

GLOBAL INNOVATION INDEX FOR PERFORMANCE RANKING: THE POSITION OF AZERBAIJAN

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Abstract. The paper mainly takes into consideration the ideas of the role of scientific technological development in the formation of national economies, and the importance of the roles of modern technologies and the innovation process in the globalized world. The main objective of this research is the significance of further development of innovation system, studying the experience of developed economies in these field, and applying to Azerbaijani national innovation system.

Keywords: economic development, political stability, global market, Global Innovation Index.

QLOBAL İNNOVASIYA İNDEKSİ FƏALİYYƏT SIRALAMASI KİMİ: AZƏRBAYCANIN MÖVQEYİ

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Xülasə. Məqalə qloballaşan dünyada, milli iqtisadiyyatın formalaşmasında elmi-texniki tərəqqinin, müasir texnologiyaların, innovasiya fəaliyyətinin rolu haqqında fikirləri özündə əks etdirir. Tədqiqatın əsas məqsədi innovasiya sisteminin daha da inkişaf etdirilməsinin zərurəti, bu sahədə inkişaf etmiş ölkələrin təcrübəsinin öyrənilməsi və Azərbaycanın milli innovasiya sisteminə tətbiqindən ibarətdir.

Açar sözlər: İqtisadi inkişaf, siyasi sabitlik, qlobal bazar, Qlobal İnnovasiya İndeksi

ГЛОБАЛЬНЫЙ ИННОВАЦИОННЫЙ ИНДЕКС ДЛЯ РЕЙТИНГА ЭФФЕКТИВ- НОСТИ: ПОЗИЦИЯ АЗЕРБАЙДЖАНА

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Резюме. В статье в основном учитываются представления о роли научно-технического развития в формировании национальных экономик, а также о важности роли современных технологий и инновационного процесса в глобализированном мире. Основной целью данного исследования является важность дальнейшего развития инновационной системы, изучения опыта развитых стран в этих областях и применения в национальной инновационной системе Азербайджана.

Ключевые слова: Экономическое развитие, политическая стабильность, глобальный рынок, Глобальный Инновационный Индекс.

1. Introduction

Innovation is still a shadowy perception, so the Global Innovation Index (GII) offers a combined metric based on sensibly nominated and calculated variables to support countries to target their strategies. Evolving an innovation index is controlled by data boundaries, and there is no precise comprehension of which aspects cooperate in definite country situations and how to effect innovation. Nevertheless, Global Innovation Index (GII) makes a significant alteration in numerous ways: It seeks to improve the eye of policy makers about the significance of innovation and connected strategies and puts an attention on a subject that is

else would be difficult to understand. Global Innovation Index (GII) supports to create an atmosphere where innovation factors are under continuous re-structuring, thus becoming an instrument to measure comparative points and to improve national innovation strategies. Also the data requirements from the Global Innovation Index (GII) are intended to maintain the accessibility of statistical information. WIPO (World Intellectual Property Organization) helps to encourage innovation and economic growth with creating a stable and effective transnational intellectual property system.

2. Global Innovation Trends and the ranking of world countries

Innovation can be accepted as an essential trigger for economic development, improved recruitment opportunities and enables firms to effectively contest in the global market. It is the basis of advances for the worth of our daily life. The background of innovation has progressed considerably recently. Initially, changes are arising in the geography of innovation. Tendencies in economic development and arrangements of investment in training, research and improvement raise a multi-polar modernization landscape. Companies of low income countries try not to miss novelties in the industrial areas. Therefore, hi-tech gap between countries of developing and advanced economies is lessening day by day. In other words, innovation led progress is no longer the inclusive chance of high-income nations only, but it is for every nation. Additionally, there has been improved appreciation of the difficulty of the voyage from idea to profitable reality, leading to an enlargement of our comprehension of innovation. New administrative arrangements, new advertising methods, effective schemes, and other non-technological innovations are now recognized as essential. Besides, the innovation process has become more open, cooperative, and internationalized than ever before.

