

MUHANDISLIK

& IQTISODIYOT

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fan va ta'limga oid ilmiy-amaliy jurnal

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ИМЕНИ Г.В. ПЛЕХАНОВА
ТАШКЕНТСКИЙ ФИЛИАЛ



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- 05.01.00 – Axborot texnologiyalari, boshqaruv va kompyuter grafikasi
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05.01.02 – Tizimli tahlil, boshqaruv va axborotni qayta ishlash
05.01.03 – Informatikaning nazariy asoslari
05.01.04 – Hisoblash mashinalari, majmualari va kompyuter tarmoqlarining matematik va dasturiy ta'minoti
05.01.05 – Axborotlarni himoyalash usullari va tizimlari. Axborot xavfsizligi
05.01.06 – Hisoblash texnikasi va boshqaruv tizimlarining elementlari va qurilmalari
05.01.07 – Matematik modellashtirish
05.01.11 – Raqamli texnologiyalar va sun'iy intellekt
05.02.00 – Mashinasozlik va mashinashunoslik
05.02.08 – Yer usti majmualari va uchish apparatlari
05.03.02 – Metrologiya va metrologiya ta'minoti
05.04.01 – Telekommunikatsiya va kompyuter tizimlari, telekommunikatsiya tarmoqlari va qurilmalari. Axborotlarni taqsimlash
05.05.03 – Yorug'lik texnikasi. Maxsus yoritish texnologiyasi
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05.05.06 – Qayta tiklanadigan energiya turlari asosidagi energiya qurilmalari
05.06.01 – To'qimachilik va yengil sanoat ishlab chiqarishlari materialshunosligi
05.08.03 – Temir yo'l transportini ishlatish
05.08.06 – "G'ildirakli va gusenisali mashinalar va ularni ishlatish" (texnika fanlari)
05.09.01 – Qurilish konstruksiyalari, bino va inshootlar
05.09.04 – Suv ta'minoti. Kanalizatsiya. Suv havzalarini muhofazalovchi qurilish tizimlari
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08.00.04 – Qishloq xo'jaligi iqtisodiyoti
08.00.05 – Xizmat ko'rsatish tarmoqlari iqtisodiyoti
08.00.06 – Ekonometrika va statistika
08.00.07 – Moliya, pul muomalasi va kredit
08.00.08 – Buxgalteriya hisobi, iqtisodiy tahlil va audit
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08.00.15 – Tadbirkorlik va kichik biznes iqtisodiyoti
08.00.16 – Raqamli iqtisodiyot va xalqaro raqamli integratsiya
08.00.17 – Turizm va mehmonxona faoliyati

Ma'lumot uchun, OAK

Rayosatining 2024-yil 28-avgustdagi 360/5-son qarori bilan "Dissertatsiyalar asosiy ilmiy natijalarini chop etishga tavsiya etilgan milliy ilmiy nashrlar ro'yxati"ga texnika va iqtisodiyot fanlari bo'yicha "Muhandislik va iqtisodiyot" jurnali ro'yxatga kiritilgan.

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MUNDARIJA

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SCENARIO-BASED ECONOMETRIC EVALUATION OF REAL INVESTMENT EFFICIENCY IN SMALL BUSINESS ACTIVITIES

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Abstract: Evaluating the effectiveness of real investments in small businesses based on scenarios is crucial. In innovation management, strategy, resources, and decision-making stages play a significant role, which in turn enhances the development and competitiveness of enterprises. In a systematized model, data collection, analysis, and evaluation are essential components of the decision-making process. Analysis results indicate that the institutional environment and the state's development policy play a key role. Effective governance and local reforms serve as catalysts for economic growth.

Keywords: management, innovation, strategy, decision-making, resource, system, analysis, institutional environment, model, scenario.

Annotatsiya: Kichik biznesda real investitsiyalar samaradorligini ssenariylar asosida baholash muhim ahamiyatga ega. Innovatsion boshqaruvda strategiya, resurslar va qaror qabul qilish bosqichlari muhim rol o'ynaydi, bu esa o'z navbatida korxonalar rivojlanishi va raqobatbardoshligini oshiradi. Tizimlashtirilgan modelda ma'lumotlarni yig'ish, tahlil qilish va baholash qaror qabul qilish jarayonining muhim tarkibiy qismlari hisoblanadi. Tahlil natijalari institutsional muhit va davlatning rivojlanish siyosati muhim ahamiyat kasb etishini ko'rsatadi. Samarali boshqaruv hamda mahalliy islohotlar iqtisodiy o'sishning katalizatori sifatida xizmat qiladi.

