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TRANSFORMATION OF THE BUSINESS SYSTEM MODEL IN THE INNOVATIVE ECONOMY

Abstract. The article examines the development of relations between the business system and the innovative economy in Azerbaijan. The author emphasizes the importance of innovative business in reducing the country's dependence on the oil and gas sector and diversifying the economy. The article uses statistical analysis, comparison, observation and analogy. The article analyzes the development of the innovative ecosystem in Azerbaijan in recent years, the difficulties faced by entrepreneurs and the transformation of the business system under the influence of innovation. The author examines successful international practices, such as the US SBIR/STTR programs, and makes proposals for the development of innovative business in Azerbaijan.

Keywords: innovation, business system, development, small and medium business, economy, entrepreneurship.

INTRODUCTION

In the context of Azerbaijan, the development of links between the business system and the innovative economy is of particular interest. Historically, the country's economy has been heavily dependent on the oil and gas sector, which was dominated by large state-owned companies. The

experience of many countries shows that small companies often become a source of breakthrough innovations. For Azerbaijan, supporting innovative businesses can become the basis for diversifying the economy and reducing dependence on the oil and gas sector. However, the creation of a truly innovative economy requires the development of a

diversified private sector, especially the high-tech industry. The development of progressive forms of territorial organization of industry is of exceptional importance for the innovative, competitive development and modernization of modern industry in Azerbaijan [3]. The creation of technology parks, the development of venture financing, tax incentives for innovative enterprises, support for startups, etc., despite the provision of such incentives, additional efforts are needed to create a favorable environment for innovative businesses. This, in turn, necessitates considering various aspects of the influence of the business system on the formation of an innovative economy.

Transformation of the business system model under the influence of innovations

The model of the Azerbaijani business system, under the influence of innovations, is undergoing the following changes:

- Azerbaijan, which has relied on the oil and gas sector for the past 20 years, is trying to diversify its economy. The use of innovative technologies in sectors such as agriculture, tourism and information technology is helping to create new business models.
- In the last 5 years, the country has seen active development of startups and innovative companies. The creation of technology parks and incubators, state support for innovative entrepreneurship contribute to the generation of new business ideas and technologies. The state actively supports initiatives in the field of research and development, providing grants and tax incentives to innovative companies. This creates favorable conditions for the commercialization of scientific work.
- Azerbaijani companies are taking steps to internationalize their business, increasingly trying to apply international management standards and practices, which opens up new opportunities for cooperation with foreign partners. This also includes participation in international exhibitions and technology fairs.
- Digitalization is becoming a major trend. With the growing availability of the Internet and mobile technologies, many business processes are moving into the digital plane. This concerns both customer interactions and internal management processes.
- The application of innovative solutions in the social sphere, including healthcare, education and sustainable development, is becoming increasingly important. This helps to solve local problems and improves the quality of life of the population. Improving the skills of the workforce and developing educational pro-

grams in the field of technology and science are becoming important aspects of the successful implementation of innovations. Cooperation with international universities also finds its place in this process.

These features form a unique business system in Azerbaijan, which adapts to modern challenges and opportunities related to innovation. However, the reports presented by KOBIA (Small and Medium Business Development Agency of the Republic of Azerbaijan) note the presence of complaints from entrepreneurs who submitted applications over the past 5 years. These complaints were mainly in the following areas.

The analysis shows that although every year there is a decrease in complaints related to the connection and use of technical infrastructure, banking operations and the allocation of preferential loans, the issuance of permits, complaints from business entities, tax, property, customs, illegal actions or inaction of officials were at a high level. In this regard, the positive transformation of the business system and business environment under the influence of innovations should be aimed at eliminating these shortcomings.

Let's analyze using 5 groups of indicators to assess the impact of the transition to a successful model of development of the innovation ecosystem in Azerbaijan.