4 different groups which mainly support the Global Innovation Index (GII) projects are the World Intellectual Property Organization, Alcatel- Lucent, the Confederation of Indian Industry (CII) and Booz & Company. The preparation of indexes on the parameters of innovation according to regions is not just for displaying and applauding the superiority of top regions, but moreover to aid for discovering the gaps. As the Confederation of Indian Industry (CII) is associated with numerous innovation events within industry and society, it became the primary manufacturing organization of India. Therefore, its awareness of the region supplements the Global Innovation Index (GII).

The crucial point for deeply comprehending of the country's ranking in the Global Innovation Index (GII) is recognition of the fundamental circumstances of any country and comparison among other neighbors. The outcomes of the Global Innovation Index (GII) show that regular levels decline continuously with revenue grades. Generally, high-income nations outperform emerging economies extensively, but certain breaches are closing among developing countries in some areas, notably in the Institutions. This shows that major

struggles have been made in a global scale with the purpose of improved political stability, enlightened supervisory environments, and improving situations for business, investment and merchandizing. The ranking of world countries according to Global Innovation Index for 2019 year is given below.

Table 1. List of countries according to GII for 2019th year

2019 Rank	Economy	2018 Rank	Change
1	Switzerland	1	0
2	Sweden	3	1
3	United States of America	6	3
4	Netherlands	2	-2
5	United Kingdom	4	-1
6	Finland	7	1
7	Denmark	8	1
8	Singapore	5	-3
9	Germany	9	0
10	Israel	11	1
11	Republic of Korea	12	1
12	Ireland	10	-2
13	Hong Kong, China	14	1
14	China	17	3
15	Japan	13	-2
16	France	16	0
82	Mauritius	75	-7
83	Albania	83	0
84	Azerbaijan	82	-2
85	Indonesia	85	0
125	Guinea	119	-6
126	Togo	125	-1
127	Niger	122	-5
128	Burundi	n/a	n/a
129	Yemen	126	-3

3. The innovation process in Azerbaijan

The current situation of innovation process in our country cannot be acknowledged as acceptable, because Azerbaijan has huge potential of uprising to higher place in global ranking. Azerbaijan was in 84th place in 2019 and this result is even worse than previous year's result of 82nd. Today, Azerbaijan is in the last place of Caucasian region, so a lot of work is still needs to be done. The significance given to the scientific and technological priorities can be seen from budget expenditures of governments. In developing countries the share of expenditures on technological innovations is quite high and it goes in dynamically

increasing rates. It is very important that governmental bodies and private sector should work in collaborative way in order to achieve successful results. However, in Azerbaijan the main burden is on the shoulders of government, and the share of private sector is quite low. Statistically around 95% of technological innovations come from governmental bodies, and this is about 0.2% of GDP issue. Comparatively, in developed European countries this percentage is about 4-6%. Besides, universities, institutes and research centers are the main active figures of technological innovations in developed countries. Detailed information related to institutions, human capital and research, infrastructure, market and business sophistication, knowledge, technology and creative outputs are given below:

Table 2. The GII Information of Azerbaijan Republic according to various indicators in 2019

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$	GDP per capita, PPP\$	GI I 2018 rank
90	77	Upper middle	NAWA	9.9	178.5	18,075.90	82
INSTITUTIONS						64.5	59
1.1.	Political environment					51.2	77
1.1.1	Political and operational stability					68.4	71
1.1.2	Government effectiveness					42.6	82
1.2	Regulatory environment					62.4	73
1.2.1	Regulatory quality					35.4	89
1.2.2	Rule of law					31.7	96
1.2.3	Cost of redundancy dismissal, salary weeks					13.7	53
1.3	Business environment					80	33
1.3.1	Ease of starting a business					96.1	9
1.3.2	Ease of resolving insolvency					63.8	42
HUMAN CAPITAL & RESEARCH						17	106
2.1	Education					21.1	[123]
2.1.1	Expenditure on education, % GDP					2.9	103
2.1.2	Government funding/pupil, secondary, % GDP/cap					n/a	n/a
2.1.3	School life expectancy, years					n/a	n/a
2.1.4	PISA scales in reading, maths, & science					n/a	n/a
2.1.5	Pupil-teacher ratio, secondary					n/a	n/a
2.2	Tertiary education					27.5	74
2.2.1	Tertiary enrolment, % gross					27.1	87
2.2.2	Graduates in science & engineering, %					23.6	38
2.2.3	Tertiary inbound mobility, %					2.1	74
2.3	Research & development (R&D)					2.5	90
2.3.1	Researchers, FTE/mn pop					n/a	n/a
2.3.2	Gross expenditure on R&D, % GDP					0.2	90
2.3.3	Global R&D companies, avg. exp. top 3, mn US\$					0	43
2.3.4	QS university ranking, average score top 3					3.7	72