Kalit so'zlar: boshqaruv, innovatsiya, strategiya, qaror qabul qilish, resurs, tizim, tahlil, institutsional muhit, model, ssenariy.

Аннотация: Оценка эффективности реальных инвестиций в малом бизнесе на основе сценариев имеет важное значение. В управлении инновациями значительную роль играют стратегия, ресурсы и этапы принятия решений, что, в свою очередь, способствует развитию и повышению конкурентоспособности предприятий. В систематизированной модели сбор данных, анализ и оценка являются важными компонентами процесса принятия решений. Результаты анализа показывают, что институциональная среда и политика развития государства играют ключевую роль. Эффективное управление и местные реформы выступают катализаторами экономического роста.

Ключевые слова: управление, инновации, стратегия, принятие решений, ресурс, система, анализ, институциональная среда, модель, сценарий.

INTRODUCTION

Analysis of the development of leading world economies provides grounds for establishing the crucial role of innovation as the foundation for qualitative changes in socio-economic life. In modern conditions of industrial and economic activity, there is a need for innovative development of enterprises as a driving force for technological, economic, and social growth of society's potential. The basis for forming a successful innovation-driven economy is the effective introduction and utilization of innovations in enterprise activities.

Therefore, the issue of researching the management of innovative activities in enterprises is of particular importance. Undoubtedly, managing innovation is a complex process. Mastering this process is a necessary condition for developing well-founded radical solutions, which, in turn, leads to increased enterprise activity in implementing social, economic, and technological innovations. Understanding the essence and means of innovative activity by managers at all levels contributes to enhancing the effectiveness of innovations, which consequently leads to increased business activity of enterprises through the introduction of various types of innovations.

In managing innovation activities, a complex of management-related problems occupies a central place. Management itself is a type of activity integrated into the entire management system. Without effective leadership, it is impossible to efficiently use management functions and methods, or to implement optimal



management solutions. Modern managers must work diligently to stimulate the activities of their subordinates and guide them towards achieving organizational goals.

REVIEW OF LITERATURE ON THE SUBJECT

The essence and significance of innovation management; conceptual and typological analysis of managers operating in the field of innovation, systematization of traditional and modern types of phenomenology and influence, as well as types of authority and leadership styles have been researched by numerous foreign and local scholars. Among them, J. Schumpeter defines, «The subject of innovation is the dissemination, creation, and development of various innovations.» Based on his work, J. Schumpeter [2] convincingly proved that innovations are the cause of cyclical development and laid the foundation for innovation studies. In the 1980s, Professor V. Kolosov [3] of the St. Petersburg University of Technology conducted research on developing methods for forecasting innovations and a scientific methodology for creating innovations as a direction of scientific activity, as well as methods for planning, organizing, and implementing innovations.

S.D. Ilyenkova, L.M. Gohberg, S.Yu. Yagudin, and U.A. Otajanov emphasize that «Innovation is a field of knowledge that studies the laws of development processes, innovations, the formation of innovations, mechanisms for managing changes, overcoming resistance to innovations, human adaptation to them, the utilization and spread of innovative trends, innovative activity, and their impact» [4, 5].

According to Peter F. Drucker, «Management is a unique type of activity that transforms a disorganized crowd into an effective, goal-oriented, productive group.» In this regard, W.J. Reddin defined «Management as the process of planning, organizing, motivating, and controlling an organization's employees, ensuring the achievement of their objectives» [6].

Research shows that many scholars consider «administration» and «management» to be similar terms. The concept of «management» was first introduced into scientific terminology by the American engineer F. Taylor [7]. He defined the main tasks of management, such as the economical use of labor and means of production; regulation of resource use, standardization of work operations, and establishing accurate accounting of working time.

A somewhat similar interpretation of management was proposed by the French manager A. Fayol: «Management is the process of forecasting, organizing, regulating, coordinating, and controlling» [8]. Michael H. Mescon, Michael Albert, and Franklin Khedouri conducted research on management effectiveness and ways to improve it, emphasizing that «Management is a set of principles, methods, tools, and forms of production management aimed at increasing its efficiency and profitability» [9].

RESEARCH METHODOLOGY

The unifying function of management is carried out by the innovative manager, which requires the use of an innovative leadership style utilizing new forms of authority to achieve scientific, technical, economic, environmental, managerial, and social effectiveness. This is based on the principles of collaborative participation and influence through harmonizing both types of authority.

