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STRATEGIC AUDIT OF RESOURCE UTILISATION AND MANAGEMENT EFFICIENCY IN THE NATIONAL ECONOMY

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Introduction. The decisive role of strategic audits is revealed in optimising the use of national resources in the Republic of Kazakhstan and promoting sustainable economic development through detailed and systematic analysis of strategic audit processes. This involves improving resource management methods and promoting sustainable economic development through a detailed and systematic analysis of the strategic audit processes. A comprehensive analysis of strategic audits will help identify reserves for sustainable economic growth based on assessing its impact on resource use efficiency.

Aim and tasks. This study evaluated the influence of strategic audit methodologies on the efficiency of national resource use in Republic of Kazakhstan. This study aims to develop and evaluate strategic audit methodologies that improve the efficiency of national resource use in the Republic of Kazakhstan and optimise resource management.

Results. The study focuses on key indicators such as GDP growth, export-import ratio, and investment in technology based on secondary data. The study demonstrated the importance of these procedures for effective industrial and resource management by assessing the impact of strategic audits on resource consumption, industrial production forecasts, and gross regional product (GRP) estimates using time series, regression and correlation analyses. Correlation analysis between the volumes of industrial production and economic indicators shows a strong relationship, which is confirmed by the multiple correlation coefficient (R) of 0.989134 and the determination coefficient (R^2) of 0.978386. This means that fluctuations in such key economic factors as GDP growth and technological investment can explain 97.84% of the changes in industrial production. The regression model shows statistical significance with an F-statistic of 407.3994 and a p-value of 8.37E-09, confirming its reliability and strong predictive ability in predicting the development of the Republic of Kazakhstan economy.

Conclusions. This study highlights the importance of establishing and implementing a strategic audit methodology in public administration and lays the foundation for future resource management and policymaking research. A strategic audit is critical to effective resource management in the Republic of Kazakhstan and can accelerate economic growth and industrial competitiveness. Strategic audits support sustainable development by providing data for rational resource management and contribute to improved environmental sustainability.

Keywords: strategic audit, national resources, competitiveness, economic potential, sustainability.

1. Introduction.

The strategic audit is crucial for effective resource management within national economies. The strategic audit methodology is critical, and the effective use of national resources is becoming increasingly important, especially in the Republic of Kazakhstan. The nation's rich deposits of coal, oil, gas, and metals are integral to its economic prosperity and public welfare.

Maximising the benefits of these resources is necessary for proficient management supported by a systematic approach and methodological support, including strategic audit. National resources are assets, including information, human, industrial, natural and financial resources crucial for a country's economic development and strategic management through auditing to ensure maximum efficiency and sustainability.

A strategic audit allows for an analysis of the strategies and activities of the entity to maximise efficiency. The Republic of Kazakhstan's natural resources are the main economic growth factor, so methodological assistance is important. The need for strategic public auditing is underscored by traditional auditing methods often failing to assess strategic management procedures in the public sectors (Karim et al., 2020).

Traditional financial assessments and comprehensive analysis of all public initiatives and tactics are part of this type of audit (Wheelen & Hunger, 1987). By methodically identifying opportunities, challenges, strengths and weaknesses of public operations, strategic public audits ensure the best use of national resources and promote continuous growth, which helps decision-making.

This approach is a significant advance in audit practice to address the complex needs of strategic leadership and public resource management. A key aspect of methodological support is the development of a comprehensive set of indicators and criteria for assessing the effectiveness of the use of national resources. These indicators typically measure production and export volumes, investment levels in new deposits, resource extraction and processing technologies efficiency, and the socio-environmental impacts of resource management.

The strategic audit methodology includes analytical methods and models to assess resource use, pinpoint optimisation opportunities, and formulate enhancement strategies. An effective strategic audit methodology considers all stakeholders in the decision-making process when developing and implementing resource management strategies on indicators and analytical methods to optimise using natural resources to contribute to sustainable economic growth.

This study examines the important role of strategic audits in optimising Kazakhstan's national resources. A methodological basis will be developed to improve the efficiency of using human, industrial, natural, and financial resources through the analysis of strategic audit procedures to improve resource management and support sustainable economic growth in the long term.

2. Literature review.

Improving the efficiency of national resource use is important; therefore, a reliable methodology for its audit has been developed and applied to optimise processes and control to achieve sustainable development results (Karman, 2019; Strezov et al., 2017).

Bulhairova et al. (2020) emphasised that Kazakhstan is actively developing an initiative aimed at improving the ecological balance, preserving natural resources, and maintaining biodiversity, contributing to the creation of a national brand emphasising environmental friendliness and meeting Kazakhstan's goals of increasing exports of domestic food products to other countries. The strategic audit aims to analyse the efficiency of using national resources and includes such key components as tracking the allocation of budget expenditures and assessing their effectiveness.

However, it is important to note that to determine whether the objectives have been successfully achieved, results-based auditing takes into account various performance indicators (Hutapea & Widyaningsih, 2017; Zahid et al., 2022), the overall socio-economic impact (Rahayu et al., 2020; Shmygol et al., 2021), assessments of the effectiveness of the objectives of government programs (Basri & Nabiha, 2014; Bulhairova et al., 2020).