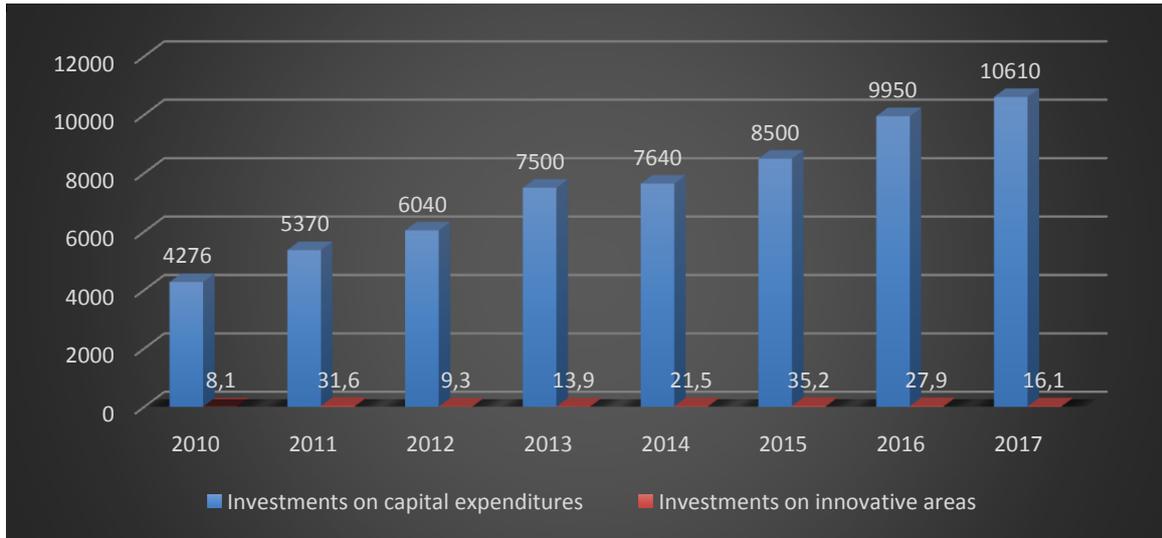
	INFRASTRUCTURE	45.3	70
3.1	Information & communication technologies(ICTs)	65.9	68
3.1.1	ICT access	67	64
3.1.2	ICT use	55.5	63
3.1.3	Government's online service	72.9	63
3.1.4	E-participation	68	77
3.2	General infrastructure	30.8	83
3.2.1	Electricity output, kWh/mn pop	2,556.70	70
3.2.2	Logistics performance	n/a	n/a
3.2.3	Gross capital formation, % GDP	25	45
3.3	Ecological sustainability	39.3	61
3.3.1	GDP/unit of energy use	10.8	44
3.3.2	Environmental performance	62.3	52
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	0.4	92
	MARKET SOPHISTICATION	56.5	31
4.1	Credit	29.5	95
4.1.1	Ease of getting credit	80	20
4.1.2	Domestic credit to private sector, % GDP	22.2	109
4.1.3	Microfinance gross loans, % GDP	0	66
4.2	Investment	81.7	[1]
4.2.1	Ease of protecting minority investors	81.7	2
4.2.2	Market capitalization, % GDP	n/a	n/a
4.2.3	Venture capital deals/bn PPP\$ GDP	n/a	n/a
4.3	Trade, competition, & market scale	58.4	74
4.3.1	Applied tariff rate, weighted avg %	5.2	89
4.3.2	Intensity of local competition	61.3	102
4.3.3	Domestic market scale, bn PPP\$	178.5	66
	BUSINESS SOPHISTICATION	24.5	103
5.1	Knowledge workers	29.4	83
5.1.1	Knowledge-intensive employment, %	23.3	62
5.1.2	Firms offering formal training, % firms	20.2	74
5.1.3	GERD performed by business, % GDP	0	82
5.1.4	GERD financed by business, %	32	56
5.1.5	Females employed w/advanced degrees, %	12.9	52
5.2	Innovation linkages	21.4	79
5.2.1	University/industry research collaboration	54.2	32
5.2.2	State of cluster development	55.7	33
5.2.3	GERD financed by abroad	0.1	100
5.2.4	JV-strategic alliance deals/bn PPP\$ GDP	0	84
5.2.5	Patent families 2+ offices/bn PPP\$ GDP	0	79
5.3	Knowledge absorption	22.9	113
5.3.1	Intellectual property payments, % total trade	0.1	105
5.3.2	High-tech imports, % total trade	2.8	124
5.3.3	ICT services imports, % total trade	0.5	106
5.3.4	FDI net inflows, % GDP	8.8	15