To ensure the effective implementation of the specified functions, special attention should be paid to forming the company's strategic resources, including information, material, financial, technological, energy, and human resources. Any activity, particularly managerial activity, should aim to achieve specific results. According to many modern researchers [10, 11, 12], the main outcomes of innovative activity are the obtained innovations and innovative solutions.

The systematization of designated functions is associated with the diversity of management activities in the chain:

idea→scientific research→development→design→production→implementation of innovations.

In our opinion, the classification of innovation management functions, consisting of three functions, has been developed in the form of a typology of functions, which is presented in Figure 1 (Figure 1).



Figure 1. Typology of Innovation Management Functions

For implementing managerial influence and performing specific functions based on the general and unifying function of management, managers at all levels are recommended to utilize tools, methods, and approaches that enable purposeful and effective organization of innovative activities in innovation management.

The development of innovative activities in a production enterprise primarily depends on the manager's skillful application of three groups of management functions. General functions define the content of the innovation management process and include the main management processes and tools that ensure the implementation of specific and unifying general functions.

With all the diversity of approaches to systematizing the aforementioned process, in our opinion, it is advisable to distinguish the following main stages and tasks of managerial decision-making in the process of managing innovative activities (Figure 2).

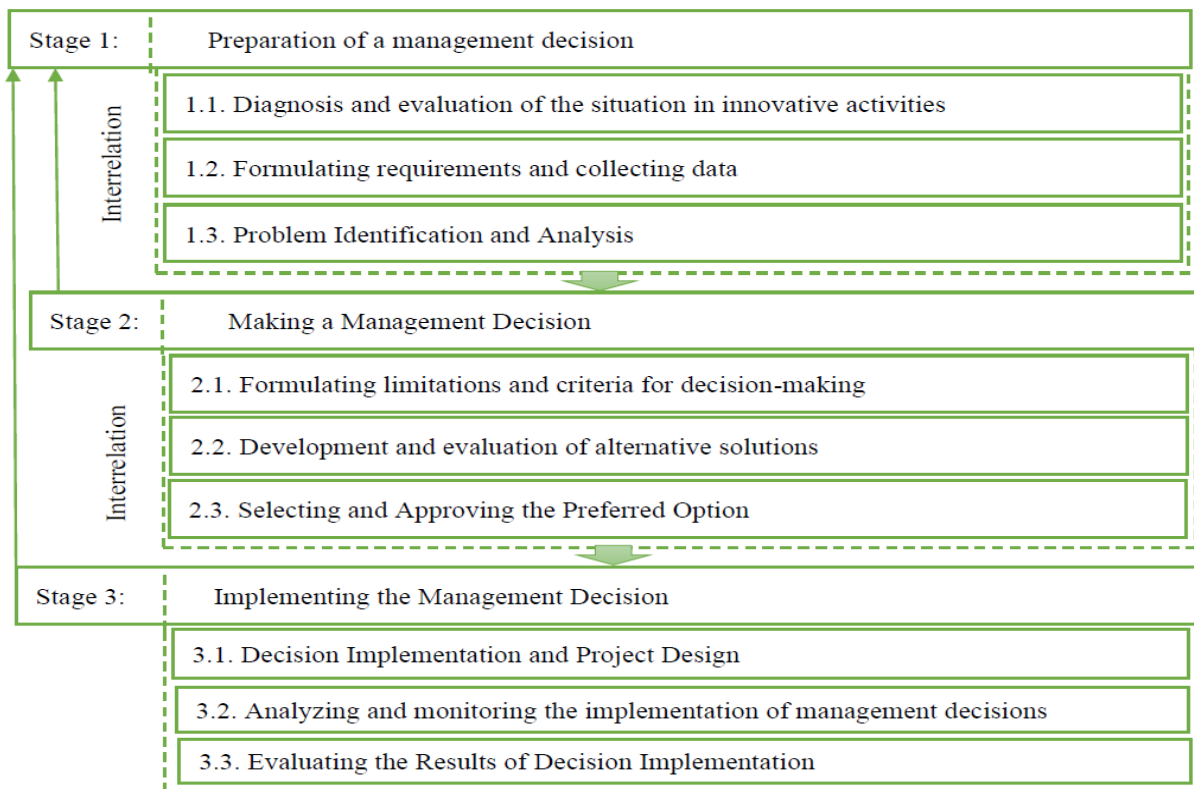


Figure 2. Stages and tasks of decision-making in innovation management¹

This model presents logical sequential stages of managerial decision-making in innovative activities. During the preparation for decision-making in the second and third stages, it may become necessary to adjust the results obtained in the previous stages, which indicates the presence of feedback. If we examine in detail the content and procedure of the management decision-making process at each stage, then at the stage of preparing a management decision, the manager identifies a problem related to the enterprise’s innovative activity by collecting, processing, and analyzing various data.