The analysis shows that per capita income and average monthly nominal wages have shown steady growth. From 2008 to 2022, per capita income almost tripled, while average wages more than tripled. GDP per capita almost tripled from 2008 to 2022, but the growth was uneven and there were declines in some years. Although credit investment shows a general upward trend, there have been declines in some years. Significant progress has been made in ICT infrastructure. For example, the number of large mobile Internet users per 100 people increased from 7 in 2008 to 88 in 2022. There has also been a significant increase in the number of businesses and employees using the Internet. The number of research workers remained relatively stable from 2008 to 2022, but there has been an increase in the number of research workers. Although state budget expenditure on science has increased in absolute terms, it has decreased relative to GDP (from 0,2 % to 0,13 %). The volume of innovative products, services and labor force per capita has increased sharply in recent years, especially in 2021 and 2022. These indicators show that Azerbaijan has made some progress in the areas of economic development, technological progress and innovation. However, there is a need to improve state budget expenditure on science in some areas, especially GDP.

 ${\it Table~1}$ Structure of complaints from entrepreneurs contacting KOBIA, weight in % of all complaints

	2019	2020	2021	2022	2023
For questions on connection and use of technical infrastructure	22	9	8,6	11,3	9,3
Based on complaints from business entities	17	21,1	25,3	22,2	40,5
On issues related to the powers of local and central executive authorities (illegal actions or inaction of officials)	14	25,6	24,5	11,1	17,1
Regarding customs procedures	10	3,7	6,8	9,6	12,3
For real estate matters	8	2,3	0,7	15,9	10,3
On taxation issues	6	4	3,7	2,9	5
On banking operations and provision of preferential loans	5	6	2,3	4,5	3,4
On unfair competition	4				
About the building permit	1				
On the allocation and use of land	1				
For questions on issuing permits	1	1,2	0,3		
Regarding government procurement	1				
For support inquiries related to COVID-19		13,6	2,3		
On other issues (environmental control, financial control, land reclamation and water management works, rental services, municipal activities, etc.)	10	13,5	25,5	22,5	2,1

Source: Compiled by the author based on KOBIA reports (2019–2023).

The main priorities of the "Strategy for the Socio-Economic Development of the Economy of Azerbaijan for 2022-2026" include increasing the efficiency, targeting and transparency of entrepreneurship support mechanisms, expanding SME access to all resources (finance, information, personnel, etc.), measures were taken to promote investments in the oil and gas sector and diversification and support of exports of this sector, public-private partnerships and increasing the efficiency of public investments. In order to ensure the implementation of these areas, institutional development and improvement of the SME environment, expanding SME access to B2B and G2B services, the market, financial sources, knowledge and innovation will continue in the near future. A digital transformation program is currently being implemented to maintain constant communication with entrepreneurs and expand their access to many services. Within the framework of this program, 7 electronic services are already operating. The home platform of electronic small and medium business www.e-smb.gov.az, GooglePlay and App-Store also has the application "Small and Medium Business Queue", www.invest.smb.gov.az, which supports access of small and medium businesses to investments, www.invest.smb.gov.az, personal development platform kobim.az, small and medium business support platform www.kobdostu.smb. gov.az, online trading portal www.kobmarket.az and a single register of small and medium enterprises [11].

Various business and innovation forecasts are used to transform innovative business in Azerbaijan. But we must not forget that they can change under the influence of economic, political and social changes and factors that are sometimes not taken into account and do not exist at the moment. From this point of view, a forecast for the development of innovative business in Azerbaijan can be given based on foreign experience and taking into account some national aspects:

The number of startups has a significant impact on innovation activity. The global hightech startup market is expected to grow by 10–15 % per year over the next 5–10 years (1,2). This growth rate is also true for Azerbaijan, given the local conditions and level of infrastructure development. Under the influence of a supporting ecosystem, the number of startups in Azerbaijan can be expected to increase 2–3 times over 5–7 years. This

Assessing the impact of the transition on a successful model of the innovation ecosystem development in Azerbaijan by 5 groups of indicators

