MUHANDISLIK & IQTISODIYOT

№4

ijtimoiy-iqtisodiy, innovatsion texnik,
fan va ta’limga oid ilmiy-amaliy jurnal

2026
APREL

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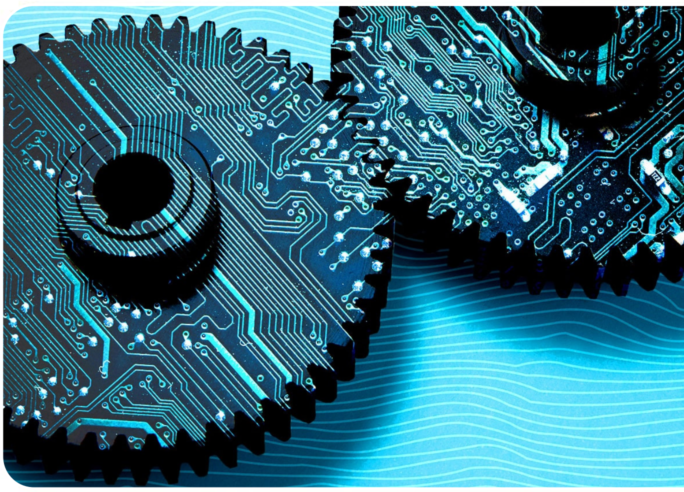

ISSN: 3060-463X

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Elektron nashr, 2026-yil, aprel.

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fan va ta'limga oid ilmiy-amaliy jurnal

05.01.00 – Axborot texnologiyalari, boshqaruv va kompyuter grafikasi
05.01.01 – Muhandislik geometriyasi va kompyuter grafikasi. Audio va video texnologiyalari
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 – Telekommunikasiya va kompyuter tizimlari, telekommunikasiya tarmoqlari va qurilmalari. Axborotlarni taqsimlash
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05.05.05 – Issiqlik texnikasining nazariy asoslari
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
10.00.06 – Qiyosiy adabiyotshunoslik, chog'ishtirma tilshunoslik va tarjimashunoslik
10.00.04 – Yevropa, Amerika va Avstraliya xalqlari tili va adabiyoti
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08.00.10 – Demografiya. Mehnat iqtisodiyoti
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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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FORECASTING AND PROMISING DIRECTIONS OF INNOVATIVE INDUSTRIAL AND INVESTMENT DEVELOPMENT IN THE KASHKADARYA REGION 393
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FORECASTING AND PROMISING DIRECTIONS OF INNOVATIVE INDUSTRIAL AND INVESTMENT DEVELOPMENT IN THE KASHKADARYA REGION

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Abstract. This article examines the prospects for forecasting innovative industrial and investment development in the Kashkadarya region and identifies promising directions for sustainable economic growth. The study analyzes regional industrial potential, investment dynamics, and innovation capacity within the context of structural transformation and modernization policies. Based on theoretical and empirical approaches, the research applies economic forecasting and comparative analysis to determine priority sectors and strategic investment opportunities. The findings indicate that strengthening innovation infrastructure, attracting foreign direct investment, and promoting industrial diversification are essential for long-term competitiveness. The results contribute to regional development planning and provide policy recommendations for enhancing innovation-driven investment strategies.

Keywords: Innovative development; Industrial investment; Regional forecasting; Kashkadarya region; Economic diversification; Investment policy; Innovation infrastructure; Sustainable growth.

Annotatsiya. Ushbu maqola Qashqadaryo viloyatida innovatsion sanoat va investitsiya rivojlanishini prognoz qilish istiqbollarini o'rganadi va barqaror iqtisodiy o'sish uchun istiqbolli yo'nalishlarni belgilaydi. Tadqiqotda mintaqaviy sanoat salohiyati, investitsiya dinamikasi va innovatsion salohiyat tarkibiy o'zgartirish va modernizatsiya siyosati kontekstida tahlil qilinadi. Nazariy va empirik yondashuvlarga asoslanib, tadqiqot ustuvor tarmoqlar va strategik investitsiya imkoniyatlarini aniqlash uchun iqtisodiy prognozlash va qiyosiy tahlilni qo'llaydi. Tadqiqot natijalari shuni ko'rsatadiki, innovatsion infratuzilmani mustahkamlash, to'g'ridan-to'g'ri xorijiy investitsiyalarni jalb qilish va sanoatni diversifikatsiya qilishni rag'batlantirish uzoq muddatli raqobatbardoshlik uchun juda muhimdir. Natijalar mintaqaviy rivojlanishni rejalashtirishga hissa qo'shadi va innovatsiyaga asoslangan investitsiya strategiyalarini takomillashtirish bo'yicha siyosat bo'yicha tavsiyalar beradi.