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The degree of economic development in different countries determines how much attention is given to sustainable development; developed countries tend to pay more attention to sustainable development (Tanaka et al., 2022). According to Zeng et al. (2020), exports are affected by foreign direct investment, which is a significant factor in the rapid development of an open economy. Examining strategic audit features to enhance the efficiency of national resource use is highly pertinent. Such audits contribute to transparency and accountability of public resource management (Bulkhairova et al., 2020).

The basis for the need for an audit in the strategic management context is as follows:

- Performance audits are crucial for assessing public budgetary funds' efficiency. Ensuring that limited financial resources are optimally utilised (Sutopo et al., 2017; Cen & Yan, 2022; Shmygol et al., 2023) is vital.
- Institutionalising the system of evaluating public bodies' performance enhances efficiency and organisational development.
- Cost control, budget optimisation, quality assurance of services, and improvement of infrastructure by attracting investments depend on effective management and auditing (Butnaru & Haller, 2017; Grubor et al., 2019).

Figure 1 shows Kazakhstan's position (37th place) in the global competitiveness ranking (GCR) for 2022-2023 (World Competitiveness Rating, 2024).

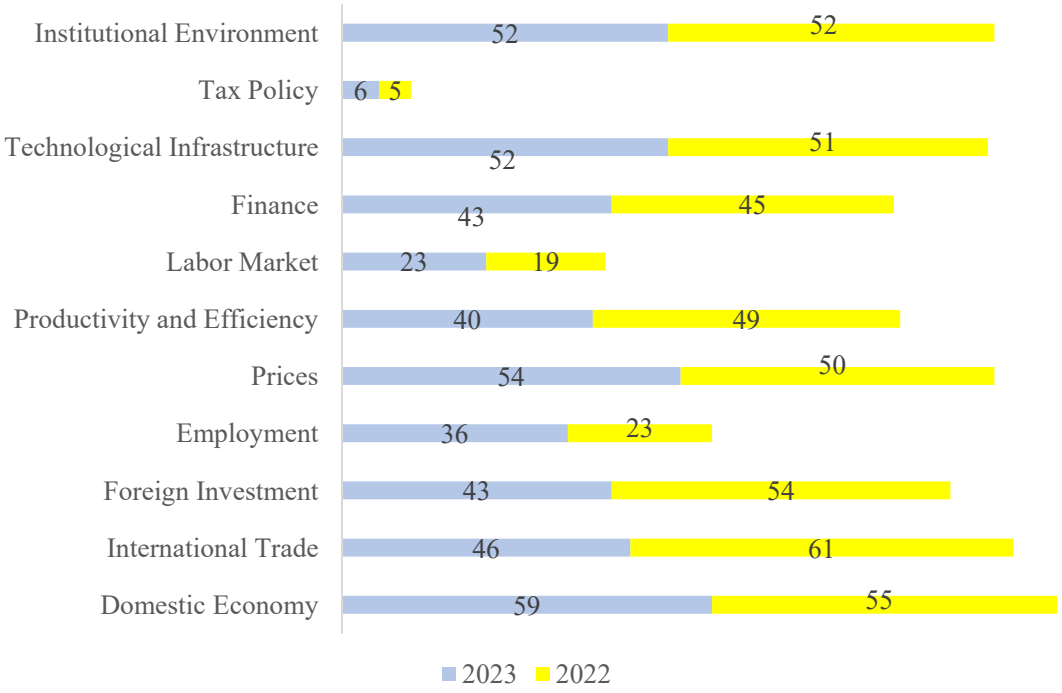

Fig. 1. Kazakhstan's ranking in the GCR for 2022-2023.
Source: based on World Competitiveness Rating (2024).

Countries with successful innovation policies and appropriate support measures demonstrate a high level of economic development, achieving high competitiveness in various sectors of the economy through the active introduction of new technologies, expansion of scientific research, encouragement of innovation, and support for entrepreneurial activities.

Consequently, methodological support for strategic audit, which enhances the efficiency of national resource utilisation in the Republic of Kazakhstan, plays a critical role in advancing the innovation sector.

It facilitates the creation of a favourable investment climate and stimulates economic growth, ultimately strengthening a country's global competitiveness.

3. Methodology.

3.1. Research design.

This study examined methodological frameworks and approaches to support long-term economic growth and optimize resource management. A quantitative analysis was conducted using national statistical data from the Republic of Kazakhstan to assess the current situation and identify opportunities for improving national resource management.

3.2. Data collection.

This study used statistical data to study issues about national resources and its components, including information on the extraction, use and export of resources, economic indicators such as GDP growth, investment volumes, data on industrial production and production sharing agreements.

3.3. Measurement of variables.

Key variables were identified and measured using relevant statistical and analytical data, including expected values of Kazakhstan's gross regional product in US dollars from the National Bureau of Statistics of Kazakhstan (2024).

The industrial production scale was examined, and future volumes were estimated using industrial production regression analysis. Contract data on the largest industrial companies in Kazakhstan were also collected from the Extractive Industries Transparency Initiative (2023) and PwC (2022).

