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ABSTRACT
of the dissertation for the degree of Doctor of Philosophy

"SYSTEMATIC ANALYSIS OF INVESTMENTS IN THE MANUFACTURING SECTOR OF THE ECONOMY OF AZERBAIJAN"

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GENERAL DESCRİPTİON OF THE RESEARCH

Relevance and degree of development of the topic: One of the key aspects of analyzing investments in the country's manufacturing industry is their level of attractiveness. In scientific literature, investment attractiveness generally refers to the overall characteristics of a given entity in terms of its investment environment, the level of development of its investment infrastructure, the extent of government support, the significance of administrative capabilities, existing barriers and investment risks, the potential for attracting additional financial resources, as well as the analysis and prospects of its ranking position and competitiveness.

In the current period, the investment attractiveness of the manufacturing industry and the factors positively influencing the process of attracting investments in this sector can be assessed through various indicators. In the modern era, the new technologies and innovations brought about by the Fourth Industrial Revolution, along with the beginning of the Sixth Technological Paradigm, hold particular significance in terms of their impact on the research field.

When characterizing the relevance of the dissertation's research topic, it is essential to mention the state of the global economy, particularly the global resource crisis affecting all countries. Economic crises typically lead to a shortage of financial resources in foreign markets. As a natural consequence of such events, the reduction of foreign investments becomes more pronounced. In the context of the transition to energy-saving technologies in the manufacturing industries of both developed and developing countries, the issue of attracting investments remains more relevant than ever, including for Azerbaijan.

The modernization and diversification of the manufacturing industry—considered a leading sector of the Azerbaijani economy—along with its various sub-sectors, the enhancement of its technical and technological infrastructure, the increase in innovation activity, and the prioritization of the value chain principle, necessitate the widespread use of targeted projects funded through direct foreign investments. Additionally, the fact that the majority of foreign investments are directed toward the oil and gas sector, leaving the

national economy still dependent on hydrocarbon exports, as well as the continued export of many manufacturing products as raw materials, highlights the necessity of large-scale investments to bring these products to the final consumption stage. Moreover, the fact that more than 90% of investments directed toward fixed capital in the non-oil sector of the country's manufacturing industry consist of domestically sourced investments further emphasizes the relevance of the research topic.

Furthermore, following the 44-day Second Karabakh War and the anti-terror operation carried out in 2023, reconstruction efforts are underway in 20% of the liberated territories, including the construction of new industrial enterprises, roads, and infrastructure. All of these initiatives require the attraction of significant investment resources.

On the other hand, despite the existence of numerous scientific studies by Azerbaijani and foreign scholars in the field of investment research, unresolved issues remain regarding the attraction of investments, and many financing problems in the manufacturing industry lack precise solutions. The insufficient number of scientific studies on the use of new technologies in the systematic analysis of investment attraction further highlights the relevance of the research topic.

In recent years, economic literature on the subject has explored the nature, functions, and classifications of investments; the attraction of domestic and foreign investments and loans in industrial sectors; their use, evaluation, efficiency, and promotion at both micro and macro levels; as well as a systematic approach to investment processes. Moreover, studies have examined the formation of a competitive value chain through the attraction of local, private, and foreign investments in the non-oil and gas sector and the creation of modern infrastructure. These aspects have been addressed in the works of Azerbaijani economists such as A. Nuriyev, T. Huseynov, T. Aliyev, E. Mammadov, F. Mammadov, T. Ahmadov, A. Muradov, S. Aliyeva, T. Karimova, E. Samadova, A. Safarov, N. Sabiroglu, and F. Zeynalov, as well as foreign researchers including A. Asaul, O. F. Blatskiy, I. Blank, I. Blauberg, O. Bogatyreva, O. Vovchak, L. Dedkovskaya, I. Drohobitsky, G. Kleiner, N. Kraus, V. Kuzmin, E.

Latyagina, T. Mayorova, N. Marenkov, S. Repin, and D. Petushenko. These studies have proposed various important approaches and recommendations. However, without diminishing the significance of the findings presented in these works, it is important to note that both local and foreign authors have yet to provide a unified practical answer to the question of how to attract investments during periods of crisis by leveraging the innovations of the Fourth Industrial Revolution. The crisis in decision-making regarding industrial investments is evident, as developed countries have been experiencing investment shortages over the past decade. Specifically, following the global financial crisis of 2007-2008, these countries attempted to address this issue through monetary injections, commonly known as quantitative easing (QE). Nearly all central banks in developed nations have utilized QE programs. Furthermore, economic stimulus measures implemented during the COVID-19 pandemic, referred to as "quantitative injections 2.0," and their effectiveness remain subjects of ongoing debate. In light of these developments and consequences, Azerbaijan's Social and Economic Development Strategy, approved by a presidential decree, has prioritized the attraction of foreign direct investments that bring advanced technologies and knowledge to the country while ensuring macroeconomic and financial stability[1]. This has been framed as a key global trend and challenge for the next decade. All these factors indicate that dominant economic theories, particularly monetarism, are insufficient in addressing the issue of financial resource shortages with existing tools. This further underscores the necessity of examining the problem of investment attraction in the manufacturing industry from an entirely new perspective.