Diagnosing and assessing the situation in innovative activity involves consciously recognizing the contradictions between changes in the opportunities and threats to the enterprise’s innovative activity, as well as determining the criteria by which the results of solving the problematic situation are evaluated. Demand formation and data collection involve compiling relevant, timely, concise, and objective information related to the identified problem. Identifying and analyzing the problem requires specifying the final desired outcome that should result from resolving the problematic situation.

At the decision-making stage, the manager selects the priority option from among possible alternatives. Formulating constraints and criteria for decision-making involves identifying and gathering all possible courses of action that will help resolve the problematic situation, as well as justifying the number of alternatives that should be considered based on criteria of realism and appropriateness. The selection and evaluation of options entails determining the advantages and disadvantages of each alternative, assessing potential consequences, and considering the feasibility of implementing each possible alternative.

ANALYSIS AND RESULTS

Summarizing the results of modern research in the field of small business shows that the quality of the institutional environment influences the competitiveness of business entities, investment decisions, production organization, and economic growth. The institutional environment is determined by the legal and administrative infrastructure within which private entrepreneurs, enterprises, and the government interact to create national prosperity. In a broad sense, the institutional environment is the totality of institutions, establishments, and organizations.

To implement a balanced state policy for developing and supporting small business and private

1 Source: developed by the author.



entrepreneurship, as well as to ensure effective use of state funds for its support, most countries have a dedicated government division. These bodies are categorized by function into those that ensure the implementation of state policy on entrepreneurship development and those that control its implementation.

The main vectors of action, priority areas, and indicators of the relevant socio-economic, organizational, political, and legal conditions for the formation and development of small business and private entrepreneurship in the Namangan region are defined. Thus, according to the responsibility vector, the implementation of decentralization and reform of public administration is envisaged, with the goal of abandoning the centralized model of public administration, ensuring the capacity of local self-government bodies, and forming public administration bodies. An effective system of territorial organization of power in the Namangan region involves the full implementation of the principles of subsidiarity and financial self-sufficiency of local self-government.

Based on the analysis conducted in the Namangan region for 2019-2022, an audit of the Entrepreneurship Support Fund's activities identified opportunities to further improve the mechanisms for allocating state financial assistance to small businesses. This demonstrates the ongoing efforts in the Namangan region to strengthen the targeted spending of funds, enhance the effectiveness of business plan implementation, and improve the timely return of financial resources. The total volume of reviewed financial support amounted to about 17.2 billion soums. All this confirms the importance of consistently improving the implementation of state policy in the field of entrepreneurship at the central level. In our opinion, assigning additional monitoring functions related to the targeted use of financial support funds to the Agency for the Development of Small Business and Entrepreneurship would contribute to increasing the effectiveness and transparency of this process (Figure 3).



Figure 3. Foreign direct investments attracted to Namangan region during 2017-2024²

According to the research results from Namangan region, the inflow of foreign investments in the region began in 2017, amounting to only 18.6 million dollars. By the end of 2022, this figure reached 379.0 million dollars, which is a 20.3-fold increase compared to 2017 (Figure 3).

Within the framework of several decrees and resolutions of the President of the Republic of Uzbekistan, as well as the State Investment Program, work is rapidly progressing to establish large enterprises in the region. Looking at the figures, in 2017, 1 large enterprise worth 0.8 million dollars was launched; in 2018, 2 enterprises worth 35 million dollars; in 2019, 23 enterprises worth 45.5 million dollars; in 2020, 17 enterprises worth 201 million dollars; and in 2021, 21 enterprises with a total value of 134.2 million dollars were put into operation. In 2022, according to the Decree of the President of the Republic of Uzbekistan No. PP-72 dated December 30, 2021, the State Investment Program planned to launch 16 large projects worth 214.6 million dollars. Including additional projects, a total of 18 projects worth 218.2 million dollars were commissioned, resulting in the creation of 4,938 permanent, 6,795 seasonal, and 203 construction jobs.

In 2024, the volume of foreign direct investment in Namangan region increased 2.8 times compared to 2023, reaching 1,368.2 million US dollars. This indicates growing interest in attracting foreign investors to the region and the increasing attractiveness of the investment climate.

The Agency for the Development of Small Business and Entrepreneurship [1] has been tasked with implementing a unified state policy aimed at developing all forms of entrepreneurship in the country at the

2 Source: developed by the author.

regional level, widely involving the population, especially youth and women, in entrepreneurship, improving the microfinance system, introducing state support for entrepreneurship, and forming a system of non-financial support for business entities.