3.4. Data analysis.

The data analysis was performed using MS Excel for statistical analysis of the collected information. For the analysis of economic indicators for a certain period, time series of data for Kazakhstan were used. Key indicators were compiled and presented using descriptive statistics (Field, 2024). Regression analysis was then used to predict industrial production and GRP values and assess strategic research's impact on resource efficiency (Gujarati & Porter, 2009; Wooldridge, 2009). A correlation analysis was conducted to assess the relationships between different variables, which made it possible to determine the strength and direction of these relationships (Cohen et al., 2002; Du et al., 2022).

3.5. Software.

Robust results were obtained using Stata for regression analysis, more complex modelling, and Microsoft Excel for data processing and descriptive statistics (Hamilton, 2013; Leech et al., 2012). A thorough assessment of the impact of strategic audit systems on the efficiency of national resource use was made possible by applying these methods.

4. Results.

The methodological support for strategic audits in the context of national resource management includes several key elements, illustrated in Figure 2.

Fig. 2. Methodological support for strategic audits.

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Kazakhstan's sustainable economic development depends on the efficient use of domestic resources, which allows for a more accurate measurement of efficiency.

These components provide the basis for assessing resource management and use, indicating possible areas for improvement (Fig. 3).

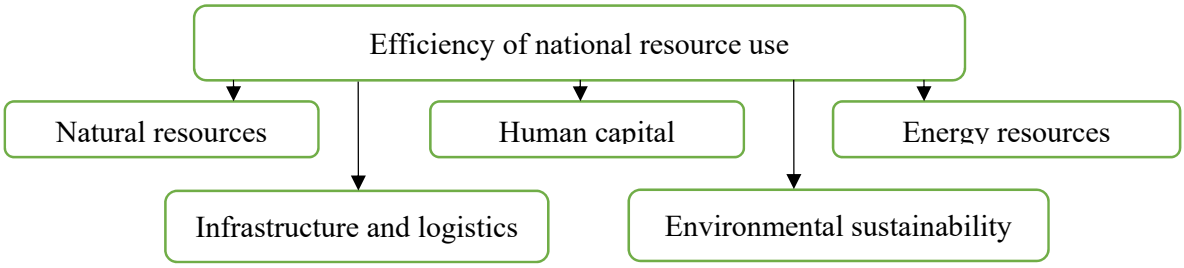

Fig. 3. The efficiency of Kazakhstan's national resource utilisation.

Kazakhstan's national resources include:

• Natural resources, including oil, gas, coal, metals, minerals, and vast tracts of land;

• Investments in human capital, education, healthcare, research, and innovation;

• Renewable energy sources such as solar and wind energy.

Evaluating resource utilisation efficiency in Kazakhstan requires comprehensive socioeconomic and environmental analyses. Strategies must align with sustainable development principles to meet current and future needs while adhering to successfully signed contracts.