Kalit so‘zlar: Innovatsion rivojlanish; Sanoat investitsiyalari; Mintaqaviy prognozlash; Qashqadaryo viloyati; Iqtisodiy diversifikatsiya; Investitsiya siyosati; Innovatsion infratuzilma; Barqaror o'sish.

Аннотация. В данной статье рассматриваются перспективы прогнозирования инновационного промышленного и инвестиционного развития в Кашкадарьинской области и определяются перспективные направления устойчивого экономического роста. В исследовании анализируется региональный промышленный потенциал, динамика инвестиций и инновационный потенциал в контексте политики структурных преобразований и модернизации. На основе теоретических и эмпирических подходов в исследовании применяются методы экономического прогнозирования и сравнительного анализа для определения приоритетных секторов и стратегических инвестиционных возможностей. Результаты показывают, что укрепление инновационной инфраструктуры, привлечение прямых иностранных инвестиций и содействие диверсификации промышленности имеют важное значение для долгосрочной конкурентоспособности. Полученные данные способствуют региональному планированию развития и содержат рекомендации по совершенствованию инвестиционных стратегий, ориентированных на инновации.

Ключевые слова: Инновационное развитие; Промышленные инвестиции; Региональное прогнозирование; Кашкадарьинская область; Экономическая диверсификация; Инвестиционная политика; Инновационная инфраструктура; Устойчивый рост.

INTRODUCTION

In the context of global economic transformation, regional economies increasingly rely on innovation-oriented industrial investment to ensure sustainable development and competitiveness. Uzbekistan's economic reforms have prioritized modernization, technological renewal, and investment attraction as key drivers of regional growth. The Kashkadarya region, characterized by its natural resources, industrial base, and strategic location, represents a promising area for implementing innovation-based industrial policies. Forecasting the trajectory of industrial-investment development in this region is essential for identifying priority sectors and ensuring efficient allocation of resources. Scientific assessment of innovation capacity and investment flows helps policymakers and stakeholders design targeted development programs. Therefore, this article aims to analyze the current state of innovative industrial investment in Kashkadarya, forecast potential development scenarios, and identify promising strategic directions.

LITERATURE REVIEW

The theoretical foundations of innovation-driven investment development have been widely explored in economic literature. Schumpeter (1934) emphasized innovation as the main engine of economic growth, highlighting the role of entrepreneurship and technological change. Porter (1990) discussed competitive advantage through industrial clusters and regional specialization, which supports investment concentration in promising sectors. Studies on regional investment and innovation policies (Dunning, 1993) underline the importance of foreign direct investment and institutional support in accelerating industrial modernization. Recent research on transition economies (OECD, 2018) stresses the role of innovation infrastructure, digital transformation, and public–private partnerships in enhancing regional competitiveness. Within Uzbekistan, national development strategies and statistical reports provide insights into industrial reforms, investment incentives, and regional economic potential. These sources emphasize diversification, localization of production, and the introduction of advanced technologies as key priorities for regional industrial growth.

RESEARCH METHODOLOGY

The study employs a mixed methodological approach combining qualitative and quantitative analysis. Methods include comparative economic analysis, statistical data evaluation, trend extrapolation, and scenario-based forecasting to assess industrial and investment development patterns. Regional indicators related to investment flows, industrial output, and innovation activity are analyzed to identify growth tendencies. Logical synthesis and expert interpretation are applied to determine strategic development directions.

