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MANAGEMENT OF INNOVATION IN AZERBAIJAN: RELATIONSHIPS WITH COMPETITIVENESS AND SUSTAINABLE DEVELOPMENT

Abstract. *The COVID-19 pandemic, negatively affecting the achievement of most of the Sustainable Development Goals, is leading to a significant crisis, especially in less developed economies, and poses serious challenges to governments around the world. Negative annual GDP growth per capita in Azerbaijan in 2020 amounted to -4.95% (below the world average of 0.56%), necessitating the resumption of short-term economic growth and achieving long-term competitiveness, sustainable development, and inclusive economy. Azerbaijan's positions in these areas, namely 58th place out of 141 countries in the global competitiveness ranking (63rd place for innovation potential and 73rd place for ICT implementation), 55th place out of 165 countries in the Sustainable Development Index, 80th place out of 131 countries according to the Global Innovation Index testify to the important role of innovation management in Azerbaijan. The article's main purpose is to study the relationship between innovation development, competitiveness, and sustainable development of the country. To empirically confirm the hypotheses, a sample of 9 countries (Azerbaijan, Georgia, Armenia, Germany, France, Finland, Estonia, Poland, Czech Republic) was formed. Several indicators were analysed based on data from the statistical department of the United Nations Department of Economic and Social Affairs, the World Bank, the World Economic Forum, and the World Intellectual Property Organization from 2010 to 2020. Statistical analysis of indicators of sustainable development, competitiveness, and innovative development of the studied countries. With the help of correlation-regression analysis and the Granger test (using the STATA software package), the mutual directions of influence of indicators of innovative development, the competitiveness of the country, and sustainable development in Azerbaijan and other sample countries were established. A regression model with random effects was built. The impact of the parameters of innovative development on the annual GDP growth per capita as a key component of the country's competitiveness and its sustainable development was formalized and assessed. The obtained results could be useful in developing measures to increase competitiveness and achieve sustainable development goals in Azerbaijan and further research.*

Keywords: innovations, sustainability, competitiveness, development, global ranking, causality, analysis, relationships, Granger test, modelling.

Introduction. The current stage of development of world transformational economies is associated with the need to implement the concept of multitasking in achieving the state's strategic goals. Thus, international competitiveness remains the most important and comprehensive goal in the work of national governments. Its provision is primarily related to the country's economic power growth. At the same time, for more than a decade, researchers, managers, and practitioners focused their attention on implementing the concept of sustainable development. In particular, among the strategic goals of the countries, there is a gradual shift of emphasis from direct provision of economic power and competitiveness to improving the quality of life, maintaining a balance between economic and social development, and adhering to certain environmental standards to achieve long-term balance and growth (Rajnoha, Lesníková & Vahančík, 2021). One of the latest events that once again accentuated the concept of sustainable development was the Covid-Pandemic 2019. The peculiarities of its course and consequences have shown the need for transformation in various socially important areas, especially in health care and education (Us et al., 2020;

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Kyrychenko et al., 2021). Moreover, Antonyuk et al. (2021) proved that the impact of the pandemic had determined changes in the implementation of the concept of sustainable development in all types of business without exception. It confirmed the relevance of introducing innovative management, technology, science, and more approaches. It is the development and implementation of innovations that enable businesses to gain new competitive advantages and maintain previously acquired market positions. The central role of innovative approaches in ensuring competitiveness at the level of individual enterprises and the entire countries has been repeatedly proven in theoretical and empirical research (Tóth et al., 2020). At the same time, current changes in the system of the world and national economies indicate the urgency of expanding the analysed links and their consideration within the chain of «innovation – competitiveness – sustainable development». It necessitated the study of the complex relationships that arise within this chain to determine their mutual influence.