Based on the research objective, we will conduct an econometric analysis of investment efficiency in small businesses operating in Namangan region. For this, we aim to examine the impact of investments on the volume of products produced by small business entities in Namangan region based on 3 scenarios. According to the 1st scenario, data from the Namangan Regional Statistics Department for 2010-2024 was used, selecting factors influencing the change in production volume of small business entities (MICH): production costs incurred by small business entities (IchX), investment volume in fixed capital of small business entities (AKI), and utilization of production capacities of small business entities (IchQ).

To conduct an econometric analysis of changes in the production volume of small businesses in Namangan region, we first determine the correlation coefficient to measure the degree of interdependence between the selected factors and the resulting factor (Table 1).

Table 1.
Correlation coefficient of factors affecting the change in production volume by small business entities in Namangan region according to scenario 1³

	MICH	IchX	AKI	IchQ
MICH	1			
IchX	0,997796	1		
AKI	0,91203	0,705778	1	
IchQ	-0,86606	-0,74799	-0,56382	1

If we examine the values in the table, we can see that the volume of products manufactured by small business entities in Namangan region (MICH) is strongly positively correlated with production costs (IchX) ($r_{MICH,IchX}=0.997796$) and the volume of investments in fixed capital of small business entities (AKI) ($r_{MICH,AKI}=0.91203$). It was determined that the resulting factor has a strong negative correlation with the factor of production capacity utilization by small business entities (IchQ) ($r_{MICH,IchQ}=-0.86606$). According to the correlation values between the selected factors, there is no multicollinearity among the factors based on the condition $r_{x1,x2} < 0.8$.

This indicates that the influencing factors have been correctly chosen and that the subsequent process can be continued. To proceed with the process, since the units of measurement for the factors differ, we logarithmically transform them based on e to convert them to a homogeneous indicator. The determination of the regression equation for the observed relationship can then be continued using the EViews program.

According to the calculation results, based on the values in the coefficient column of Table 2, the following equation is derived (Table 2; Figure 4):

$$\ln MICH = 0.7 \ln AKI + 0.67 \ln IchQ - 0.02 \ln IchX + 0.51435 \quad (1)$$

Table 2.
Multifactor regression equation for the volume of products manufactured by small business entities in Namangan region according to scenario 1⁴

Dependent Variable: LNMICH

Method: Least Squares

Date: 06/16/23 Time: 21:41

Sample: 2010 2024

Included observations: 15

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNICHX	-0.020709	0.141812	-0.146032	0.0471
LNAKI	0.711760	0.098435	7.230746	0.0000
LNICHQ	0.665498	0.426142	1.561682	0.0528
C	0.51435	1.830126	0.28105	0.0219
			$t_{jad} = 2,201$	
R-squared	0.920557	Mean dependent var		7.703428

3 Source: developed by the author.

4 Source: developed by the author.



Adjusted R-squared	0.894076	S.D. dependent var	0.992357
S.E. of regression	0.322973	Akaike info criterion	0.825162
Sum squared resid	0.938803	Schwarz criterion	0.998993
Log likelihood	-1.363555	Hannan-Quinn criter.	0.789432
F-statistic	34.76276	Durbin-Watson stat	1.820813
Prob(F-statistic)	0.000028	$F_{jad} = 0,258896435$	