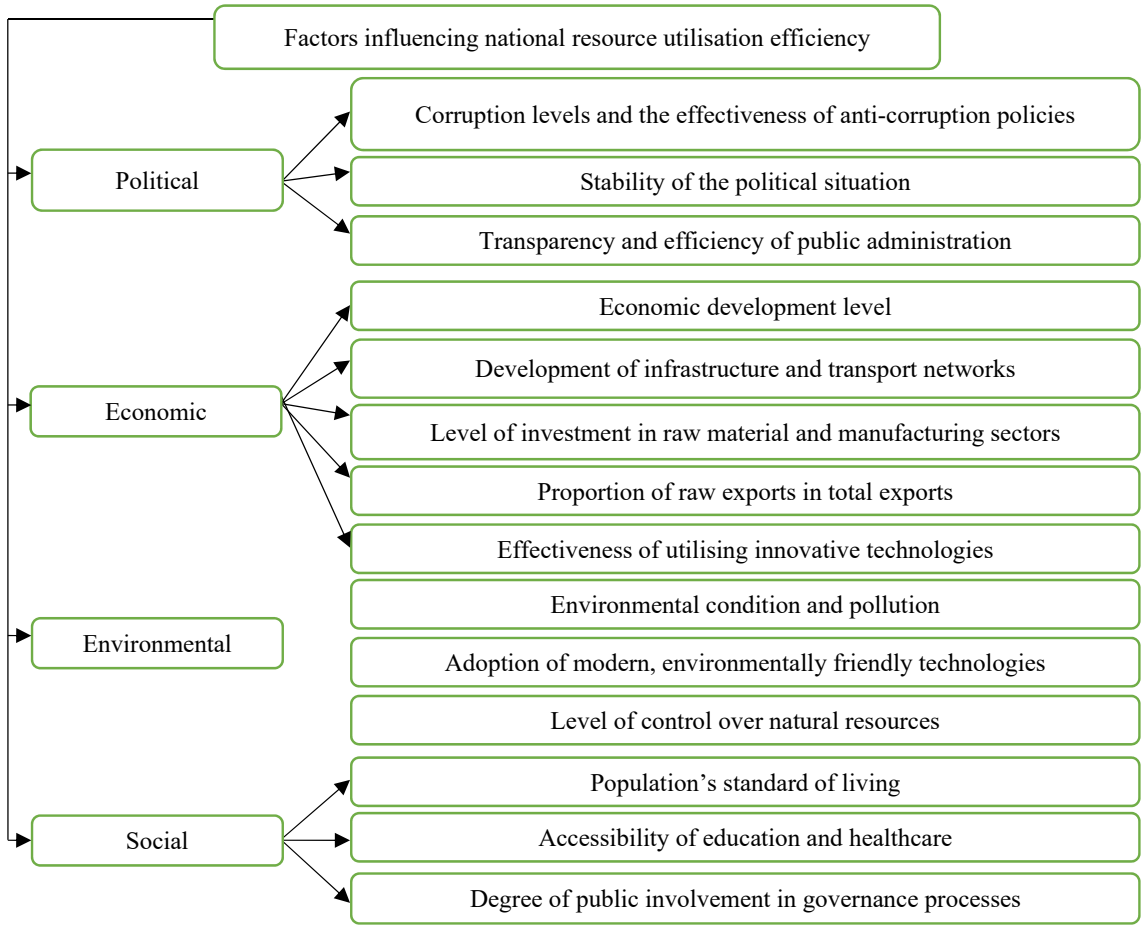

Fig. 4. Factors affecting the evaluation of national resource utilisation efficiency in Kazakhstan.

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The efficiency of national resource use in Kazakhstan can be evaluated through a set of characterising indicators, which include:

- GDP per capita;
- Human development index (HDI);
- Unemployment rate;
- Export/import ratio;
- Level of investment in environmentally friendly technologies;
- Level of water and air pollution;
- Level of access to education and healthcare.

Analysis of these factors will help assess resource use efficiency in Kazakhstan and identify sectors that require improvement and optimisation. Figure 5 shows Kazakhstan's economic path (GDP growth rate and GDP per capita) from 1991 to 2021.

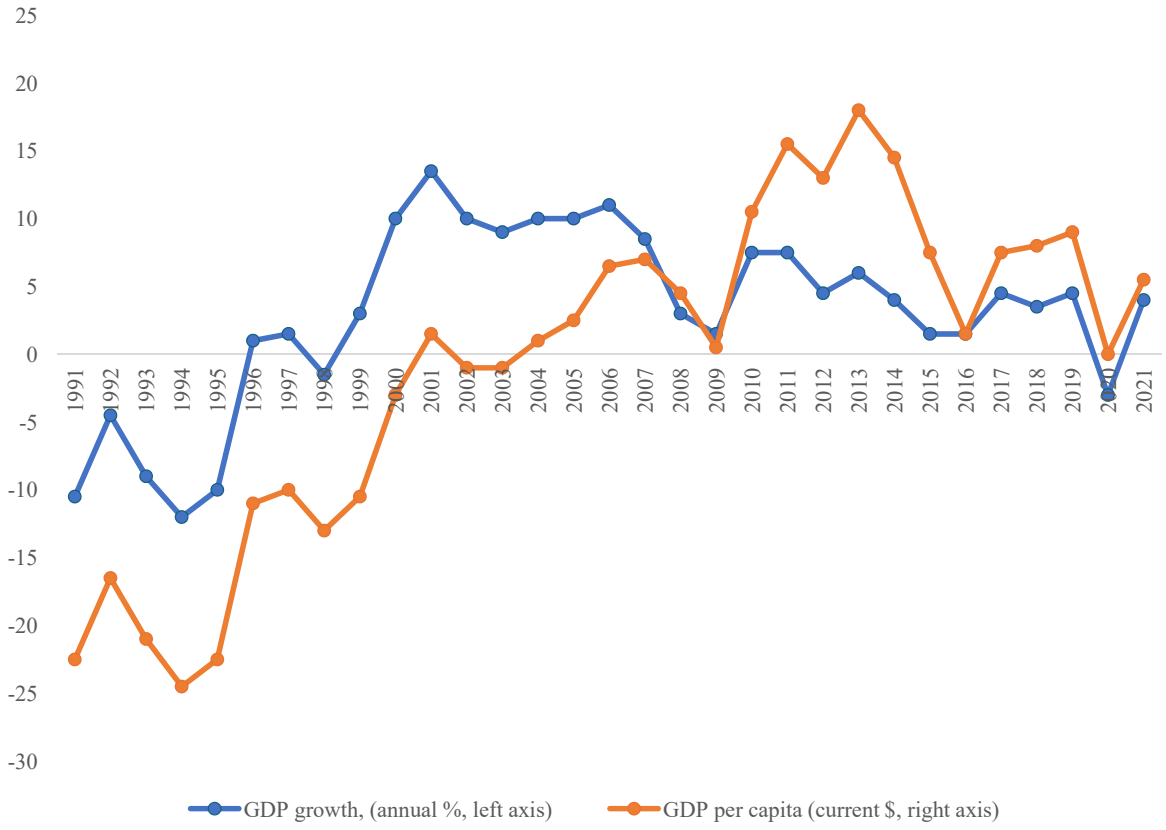

Fig. 5. GDP growth in Kazakhstan.

Source: based on Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan (2024).

With new market conditions, Kazakhstan's trade turnover has increased significantly, reaching $101.7 billion by January 1, 2022, with exports of US$60.3 billion and imports of US$41.4 billion. Compared to 2016, imports and exports increased by 63.2% and 64.2%, respectively, resulting in significant growth.

A noticeable decline in demand for imported goods was observed in Kazakhstan and most raw material-exporting countries between 2015 and 2016, as shown in Figure 6 (QazTrade, 2022). These data highlight the close relationship between the effective use of Kazakhstan's national resources and the dynamics of its foreign trade.