Literature Review. The issue of sustainable development is multifaceted. On the one hand, the maintenance of environmental and social components is traditionally associated with the diversion of resources that ensure economic development, focusing on creating new technological processes and limiting environmentally depleting economic activities. On the other hand, the sustainable development paradigm creates new opportunities for business activities, establishes new cooperative ties, and increases economic processes' efficiency. Thus, in particular, the sharing and collective economy could significantly increase the level of aggregate organizational benefits, make the most efficient use of resources and minimize the level of production losses (Yiu et al., 2020; Nuriyev, 2017). Kowo et al. (2019) emphasized that the well-built organizational basis of the cooperative economy is the key to improving the efficiency of its operation and achieving progress in sustainable development. Androniceanu et al. (2021) determined that the circular economy is one of the most effective ways to ensure sustainable development. Several macroeconomic and regulatory prerequisites determine its functioning.

The sustainable development concept must be now spreading as an ideology at the state level and as a new paradigm of corporate development. Thus, in particular, increasing corporate social and environmental responsibility is seen as a tool to increase the firm's competitiveness in the long run and increase its resilience to internal and external risks (Taliento & Netti, 2020). In the era of Industry 4.0, there is a transformation of corporate interests from resource to stakeholder approach, complementing the company's financial targets with social and environmental. It causes significant transformations in corporate governance, strategic orientation, and public reporting of enterprises (Suarez & Vargas, 2021). At the same time, it is essential that at the present stage, not only are financial targets complemented by sustainable development parameters, but their strong integration is taking place. It characterizes financial institutions' activities and general approaches to financial management (El Amri et al., 2020; Khadidja & Gachi, 2021; Ibrahimov, 2018; Atashov et al., 2014).Thus, social and environmentally oriented projects req uire additional investment resources from corporations at the initial stage, limiting the ability to reinvest profits directly into the business. However, in the future, the effect achieved as a result of such projects would positively impact society and create additional value at the company level. For example, it has been proved that social entrepreneurship could significantly reduce unemployment. This type of business directly benefits the socially vulnerable population and social development in general (Zainea et al., 2020).

According to Zeynalli (2021), in the context of popularizing the concept of sustainable development, human capital management is gaining new importance because it is the developed human capital that is the key resource of innovative development, without which the sustainability strategy could not be implemented. It requires applying several innovative approaches to its learning and development. At the same time, human development, resource efficiency, and public administration are currently seen as interrelated processes that are mutually reinforcing and could not be provided in isolation (Naomi & Akbar, 2021). Moreover, Koziuk et al. (2019) proved that the intensity of environmental regulation significantly

enhances the country's global competitiveness. It points to the fact that national economies must develop comprehensively in modern conditions, given the possibility of mutual strengthening of individual areas.

At the same time, the most effective enhancers of sustainable development must be different in each country. Thus, the transition to sustainable development could be facilitated by financial preconditions such as the accumulation of capital and the openness of its movement, the intensification of trade, and the quality of political governance (Yakubu et al., 2019). It is important that in the context of climate change and the transition to sustainable development, governance mechanisms could be developed both to adapt existing methods and approaches to new challenges of the global environment and create new ones. In particular, ways to maximize efficiency remain important, which are currently used not only as an opportunity to save the company's internal resources but also as a tool to reduce environmental impact (Niñerola et al., 2020). At the same time, at the corporate level, the source of competitiveness growth has always been investing in innovation. The innovative approach changes the company's philosophy, making it more resistant to environmental variability (Lewandowska, 2021). It is essential that in the conditions of implementation of the concept of sustainable development, it is innovation-oriented companies that would be more favourable to external challenges and able to ensure competitiveness in new conditions. The research results have shown that companies with sustainable competitive advantages can obtain the most successful market position at the present stage, including marketing and technological resources and marketing and innovation competencies (Lee & Yoo, 2021). Exploring innovative development features in the South Caucasus, Niftiyev et al. (2021) noted a significant lag in Azerbaijan compared to its closest neighbours. Compared to more developed European countries, it could be noted that the lack of concepts of innovative economy poses significant threats in terms of difficulties in implementing the concept of sustainable development and in the context of long-term competitiveness. It is essential given the raw material orientation of Azerbaijan's economy and the current transition trend to environmentally friendly economies, and the use of energy from renewable sources.