Analysis and results. In order to forecast the development of innovation-oriented industrial and investment development in Kashkadarya region, a comprehensive analysis of the impact of production factors on the volume of products produced by industrial entities was carried out. As a result of this analysis, the forecast values of the main factors determining the industrial production process were calculated based on various econometric models, and prospective forecast indicators of the volume of products produced by industrial entities were determined in accordance with these factors. Official data from the Kashkadarya regional statistics department were used to implement the forecasting process. The number of labor employed in industry, the volume of industrial production in the non-state sector, the number of operating industrial enterprises, and the volume of investments in fixed capital were selected as important production factors that significantly affect the volume of industrial products. These factors are considered the main determinants that ensure the sustainable development of industry and reflect the activity of investment and innovation processes in the region. The analysis used time series data for the period 2014–2024. The choice of this period is explained by the fact that it covers the stage of reforms aimed at modernizing industry, expanding investment flows, and stimulating innovative activity in the Kashkadarya region. It is this period that is characterized as a stage when structural changes in the industrial sector intensified, investment activity stabilized relatively, and production growth trends were formed. Based on data from the Kashkadarya regional statistics department, a statistical and econometric basis was formed reflecting the relationship between the volume of industrial production and selected production factors (Table 1). Data from the Kashkadarya regional statistics department were used to conduct this analysis. The number of employees in the industry, the volume of industrial production in the non-state sector, the number of enterprises, and investments in fixed capital were selected as important factors affecting the volume of products developed by industrial entities. Data for 2002-2021 were used for the analysis. According to the data of the Kashkadarya regional statistics department, the following 1- was formed.

Kashkadarya region's industrial production, investments and main influencing factors

№	Years	Value of investments in the capital of industrial enterprises (billion soums)Y	Number of employees in the industrial sector (thousand people)X_1	Industrial output volume in the non-government sector (billion soums)X_2	Number of industrial enterprises (units) X_3	Industrial output volume by industrial entities (billion soums)X_4
1	2005	408.5	34.0	263.8	2.74	2228.1
2	2006	534.9	32.6	524.2	3.06	3143.5
3	2007	773.2	31.3	771.3	3.03	3392.6
4	2008	137.6	29.7	137.9	3.43	4373.9
5	2009	189.0	28.4	189.0	3.46	6978.8
6	2010	723.6	41.0	1286.4	3.63	8300.0
7	2011	128.4	33.7	3049.3	3.94	1630.3
8	2012	408.0	37.4	4082.0	3.98	2192.2
9	2013	395.7	41.9	3935.1	4.22	1597.9
10	2014	430.4	43.2	4082.0	4.54	1914.4
11	2015	558.0	47.6	3935.1	4.63	2875.9
12	2016	626.7	47.8	5814.3	4.62	3498.8
13	2017	632.3	48.6	6303.2	4.25	3944.4
14	2018	872.9	92.1	8643.4	3.99	5224.3
15	2019	963.2	95.0	9599.7	3.46	6334.0
16	2020	1094.9	96.1	1076.8	3.21	1018.9
17	2021	1452.5	10.9	4639.2	3.17	1651.5
18	2022	2036.1	96.0	6377.9	3.44	2446.5
19	2023	1461.3	91.0	8028.3	3.83	1992.7
20	2024	1874.1	89.0	9044.2	4.48	1622.1

The data presented, in particular, the volume of products produced by industrial entities, the volume of industrial production in the non-state sector, and the value of investments in the capital of industrial entities are nominal indicators, and their direct use will not provide any basis for conclusions. Taking this into account, we determined the real values of the indicators. For this, the deflator index was used and 2010 was taken as the base year (see Table 2).

Kashkadarya region's industrial production, investments and main influencing factors

Yillar	Deflator index (Base year 2010)	Value of investments in the capital of industrial enterprises (billion soums) Y	Number of employees in the industrial sector (thousand people) X_1	Industrial output volume in the non-government sector (billion soums) X_2	Number of industrial enterprises (units) X_3	Industrial output volume by industrial entities (billion soums) X_4
2005	8.5	34.7	2.89	22.59	0.23	189.38
2006	12.4	66.3	4.04	65.00	0.37	389.79
2007	18.0	139.1	5.63	138.83	0.54	610.65
2008	22.8	31.3	6.77	31.02	0.78	997.24
2009	26.4	49.8	7.49	49.89	0.91	1817.27
2010	32.1	232.2	13.16	412.93	1.16	2664.3
2011	39.6	286.5	13.34	1207.52	1.56	645.59
2012	48.3	50.8	18.06	2930.87	1.92	1058.83
2013	61.2	242.1	25.64	2405.83	2.58	977.91
2014	71.8	309.0	31.01	2930.87	3.25	1374.53
2015	100.0	558.0	47.60	3935.10	4.63	2875.90