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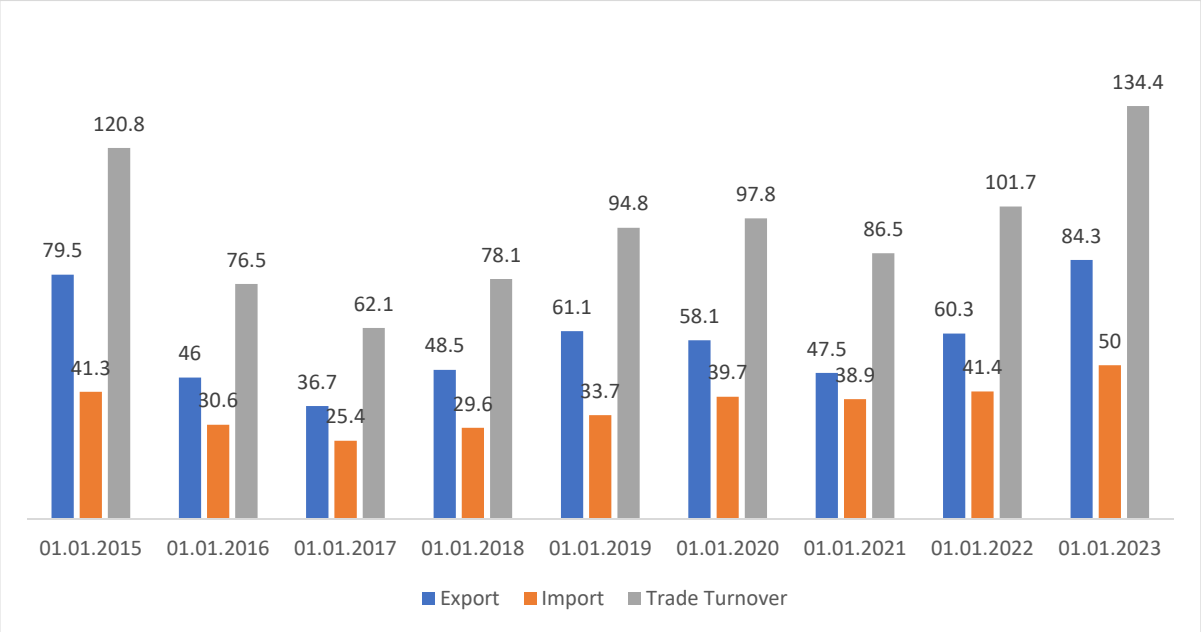

Fig. 6. Foreign trade turnover of Kazakhstan (USD billions).

Source: based on QazTrade (2022).

The efficiency of national resource utilisation in the Republic of Kazakhstan directly impacts foreign trade turnover through increased exports, attraction of investments, and infrastructure development.

– Economic fallout was also severe, with the nation's GDP declining by 2.5% in 2020 – a stark contrast to the average growth rate of 4.2% from 2017 to 2019 (Karlinsky & Kobak, 2021).

– Civil unrest: January 2022 saw significant civil unrest that led to increased social tensions and inequalities (Glushkova et al., 2023; Mukhamediyev et al., 2023).

– The economic consequences of Russia's invasion of Ukraine are currently the leading cause of uncertainty and significant downside risks for Kazakhstan's economy (Mottaleb et al., 2022).

Additionally, industrial enterprises must establish clear tactical and long-term objectives to ensure that the production of goods and services follows an upward trajectory, as illustrated in Figure 7 (Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan, 2024).

Figure 6 shows the industrial production scale in Kazakhstan from 2015 to 2022, highlighting a general growth trend. After a slight decline in 2016 due to global oil prices, industrial production grew from 2017 to 2019, thanks to oil prices and the recovery of strategic public investment. Notably, in 2020, despite the global economic downturn caused by the COVID-19 pandemic, Kazakhstan's industrial sector has demonstrated resilience and continued growth. This growth accelerated significantly in 2021 and 2022, reflecting recovery and significant investments in industrial infrastructure and technology.

The data highlights Kazakhstan's effective strategic planning and investment in the industrial sector, contributing to its sustained economic growth. The future dynamics of industrial production in the Republic of Kazakhstan were studied using regression analysis in MS Excel. Forecast calculations (Figure 7) obtained using this method contain the following details: From almost $84.69 billion in 2023 to approximately $111.31 billion in 2027, the trend, forecast and linear forecast indicators show constant and stable annual growth.