	Purch	Purchasing power of populati	o	demand	. Ein	Financial and e	economic potentia	ntial	
	Income per person, manat per month	Average monthly nominal wage, manat per month	The weight of the subsistence minimum in cash income per capita, %	Consumption expenditure per person, manat per month	Loan deposits of credit institutions in national and foreign currency by terms, manat	GDP per capita, manat/ person	Volume of total investment in fixed capital per person (in actual prices), manat/person	Retail turnover per person, manat/person	Budget revenues per person, manat/person
2008	196.8	274.4	3.0	126.1	72 115 139 232.9	4603.7	0.48	1205.6	0.11
2009	211.1	298,0	3.3	140.6	86 288 945 107,5	4033.2	0.36	1288.2	0.11
2010	237.2	331.5	3.1	153.1	105 136 252 071,3	4753,0	0.48	1473.9	0.11
2011	279.2	364.2	2.8	175.8	110 249 911 218,7	5752.9	0.59	1743,0	0.12
2012	313.7	398.4	2.9	193.0	130 647 042 286,5	5966,1	0.65	1901,3	0.17
2013	334.5	425.1	2.9	215.1	152 809 154 034,9	6258.3	0.80	2100.8	0.19
2014	347.1	444.5	3.0	233.7	194 183 010 381,0	6268,0	0.81	2321.6	0.18
2015	362.6	466.9	3.0	265.8	198 471 537 372,1	9.9029	0.89	2681.2	0.18
2016	8.688	499.8	2.9	302.2	215 468 686 514,3	6269.6	1.03	3110,6	0.14
2017	417.8	528.5	3.1	341.6	166 057 413 631,3	7226,0	1.08	3595,1	0.13
2018	1.744	544.6	3.2	362.6	133 862 025 330,7	8156.2	98.0	3747.2	0.14
2019	475.4	635.1	3.2	391.9	165 259 511 429,2	8246.3	0.93	3958,4	0.21
2020	465.8	7.707	3.4	366.8	179 452 312 976,1	7257.8	0.91	4027.1	0.18
2021	475.5	732.1	3.4	403.2	186 416 629 120,1	9278.9	0.75	4410.2	0.23
2022	572.7	840,0	3.1	477.9	226 795 289 219.8	13270.9	0.71	5184.3	0.27

Source: Compiled by the author based on materials from https://stat.gov.az/source/industry/.