2016	121.5	761.4	58.07	7064.37	5.61	4251.04
2017	140.3	887.1	68.18	8843.38	5.96	5533.99
2018	156.8	1368.7	144.41	13552.85	6.25	8191.70
2019	179.3	1727.0	170.33	17212.26	6.20	11356.86
2020	198.0	2167.9	190.27	2135.29	6.35	20160.42
2021	215.3	3127.2	23.467	9988.19	6.82	35564.33
2022	257.1	5234.8	246.81	16397.58	8.84	62893.08
2023	327.7	4788.6	298.20	26308.73	12.55	65281.11
2024	388.6	7282.7	345.85	35145.76	18.80	63050.73

Initially, based on the data in Table 2, we will look at the time-dependent, i.e., trend model of the volume of products developed by industrial entities. In the modeling process, the graphical method was used, taking into account the fact that the most widely used method for selecting a model that corresponds to the laws of deve The trend models calculated to forecast the process of changing the volume of products produced by industrial entities are shown in Figure 1. According to the analysis of the results of the resulting trend model, it was determined that R^2 = 0.86 Fcalculated = 43.3. Taking into account the above analysis and the situations identified for all criteria, we decided to use the regression equation of the form y = 8.4118x2 - 102.28x + 651.93 to develop forecast indicators. The results of the study conducted to forecast the change in the value of investments in the capital of enterprises engaged in the activities of industrial entities of the Kashkadarya region showed that it does not correspond to any trend model and their values according to the criteria are not at the required level. In this figure, the actual indicators are marked with a red line and the values determined based on the model are marked with a blue line. It can be seen that they are almost close to each other and the random variables have small values.lopment of indicators.

In order to assess the development trends of industrial sectors in the region and determine their future indicators for the next period, forecast values were developed for the volume of products produced by industrial entities and the main factors affecting it. This forecasting process was carried out on the basis of a trend model reflecting the dynamics of the volume of industrial production. The results of the developed forecast show that the volume of products produced by industrial sectors in the region has a stable growth trend based on the trend model. In particular, compared to 2024, the volume of industrial production in 2025 increased by 1.18 times, and by 2028 this indicator is projected to reach 1.96 times. These growth rates are explained by increased investment activity in industrial sectors, expansion of production capacities, and technological innovation processes. According to the forecasts obtained from the trend model, if the current development trend is maintained, by 2030 the volume of products produced by industrial entities in the region is expected to increase by approximately 2.4–2.5 times compared to 2021. This indicates that there is a possibility of increasing the volume of industrial production by an average of 10.1% per year. The results of this forecast serve as an important scientific and practical basis for accelerating the development of innovation-oriented industrial and investment in the Kashkadarya region, increasing the competitiveness of industrial sectors, and implementing medium- and long-term strategic planning.

This approach, along with forecasting the volume of industrial production, allows us to identify promising areas of innovation-oriented industrial and investment development in the Kashkadarya region. The results of the forecast serve as an important scientific and practical basis for developing medium-term strategic decisions on industrial development in the region. Since the units of measurement of the variables are different and for a better understanding of the interpretation of the multifactor econometric model, we take the natural logarithm of all factor values. To implement the econometric analysis methods that we will consider in our study below, we will use special econometric modeling, statistical and forecasting programs - EViews 9, Gretl.

