

**REPUBLIC OF AZERBAIJAN**

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**ABSTRACT**

of the dissertation for the degree of Doctor of Philosophy

**PROSPECTS FOR THE APPLICATION OF  
INNOVATIONS IN ENSURING THE COMPETITIVENESS  
OF ECONOMIC ENTITIES**

Speciality: 5308.01 – General economy

Field of science: Economic sciences

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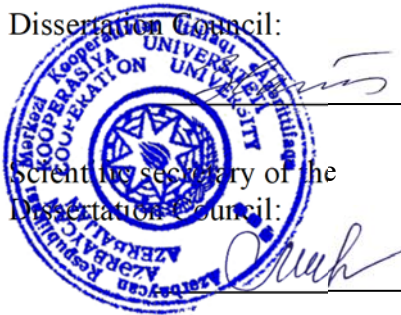
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## GENERAL CHARACTERISTICS OF THE WORK

**Relevance and degree of development of the topic.** In the conditions of fluctuations in the world economy, the competitiveness of various economic sectors and entities is determined mainly by the achievements of scientific and technical progress, which manifest themselves in new technologies, fields of science and forms of organization of production. In this regard, competitive advantages are one of the most important factors for ensuring competitiveness and economic growth based on the innovative potential of the economic system. Currently, the orientation of the economy towards the path of innovative development is considered an important strategy for ensuring the competitiveness of economic entities in the long term. Strengthening innovative potential, improving the mechanisms for the development and application of innovations allow ensuring the efficiency of the structure of the economy, its sustainability and stability. Therefore, there is a constant need to form innovation systems and identify resources to strengthen the innovative potential of the economy and its individual sectors.

In general, in the modern era of the integration of the Azerbaijani economy into the world community, innovation activity has a unique role as the basis for increasing the competitiveness of economic entities. In such conditions, it is extremely important to effectively use innovations throughout the entire production cycle. The formation of innovative relations in the economy is directly related to the transformation of the institutional environment. Innovative and technological development can be implemented with large-scale state support. Innovation activity is becoming a real strategic resource for the competitiveness of economic entities as one of the main factors ensuring the growth of the competitiveness of the economy and increasing the competitive advantages of its sectors. One of the 5 directions of “Azerbaijan 2030: National Priorities for Socio-Economic Development” is the formation of a *“sustainably growing competitive economy”*.<sup>1</sup>

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<sup>1</sup> “Azerbaijan 2030: National Priorities for Socio-Economic Development.” Decree of the President of the Republic of Azerbaijan dated February 2, 2021.

The "Socio-Economic Development Strategy of the Republic of Azerbaijan for 2022–2026" defines a *"strategic framework for a sustainably growing competitive economy"* and reflects the issues of *"preventing the negative effects of monopoly entities on competition and strengthening competition in all markets"* by implementing *"expanding the possibilities of applying digital technologies"*.<sup>2</sup>

In modern conditions, the development of innovative activity plays a major role in the formation of an efficient institutional environment, contributing to the increase in the competitive advantages of the economy and its subjects. An efficient institutional environment implies mechanisms that serve the development of economic processes, as well as strengthening the interaction of areas of activity and subjects. A number of features of the institutional system necessitate the creation of new institutions that stimulate the innovative development of the economy and have a direct impact on increasing its competitiveness. In this regard, the development of competitive areas through the creation of innovations is naturally based on the effectiveness of scientific activity. The entry of fundamental science fields into the global space imposes a number of tasks on the state in the direction of the modernization and diversification of the economy and the development of competitive areas. As stated in the Law of the Republic of Azerbaijan "On Science", *"the state creates equal conditions for all enterprises and organizations carrying out scientific innovation activities and stimulates their activities"*, the state *"participates in the creation of competitive, high-tech production areas, ensuring guaranteed sales markets and encouraging and supporting their access to foreign markets"*.<sup>3</sup>

From the above, it is clear that the stimulation of innovations ultimately has a positive effect on increasing the competitiveness of the economy, as well as strengthening the competitiveness of subjects. In general, the competitiveness of the economy can be perceived as the ability of each economic activity sector to respond sensitively to

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<sup>2</sup> "Socio-economic development strategy of the Republic of Azerbaijan for 2022–2026". Decree of the President of the Republic of Azerbaijan dated June 22, 2022.

<sup>3</sup> Law of the Republic of Azerbaijan "On Science". June 14, 2016.

changes in internal and external conditions. The competitiveness of the economy largely depends on the level of competitiveness of subjects based on science and innovation. It takes into account the influence of internal and external factors on the activities of economic subjects and their adaptation to the competitive environment. This feature of competitiveness includes the ability of subjects to compensate for lost competitive advantages, and its most important component is considered to be innovation ability. Thus, the mutual study of innovation activity, the competitiveness of the economy and the competitiveness of subjects is of particular relevance, taking into account the structural aspect of competition. This gives grounds to say that the assessment of the impact of innovative activity on increasing competitive advantages is of high scientific and practical importance and determines the relevance of the dissertation topic.