5.3.5	Research talent, % in business enterprise	n/a	n/a
	KNOWLEDGE & TECHNOLOGY OUTPUTS	14.9	101
6.1	Knowledge creation	3.9	109
6.1.1	Patents by origin/bn PPP\$ GDP	1.1	60
6.1.2	PCT patents by origin/bn PPP\$ GDP	0.1	67
6.1.3	Utility models by origin/bn PPP\$ GDP	0.1	53
6.1.4	Scientific & technical articles/bn PPP\$ GDP	3.5	96
6.1.5	Citable documents H-index	3.9	104
6.2	Knowledge impact	21.4	111
6.2.1	Growth rate of PPP\$ GDP/worker, %	-1.6	105
6.2.2	New businesses/th pop. 15-64	1	70
6.2.3	Computer software spending, % GDP	0.1	95
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	1.2	104
6.2.5	High- & medium-high-tech manufactures, %	0.1	79
6.3	Knowledge diffusion	19.4	51
6.3.1	Intellectual property receipts, % total trade	0	108
6.3.2	High-tech net exports, % total trade	0.1	115
6.3.3	ICT services exports, % total trade	0.4	107
6.3.4	FDI net outflows, % GDP	6.4	10
	CREATIVE OUTPUTS	22.8	84
7.1	Intangible assets	38.7	76
7.1.1	Trademarks by origin/bn PPP\$ GDP	16.7	91
7.1.2	Industrial designs by origin/bn PPP\$ GDP	0.1	110
7.1.3	ICTs & business model creation	65.9	48
7.1.4	ICTs & organizational model creation	63.4	35
7.2	Creative goods & services	8.7	92
7.2.1	Cultural & creative services exports, % total trade	0.1	75
7.2.2	National feature films/mn pop. 15-69	7.2	27
7.2.3	Entertainment & Media market/th pop. 15-69	n/a	n/a
7.2.4	Printing & other media, % manufacturing	0.7	82
7.2.5	Creative goods exports, % total trade	0	122
7.3	Online creativity	5	66
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	1	94
7.3.2	Country-code TLDs/th pop. 15-69	1.2	76
7.3.3	Wikipedia edits/mn pop. 15-69	26.2	41
7.3.4	Mobile app creation/bn PPP\$ GDP	0	93

The restructuring of Azerbaijani economy according to innovative form and international experience requires basic reforms and quick actions. This approach is also related to “Azerbaijan 2020: Look into the future” concept of development and Strategical Roadmap of Azerbaijani National economy. However, legislation and commercial laws were not enough to booster public economy in more innovative way. Therefore, the necessity for functions, laws, responsibility perspectives and coordination of innovation activities increases further. Additionally, investments on innovative basis seem to be very insufficient. To

clarify, the investments on innovative basic still remained very low, while investments to capital expenditures had increased to 10.6 billion AZN. From 2010 to 2017 innovative investments have been doubled, but still it was 16.1 million AZN which is very low number in republic scale. As it is seen from the graphics below investments on capital expenditures was 633 times higher than investments innovative businesses.

Table 3. The comparative statistics of investments on capital expenditures and innovative areas



The weight of innovative actions is not sufficiently high compared to macroeconomic numbers. In other words, innovative products are not even 1 per cent of GDP, and situation is not different anymore in non-oil sector of economy. However, in developed countries the share of innovative products in GDP are increasing noticeably.