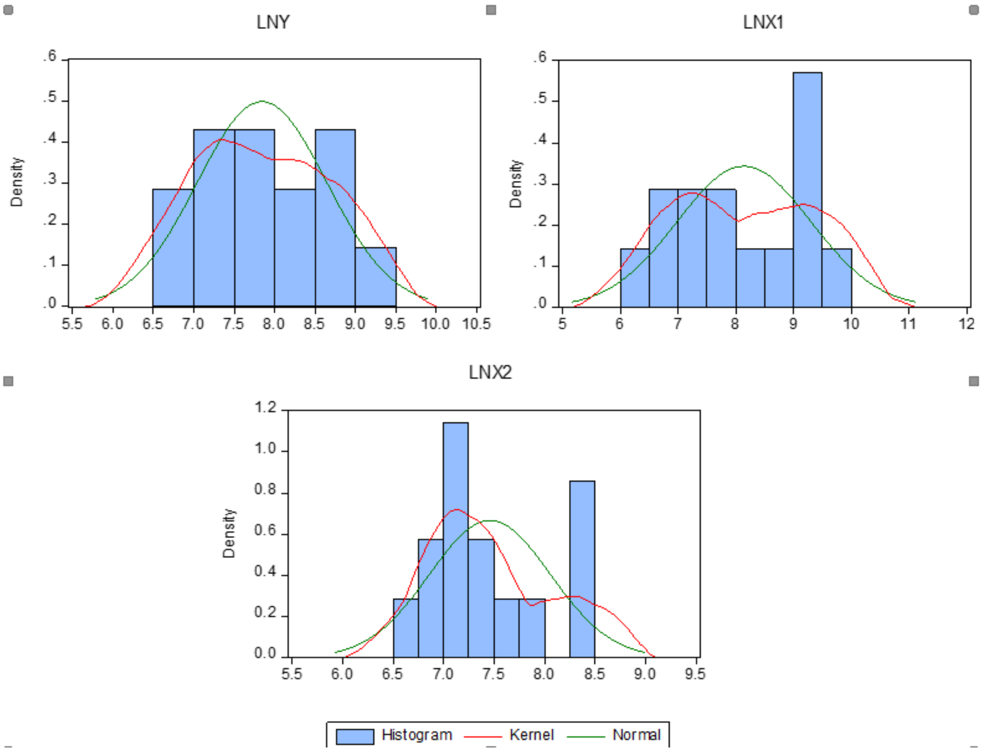
For the practical use of the regression model, it is of great importance to check the statistical significance of the coefficients of the regression equation and check the overall quality of the model being implemented. Regression statistics calculations and analysis of variance were performed using the Eviews program; Standard errors and interval limits of the equation coefficients were calculated. Correlation and regression analysis are usually performed for a limited population, therefore, the parameters of the regression equation (regression and correlation indices), correlation and determination coefficients can be distorted by random factors. After selecting and analyzing the main factors, a regression equation can be constructed that quantitatively reflects the magnitude of the impact of their factors on the volume of attracted investments. Using the Eviews program, we created a model of the investment climate activation that reflects the impact of the selected main factors on the intensity of investment processes, in particular, on the volume of investments attracted to the regions. Now it is necessary to check the significance of the identified model parameters.

Statistical description of factors

	LN(Y)	LN(X_1)	LN(X_2)
Mean (o'rtacha)	7.845315	8.142780	7.458975
Median (mediana)	7.730711	7.922333	7.255409
Maximum (maksimum)	9.076283	9.795680	8.481359
Minimum (minimum)	6.628570	6.485093	6.638568
Std. Dev. (standart chetlanish)	0.801201	1.163099	0.599243
Skewness — S (Asimmetriya koeffitsienti)	0.088023	0.026289	0.594269
Kurtosis — K (Ekstsess koeffitsienti)	1.743278	1.446432	2.144631
Jarque-Bera (Jarka-Bera mezoni)	0.939367	1.409531	1.250829
Probability (ehtimollik)	0.625200	0.494224	0.535040
Sum (umumiy yig'indi)	109.8344	113.9989	104.4256
Sum Sq. Dev. (standart chetlanishlarning umumiy yig'indisi)	8.344994	17.58640	4.668205
Observations (kuzatuvlar soni)	14	14	14

Before building a multifactor econometric model, let's look at the statistical description of the factors in Table 3.3.3. The table data shows the average value (mean), median, maximum and minimum values (Maximum, minimum), as well as the difference of each factor from the average value (Std. Dev (Standard Deviation)). In addition, the table shows the skewness coefficient (S) indicating whether the theoretical distribution curve of each factor is located to the right (S>0) or to the left (S<0) of the normal distribution curve, and the kurtosis coefficient (K) indicating whether the theoretical distribution curve of each factor is located higher (K>0) or lower (K<0) than the normal distribution curve, as well as the Jarque-Bera test (Jarque-Bera) values, which are used to confirm the conformity of each factor to the normal distribution.