Among the republican economists who deal with the problems of applying innovations in ensuring the competitiveness of economic entities, the following can be noted: Z.A.Samadzade, E.A.Guliyev, B.Kh. Atashov, A.F.Musayev, A.D.Huseynova, I.H.Ibrahimov, P.A.Hasanova, R.A.Balayev, A.E.Guliyeva, E.A.Ibrahimov, T.N.Aliyev, A.F.Abbasov, M.M.Huseynov, M.J.Huseynov, S.I.Valiyeva, N.J.Gafarov, E.B.Mammadova, G.N.Manafov, I.H.Salimov, A.H.Tagiyev, S.A.Rahimov F.H.Gasimov, Z.M.Najafov and others.

The economic aspects of the problem of the development of innovation activity and its impact on increasing the competitiveness of the economy have also been the focus of attention of many world economists. The theoretical and methodological foundations of innovation activity and its relationship with increasing the competitive advantages of the economic system have been extensively studied by A. Marshall, A. Smith, E. Minko, M. Porter, P. Samuelson, F. Hayek, Y. Schumpeter, V. Obremchuk, Y. Rubin, A. Gudzinski, N. Abayeva, I. Dyukov, R. Fatkhutdinov and others.

At the same time, it should be noted that despite the great attention paid by domestic and foreign scientists to the problems of the influence of innovative relations on the formation of competitive advantages of the economic system, certain issues related to strengthening the competitiveness of economic entities have not been

sufficiently studied. Also, the identification of the main directions of interaction between innovation activity and the competitiveness of entities has been studied to a limited extent.

**Object and subject of the study.** The research object of the dissertation work is the sectors of the Azerbaijani economy and the entities operating in these sectors. The subject of the research is economic relations, regularities, connections and dependencies related to ensuring the competitiveness of economic entities and the application of innovations.

**The purpose and tasks of the study.** The purpose of the study is to summarize the theoretical and methodological aspects of assessing the competitiveness of economic entities, identify the main determinants of the competitiveness of economic entities, analyze the level of development and competitiveness, identify directions for increasing their competitiveness, the prospects for applying innovations in this process, and prepare proposals and recommendations in this regard. In accordance with the goals, the following tasks have been identified:

- research of scientific provisions on competitiveness and competitiveness;
- interpretation of the main determinants of the competitiveness of economic entities and the factors affecting it;
- characterization of methods for assessing the level of competitiveness of economic entities;
- determination of the role of innovations in ensuring the competitiveness of economic entities;
- investigation of the level of development of economic entities in the Republic of Azerbaijan and indicators of competitiveness;
- analysis and assessment of the state of use of innovations in the activities of economic entities in Azerbaijan;
- identification of directions for increasing the competitiveness of economic entities in Azerbaijan and opportunities for using innovations;
- directions for providing state support to competitive economic entities.

**Research methods.** In the dissertation work, methods of analysis, grouping, analytical analysis, economic-statistical, economic-mathematical, and comparative analysis were used to analyze the main economic indicators, as well as to evaluate the factors affecting these indicators.

**The main provisions put forward for defense.** The main provisions put forward for defense are as follows:

- There is a need to generalize scientific-theoretical views and conceptual provisions related to the concepts of competitiveness and competitiveness;
- It is necessary to substantiate the impact of the main determinants of competitiveness on the activities of economic entities;
- Substantiation of the role of innovations in the competitiveness of economic entities based on methods for assessing the level of competitiveness is the need of the day;
- Assessment of competitiveness indicators and the results of factors affecting them based on the analysis of the activities of economic entities is of particular importance from a practical point of view;
- It is necessary to assess the impact of the use of innovations on the activities of economic entities;
- There is a need to coordinate the forecasting of the main indicators of economic entities with the directions for increasing competitiveness;
- It is important to substantiate the priorities for the use of innovations in increasing the competitiveness of economic entities based on the assessment of factors affecting innovations;
- Substantiating the main directions of state support measures aimed at increasing the competitiveness of economic entities is currently one of the most pressing issues.

**The scientific novelty of the study.** The scientific novelty of the research is characterized by the following:

- ✓ Based on a comparative assessment of conceptual approaches to the concepts of competitiveness and competitiveness sustainability, theoretical and methodological provisions

characterizing the content of these indicators have been systematized;

- ✓ The need for the application of innovations in ensuring competitiveness has been substantiated by assessing the impact of the main determinants of competitiveness on the activities of economic entities;
- ✓ The results of the quantitative impact of the factors that form competitiveness indicators, including the use of innovations on the activities of economic entities, have been determined using economic-mathematical methods, and the dependence between these factors and the activities of the entities has been determined;
- ✓ Based on the comparison and forecasting of the main indicators of economic entities operating in various spheres, the directions for increasing competitiveness have been determined and justified;
- ✓ Existing reserves and priorities for the use of innovations in increasing the competitiveness of economic entities have been identified;
- ✓ The main directions of state support measures for competitive economic entities have been studied using international experience.

**Theoretical and practical significance of the research.** The theoretical significance of the results obtained in the research work is reflected in the generalization of scientific approaches to the use of innovations in ensuring the competitiveness of economic entities and the modernization of the state support mechanism, as well as scientific aspects related to the main determinants of competitiveness and the methodology for assessing the level of competitiveness. The main scientific provisions and results of the research work can serve as a theoretical and methodological basis for studies on ensuring the competitiveness of entities operating in various economic spheres, as well as the use of innovations in this process.