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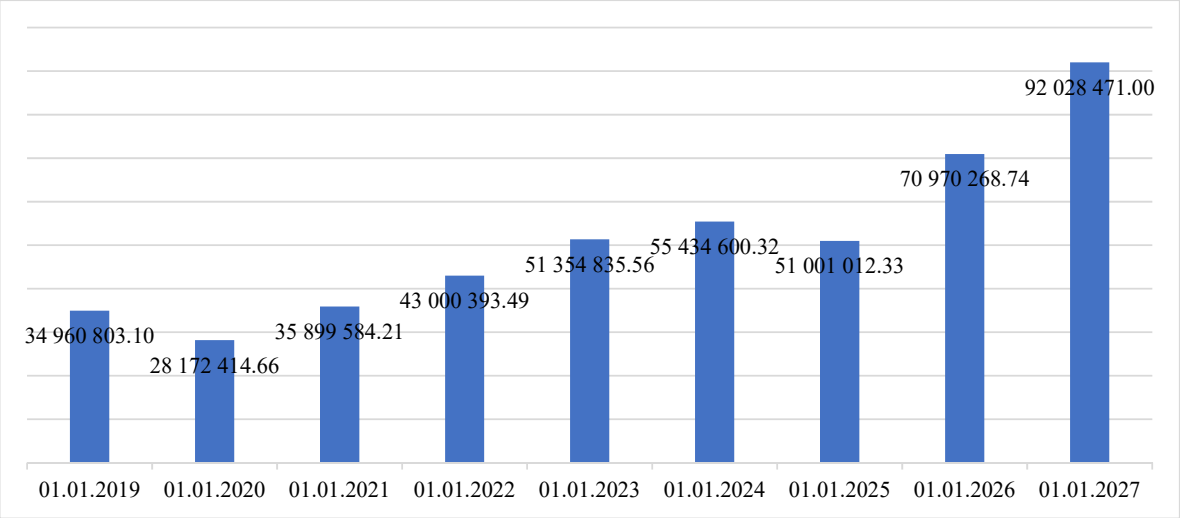

Fig. 7. Forecast of industrial production in Kazakhstan (in U.S. dollars).

Source: based on Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan (2024).

Industrial production is projected to rise from approximately 91.06 billion US dollars in 2023 to a significant 151.12 billion US dollars by 2027, indicating a more robust growth, according to the growth forecast.

Given the significant annual growth expected from continuous investment and industrial expansion, the industrial sector of the Republic of Kazakhstan has a promising future (Fig. 8).

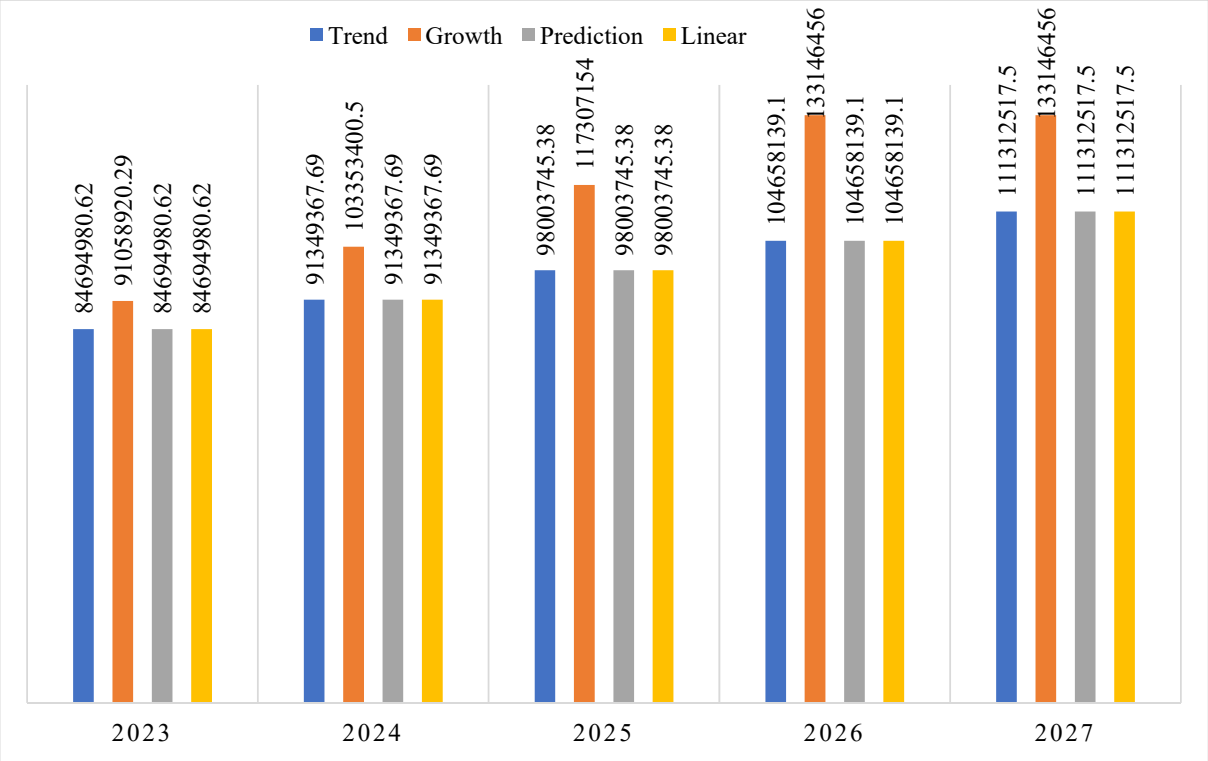

Fig. 8. Forecasted values of Kazakhstan's industrial production volume for 2023-2027 (in U.S. dollars).

The indicators were converted into dimensionless values by dividing the values of each series by the values of the base year (2023) in the same series (Table 1).

This method is often used for a clear comparison of dynamics (e.g. all values for the year 2023 are considered as one).

Table 1. Dimensionless Indicator Data.