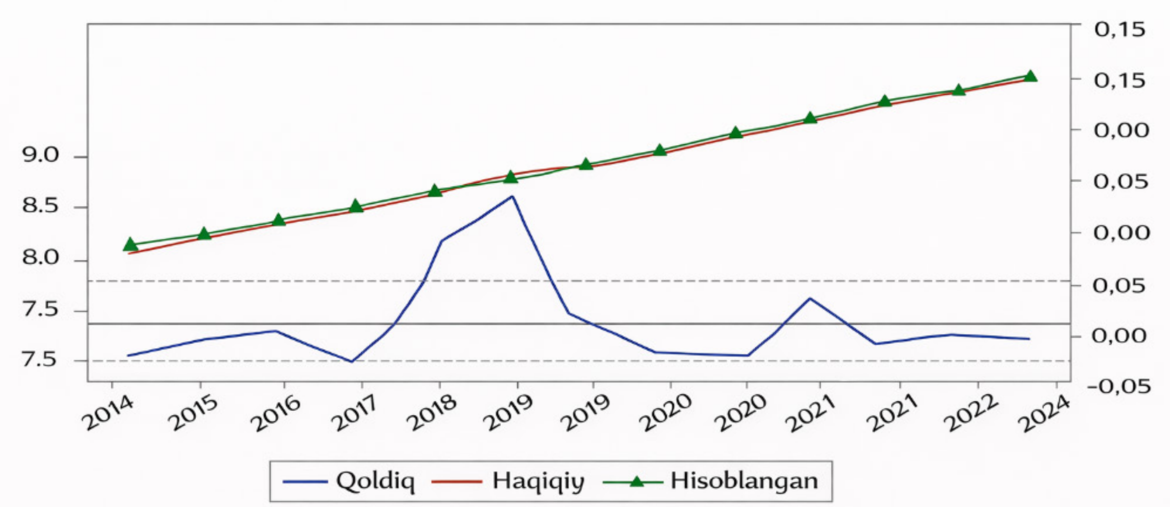
The compliance of factors with the normal distribution is examined using the skewness coefficient, kurtosis coefficient, and Jarque-Bera test. If we pay attention to the numerical values in the table, the asymmetry coefficient, the kurtosis coefficient and the Jarka-Bera criterion have relatively small values, so it can be assumed that the factors are close to the normal distribution. On the contrary, large values of asymmetry, kurtosis and the Jarka-Bera criterion indicate that the factors deviate significantly from the normal distribution. To better visualize this situation, let's look at the normal distribution functions of each factor. The normal distribution functions of all factors are given in Figure 3 below.



It can be seen from the figure that almost all factors obey the law of normal distribution. To select factors for a multifactor econometric model, a correlation analysis is required. For this, pairwise correlation coefficients are calculated between the factors. According to the results of the correlation analysis, it was found that there are dense connections between the resulting factor (LnY) and the influencing factors (LnX_1, LnX_2), that is, the value of the pairwise correlation coefficients is greater than 0.8. The results of the matrix analysis of the pairwise correlation coefficients show that the factors $\ln(x_i)$ $(i=\overline{1,2})$ and $\ln(x_j)$ $(j=\overline{1,2})$ cannot be considered collinear. Because, if $r_{(\ln(x_i),\ln(x_j))}<0.8$ and the determinant of the matrix $X'X$ is not close to zero, then this indicates the absence of multicollinearity. So, the pairwise correlation coefficients between the factors have taken numerical values less than 0.8. So, the correlation coefficients between the factors included in the multifactor econometric model meet the requirements in terms of the calculated value and probability of the t-Student criterion. In the next step, we will build a multifactor econometric model. In general, the multivariate econometric model has the following form:

$$\ln(Y)=\ln(\alpha_0)+\alpha_1*\ln(X_1)+\alpha_2*\ln(X_2)+\dots+\alpha_n*\ln(X_n)+\varepsilon \quad (3.3.1)$$

Now, to check the reliability of the calculated parameters (regression coefficients) of the multivariate econometric model (3.3.2), the Student's t-test is used. It is known that the reliability probability α=0.05 and the degree of freedom df=n-m-1=14-2-1=11 (n is the number of observations, m is the number of factors), the tabular value of the t-test is equal to ttable=2.201. From the data in Table 2, it can be seen that the absolute value of the calculated values of the t-test for each factor is greater than the tabular value. This indicates that the estimated parameters (regression coefficients) of the model are reliable and that the model can be used to forecast future periods. The actual, estimated and differences between the multifactor econometric model are presented in Figure 4 below.