The practical significance of the dissertation work is confirmed by the preparation of conclusions and recommendations and the formation of opportunities for practical use of individual provisions of

scientific concepts related to the use of innovations in ensuring the competitiveness of economic entities and state support in this direction. The proposals put forward can be used in the formation of competitive economic entities and the improvement of their operating mechanisms.

**Approval and application.** The main scientific and theoretical provisions, results and proposals of the dissertation were reflected in 6 articles (3 of which are abroad) and 4 theses (1 of which are abroad) published in reputable journals and conference materials recommended by the Higher Attestation Commission under the President of the Republic of Azerbaijan. Among the conference materials, the following theses can be cited: “Priorities of state support for competitive economic entities” (Baku, 2023), “The role of advanced technologies in ensuring the competitiveness of enterprises” (Ganja, 2023), “Criteria for assessing the competitiveness potential of economic entities” (Moscow, 2024), “The Impact of Digitalization on the Sustainability of Companies' Competitive Advantage” (Ganja, 2023). During the research, the author also published the following articles: “Mechanism for ensuring the competitiveness of economic entities” (Ganja, 2021), “Features of the implementation of innovations in the competitive sustainability of economic entities” (Moscow 2022), “Competitiveness of economic entities, the need to improve it” (Baku, 2023), “Main parameters of the competitiveness of the banking sector in Azerbaijan and its dependence on innovations” (Baku, 2024), “Competition as a mechanism for ensuring the sustainability of economic entities” (Moscow, 2025), “Analysis and assessment of competitiveness of entrepreneurial structures in Azerbaijan” (Belgorod, 2025).

**Name of the organization where the dissertation was carried out.** Azerbaijan University of Technology.

**Total volume of the dissertation with a mark indicating the volume of the structural sections separately.** The dissertation consists of an introduction, three chapters, a conclusion, and a list of used literature. The total volume of the introduction (13527 characters), chapter I (69514 characters), chapter II (49891 characters), chapter III (61175 characters), a conclusion (7544

characters), and a list of used literature (21672 characters) is 239140 characters. The dissertation consists of 201651 characters, excluding tables, graphs, and a list of used literature.

## SUMMARY OF THE RESEARCH WORK

**The introductory part** of the dissertation work justifies the relevance of the topic, characterizes the goals and objectives of the research, and describes the main provisions put forward for defense, and reflects the scientific innovations, theoretical and practical significance, and approval of the work.

In the first chapter of the dissertation entitled "**Theoretical and methodological foundations of assessing the competitiveness of economic entities**", the essence of the concepts of competitiveness and competitiveness sustainability is examined in a comparative manner, the main determinants of the competitiveness of economic entities, methods for assessing the level of competitiveness of economic entities, and the role of innovations in ensuring the competitiveness of economic entities are commented on.

In macroeconomic policy, competitiveness and competitiveness sustainability are the basis for the effective activity of economic entities in the mechanism of market interaction based on comparative advantages. In modern conditions, entities are interested in maintaining competitiveness and forming their activities on the basis of competitiveness principles in order to resist competition with the threat of increasing competitive pressure. This determines the place and role of studying the essence of competitiveness and competitiveness sustainability mechanisms and comparative analysis of their main components in the activities of economic entities. In economic literature, the concept of competitiveness is interpreted in different directions depending on the nature of the object to which it refers: microcompetitiveness at the level of goods and enterprises, mesocompetitiveness at the level of individual sectors, macrocompetitiveness at the level of the country's economy.

The formation of competitive advantages has led to the emergence

of the concepts of competitiveness and competitiveness. Competitiveness is considered a special dynamic process of relations between one or similar producers for products or services. Competitiveness is mainly determined by two elements: the demand for products (services) or a mass of goods, characterizing the degree of satisfaction; the efficiency of production and management. As a rule, these elements are closely related to each other, and in most cases one determines the other.

Based on scientific approaches to competitiveness and competitiveness sustainability, it is possible to summarize the main factors, categories and indicators that shape competitiveness and competitiveness sustainability. This allows us to identify the main determinants of strengthening the competitiveness and competitiveness of economic entities.

In a market economy, the efficiency of the activities of entities and their economic development directly depend on the laws of competition, the state of realization of its forms and manifestations, and the degree to which entities are ready for competition. In this regard, it is considered one of the most important issues for economic entities to pay attention to the factors affecting the competitive environment and competitiveness. Competitiveness generally reflects the universal mechanism of competition and, as the main category of a market economy, is determined both at the product level and at the level of economic entities, sectors, individual regions and the country. The various levels of competition mentioned differ in their methods and indicators. In this regard, it is most important to determine which components of the economic system are characteristic of competitiveness, in which cases it is appropriate to take into account competitiveness, and which methods and means of solving problems related to the competitiveness of entities should be taken into account.