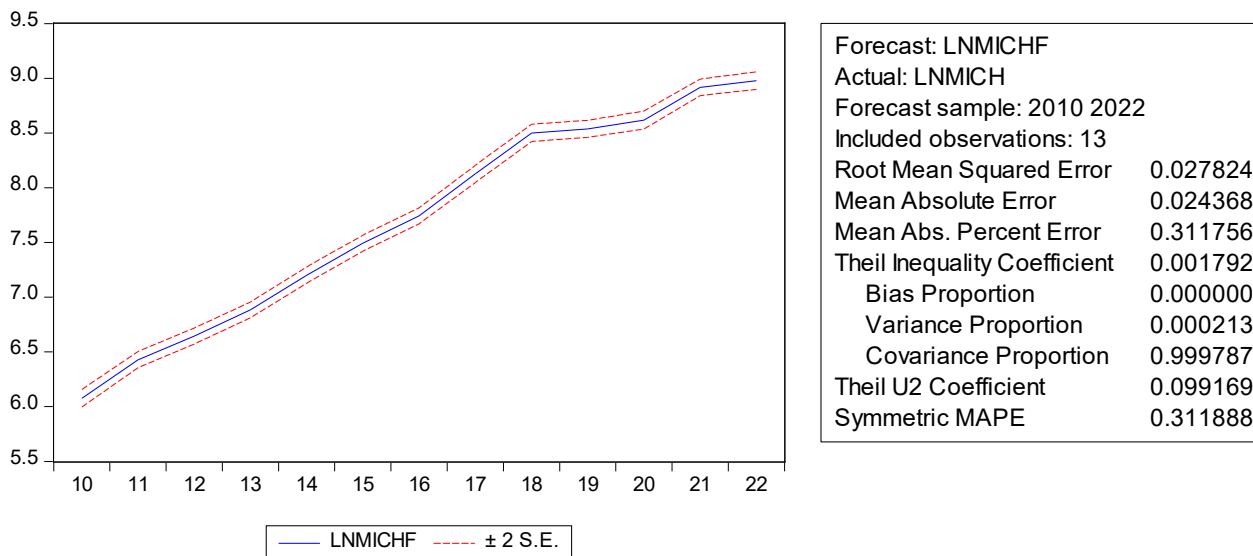


Figure 4. Results of retrospective quality criteria for regression parameters 1⁵

If we focus on the significance of the parameters in the identified first regression equation according to t-Statistic criteria, with $\alpha=0.05$ and $df=11$, where $t_{jad}=2.201$, only the volume of investments in fixed assets of small business entities - AKI ($t_{AKI}=7.230746 > t_{Tab}=2.201$) is significant, while the parameters of the remaining factors are insignificant. However, considering that all these parameters are important according to $r=0.05$, it is necessary to verify the actual significance or insignificance of these factor parameters using retrospective quality criteria MAPE (Mean Absolute Percentage Error) and TIC (Theil Inequality Coefficient - Theil's alternative measure of forecast accuracy) (Figure 4).

Based on the data presented in Figure 4, it can be noted that $MAPE=0.312$, which indicates a high forecast accuracy as $MAPE=0.312 < 10\%$, and with $TIC=0.002 < 1$, the coefficient's proximity to zero suggests that all parameters of the first regression equation are significant. Now, based on the properties of logarithms, we exponentiate the first regression equation obtained above, resulting in the following equation:

$$MICh = \frac{AKI^{0,7} * IChQ^{0,67} * e^{0,51435}}{IChX^{0,02}} \quad (1^*)$$

Now, considering that the significance of the 1*-regression equation is equal to $F_{Tab}=8.7633$ with the Fisher criterion at $\alpha=0.05$ and $k1=11$; $k2=3$, it was determined that the calculated Fisher value $F_{calc}=34.7$ satisfies the condition $F_{Tab} < F_{calc}$. Since the Durbin-Watson statistic for the 1*-regression equation is equal to $DW=1.8$, the absence of autocorrelation indicates the reliability and adequacy of the equation.

Interpreting the (1*) -regression equation, if production costs are reduced by 1.0%, the volume of production by small businesses in Namangan region will increase by an additional 1.8%. If the volume of investments in fixed assets and the level of production capacity utilization are increased by 1.0%, the volume of production by small businesses in the region will increase by 62.2 billion soums and 195.2 billion soums, respectively. Based on these

5 Source: developed by the author.

results, it is necessary for small businesses operating in Namangan region to review their cost estimates, develop measures to attract domestic and foreign investments, and most importantly, find ways to maximize the use of existing production capacities.

Studies on the use of production capacities show that electricity shortage in the region is the biggest problem in this regard. It is recommended to use alternative energy resources and replace existing fixed assets with new energy-saving technologies.

According to the 2nd scenario, an econometric analysis will be conducted to determine how changes in the net revenue from product sales by small business entities (SST), the volume of investments in fixed capital of small business entities (AKI), and the total number of employees in small business entities (JBS) affect the change in the volume of products produced by small business entities in Namangan region. To determine the appropriateness of the initially selected factors, the correlation coefficient between them is calculated (Table 3).

Table 3
Correlation coefficient of factors affecting the change in production volume by small business entities in Namangan region according to scenario 2⁶

	MICH	SST	AKI	JBS
MICH	1			
SST	0,967269	1		
AKI	0,91203	0,576726	1	
JBS	0,872195	0,702438	0,763992	1

According to the results presented in the table, the factors strongly correlated with the change in the volume of output produced by small business entities are: net revenue from the sale of products of small business entities - SST ($r_{MICH,SST}=0.967269$), the volume of investments in fixed capital of small business entities - AKI ($r_{MICH,AKI}=0.91203$), and total employment in small business entities - JBS ($r_{MICH,JBS}=0.872195$). There is no multicollinearity between these factors as per the condition $r_{x_1,x_2}<0.8$. This, in turn, indicates that it is possible to proceed to the next stage of determining the regression equation.