Number of scientific and pedagogical staff engaged in scientific work and research activities, people Number of personnel engaged in scientific work, people Number of employees who with a scientific work, people Number of engaged in scientific work, people Number of enterprises with a web page (Web page, Website) in the total number of enterprises, website) in the total number of enterprises, website, person with a scientific work, people Number of enterprises with a web page (Web page, Website) in the total number of enterprises with a web page (Web page, Website) in the total number of enterprises with a web page (Web page, Website) in the total number of enterprises, website, person with a scientific work, person with a scientific work, person with a scientific work, person with a scientific work and a scientific work and a scientific work and a scientific work and a scien				ICT infi	ICT infrastructure					Innovative potential	ıtial		Innova- tive produc- tion
7 23.7 11.7 4.0 2.0 19.1 17 942 4110 11 24.2 13.8 5.0 2.2 23.8 17 401 4 098 15 47.3 27.9 7.1 4.9 28.4 17 924 4 397 30 56.3 35.6 10.3 9.0 29.8 18 687 4 660 50 57.1 40.9 10.3 9.0 29.8 18 687 4 660 50 57.1 40.9 10.3 9.0 29.8 18 680 6 762 65 57.8 42.2 14.4 9.3 31.9 22 358 6 836 65 58.6 45.7 16.5 10.4 32.4 23329 8 122 72 63.1 48.0 20.4 11.9 35.0 23093 8 066 73 66.9 52.5 23.1 12.2 39.3 20580 7 657 77 62.8 51.5 25.3		capable of connecting to a large- scale mobile Internet network per	computers in the total number of enterprises operating in the	Internet access in the total	the Internet compared to the list of employees working at all	web page (Web page, Website) in the total number of all operating	used a computer, to the list of all employees working in enterprises		pedagogical staff engaged in scientific work and research	-	Expenditures on science from the state budget, % of GDP	Main resources used in scientific research and work, manat	Innovative product, service, volume of work per capita, manat/person
11 24.2 13.8 5.0 2.2 23.8 17 401 4 098 15 47.3 27.9 7.1 4.9 28.4 17 924 4 397 30 56.3 35.6 10.3 9.0 29.8 18 687 4 660 50 57.1 40.9 10.9 9.2 31.2 21573 6 762 55 57.8 42.2 14.4 9.3 31.9 22 358 6 836 65 58.6 45.7 16.5 10.4 32.4 2329 8 122 72 63.1 48.0 20.4 11.9 35.0 23093 8 066 72 65.3 51.6 21.9 11.9 38.0 22527 7772 73 66.9 52.5 23.1 12.3 39.6 20179 7 552 75 67.2 52.9 25.3 12.3 39.6 20179 7 768 83 63.9 52.5 26.9	2008	7	23.7	11.7	4.0		19.1			62100000	0.2	85100000	0.97
15 47.3 27.9 7.1 4.9 28.4 17 924 4 397 30 56.3 35.6 10.3 9.0 29.8 18 687 4 660 50 57.1 40.9 10.9 9.2 31.2 21 57.3 6 762 55 57.8 42.2 14.4 9.3 31.9 22 358 6 836 65 58.6 45.7 16.5 10.4 32.4 2358 6 836 72 63.1 48.0 20.4 11.9 35.0 23093 8 066 72 65.3 51.6 21.9 11.9 38.0 22527 7 772 73 66.9 52.5 23.1 12.3 39.6 20179 7 657 77 62.8 51.5 25.3 12.3 39.6 20179 7 768 83 63.9 52.5 26.9 9.9 42.2 20522 7 651 85 65.2 54.2 28.1 10.2 43.0 19754 7 1770	2009	1	24.2		5.0		ω.			83300000	0.2	82300000	60.0
30 56.3 35.6 10.3 9.0 29.8 18 687 4 660 50 57.1 40.9 10.9 9.2 31.2 21 573 6 762 55 57.8 42.2 14.4 9.3 31.9 22 358 6 836 65 58.6 45.7 16.5 10.4 32.4 23329 8 122 72 63.1 48.0 20.4 11.9 35.0 23093 8 066 72 65.3 51.6 21.9 11.9 38.0 22527 7772 73 66.9 52.5 23.1 12.2 39.3 20580 7657 77 62.8 51.5 25.8 9.8 41.1 20790 7768 83 63.9 52.5 26.9 9.9 42.2 20522 7651 85 65.2 54.2 28.1 10.2 43.0 19754 7170	2010	15	47.3		7.1	4.9	28.4	17 924		92800000	0.22	00000926	0.71
50 57.1 40.9 10.9 9.2 31.2 21.573 6762 55 57.8 42.2 14.4 9.3 31.9 22.358 6 836 65 58.6 45.7 16.5 10.4 32.4 23329 8 122 72 63.1 48.0 20.4 11.9 35.0 23093 8 066 73 66.9 52.5 23.1 12.2 39.3 20580 7 657 75 67.2 52.9 25.3 12.3 39.6 20179 7 552 77 62.8 51.5 25.8 9.8 41.1 20790 7 768 83 63.9 52.5 26.9 9.9 42.2 20522 7 651 85 65.2 54.2 28.1 10.2 43.0 19754 7 170	2011	30			10.3	9.0	29.8	18 687		106100000	0.2	95200000	3.03
55 57.8 42.2 14.4 9.3 31.9 22.358 6 836 65 58.6 45.7 16.5 10.4 32.4 2329 8 122 72 63.1 48.0 20.4 11.9 35.0 23093 8 066 72 65.3 51.6 21.9 11.9 38.0 22527 7772 73 66.9 52.5 23.1 12.2 39.3 20580 7 657 77 62.8 51.5 25.3 12.3 39.6 20179 7 552 77 62.8 51.5 25.8 9.8 41.1 20790 7 768 83 63.9 52.5 26.9 9.9 42.2 20522 7 651 85 65.2 54.2 28.1 10.2 43.0 19754 7 170	2012	20	57.1	40.9	10.9	9.2	31.2			116700000	0.21	88000000	2.61
65 58.6 45.7 16.5 10.4 32.4 23329 8 122 72 63.1 48.0 20.4 11.9 35.0 23093 8 066 72 65.3 51.6 21.9 11.9 38.0 22527 7 772 73 66.9 52.5 23.1 12.2 39.3 20580 7 657 75 67.2 52.9 25.3 12.3 39.6 20179 7 552 77 62.8 51.5 25.8 9.8 41.1 20790 7 768 83 63.9 52.5 26.9 9.9 42.2 20522 7 651 85 65.2 54.2 28.1 10.2 43.0 19754 7 170	2013	55	57.8		14.4	9.3	31.9	22 358		117000000	0.2	107200000	1.34
72 63.1 48.0 20.4 11.9 35.0 23093 8 066 72 65.3 51.6 21.9 11.9 38.0 22527 7772 73 66.9 52.5 23.1 12.2 39.3 20580 7657 75 67.2 52.9 25.3 12.3 39.6 20179 7562 77 62.8 51.5 25.8 9.8 41.1 20790 7768 83 63.9 52.5 26.9 9.9 42.2 20522 7651 85 65.2 54.2 28.1 10.2 43.0 19754 7170	2014	65	58.6	45.7	16.5	10.4	32.4	23329		124200000	0.21	122200000	1.42
72 65.3 51.6 21.9 11.9 38.0 22527 7772 73 66.9 52.5 23.1 12.2 39.3 20580 7657 75 67.2 52.9 25.3 12.3 39.6 20179 7552 77 62.8 51.5 25.8 9.8 41.1 20790 7768 83 63.9 52.5 26.9 9.9 42.2 20522 7651 85 65.2 54.2 28.1 10.2 43.0 19754 7170	2015	72	63.1	48.0	20.4	11.9	35.0	23093		113200000	0.21	114200000	0.16
73 66.9 52.5 23.1 12.2 39.3 20580 7 657 75 67.2 52.9 25.3 12.3 39.6 20179 7 552 77 62.8 51.5 25.8 9.8 41.1 20790 7 768 83 63.9 52.5 26.9 9.9 42.2 20522 7 651 85 65.2 54.2 28.1 10.2 43.0 19754 7 170	2016	72	65.3	51.6	21.9	11.9	38.0	22527		110200000	0.18	129500000	3.74
75 67.2 52.9 25.3 12.3 39.6 20179 7552 77 62.8 51.5 25.8 9.8 41.1 20790 7768 83 63.9 52.5 26.9 9.9 42.2 20522 7651 85 65.2 54.2 28.1 10.2 43.0 19754 7170	2017	73	6.99		23.1		39.3	20580		109800000	0.16	157400000	1.54
77 62.8 51.5 25.8 9.8 41.1 20790 7768 1 83 63.9 52.5 26.9 9.9 42.2 20522 7651 1 85 65.2 54.2 28.1 10.2 43.0 19754 7170 1	2018	75	67.2			12.3	39.6	20179		117800000	0.15	149100000	3.01
83 63.9 52.5 26.9 9.9 42.2 20522 7 651 1 85 65.2 54.2 28.1 10.2 43.0 19754 7 170 1	2019	77			25.8	9.8	41.1	20790	2 7 68	122300000	0.15	162800000	2.57
85 65.2 54.2 28.1 10.2 43.0 19754 7170	2020	83	63.9		26.9	6.6	42.2	20522		143600000	0.2	159500000	2.87
	2021	82	65.2		28.1	10.2	43.0	19754		151800000	0.16	142200000	6.91
88 65.8 54.8 29.4 10.5 43.5 19875 7.267	2022	88	65.8	54.8	29.4	10.5	43.5	19875	7 267	167800000	0.13	116100000	11.08