Competitiveness factors reflect the set of conditions to which it adapts and determine the feasibility and effectiveness of the adaptation process. This, in turn, is determined by the interaction of the main determinants of competitive advantages. Since the factors and determinants of the formation of long-term competitive advantages of economic entities are multifaceted, the assessment of the level of

competitiveness also attracts attention with its complexity. The assessment of competitiveness allows a specific entity to determine its differences from competitors in the development process by the degree to which its goods or services satisfy consumer demand, as well as the efficiency of production activities. The assessment of competitiveness is based on the calculation and analysis of a number of indicators characterizing the business activities of entities. In order to assess the competitiveness of the entity, it is necessary to select comparison objects, and these objects must have certain parameters for the reliability of the comparison.

In the conditions of modern technological development, the acquisition of competitive advantages by economic entities is becoming more relevant. Regardless of the scale of activity and market coverage, the competitiveness of entities, regardless of the achieved consensus, constantly emphasizes the expansion of the application of innovations. Therefore, one of the main tasks of the state's economic policy is the preparation and continuous improvement of measures aimed at ensuring the innovative development of technologies used in various fields and manufactured products. Innovative development is the basis for economic growth and satisfying the population's demand for high-quality products and services. In this regard, the engagement of economic entities in innovative activities ensures their acquisition of competitive advantages, contributes to the strengthening and expansion of their positions, and creates the basis for increasing market share.

In the second chapter of the dissertation entitled "**Analysis of the level of development of economic activity areas and the competitiveness of entities**", an analysis of the level of development of economic activity areas is carried out, indicators of competitiveness of economic activity areas and entities, and factors affecting the use of innovations in the competitive activity of economic entities are evaluated.

The sustainable development of entities operating in various sectors of the economy directly depends on the interaction with stakeholders, the level of investment attraction in various production sectors, and the use of innovative technologies. Interaction with stakeholders

servicing stable development for entities in the fields of economic activity is a constant focus.

The progressive innovative development, accompanied by the transition of the economy to a high-tech development stage, is also manifested in the relevant indicators reflecting the activities of entities. In practice, the results of the activities of various entities are analyzed in a comparative manner with the results of financial and economic activities. Based on research, it can be said that the activities of economic entities require consideration of the mechanisms that support them. As a result, determining the relationship between the stability of the activities of any entity and its variability can be considered one of the main issues. Thus, it becomes necessary to take into account the influence of various factors within the framework of the study of the activities of economic entities. In this regard, the analysis of gross product by types of economic activity shows that in 2023, except for a 24.9 percent decrease in the provision of services in the mining industry, an increase was observed in other areas. Thus, during the comparable period, the gross agricultural product increased by 55.8 percent, the gross industrial product by 43.2 percent, the mining industry by 37.3 percent, the processing industry by 56.3 percent, the electricity, gas and steam production, distribution and supply industry by 56.1 percent, and the water supply, waste treatment and processing industry by 80.5 percent (Table 1).

İqtisadi subyektlər iqtisadiyyatın müxtəlif sferalarının daxilində formalaşmış makro və mikromühit sistemində fəaliyyət göstərdiyindən onların rəqabətə davamlılığı, bütövlükdə iqtisadiyyatın və onun sahələrinin rəqabət qabiliyyətindən asılı olur. Bu onunla əlaqəlidir ki, rəqabət qabiliyyəti, yüksək iqtisadi göstəricilərin əldə edilməsinin əsas şərtlərindəndir.

Appropriate methods for assessing the level of competitiveness require the implementation of effective organizational and economic measures to manage the competitiveness of entities. Taking into account the above, let's look at a comparative analysis of the competitiveness of business entities based on appropriate methodologies.

**Table 1**

**Value of gross product by types of economic activity in the Republic of Azerbaijan, at actual prices, million manats**

Indicators	2019	2020	2021	2022	2023	Compared to 2019, in 2023, in percent
Agriculture	7836,7	8428,9	9163,4	10984,2	12210,6	155.8
All industries	46999,2	37269,9	55229,1	86383,4	67296,0	143.2
Mining and quarrying	32857,5	22836,3	36222,4	64745,3	45117,5	137.3
Manufacturing	11793,8	11848,3	15887,0	18116,4	18431,2	156.3
Electricity, gas and steam generation, distribution and supply	2011,6	2253,2	2672,1	3016,3	3140,4	156.1
Water supply, waste treatment and	336,3	332,1	447,6	505,4	606,9	180.5

*Source: The table was compiled by the author based on data from the State Statistical Committee of the Republic of Azerbaijan*<sup>4</sup>

The efficiency of the activities of business entities is assessed as their ability to achieve the set goals and objectives by creating competitive advantages. In modern economic conditions, there is a direct relationship between the quantitative and qualitative criteria of efficiency and the competitiveness of business entities. In this context, based on the existing methodological approach to the construction of production functions, let us conduct a correlation-regression assessment of the factors affecting the competitive activities of business entities and their impact on the added value obtained as a result of their activities. It is known that the number of subjects and employees engaged in entrepreneurship, as well as the level of wages, significantly affect the added value obtained. Taking into account the above, it is possible to determine the impact of factors that play an important role in the

<sup>4</sup> <https://www.stat.gov.az/source/industry/az/009.xls>

formation of competitiveness on the volume of added value obtained from entrepreneurial activity. Based on the official data of the State Statistical Committee of the Republic of Azerbaijan for 2019-2023, we conducted a regression analysis of the added value created as a result of the activities of entrepreneurial subjects and the factors affecting it using the Gretl application package (table 2).