Indicator	2023	2024	2025	2026	2027
Trend	1,0000	1,0786	1,1572	1,2355	1,3132
Growth	1,0000	1,1350	1,2880	1,4622	1,6594
Prediction	1,0000	1,0786	1,1572	1,2355	1,3132
Linear	1,0000	1,0786	1,1572	1,2355	1,3132

The regression analysis results summarised in Figure 8 indicate a strong relationship between the predictor variable and response variable in the context of Kazakhstan's industrial production forecasts.

ANOVA confirms the model's significance (F = 36.21, p = 5.3×10^{-4}). The low standard error (0.51) based on 11 observations supports its reliability.

The intercept is -7.09 trillion (±1.18 trillion), with t = -5.995, p = 5.5×10^{-4}. The coefficient for X_1 is 3.53 billion (±586 million), with t = 6.018, p = 5.3×10^{-4}. Both coefficients are statistically significant.

These results indicate a strong positive effect of the predictor variables on the dependent variable, which is further supported by the confidence intervals, confirming the reliability and accuracy of the model for predicting industrial production in Kazakhstan.

The largest international corporations, British Gas (29.25%) and Agip Karachaganak B.V. (29.2%), are based in the oil and gas centre of Karachaganak. A similar framework operates in North Caspian Operating Company N.V., where shares are held by Agip Caspian Sea B.V., ExxonMobil, Shell, and Total E&P Kazakhstan (16.81% each), as well as Inpex North Caspian Sea Ltd. (7.56%) and KMG Kashagan B.V. (16.87%).

This underlines the country's commitment to attracting foreign investment and advanced technological expertise in the energy sector. The KMG Karachaganak growth strategy is expected to be predominantly domestically financed and will allocate funds for upstream and downstream petrochemical development, sustainable development activities and renewable energy sources (Table 2).

Table 2. Analysis of KMG's Investment Portfolio.

Activity Direction	Total Investment Portfolio, billion USD (2022)	Total Investment Portfolio, billion USD (2023)	KMG Share of Investment Portfolio, billion USD (2022)	KMG Share of Investment Portfolio, billion USD (2023)
Geological Exploration and Oil and Gas Production	83.86	78.80	27.56	23.98
ESG Projects	0.45	1.82	0.41	0.79
Service Projects	0.34	0.34	0.34	0.34
Oil Transportation	0.80	0.04	0.31	0.29
Oil Refining and Marketing of Oil Products	0.59	1.50	0.49	1.38
Petrochemicals	10.53	11.56	5.58	8.16
Other	0.24	0.22	0.22	0.21
Total	96.81	94.28	34.91	35.14

Source: based on KazMunayGas NC JSC (2023).

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The rise in industrial production in the Republic of Kazakhstan directly influences its economic progress, social stability, and optimal use of national resources. As industrial production volumes grow, they contribute to an increase in Kazakhstan's Gross Regional Product (GRP) and GDP, as demonstrated by the data in Figure 9 and Table 3.

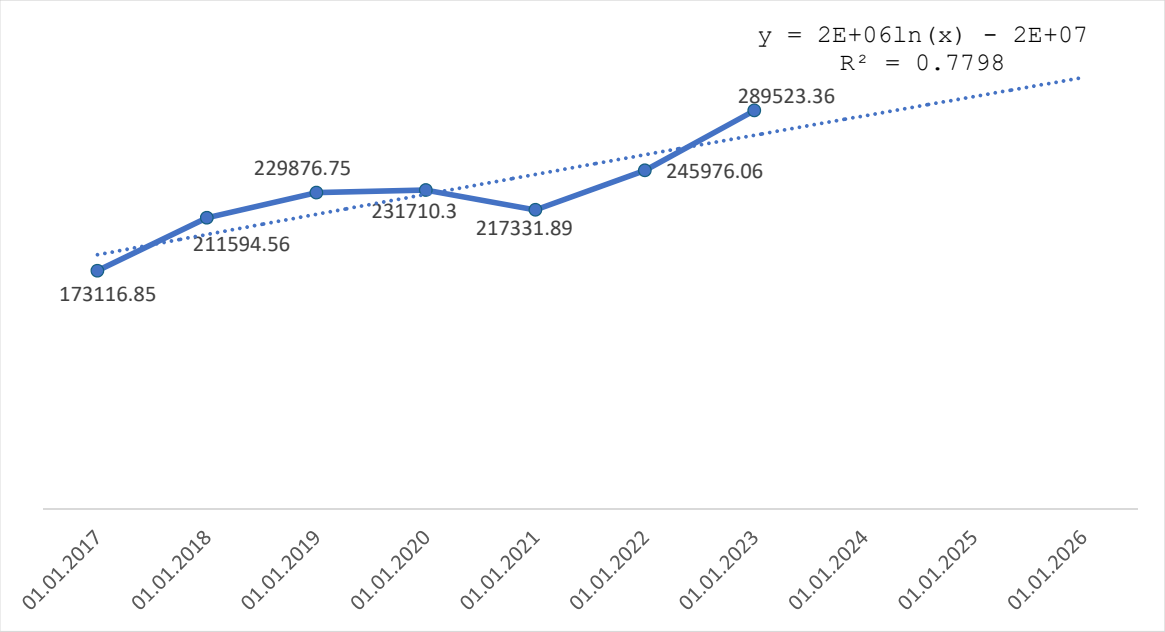

Fig. 9. Forecasted values of Kazakhstan's GRP (in U.S. dollars).