Methodology and research methods. The study consists of two parts. The first part of the calculations is devoted to identifying the causal links in the chain "innovation - competitiveness - sustainable development". The following parameters were selected as statistical indicators for measuring the components of this index:

– Global Innovation Index, developed by the World Intellectual Property Organization and calculated for most countries since 2007;

– Global Competitiveness Index, which is calculated according to the methodology of the World Economic Forum and published since 2000;

– Sustainable Development Index, calculated according to the methodology of J. Hickel (2020), contains results for the world during 1990-2019.

Given the different time ranges of available statistics on selected studies, the time period 2010–2020 (for the Sustainable Development Index until 2019) was chosen for the calculations. For considering the specifics of the development of the studied indicators in different types of economies, the study sample was built from 9 countries: the South Caucasus (Armenia, Georgia, Azerbaijan), which has a low level of innovation; developed European countries (Germany, France, Finland), which are highly competitive; Eastern European countries (Estonia, Poland, Czech Republic), which in recent years have shown significant progress in competitiveness and innovation. The calculations involve several stages:

1. Statistical analysis of the input data range.

2. Investigation of the causality between innovation, competitiveness, and sustainable development of the country using the Granger test.

3. Identification of the strength and direction of causal relationships that arise in the chain «innovation - competitiveness – sustainability» through correlation and regression analysis.

The second part of the calculations is devoted to identifying the features of the impact of innovation on the country's competitiveness. Five indicators of innovative development were selected for the analysis:

– patent applications by residents, number;
– research and development expenditure, % of GDP;
– researchers in R&D, per million people;
– scientific and technical journal articles;
– technical cooperation grants, BoP, current US$.

GDP per capita growth (annual %) was chosen as an indicator of the country's competitiveness, reflecting the most comprehensive changes in the country's development during the study period. The calculation period covers 2000-2020. It allows assessing the dynamic changes occurring in the studied parameters fully. The sample of the study is formed from nine countries listed above. The study is conducted as follows:

1. Selection of the specification of the panel regression model using the British-Pagan test.
2. Construction of a complex of one-factor panel regression dependencies.
3. Interpretation of the obtained results.

Results. Preliminary statistical analysis of the parameters that characterize the country's innovation, sustainable development, and competitiveness revealed certain communication patterns between them (Figure 1). The rating positions of the countries were chosen as indicators quantifying the studied characteristics (and a smaller value reflects the best result achieved by the country). Figure 1 shows the average values of rating positions for the entire study period in each studied country, which allows generalizing comparisons of existing patterns.

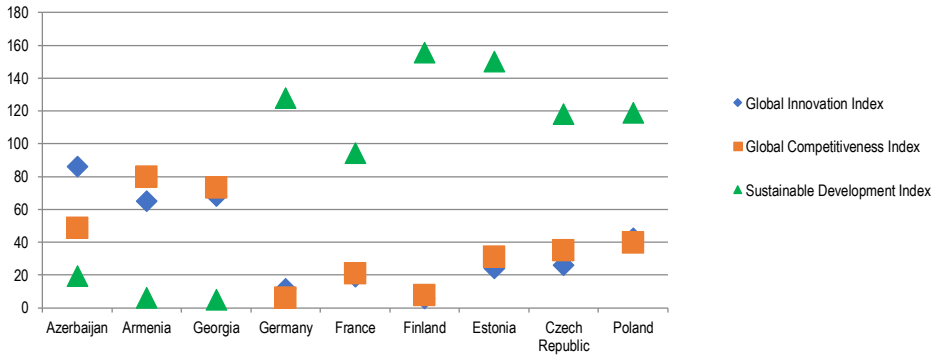

Figure 1. Average values of rating positions of 9 countries according to the Global Innovation Index, the Global Competitiveness Index, and the Sustainable Development Index

Source: developed by the authors.