**Table 2**

**Dynamics of added value created as a result of the activities of entrepreneurial entities in Azerbaijan and indicators affecting it**

<b>Years</b>	<b>Added value created, million manat (Y)</b>	<b>Number of active business entities (X1)</b>	<b>Number of employees, thousand people (X2)</b>	<b>Average monthly nominal wage, man (X3)</b>
<b>2019</b>	11071.7	271304	332.2	531.0
<b>2020</b>	10941.0	316370	348.7	612.3
<b>2021</b>	13956.1	355906	357	632.2
<b>2022</b>	17170.4	377842	370	707.9
<b>2023</b>	20087.1	401149	390	765.8

*Source: Official data of the State Statistical Committee of the Republic of Azerbaijan<sup>5</sup>*

Let us consider the results obtained using the Gretl program and their interpretation. Since the free limits are  $a = -0.00373455$ ,  $b = 260.282$ ,  $c = -18.9737$ , and the dependent variable is  $d = -65330.5$ , we obtain a regression equation expressing the dependence of the added value created as a result of the activities of entrepreneurial entities in Azerbaijan on the number of operating entrepreneurial entities, the number of employees, and the average monthly nominal wage. Taking into account the results obtained, the linear functional dependence between the state budget revenues and the factors affecting them can be expressed by the following regression equation:

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<sup>5</sup> <https://www.stat.gov.az/>

$$Y = -65330.5 - 0.00373455X_1 + 260.282X_2 - 18.9737X_3 \quad R^2 = 0.919228$$

$$(t) (-0.7232) (-0.04074) (0.5902) (-0.1694) \quad DW = 2.420688$$

As can be seen, the coefficients of the independent variable and the dependent variable, which reflect the causal factors and the outcome factor, are significantly larger than their standard errors. This characterizes the statistical significance of the obtained model.

Based on the correlation dependence between the indicators included in Table 3, it can be concluded that a one-unit increase in the number of entrepreneurial entities operating in Azerbaijan and nominal wages over the studied period will lead to a decrease in the value added created by  $-0.00373455$  and  $-18.9737$  units, respectively, while a one-unit increase in the number of employees will lead to an increase in the value added created by 260,282 units.

**Table 3**

**Multivariate linear regression model**

Model 1: OLS, using observations 2019-2023 (T = 5)

Dependent variable: Y

	Coefficient	Std. Error	t-ratio	p-value
const	-65330.5	90334.9	-0.7232	0.6014
X1	-0.00373455	0.0916678	-0.04074	0.9741
X2	260.282	440.990	0.5902	0.6606
X3	-18.9737	111.997	-0.1694	0.8932

Mean dependent var	14645.26	S.D. dependent var	3967.265
Sum squared resid	5085153	S.E. of regression	2255.028
R-squared	0.919228	Adjusted R-squared	0.676911
F(3, 1)	3.793502	P-value(F)	0.356928
Log-likelihood	-41.67569	Akaike criterion	91.35137
Schwarz criterion	89.78913	Hannan-Quinn	87.15845
rho	-0.314252	Durbin-Watson	2.420688

Source: Calculated by the author using the Gretl program.

If we look at the calculations, we can see that there is a statistically significant relationship between the dependent variable and the independent variables. If there is no statistically significant

relationship, the main reason for this is that some variables affect the relationship of other variables. In the model, this problem is called heteroscedasticity (variation of variance). To solve this problem in the model, it is necessary to remove the weakly correlated variables from the model. We have shown the model we obtained as a result in Table 3. To determine the adequacy of this result, the statistical significance of the given coefficients should be checked. For this, the following hypothesis should be tested:

$$\begin{cases} H_0: \beta_n = 0 \\ H_A: \beta_n \neq 0 \end{cases}$$

Here:

H0 -null hypothesis;

HA-alternative hypothesis;

$\beta_n$ -independent variable in the model.

The null hypothesis confirms the idea that there is no relationship between the independent variable and the dependent variable. The alternative hypothesis is the opposite of the null hypothesis and confirms the idea that there is a relationship. That is, we remove the variables whose p-value is the furthest from 0.10 from the model. Because for these variables, the null hypothesis is confirmed. For variables in the model whose p-value is less than 0.10, the null hypothesis is rejected. That is, it means that there is a significant relationship between the dependent variable and the independent variables. These variables remain in the model.

Table 4 shows the results of the Breusch-Pagan test. Based on these results, the p-value is 0.59 and is greater than 0.10, so the null hypothesis is accepted. That is, there is no heteroscedasticity in this model. Since the significance F  $\sim$  0.356928, the regression model is valid based on the  $p < 0.05$  condition.