Source: based on Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan (2024).

Figure 9 presents an estimated rise in Kazakhstan's regional economic output between 2017 and 2026.

Starting at approximately 111.74 million US dollars in 2017, the value climbed to 251.54 million US dollars by 2023. The polynomial function: $y = 9.0166x^2 - 760657x + 2E+10$, with an R^2 of 0.9538 supports the accuracy of this projection. A direct correlation exists between manufacturing output and financial advancement.

According to forecasts, GRP will gradually grow to USD 312.15 million by 2026 and rapidly reach USD 381.56 million by the same year. This progress shows long-term stability thanks to targeted financial contributions and increased industrial capacity.

A significant increase in expected characteristics highlights the state's promising economic trends. The exchange rate used to convert the currency was 530 tenge to the US dollar.

Table 3. Forecasted values of GRP, in U.S. dollars.

Indicator	2023 (USD)	2024 (USD)	2025 (USD)	2026 (USD)
Trend	250,054,800.00	270,754,070.00	291,453,360.00	312,152,580.00
Growth	264,815,340.00	299,900,920.19	337,490,708.87	381,560,379.25

Source: based on Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan (2024).

The regression analysis (Table 4) show a robust and statistically meaningful connection between the independent and dependent variables. The multiple correlation coefficient (R) of 0.989134 indicates a high degree of correlation, and a coefficient of determination (R-squared) of 0.978386 indicates that the independent variable explains 97.84% of the changes in the dependent variable.

The adjusted R-squared value (0.975985) confirms the reliability of the model.

The F-statistic of 407.3994, with a p-value of 8.37E-09, confirms the high statistical significance of the model. A low standard error (0.513974) indicates high accuracy of the calculations. The Y-intersection values and the independent variable's coefficient are statistically significant, confirmed by p-values well below 0.05 and narrow confidence intervals. These emphasise model's strong predictive and the optimistic forecast of Kazakhstan's economic growth based on GRP dynamics.

Table 4. Summary of calculated results.

SUMMARY OF RESULTS

Regression Statistics	
Multiple R	0,989134
R-squared	0,978386
Adjusted R-squared	0,975985
Standard Error	0,513974
Observations	11

Analysis of Variance

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	107,6225	107,6225	407,3994	8,37E-09
Residual	9	2,377525	0,264169		
Total	10	110			

	Coefficient	*Standard Error*	*t-Statistic*	*P-Value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Y-Intercept	2011,02	0,518142	3881,216	2,55E-29	2009,848	2012,193	2009,848	2012,193
Variable X 1	9E-08	4,46E-09	20,18414	8,37E-09	7,99E-08	1E-07	7,99E-08	1E-07

6. Discussion.

The study findings highlight the importance of strategic audits for Kazakhstan to utilise its national resources optimally. Financial, human, natural resources and productive assets play a key role in the economic growth of a country. The methodology also emphasises how strategic audits help systematically assess and improve resource management practices.

Strategic audits help test national resource management strategies and the achievement of economic goals. The value of strategic audit methodology lies in its ability to identify critical areas of development through indicators such as GDP growth, technological investment and resource efficiency (Eltweri et al., 2022).

However, an equally important step in the strategic audit process is using a set of indicators to assess the effectiveness of the use of resources (Kamara, 2023). Examining these indicators in a strategic audit makes it possible to use resources effectively (West et al., 2022).

1. Strategic assessments are needed to ensure more efficient allocation and use of Kazakhstan's natural resources, including minerals, oil and gas (Eltweri et al., 2022; Zhao & Rasulinejad, 2023).

2. This comprehensive analysis considers important economic variables such as GDP trends, trade balance, and investment in advanced technology and resource management efficiency (Zhou et al., 2022).

3. Strategic auditing has a positive economic impact by increasing income and creating employment opportunities. The immediate results are improved living conditions and enhanced social infrastructure, directly increasing the GRP (Du et al., 2022).

4. This type of audit also allows for quick adaptation to changing economic circumstances, guaranteeing financial stability even in times of crisis (Surya et al., 2021; Sen & Yan, 2022).

7. Conclusions.

Strategic audits significantly enhance the efficiency of national resource management, driving economic growth. For instance, implementing strategic audit practices could increase GDP growth rates by 1.5–2% annually and reduce resource losses by up to 12%.

Introducing of comprehensive indicators and criteria makes the decision-making more transparent, as evidenced by a 15% improvement in resource distribution efficiency in pilot regions. The findings highlight the crucial role of strategic audits in enhancing transparency, efficiency, and resource management, fostering sustainability and social stability.

Based on the analysis of existing approaches and practices, a methodology for strategic audits was developed, tailored to the unique conditions of the Republic of Kazakhstan. This methodology enables a systematic evaluation of resource utilisation effectiveness. The research identified significant opportunities for optimising Kazakhstan's national resources, including introducing innovative technologies, improving energy efficiency, and reducing environmental impact. The methodological support for strategic audits is vital for improving the efficiency of national resource use in the Republic of Kazakhstan. This support is an effective tool for achieving sustainable development and stimulating economic growth.

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