However, the available time series have not shown sharp changes in the ranking positions of countries over the past 10 years, which generally indicates the representativeness of this approach to analysis. Thus, first of all, countries' positions on the Global Innovation Index and Global Competitiveness Index are quite close. Besides, the better the country's position in these areas is the closer the positions of its ratings on innovation and competitiveness. At the same time, it is essential that the positioning of countries on the Sustainable Development Index is inversely dependent on the two previous indices. Thus, countries like Georgia, Armenia, and Azerbaijan show better ranking positions in the Sustainable Development Index than competitiveness and innovation. At the same time, more economically developed countries, by contrast, lag significantly behind the level of sustainable development compared to the other two studied

parameters. It points to the fact that until recently, the efforts of the world economy were focused primarily on achieving economic power, which included uncontrolled use of natural resources and human capital, which led to sharp imbalances, which would need to change management approaches and perceptions in society. At the same time, it is important for another group of countries not to lose the achieved positions of sustainable development while building their economic potential when formulating their development policy. Previous analysis showed certain innovation, competitiveness, and sustainability patterns in the country. At the same time, it is important to determine the level of interdependence of the studied indicators, which is of interest in predicting the achieved consequences when changing the level of one of the studied indicators. To this end, six hypotheses were put forward regarding interdependencies between pairs of studied indicators in the chain «innovation – competitiveness – sustainable development». Granger's causality test was used to confirm and refute the hypotheses on the presence of interdependencies between indicators. The calculations were performed using the Stata software package separately for each studied country. Table 1 presents the evaluation results.

Table 1. Results of causality analysis in the chain «innovation – competitiveness – sustainability» by Granger test

Country	Hypothesis tested					
	GCI→GII	SDI→GII	GII→GCI	SDI→GCI	GII→SDI	GCI→SDI
Azerbaijan	349.2***	1347.1***	1.9e+05***	1.2e+05***	117.47***	7.7436***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.021)
Armenia	57.696***	44.648***	198.59***	325.92***	8.3296**	28.736***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.016)	(0.000)
Georgia	160.15***	91.917***	114.62***	69.21***	3.3314	7.2348**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.189)	(0.027)
Germany	7.6566**	98.598***	65.851***	155.33***	0.946	0.858
	(0.022)	(0.000)	(0.000)	(0.000)	(0.623)	(0.651)
France	6644.5***	49398.0***	36.191***	17.405***	8.539**	2.1893
	(0.000)	(0.000)	(0.000)	(0.000)	(0.014)	(0.335)
Finland	55.651***	20.002***	1.7523	49.116***	114.95***	800.15***
	(0.000)	(0.000)	(0.416)	(0.000)	(0.000)	(0.000)
Estonia	10.162***	0.437	481.21***	274.71***	41.675***	12.941***
	(0.006)	(0.804)	(0.000)	(0.000)	(0.000)	(0.002)
Czech Republic	19.357***	6.242**	31.567***	5.1712*	245.81***	205.02***
	(0.000)	(0.044)	(0.000)	0.075	(0.000)	(0.000)
Poland	1.6508	301.64***	100.07***	552.04***	0.0854	2.955
	(0.438)	(0.000)	(0.000)	(0.000)	(0.958)	(0.228)

Notes: GCI – the indicator of competitiveness presented by the Global Competitiveness Index; GII – the indicator of innovations presented by the Global Innovation Index; the indicator of sustainable development presented by the Sustainable Development Index; *** – causality hypothesis is confirmed at the 99 % significance level; ** – causality hypothesis is confirmed at the 95 % significance level; * – causality hypothesis is confirmed at the 90 % significance level; values of Prob > chi2 presented in parentheses.

Source: authors' calculations.