**Table 4**

**Breusch-Pagan test**

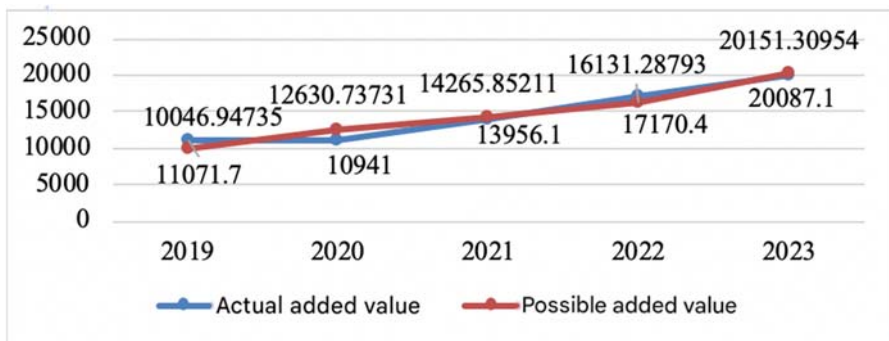
Breusch-Pagan test for heteroskedasticity  
 OLS, using observations 2019-2023 (T = 5)  
 Test statistic: LM = 1.870948,  
 with p-value = P(Chi-square(3) > 1.870948) = 0.599619

*Source: Calculated by the author using the Gretl program*

Since the correlation coefficient between the indicators for the studied period is  $r = \sqrt{R^2} = \sqrt{0.676911} = 0.8227$ , based on the Chaddock scale of  $r = 0.7-0.9$ , there is a high correlation between the added value created as a result of the activities of entrepreneurial entities in Azerbaijan, the number of employees and the average monthly nominal wage. According to the results of the Gretl program, the determination coefficient  $R^2 = 0.919228$  means that 91.9% of the variance of the corresponding regression equation is explained by the resulting indicator, and 8.1% is explained by the influence of other factors not included in the model. This indicates that the regression equation better expresses the initial data and that a larger part of the volume of state budget revenues is explained by the influence of the factors included in the model.

$$Y = -65330.5 - 0.00373455X_1 + 260.282X_2 - 18.9737X_3$$

Based on the obtained equation, let us determine the level of added value created as a result of the activities of business entities using a regression model (Figure 1).



**Chart 1. Actual and regression model level of added value created as a result of the activities of business entities, in million manats**

*Source: Calculated by the author using MS Office Excel based on official data from the State Statistical Committee of the Republic of Azerbaijan.*

As can be seen, the actual and regression model levels of created added value have changed in different directions over the years of the study. Thus, the amount of actually created added value outpaces the growth rate of the amount of added value that can be created under the

regression model in 2018, 2019, 2022 and 2023. The opposite situation, that is, the increase in the amount of added value obtained under the regression model compared to the amount of actual added value, occurs in 2020 and 2021. The main reason for this can be attributed to the spread of Coronavirus (Covid-19) in the world and in Azerbaijan in 2020 and 2021, and its negative impact on almost every sector of the economy.

As mentioned, the competitiveness of entities depends on a number of factors and is assessed using a number of criteria. In this regard, the competitiveness criterion can be considered as a qualitative and quantitative characteristic that is the basis for assessments. It is known that the qualitative factor significantly affects the competitive potential of business entities. However, there are certain difficulties in calculating it. Therefore, preference is given to mainly quantitative assessment of the competitiveness of business entities. The analysis of the factors used for the purpose of the study and the added value obtained from entrepreneurial activity showed that their dynamics continuously increased in 2019-2023. Thus, compared to 2019, the number of business entities increased by 47.9% in 2023, the number of employees engaged in entrepreneurial activity by 17.4%, the average monthly nominal wage by 44.2%, and the added value created by 81.4%.

Based on the assessment of the impact of the number of business entities, those engaged in entrepreneurial activity and the average monthly nominal wage on the created added value, it is found that the impact of these factors on the created added value is 91.9%, and 8.1% falls on other factors that are not taken into account. A comparison of the actual and regression model levels of the created added value as a result of the activities of business entities shows that there is no sharp difference between the actual and possible indicators. This highlights the need to use other available resources and reserves in order to increase the competitiveness of business entities.

In any case, the purpose of assessing competitiveness is important in terms of determining the position of entities in the markets. This is due to the fact that when solving the problem of competitiveness, competition between entities in a market economy takes the form of

product competition. Therefore, competitiveness in a certain product market directly determines the level of competitiveness of the entity. This confirms that the vast majority of entities that are more resistant to competition are represented in the market with competitive products. Naturally, it is practically impossible for entities that produce products that are not in demand among consumers to achieve successful results.

The main elements of innovation in the activities of economic entities include means of production, organizational development, technological processes, human potential, manufactured products, product quality, etc. Taking into account the above, in order to realize the innovative development of entities, it is important to give preference to new approaches in production and sales activities, in the distribution of financial and investment resources, and in the implementation of marketing policy. These should be based on important principles such as maintaining a balance between the interests of the consumer and the producer, ensuring that the innovative product meets the development requirements of both the market and the entity itself, and continuously implementing innovation activities.

The third chapter of the dissertation, entitled "**Directions for Increasing the Competitiveness of Economic Entities and Prospects for the Application of Innovations,**" reflects the directions for increasing the competitiveness of economic entities, the use of innovations in increasing the competitiveness of economic entities, and the priorities of state support for competitive economic entities.