Research shows that small businesses and private entrepreneurship entities currently operating in the republic are considered drivers of economic sectors. It is possible to determine their development trends through numerous linear and nonlinear equations, particularly exponential, power, logarithmic, exponential, binomial, and linear functions. Based on this, initially, taking into account the heterogeneous composition of all factors, they are logarithmized using base e, and the analysis can be continued using the EViews program (Table 4).

Table 4
Results of the multi-factor regression equation for the volume of products manufactured by small business entities in Namangan region according to scenario 2⁷

Dependent Variable: LNMICH
Method: Least Squares
Date: 06/16/23 Time: 21:21
Sample: 2010 2022
Included observations: 13

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNSST	0.959212	0.299158	3.206369	0.0107
LNAKI	0.083403	0.080091	1.041359	0.0249
LNJBS	5.017879	0.640944	7.828887	0.0000
C	-35.47071	4.155035	-8.536801	0.0000
			$t_{jad}=2,201$	
R-squared	0.990067	Mean dependent var		7.703428
Adjusted R-squared	0.986756	S.D. dependent var		0.992357

6 Source: developed by the author.

7 Source: developed by the author.



S.E. of regression	0.114203	Akaike info criterion	-1.254010
Sum squared resid	0.117382	Schwarz criterion	-1.080179
Log likelihood	12.15106	Hannan-Quinn criter.	-1.289740
F-statistic	299.0207	Durbin-Watson stat	2.193714
Prob(F-statistic)	0.000000	$F_{Jad}=8,7633$	

Based on the coefficient values provided in the table data, the following equation is derived:

$$\text{LnMICH} = 0,96\text{LnSST} + 0,08\text{LnAKI} + 5,02\text{LnJBS} - 35,47071 \quad (2)$$

Based on the research results, if we focus on the significance of the parameters of the 2nd regression equation according to the t-Statistic criteria, given that $t_{\text{Crit}} = 2.201$ at $\alpha = 0.05$ and $df = 11$, it follows that the parameters of the factors net revenue from sales of small business entities - SST ($t_{\text{SST}} = 3.206369 > t_{\text{Tab}} = 2.201$) and the total number of employees in small business entities - JBS ($t_{\text{JBS}} = 7.828887 > t_{\text{Tab}} = 2.201$) are significant. To check the significance or insignificance of the remaining parameter, the investment volume in fixed capital of small business entities - AKI, retrospective quality criteria $\text{MAPE} < 10\%$ and $\text{TIC} < 1$ are used.

Based on the data presented in Figure 5, it can be noted that $\text{MAPE} = 0.93$, which, in turn, implies the significance of all parameters of the 2nd regression equation due to the fulfillment of the inequality condition $\text{MAPE} = 0.93 < 10\%$ and the high prediction accuracy $\text{TIC} = 0.0061 < 1$. Now, we can exponentiate the resulting 2nd regression equation to derive the following equation (Figure 5):