Thus, the first pair of studied indicators, «Competitiveness – Innovation». The results showed that in 8 of the 9 countries studied, this relationship was significant, i.e., changes in the country's level of competitiveness are a source of change in the level of its innovation. The only exception was Poland, for which such a connection has not been confirmed. At the same time, the inverse relationship, i.e., the impact of innovation on the country's level of competitiveness, was also confirmed for 8 of the 9 countries studied. However, in this case, the exception was Finland, for which the study was insignificant. The next

pair of «Sustainable Development – Innovation» indicators were also closely interrelated in most countries. At the same time, certain exceptions were also characteristic. In particular, sustainable development progress does not lead to a change in the level of innovation in Estonia, and innovation shifts have not been a determinant of sustainable development in Georgia, Germany, and Poland. The last pair of studied indicators, «Sustainable Development – Competitiveness», also showed quite interesting results. Thus, the progress of sustainable development has been a source of change in competitiveness for all but the countries. At the same time, the opposite effects are observed in only 6 of the 9 analyzed countries (exceptions are Germany, France, and Poland).

It is important that Azerbaijan has close ties in the chain of "innovation - competitiveness - sustainable development". It indicates that effective innovation management could significantly increase the country's competitiveness and progress in sustainable development. It determines the need to build a successful organizational basis for the development and implementation of innovations and their focus on ensuring harmonious and balanced development of the national economy.

Note that the peculiarity of the Granger test is the analysis only of the causality of the studied indicators, while the strength and direction of the relationship remain open questions. This study performed a correlation-regression analysis on panel data for determining these parameters (Table 2). As expected, the calculations confirmed the existence of a direct link between innovation and competitiveness, which is two-way, indicating the mutually reinforcing role of these parameters. At the same time, the dependence of competitiveness and innovation on the level of sustainable development has been reversed. It indicates that in the current conditions of strategic development of the world economy, the development and implementation of innovations should be carried out very carefully, which will achieve a positive effect rather than worsen the level of sustainable development.

Table 2. Results of correlation and regression analysis of the relationships in the chain «innovation – competitiveness – sustainability»

The pair of analysed indicators	Correlation coefficient	Regression equations	Significance
Global Innovation Index ↔ Global Competitiveness Index	0.7992	GII = 0.183GCI + 31.782	3.81* (0.0510)
		GCI = 0.256GII + 28.056	6.12* (0.0133)
Global Innovation Index ↔ Sustainable Development Index	-0.8739	GII = -0.291SDI + 64.792	24.48*** (0.0000)
		SDI = -0.454GII + 106.147	9.87** (0.0017)
Sustainable Development Index ↔ Global Competitiveness Index	-0.8196	SDI = -0.281GCI + 98.983	3.98** (0.0462)
		GCI = -0.234SDI + 58.369	13.46*** (0.0002)

Notes: GCI – the indicator of competitiveness presented by the Global Competitiveness Index; GII – the indicator of innovations presented by the Global Innovation Index; the indicator of sustainable development presented by the Sustainable Development Index; *** – statistical significance at the 99 % (Wald criterion); ** – statistical significance at the 95 %; * – statistical significance at the 90 %; values of Prob > chi2 presented in parentheses.

Source: authors' calculations.

The identified patterns necessitated the study of the parameters of innovative development, which can be a source of competitiveness and sustainable development of the country. Therefore, the first parameter of potential impact may be the number of filed patent applications (Table 3). The results revealed a statistically significant impact, which is positive, despite the low quantitative level.

Table 3. Results of the assessment of the impact of patent applications on the country's competitiveness and development for 2000–2020

Variable	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Patent applications	0.000	0.000	-1.66	0.096	0.000	0.000	*
Constant	4.443	0.822	5.41	0.000	2.833	6.053	***
Adequacy criteria							
Mean dependent var		3.796	SD dependent var			5.286	
Overall r-squared		0.054	Number of obs			178.000	
Chi-square		2.769	Prob > chi2			0.096	
R-squared within		0.000	R-squared between			0.289	

Notes: *** – statistical significance at the 99 % (Wald criterion); ** – statistical significance at the 95 %; * – statistical significance at the 90 %.

Source: authors' calculations.

The next of the studied indicators is the level of research and development expenditures (Table 4). They showed an inverse relationship with the performance indicator, which is quite natural in the first years of innovation, as it diverts funds from other sources of the national economy and can only lead to positive results over a period of time.