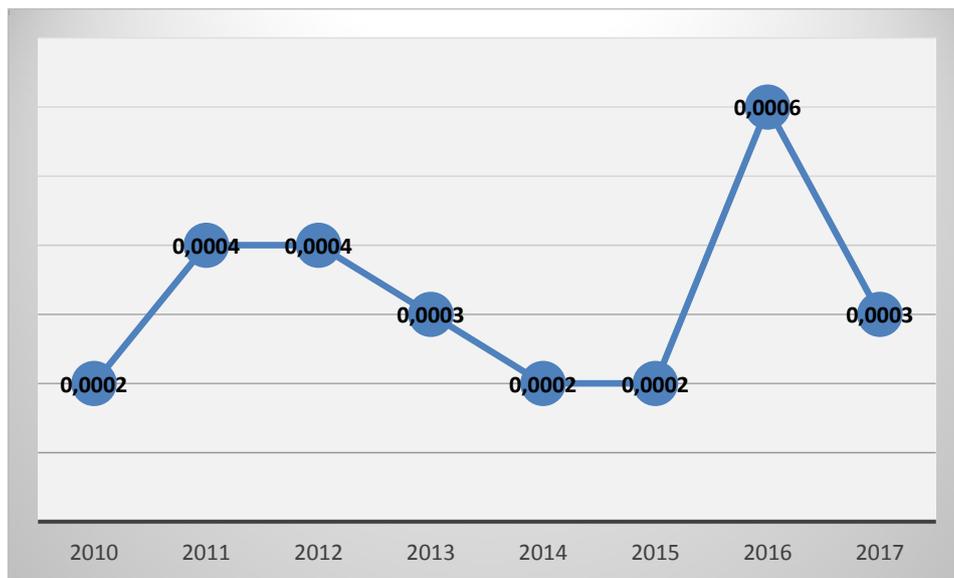


Figure 4. The share of investments on innovation compared to GDP

“Azerbaijan 2020: Look into the future” concept of development and Strategic Roadmap of Azerbaijani National economy contains several aspects of innovative economy, despite the fact that is not directly identifying legislative basis and policy of innovation process. International experience highlights development strategies, public programs and conceptions should be co-ordinated in order to make innovative economy effective. Current approach can enhance the improvement of related legislation, namely “Law of innovation activity” according to modern requirements.

Azerbaijan has come into the stage of economy in which its future development is highly depended on the significance, scale and efficiency of structural policies. And the basic target of policy is foundation of innovative and highly technologic economy. Today it is very significant to approach the national innovation system in complex way including the functional, sectorial and regional levels.

Conclusion. INSEAD (European Institute for Business Administration) founded the Global Innovation Index (GII) project in 2007 with the aim of deciding how to discover methods to effectively apprehend the productivity of innovations. It tries to go further than old-style methods for calculating innovation performance as the quantity of PhDs, the amount of research articles written, the quantity of new research centers created, the number of patents given etc., and money spent on Research & Development. Currently, mostly it is known that the meaning of innovation has extended and longer is limited with Research and Development laboratories with educational publications. Instead, business model and social innovations are increasingly highlighted recently. A motivation of the Global Innovation Index (GII) has been to optimize the amount of various country economies further.

This is still a difficulty because gaining well-timed and relevant tools on a global base is generally not so easy. Different kinds of official statistical numbers from international organizations like Scientific and Cultural Organization (UNESCO), the International Telecommunications Union (ITU), the United Nations Educational and the World Bank, were studied. In conclusion, joining different results into an easy measure of innovation for an economy with statistical and further complications, particularly when considering economies which differ in size, population, and phase of economic advancement.

The specific directions of Azerbaijani innovation policy to increase Azerbaijani position in the ranking list have been identified:

- The foundation of legislative base of the system
- The foundation of technical base of the system
- The increase of intellectual potential of regions, organizations and scientific institutions
- The strengthening of intellectual creativity and activity of scientists, researchers, and engineers.
- The significance of private sector contribution to technological innovations

- The foundation of industrial, agro-industrial complexes, free economic zones, and organizations in service sector on the basis of modern innovative technologies.
- The increase of number conferences, symposiums, expeditions, and other events related to innovation process in economic activities
- The usage of international experience, especially the experience of developed western countries in the formation of innovative improvement model of Azerbaijani economy.

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