Source: Compiled by the author based on materials from https://stat.gov.az/source/industry/.

suggests that the number of startups may grow from 164 in 2023 to 200–300 by 2030. If we take the experience of Israel as a basis, there are about 15 startups per 1,000 residents. If this figure is 1 startup per 1,000 people in Azerbaijan, then according to the forecast, there may be an increase of up to 5 startups per 1,000 people in 5 years.

- Countries with a developed business environment, such as the United States and Germany, spend about 2,5–3 % of GDP on research and development. In South Korea, this figure is about 4,5 %. For Azerbaijan, it is considered appropriate to set a target of 1–2 % of GDP by 2030, and to increase the number of graduates in the field of science, technology, engineering and mathematics by 20–30 % per year [7–9].
- Innovative entrepreneurship can create a large number of jobs. For example, if each new company creates an average of 10 jobs, then the creation of 200 start-ups can lead to the creation of up to 2,000 new jobs.
- According to the World Bank, more than 70 % of SMEs in countries with developed digital ecosystems actively use online platforms for promotion and sales [10]. According to the European Commission, 60 % of SMEs in the EU use digital technologies. It is predicted that by 2025, about 50 % of small and medium enterprises in Azerbaijan will use at least one digital platform (cloud technologies, customer management systems, e-commerce, etc.) for their business processes [4–6].
- The share of high technologies in Singapore's total exports exceeds 50 %. In Azerbaijan, this figure is expected to increase from 5 % to 10 %, i.e., twofold, over the next five years. A study of global experience in developing innovative infrastructure, especially technology parks, has shown their key role in the commercialization of scientific work. It should be noted that successful operation of technology parks requires a long period of time (30–40 years) and a favorable environment [7–9].

