,1	8,3	2.0	4,5	397,5

Table 1. Countries with high level of innovation development

Source: Based on data from the World Bank and the State Statistics Committee

Uzbekistan's global innovation index is almost 30 points (100 points) and the country is ranked 80-90 in the WEF ranking of global competitiveness. For the leading countries, the difference in the average score of this indicator (57.8) is about 2 times.

Comparing the indicators of conditions and factors of innovative development in Uzbekistan with world indicators allows us to conclude that the main factors hindering the transition to an innovative economy in Uzbekistan are underdeveloped institutions in this area and insufficient funding of science and new technologies.

Conclusion

Research and analysis of the impact of innovation on the economy, investment in research shows that the introduction of innovation in the digital economy can accelerate its development in the country. Developed countries and mega-companies today are benefiting greatly from innovations in the digital economy. According to the Decree of the President of the Republic of Uzbekistan "On measures to introduce the digital economy and e-government", by 2023 the share of the digital economy in GDP will double and the volume of services in this area will triple to $ 100 million. At the same time, in 2020-2022 it is planned to implement a total of 268 projects for the further development of the park of e-government, telecommunications and software products and information technology, the widespread introduction of digital technologies in the real sector. Thus, in accordance with the Decree of the President of the Republic of Uzbekistan dated April 28, 2020 No PP-4699 "On measures for the widespread introduction of digital economy and e-government" in 2020-2022, the total value of data in the field of technology and communications will reach 17.6 trillion. It is planned to implement 35 priority projects worth UZS. It is planned to implement 44.8% of these projects through foreign direct investment and unsecured loans, and 33% through government-guaranteed loans. The implementation of these tasks will undoubtedly have a significant impact on the development of the digital economy of our country.

REFERENCES

1. "Xalq so`zi," January 25, 2020 (https://ru.wikipedia.org/wiki/%D0%98%D0%BD%D0%BD%D0%BE%D0%B2%D0%B0%D1%86%D0%B8%D1%8F).
2. Schumpeter Yu. Theory of Economic Development: Research on Entrepreneurial Profit, Capital, Credit and Business Cycle. –M.: Progress,.
3. Khuchek M. Innovations at enterprises and their implementation. –M.: Luch, 1992.
4. Prigogine A.I. Innovations: incentives and prospects. A.I. Prigogine. - M.: Polit-izdat, 1998
5. Santo B. Innovation as a means of economic development. per. from Hung. M.: Progress, 1990.
6. McKinsey Global Institute [Electronic resource]. URL:http://www.mckinsey.com/insights/mgi
7. 2017 Strategy& Global Innovation 1000 https://www.strategyand.pwc.com/uk/en/media/2017-global-innovation-1000-fact-pack.pdf
8. https://www.bcg.com/publications/2021/most-innovative-companies-overview
9. www.wikipedia.ru
10. https://mineconomy.uz/en/info/4166
11. https://mitc.uz/en/news/category/18
12. https://uztelecom.uz/en/for-operators/internet-channels
13. https://www.adlittle.com/at-en/digital-ksa-assessment-and-way-forward-digital-economy
14. Кобилов, А. У., & Джурабоев, А. М. (2020). Технологии компьютерного дистанционного обучения. Academic Research in Educational Sciences, 1 (3), 287-293.
15. Кобилов А. У., Ольховская, И. В. (2021). Инновации–форма управленческой деятельности государства и организаций. Экономика и бизнес теория и практика, 1(1), 173-178.
16. Зияев, Т. М., Ўринович, Қ. А., Ёқуб, Д. Т. (2019). Қулай инвестицион муҳит ва фаол инвестицион сиёсат–барқарор иқтисодий ўсиш омили. Экономика и финансы (Узбекистан), 2(10), 555-559.

17. Kobilov, A. U., Khashimova, D. P., Mannanova, S. G., Abdulakhatov, M. M. O. (2022). Modern Content and Concept of Digital Economy. International Journal of Multicultural and Multireligious Understanding, 9(2), 375-378.
18. Kobilov, A. (2021). The concept of digital economy, its features and prospects. Архив научных исследований, 2(1), 42-48.
19. Akhmedov, B. A. (2022). Analysis of the Reliability of the Test form of Knowledge Control in Cluster Education. Psychology and Education, *59*(2), 403-418.