Table 4. Results of the assessment of the impact of expenditures on the R&D sector on the country's competitiveness and development for 2000–2020

Variable	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
R & D expenditures	-2.078	0.355	-5.86	0.000	-2.773	-1.382	***
Constant	6.727	0.632	10.65	0.000	5.489	7.966	***
Adequacy criteria							
Mean dependent var		3.796	SD dependent var			5.418	
Overall r-squared		0.175	Number of obs			164.000	
Chi-square		34.278	Prob > chi2			0.000	
R-squared within		0.018	R-squared between			0.816	

Notes: *** – statistical significance at the 99 % (Wald criterion); ** – statistical significance at the 95 %; * – statistical significance at the 90 %.

Source: authors' calculations.

Interestingly, the inverse relationship was also found with the indicator of the number of researchers working in research and development (Table 5). In our opinion, this connection is explained by the expenditure of additional financial resources for researchers, which will allow obtaining certain results of their activities only after a long period. In some cases, it may not lead to a positive result at all, given the specifics of the research field.

The next studied indicators were the number of scientific publications containing research results. Table 6 indicates the presence of direct dependence - the growth of publishing activity is a source of competitiveness and development for the country. It may be evidence that the publication of certain results already has positive changes in research activity, which are implemented in practice and bring positive results for the state. In addition, publishing activity and patents are evidence of the growing scale of research work and its quality, which has a positive impact on the country's overall development.

The last studied indicator is the number of cooperation grants received by the state (Table 7). It is quite natural that the studied relationship turned out to be positive, as direct support from the state from

abroad usually involves investing these funds in the most progressive growth areas of the national economy.

Table 5. Results of the assessment of the impact of the number of researchers in R&D sector on the country's competitiveness and development for 2000–2020

Variable	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Researchers in R & D	-0.001	0.000	-3.11	0.002	-0.001	0.000	***
Constant	4.724	0.816	5.79	0.000	3.124	6.323	***
Adequacy criteria							
Mean dependent var		2.482	SD dependent var			3.396	
Overall r-squared		0.111	Number of obs			116.000	
Chi-square		9.698	Prob > chi2			0.002	
R-squared within		0.027	R-squared between			0.584	

Notes: *** – statistical significance at the 99 % (Wald criterion); ** – statistical significance at the 95 %; * – statistical significance at the 90 %.

Source: authors' calculations.

Table 6. Results of the assessment of the impact of scientific publications on the country's competitiveness and development for 2000–2020

Variable	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Scientific articles	0.000	0.000	-2.48	0.013	0.000	0.000	**
Constant	5.037	0.804	6.27	0.000	3.462	6.612	***
Adequacy criteria							
Mean dependent var		3.907	SD dependent var			5.421	
Overall r-squared		0.093	Number of obs			171.000	
Chi-square		6.165	Prob > chi2			0.013	
R-squared within		0.001	R-squared between			0.470	

Notes: *** – statistical significance at the 99 % (Wald criterion); ** – statistical significance at the 95 %; * – statistical significance at the 90 %.

Source: authors' calculations.

Table 7. Results of the assessment of the impact of technical cooperation grants on the country's competitiveness and development for 2000–2020

Variable	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Technical cooperation grants	0.000	0.000	2.22	0.026	0.000	0.000	**
Constant	3.472	1.514	2.29	0.022	0.505	6.440	**
Adequacy criteria							
Mean dependent var		6.426	SD dependent var			6.441	
Overall r-squared		0.063	Number of obs			75.000	
Chi-square		4.936	Prob > chi2			0.026	
R-squared within		0.235	R-squared between			0.152	

Notes: *** – statistical significance at the 99 % (Wald criterion); ** – statistical significance at the 95 %; * – statistical significance at the 90 %.

Source: authors' calculations.