An analysis of the experience of different countries has shown that the goals of Azerbaijan's policy to support innovative entrepreneurship are consistent with global trends. But under the influence of innovation, the transformation of the business system continues in the following areas:

- Increasing investment in innovation;
- Stimulating the speed of business development;
- Creating a successful system for disseminating knowledge and experience;
- Expanding the use of digital economy opportunities;

• Improving innovation management.

However, we note that the relevant regulatory framework in the field of innovation has not been developed and there is no law "On Innovations".

Based on the principles of openness, scale, innovation and efficiency, we propose to develop a program to support small businesses in the field of science and innovation, using the experience of the American SBIR/STTR programs. The SBIR (Small Business Innovation Research) and STTR (Small Business Technology Transfer) programs are important initiatives of the US government aimed at supporting small businesses and stimulating innovation in the country. Focusing on the goals of the programs, SBIR seeks to support small innovative companies in the development of new technologies and products that can become the basis for commercial solutions. STTR focuses on developing cooperation between universities and government research laboratories, as well as small businesses and research institutes. Funding for each program consists of three stages:

Funding of up to USD 150,000 for a period of 6–12 months at stage I is aimed at the feasibility study of the innovative concept.

At stage II, funding of up to USD 1,000,000 is provided for 1–2 years for the refinement of a prototype, i.e. a sample.

At stage III, commercialization has already begun and is financed not by public funds, but by other financial sources.

It should also be noted that only a small number of applications receive funding through the SBIR/STTR programs. However, the SBIR/STTR programs have contributed to the creation of many successful startups and innovative products that have gained significant market share.

A study of the development of inventive activity in countries with different economic potentials has determined that the dynamics of inventive activity depends on several factors — the volume of investment in ITI, the capacity of the domestic market and the effectiveness of intellectual property management.

The choice of specific innovation support instruments depends on national institutional conditions. National-level assessments are necessary to design effective support programmes.

One of the main challenges is to ensure complementarity of public funding. The main argument in favour of public support for commercial innovation is that the benefits of innovation often extend beyond the individual company and create positive externalities throughout the economy. Without government intervention, companies may underinvest in innovation because they are unable to fully reap the benefits of their innovations. Government

intervention can help address coordination issues. Some innovations require the simultaneous development of several interrelated components, and governments can help coordinate the efforts of different actors. For Azerbaijan, these coordination measures are recommended to increase the potential of high-tech and medium-tech industries by transferring revenues from high-income sectors of the economy to innovative areas, as well as by applying a combined approach aimed at creating new innovations. Particular attention should be paid to the experience of countries such as the Republic of Korea and Taiwan, which were able to enter the group of high-income countries due to significant investments in innovation. They have used tools such as the formation of public-private research consortia, cooperation with foreign companies in research and development, assistance in training local companies from foreign investors, and the acquisition of foreign technologies and brands. Of particular importance may be programs that promote cooperation between universities and businesses and facilitate the transition of specialists from academia to business. This allows university research to be more focused on the innovative needs of industry. Effective use of public-private research can activate appropriate funding mechanisms for universities, including opportunities for competitive funding based on competitive bidding rather than guaranteed financial support. In developing effective use of publicprivate research, special attention should be paid to governance mechanisms, cost sharing between partners, and issues related to intellectual property rights for the results of joint activities. The following additional measures are proposed for Azerbaijan:

- transfer of rights to research results to empoyer organizations;
- granting scientific institutions the right to engage in entrepreneurial activity;
- preferential taxation of income from technology transfer;
- creation of infrastructure for the commercialization of intellectual potential.