3.3.2-rasm. Qashqadaryo viloyati sanoat tarmog'ida ishlab chiqarilgan umumiy mahsulot hajmining haqiqiy, hisoblangan va qoldiq qiymatlari (2014–2024-yillar)

Also, the ARIMA (Autoregressive integrated moving average) model is widely used in forecasting time series data for the medium term. In particular, the standard errors calculated by the ARIMA model are lower than those of the linear model in all forecast periods, which indicates that this model is statistically more stable. Also, the 95% confidence intervals determined by the ARIMA model are narrower, ensuring that the forecast values are closer to the real economic process. The results of the linear model show that the volume of industrial products increases sharply and rapidly as the forecast period lengthens. However, the high standard errors and the widening of the confidence intervals mean that this model is relatively less reliable for long-term forecasts. This is explained by the fact that the linear model does not sufficiently take into account structural changes in the time series and external economic factors.

The forecasting ARIMA (Autoregressive integrated moving average) model has the order (p,d,q), where p represents the autoregression parameter, d represents the integration part, and q represents the moving average parameter. The general form of the ARIMA model is as follows:

$$Y_t=\alpha+\varphi_1 Y_{t-1}+\cdots+\varphi_p Y_{t-p}+\epsilon_t+\theta_1 \epsilon_{t-1}+\cdots+\theta_q \epsilon_{t-q} \quad (3.3.7)$$

Based on the results of calculations based on available statistical data, the ARIMA model was developed to forecast the total volume of output produced in the regional industrial sector. This model is characterized by the correspondence of forecast values to real dynamics, relatively low standard errors, and the location of confidence intervals within acceptable limits. Therefore, within the framework of the dissertation, it is considered appropriate to use the forecast results obtained based on the ARIMA model in assessing the prospects for innovation-oriented industrial and investment development of the Kashkadarya region and developing strategic decisions. These forecasts serve as an important scientific and practical basis for the formation of a medium-term strategy for industrial development in the region.

CONCLUSION AND SUGGESTIONS

The research demonstrates that forecasting innovative industrial-investment development in the Kashkadarya region requires a comprehensive evaluation of economic structure, resource potential, and technological readiness. The findings show that strengthening innovation ecosystems, expanding industrial diversification, and encouraging investment in high-value-added sectors are crucial for long-term regional competitiveness. Strategic focus on energy processing, agro-industrial modernization, and digital manufacturing can enhance sustainable growth prospects. Effective coordination between government policy, private sector initiatives, and institutional support mechanisms will determine the success of innovation-driven industrial transformation. The study provides analytical insights that may assist policymakers and researchers in designing evidence-based strategies for regional development and investment planning.

References

1. Schumpeter, J. A. (1994). The Theory of Economic Development. Harvard University Press.
2. Porter, M. E. (1990). The Competitive Advantage of Nations. Free Press.
3. Dunning, J. H. (1993). Multinational Enterprises and the Global Economy. Addison-Wesley.
4. OECD. (2018). Innovation Policies for Sustainable Growth. OECD Publishing.
5. World Bank. (2020). Foreign Direct Investment and Development. World Bank Publications.
6. State Committee of the Republic of Uzbekistan on Statistics. (2023). Regional Statistical Review.
7. Ministry of Investment, Industry and Trade of Uzbekistan. (2022). Investment Policy Report.

muhandislik & iqtisodiyot

ijtimoiy-iqtisodiy, innovatsion texnik, fan va ta'limga oid ilmiy-amaliy jurnal

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2026. № 4

"Muhandislik va iqtisodiyot" jurnali 26.06.2023-yildan Oʻzbekiston Respublikasi Prezidenti Adminstratsiyasi huzuridagi Axborot va ommaviy kommunikatsiyalar agentligi tomonidan №S–5669245 reyestr raqami tartibi boʻyicha roʻyxatdan oʻtkazilgan.
Litsenziya raqami: №095310.

Manzilimiz: Toshkent shahri Yunusobod tumani 15-mavze 19-uy