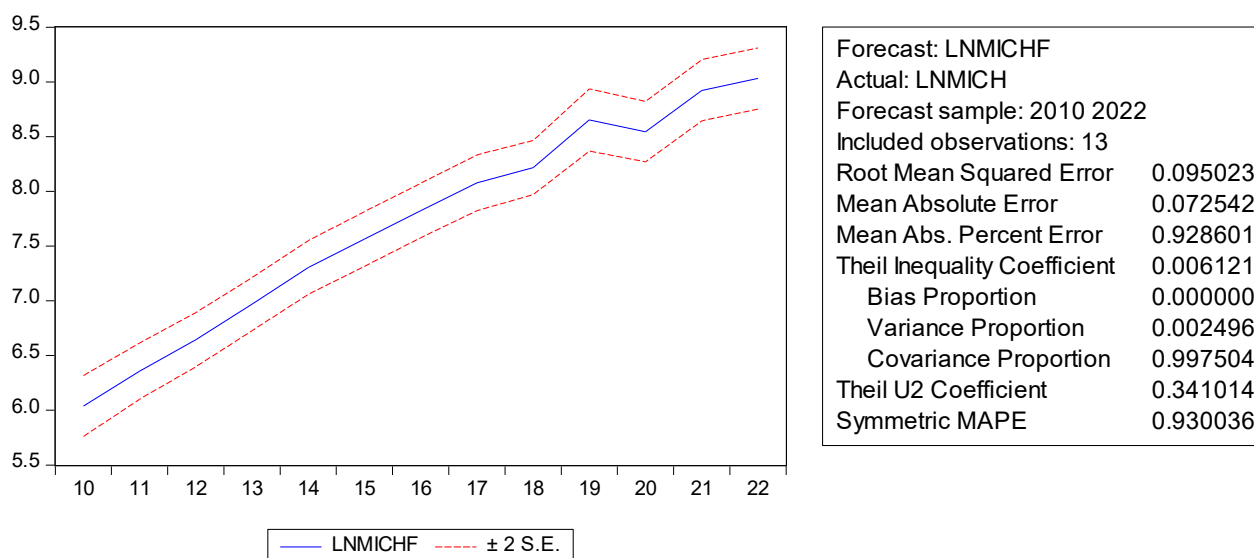


Figure 5. Results of retrospective quality criteria for regression parameters 2⁸

Considering that the 2*-regression equation has $F_{\text{Tab}} = 8.7633$ at $\alpha = 0.05$ and $k_1 = 4; k_2 = 16$, and the calculated Fisher value is $F_{\text{calc}} = 299.02$, the significance of the 2*-regression equation is confirmed by the condition $F_{\text{Tab}} < F_{\text{calc}}$. Additionally, with $DW = 2.19$, the absence of autocorrelation indicates the reliability and adequacy of the equation.

According to the identified 2*-regression equation, if we increase each of the selected factors separately by 1.0 percent, namely net sales revenue and the volume of investments in fixed assets, the volume of products produced by small businesses in Namangan region will increase by 96.5 billion soums and 8.0 billion soums, respectively. If we increase the number of employees in the sector by 9,000 people, the volume of products produced by small businesses in the region is expected to reach an additional 501.3 billion soums.

CONCLUSIONS AND SUGGESTIONS

The research results indicate that the importance of institutions is not limited to the legislative framework. The government’s support for markets and economic freedoms, as well as the continuous improvement of public administration efficiency, play a crucial role: the ongoing optimization of administrative structures, enhancement of state regulation mechanisms, strengthening of transparency in the preparation and execution of state contracts,

8 Source: developed by the author.



increasing trust, expansion of business support services, and further improvement of judicial independence contribute to reducing economic costs and accelerating the development process.

In conclusion, summarizing the results obtained for all scenarios, it can be emphasized that currently in the Namangan region, a reliable decision can be made that the most effective direction is to channel investments into the fixed capital of small business entities to increase employment in the sector, fully utilize production capacities, and most importantly, to ensure efficient use of energy resources.

References:

1. Resolution of the President of the Republic of Uzbekistan No. RP-4417 dated 13.08.2019 «On measures for organizing the activities of the Agency for Entrepreneurship Development under the Ministry of Economic Development and Poverty Reduction of the Republic of Uzbekistan» // URL: <https://lex.uz/docs/7579994>
2. Schumpeter, J. Theory of Economic Development M.: Progress, 1992.1992.
3. Kolosov V. A., Turovski R. F. Tipologiya novyh russiskix granits // Izv. RAN. Ser.geogr. 1999. No 5. S. 30-47
4. Ilyenkova, S.D., Goxberg, L.M., Yagudin, S.Yu. i dr., 2000. Innovatsionnyy menedjment : Uchebnik dlya vuzov. Pod. red. S. D. Ilyenkovoy. M.: YUNITI.
5. Otajanov U.A., Improving the Efficiency of Using Foreign Investments in Small Businesses. European journal of business startups and open society (2795-9228), Vol. 4 NO. 7 (2024).
6. Peter F., Drucker., 1999. The Practice of Management. Butterworth-Heinemann.
7. Excerpt From The Principles Of Scientific Management (1911, By Frederick Winslow Taylor)
8. Fayol, Henri, 1916. Administration industrielle et générale; prévoyance, organisation, commandement, coordination, controle. Paris, H. Dunod et E. Pinat.
9. Michael, H. Mescon, Michael, Albert and Franklin, Khedouri, 1988. Management [3rd ed.]. Cambridge, MA.
10. Lepeyko, T.I., Koyuda, V.A. i Lukashov, S.V., 2015. Innovatsionnyy menedjment: [Uchebnoye posobiye]. X.: ID "INJEK".
11. Peter F., Drucker., 1999. The Practice of Management. Butterworth-Heinemann.
12. Levitin A., 2003. Introduction to The Design & Analysis of Algorithms. Addison-Wesley.

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