Conclusions and directions of further research. The study showed a shift in emphasis in the development of states to ensure competitiveness (mostly economic) to achieve a balance of sustainable development. It has highlighted the need to change approaches to public administration and the use of other instruments to develop the national economy, among which, however, the most significant are innovations. The analysis of the relationships in the chain "innovation - competitiveness - sustainable development" showed a significant level of their interdependence. At the same time, it is important that in the current system of world economic relations, ensuring sustainable development is usually associated with the loss of competitiveness in its traditional sense. It requires completely different approaches to the country's innovative development. The study of some parameters of innovative development of the country on its competitiveness and sustainable development showed the following patterns: 1) parameters of intellectual protection of innovation (publication of articles, obtaining patents) can improve the position of the state; 2) the increase in spending on the research industry, as well as the growth in the number of researchers due to the deterioration of the country's position, which may be evidence of delayed influence; 3) direct support for technical cooperation can weaken the position of the state in the short term.

The results obtained indicate the prospects for further research. Thus, analysing the delayed impact of innovation on the country's competitiveness and sustainable development and identifying the period of achieving a positive effect is of scientific interest. It is also interesting to study the communication channels between the country's competitiveness and its sustainable development to determine the possibility of balanced development of the country without losing its competitiveness. Also of practical importance is the study of tools for state support for the development and implementation of innovations in sustainable development.

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Менеджмент інновацій в Азербайджані: взаємозв'язок з конкурентоспроможністю та сталим розвитком

Пандемія COVID-19 негативно впливає на досягнення більшості Цілей сталого розвитку, що призводить до суттєвої кризи, особливо відчутної в країнах з менш розвиненою економікою. Таким чином, перед урядами країн світу постають серйозні завдання. Негативний річний приріст ВВП на душу населення в Азербайджані за 2020 рік склав -4,95% (нижче за середньосвітовий показник на 0,56%). Це зумовлює необхідність не тільки відновлення короткострокового економічного зростання, а й досягнення довгострокової конкурентоспроможності, сталого розвитку та інклюзивної економіки. У статті зазначено, що Азербайджан займає 58 місце зі 141 у рейтингу глобальної конкурентоспроможності (при цьому 63 місце за інноваційним потенціалом та 73 місце за впровадження ІКТ); 55 місце зі 165 за Індексом сталого розвитку; 80 місце зі 131 у Глобальному інноваційному індексі, що свідчить про важливу роль менеджменту інновацій в Азербайджані. Основною метою статті є дослідження взаємозв'язків між інноваційним розвитком, конкурентоспроможністю та сталим розвитком країни. Для емпіричного підтвердження висунутих гіпотез була сформована вибірка з 9 країн світу (Азербайджан, Грузія, Вірменія, Німеччина, Франція, Фінляндія, Естонія, Польща, Чехія). Автором проведено аналіз низки показників, ґрунтуючись на даних статистичного відділу Департаменту з економічних та соціальних питань Організації Об'єднаних Націй, Світового банку, Світового економічного форуму та Світового організації інтелектуальної власності за період із 2010 по 2020 рр. У роботі проведено статистичний аналіз індикаторів сталого розвитку, конкурентоспроможності та інноваційного розвитку досліджуваних країн. За допомогою кореляційно-регресійного аналізу та тесту Грейнджера (з використанням програмного пакету STATA) встановлено взаємні напрямки впливу показників інноваційного розвитку, конкурентоспроможності країни та її сталого розвитку в Азербайджані та інших країнах вибірки. Побудовано регресійну модель з випадковими ефектами, формалізовано та оцінено вплив параметрів інноваційного розвитку на річний приріст ВВП на душу населення як ключову складову конкурентоспроможності країни та її сталого розвитку. Отримані результати можуть бути корисними при розробці заходів щодо підвищення конкурентоспроможності та досягнення цілей сталого розвитку в Азербайджані, а також у подальших дослідженнях.

Ключові слова: інновації, стійкість, конкурентоспроможність, розвиток, глобальне рейтингування, причинно-наслідкові зв'язки, аналіз, взаємозв'язки, тест Грейнджера, моделювання.