Ensuring the competitiveness of the economy, its sectors and entities occupies one of the main places in the economic policy of the state. In this regard, creating a competitive advantage over competitors and ensuring the competitiveness of the economy are considered strategic directions of the state's economic activity. Increasing competitiveness is characteristic of all levels of its hierarchy - products, entities, sectors, regions and the country. It should be noted that increasing the competitiveness of entities as one of the main links of the economy is of particular importance. Considering that

competitiveness is primarily related to the production of competitive products, production capacity can be indicated as a determining factor in this direction. The production capacity of economic entities is the main condition for fulfilling the tasks of creating competitive products and ensuring their introduction to the market.

Increasing the sales volume of a product, work or service, which is one of the directions of increasing competitiveness, cannot produce the desired results in itself, because it is impossible to talk about positive results without taking into account important indicators such as the level of costs and the amount of profit in this process. Naturally, when organizing the production process and planning the volume of products, special attention is paid to determining the sales volume at a level that will ensure production activity. In fact, in competitive conditions, increasing profitability by increasing the efficiency of production acts as a priority goal of the subjects. In this context, the main factor of competitiveness in the long term is the use of innovative and technological changes in the organization of production.

The next factor in the direction of increasing the competitiveness of entities is the constant renewal of manufactured products, improvement of their structure, optimization and diversification of resources used in production. Competitiveness is associated with this conditional economy of scale of production. In order to realize this opportunity, it is important to pay special attention to increasing investments in innovative development by entities, reorganization of labor resources and concentration. The impact of the concentration of production on the efficiency of innovative development cannot be imagined separately from the impact of innovations themselves on production. In fact, in order to increase the competitiveness of entities, economic improvement of production is important.

Another important direction of increasing the competitiveness of entities is related to improving product quality. Improving product quality through the application of scientific and technological progress has a significant impact on the development of new markets and increasing export volumes. Product quality creates conditions for improving the image of entities among consumers, facilitating their access to foreign markets, and maximizing profits.

Cost reduction is considered one of the main elements of competitive advantage. The implementation of measures envisaged in this direction requires the improvement of production technologies, material and technical base, scientific and research activities, and personnel management.

Thus, competitiveness remains the main direction of the economic management system, ensuring the implementation of strategic goals of economic development of key sectors and entities at all stages.

Achieving sustainability in the development of the economy, its sectors and entities, as well as implementing structural changes and diversifying production, primarily involves issues of increasing the role of innovations in economic processes, their impact on the overall pace, directions and mechanisms of development of innovations. This is mainly manifested in the increase in investments in science, organizational and technological innovations, the dynamics of the development of high-tech production areas, the emergence of new types of activity.

The formation of a competitive and sustainable development model of economic activity areas and entities is considered one of the priorities of the state's economic policy. In this regard, the determination of a more optimal strategy is related to important issues such as natural and geographical conditions, the capacity of the domestic market, the level of qualification of employees in various fields of activity, the availability of natural resources, the intensity of foreign trade, and the participation of the state in the international division of labor.

Thus, achieving the required competitiveness of the economy and its sectors requires increasing the level of intensity of the scientific capacity of production, which ensures the efficiency of the competition mechanism in the domestic market. The following can be highlighted as directions for supporting the improvement of competitiveness based on the formation of the economy's self-sufficiency::

- Providing necessary support to supporting sectors of the economy and the selection of their areas of activity that can create the basis for ensuring stable economic growth;

- Increasing the efficiency of resource potential use;
- creating favorable conditions for the activities of economic entities, etc.

In modern economic conditions, the methods of state influence on the scientific and innovative activities of subjects are different. Among them, the intensification of scientific research and innovation activities and the application of their results to production, as well as the use of stimulating mechanisms for the dissemination of advanced techniques and technologies, play a leading role in the process of innovative development of the economy. Thus, the implementation of the above-mentioned directions for the development of the competitiveness of the economy can be considered the main conditions for stable economic growth.

## CONCLUSION

Ensuring the continuity of the processes of entities operating in various spheres of the economy and the study of the role of innovations in this process allow us to draw a number of general conclusions. First of all, it can be noted that the problems of active and innovative development of the economy, its sectors and entities require the search for new sources, the creation of justified mechanisms for using scientific potential. At the same time, the development of a strategy for increasing the continuity of the process of innovative renewal of the economy reveals the need to obtain the knowledge of science, new technologies, areas of knowledge capacity and the activities of entities. Therefore, currently, innovative activity in all areas and levels of socio-economic development is not only a stable development, but also a high-level economic sector and sustainability in their activities, ensuring the country's place in the world economy and its management. Based on the above, it can be noted the feasibility of plans to ensure the continuation of the economy, its spheres and entities, and to identify prospects for the application of innovations in the activities of business and activity entities:

1. The ability of the economy and its subjects to use scientific and technical innovations is the main feature of its innovative potential and

determines the main directions of innovative activity in the production process. In this regard, ensuring the use of modern innovative solutions, including the implementation of alternative innovative projects, expanding the scale of innovation dissemination, and implementing the application of the results of scientific, technical and technological innovations to production are the most important directions.