We recommend the following strategic directions for the transformation of the business system model of Azerbaijan under the influence of innovations in the next 5–10 years:

- a) Attention should be paid to the export-oriented development of technology centers, the development of software and IT services for the CIS and Middle East countries from international markets;
- b) The rollout of 5G and eventually 6G should accelerate:
- c) Achieve 50 % share of renewable sources in the country's energy balance by 2050;

- d) Incentives for investment in research and development of green hydrogen production technologies using the country's abundant solar and wind resources should be improved;
- e) Applying carbon capture and storage technologies to reduce emissions from oil and gas infrastructure, smart grid technologies to optimize electricity distribution and integrate renewable energy sources;
- f) Investing in the development of drought- and disease-resistant plant varieties adapted to local conditions, creating a national brand of organic products;
- g) Application of robotic systems and artificial intelligence in the food industry to improve the efficiency and quality of products;
- h) Developing infrastructure for electric vehicles, including a network of charging stations across the country, with 70 % of new sales of electric vehicles achieved by 2045, creating a legal framework and infrastructure for driverless cars and delivery drones;
- i) Optimization of logistics processes using artificial intelligence and blockchain technologies to improve the efficiency of the transport sector;
- j) Empowering fully digital banks and fintech startups to improve financial inclusion and efficiency in the banking sector by using artificial intelligence to assess credit risks, combat fraud and personalize financial services;
- k) Application of artificial intelligence systems to adapt educational and training programs to the individual needs of each student;
- I) Development of a system of retraining of personnel to adapt the workforce to the rapidly changing requirements of the labor market and the creation of a national distance education platform accessible to all citizens of Azerbaijan;
- m) Development of a system of remote medical consultations for remote regions;
- n) Using genetic testing and AI analysis to develop personalized treatment plans, using AI to analyze medical images and diagnose diseases early;
- o) Development of 3D printing technologies for the production of prostheses, implants and even organs.
- p) Implementation of robotic surgery systems in the country's leading medical centers.

Successful implementation of these recommendations will enable Azerbaijan to become a regional leader in innovation and sustainable development, to be competitive by diversifying its economy, and to reduce its dependence on the oil and gas sector. This will require significant investment

and long-term planning, but the result will be a resilient and competitive economy ready for the challenges of the mid-21st century.

Conclusions and suggestions

The study shows that additional efforts are needed to develop innovative businesses in Azerbaijan. Priority areas include increasing the number of startups and innovative companies, creating technology parks and developing venture financing.

Access to technical infrastructure, taxation issues, customs procedures and illegal actions of officials are some of the main problems that entrepreneurs still face.

Based on the results of the study, the following proposals were put forward:

- 1. Using the experience of the US SBIR/STTR programs, it is proposed to develop a program to support small businesses in the field of science and innovation in Azerbaijan.
- 2. To develop innovation, it is recommended to increase the share of research and development funds in GDP, increase the number of specialists in the field of science and technology, and increase the export of high-tech products.
- 3. It is important to strengthen public-private partnerships, develop cooperation between universities and businesses, and create favorable conditions for the commercialization of intellectual property.
- 4. In the long term, it is recommended to carry out work in such strategic areas as the introduction of 5G and 6G technologies, the development of renewable energy sources, the use of artificial intelligence and robotics in various fields, and the creation of infrastructure for electric power and transport vehicles.

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ТРАНСФОРМАЦІЯ МОДЕЛІ БІЗНЕС-СИСТЕМИ В ІННОВАЦІЙНІЙ ЕКОНОМІЦІ

Резюме. У статті розглянуто розвиток відносин між бізнесовою системою та інноваційною економікою в Азербайджані. Автор наголошує на важливості інноваційного бізнесу для зниження залежності країни від нафтогазового сектору та диверсифікації економіки. У статті використано методи статистичного аналізу, порівняння, спостереження та аналогії. Здійснено аналіз розвитку інноваційної екосистеми в Азербайджані за останні роки, окреслено труднощі, з якими стикаються підприємці, описано трансформацію бізнессистеми під впливом інновацій. Автор розглядає такі успішні міжнародні практики, як програми США SBIR/STTR, а також висловлює пропозиції щодо розвитку інноваційного бізнесу в Азербайджані.

Ключові слова: інновації, бізнес-система, розвиток, малий і середній бізнес, економіка, підприємництво.

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