2. Expanding the use of innovative potential in the activities of economic entities directly depends on the competition strategy. This strategy determines the following directions based on the maximum use of economic potential: determining priorities for increasing the production of competitive products; ensuring the competitiveness of entities and forming an innovative development mechanism; developing the ability to implement the application of new technologies in production, efficient use of technological and intellectual potential, strengthening the scientific foundations of innovation process management, etc.

3. Against the background of the changes taking place in the world economy, the formation and efficient use of the innovative potential of the economy and its subjects has become one of the most important issues from a practical point of view. One of the main principles of the efficient use of resources and innovative potential is related to their role in the innovation process. Since resource potential combines elements such as personnel, technical-technological, information, organizational, financial components, it is necessary to develop and efficiently use resource components in the process of using the innovative potential of individual subjects and sectors of the economy as a whole.

4. One of the priority issues for the development of economic activities and their subjects is to increase their competitiveness by increasing the added value of manufactured products. In the case of business entities, calculations show that the creation of added value is formed under the influence of different factors (the dependence on factors such as the number of entities and employees, the level of wages is 91.9%). Therefore, the fulfillment of this task is possible through traditional and new approaches to innovation activity. The

traditional approach involves directing fundamental research to applied development, as well as production and commercialization. In fact, since innovations are based on the results of scientific and research activities, there is a need to involve highly qualified specialists at the initial stages of the innovation process. According to the modern approach, the results of fundamental research are required to be used at all stages of the innovation cycle, including the production and commercialization of innovative ideas. Therefore, by coordinating both approaches, it is possible to create added value in product production, thereby increasing the competitiveness of entities.

5. The study of the characteristics of the innovation sphere, as well as the development trends of economic relations between entities, shows that an important trend in this area is associated with the movement of products, work and services, capital and labor in foreign economic relations. This trend creates new requirements for the application of innovations in production. It is known that only a certain part of the country's economic potential participates in the international division of labor. The development trends of the world economy, however, determine the export of raw materials by converting them into finished products. This implies the application of measures to stimulate the use of innovations in order to strengthen the position of the economy and its sectors, as well as entities engaged in export-oriented activities, in world commodity markets, and to ensure efficiency in the circulation of products, work and services, capital and labor.

6. Financing the creation and acquisition of innovative technologies can play an important role in stimulating the development of competitive areas. The system of financing innovation activities includes the following interrelated elements with specific functional characteristics: the process of financing innovation activities; the mechanism for collecting funds from various sources; the mechanism for controlling investments; the mechanism for returning investments in innovation processes, etc. Financing innovation activities covers various areas of the innovation process as a whole and the activities of individual subjects. The level of income from the implementation of innovative projects determines the final results of the innovative

activities of subjects and the effectiveness of the state's financial policy. Therefore, the effective use of state finance, loan capital, investments in securities, foreign capital and internal capital of subjects serving innovation activities is considered one of the most urgent issues.

7. In innovation policy, the state financing of science and the creation of favorable conditions for the efficient use of financial resources are of particular importance. The results of financing scientific activity are one of the main directions for the formation of the competitiveness of production and create a favorable basis for ensuring the technological advantages of subjects. It is known that the fields of fundamental science are developing in many respects in response to the requirements of applied sciences and the challenges associated with their activities. Nevertheless, studies show that in the last 5 years, the share of expenditures on science in the gross domestic product varies within the range of 0.18-0.23%, and in state budget expenditures - 0.6-1.35%, which is a very low indicator. Therefore, it is extremely important in terms of supporting fundamental sciences by stimulating applied research. The above shows that increasing the amount of funds allocated from the budget to the fields of scientific activity is one of the most important directions in stimulating the creation of innovations and their application in production.

8. The use of loans occupies a special place in the state innovation policy. In this regard, it is important to pay attention to the following areas: increasing the interest of credit institutions in the innovation sector; significantly reducing loan interest rates for entities implementing innovative projects; introducing concessions for banks that provide loans to innovative projects, including reducing the volume of required reserves; providing guarantees for the timely repayment of loans received from banks through interest-free lending, including extending the term of these loans; providing targeted resources at lower interest rates by banks to provide loans to innovative processes, etc.

9. The main laws of innovative and competitive development require attention to the use of the following tools in the implementation of economic policy priorities: protection of local

producers from competition and harmful effects of imported products, implementation of state orders for high-quality and competitive products, stimulation of exports through subsidies or currency regulations, etc.

10. The development of competitive production is related to the following areas: ensuring the processing of raw materials and forming a mechanism for managing innovation activity; using new forms of production organization by diversifying economic activity for the development of knowledge-intensive areas; forming a more advanced organizational and economic mechanism for managing innovation infrastructure; providing the necessary conditions for directing investments to areas with high potential in terms of competitiveness, as well as knowledge-intensive areas; forming a complex of specialized infrastructure entities that allow increasing innovative activity, etc.

**The following articles and theses of the author have been published on the topic of the dissertation.**

1. Sultanova G.G. Mechanism for ensuring the competitiveness of economic entities // – Ganja: “Innovative economy and management” journal, 2021. No. 1/5. – pp. 51-57.

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