Object and subject of the study. The object of the research is Azerbaijan's manufacturing industry. The subject of the research consists of the aspects of improving the organizational-economic mechanism for attracting direct internal and external investments to

[1] Azərbaycan Respublikasının 2022-2026-cı illərdə sosial-iqtisadi inkişaf Strategiyası, p.10.
Url:https://static.president.az/upload/Files/2022/07/22/5478ed13955fb35f0715325d7f76a8ea_3699216.pdf

the manufacturing industry of the Azerbaijani economy based on a systematic approach. Azerbaijan's manufacturing industry.

The purpose and objectives of the study. The aim of the research is to identify the problems related to the methods and approaches for the analysis of investments by using systematic analysis, and to develop methodological and practical proposals and recommendations for strengthening the attraction of investments to Azerbaijan's manufacturing industry through the use of new innovations and existing technologies.

To achieve this objective, the dissertation sets forth and addresses the following tasks:

- Reviewing and summarizing scientific literature on investment attraction in the economy to explain its nature, types, and functions, while establishing the theoretical and methodological foundations in line with the requirements of modern economic development.
- Examining international best practices in attracting investments to the manufacturing industry and assessing their applicability in the Azerbaijani context.
- Analyzing the current state of investment provision in the manufacturing sector based on long-term statistical data and identifying available reserves.
- Evaluating the utilization of investments in the manufacturing sector using modern econometric models and software packages.
- Assessing the efficiency of investments directed toward the manufacturing sector through a systematic approach.
- Modeling the impact of investments in the studied industrial sector on the macroeconomic environment.
- Developing recommendations for expanding investment activities and stimulating systematic investment growth through the application of bills of exchange veksels and blockchain technologies.

Research Methods. Conduct the dissertation research, a systematic approach has been applied to the study of investment activities. The methodology includes synthesis, complex economic

and financial analysis, classification, correlation-regression methods, and factor-based assessment of investment efficiency.

The principal theses of the defense.

1. The investment process should be considered both as an independent system and as a subsystem within the broader economic system.
2. The use of investment attraction mechanisms in the manufacturing industry, based on international experience, will allow for an increase in the technical-technological level of the sector.
3. Using systematic and comparative analysis, visualization methods, and multi-year statistical data, the relative measures of the dynamics of investment attractiveness in Azerbaijan's manufacturing sector have been grouped based on sectors with similar development dynamics, and high-profit sectors have been identified through this grouping.
4. The dynamics of the production efficiency of the manufacturing industry and the linear dependence of the development results of manufacturing products have been assessed, and the most efficient areas of production have been identified.
5. The complex evaluation of the dependence of investments in the manufacturing industry on key macroeconomic factors has been considered effective.
6. To ensure the sustainable development of the manufacturing industry, increase its innovation activity, implement the production of a wide range of products replacing imports through diversification of production, carry out deep processing of chemicals, petrochemicals, non-ferrous metals, and others exported as raw materials based on the value chain principle, and achieve the implementation of targeted projects in these and other necessary directions, the necessity to intensify the process of attracting direct foreign investments into the sector has arisen.
7. The importance of developing a structural scheme for the application of promissory notes as an auxiliary investment tool

in the new investment attraction mechanism has been emphasized, and its use will contribute to promoting the development of the manufacturing industry..

8. The application of blockchain technology in the modern economy has been proposed to improve the quality of economic processes and stimulate systematic growth. In the context of rapid economic development, globalization, and the search for new investment sources, blockchain technology is seen as a vital tool for both the digitalization of society and the creation of new financial instruments for investing in the manufacturing industry.

Scientific novelty of the research. The scientific novelty of the dissertation is as follows:

- Based on statistical data from the last decades, systematic analysis of investment attractiveness in Azerbaijan's manufacturing sector has been conducted, and industrial groups with similar development dynamics have been identified **[9, p.72]**.
- The primary dependencies of manufacturing industry production on sector-specific investments and the timelines for investment distribution across these sectors have been determined **[9, p.73].**
- Using mathematical-statistical methods and modern software packages, the linear relationship between the indicators of manufacturing product development results and investment dynamics has been evaluated **[3, p.48].**
- The dependence of investments in the manufacturing industry on key macroeconomic factors has been established **[9, p.76].**
- A new mechanism for attracting investments to processing enterprises, as well as the application of bills of exchange as an auxiliary investment instrument, has been proposed in the form of a block scheme **[5, p.68].**
- The necessity of blockchain technology as a crucial tool for the creation of new financial instruments in the context of rapid economic development and the search for new investment sources has been substantiated **[6, p.230].**

Theoretical and practical significance of the research. The practical significance of the dissertation is determined by the possibility of using a systematic approach in the analysis and planning of Azerbaijan's processing industry. The proposed methods and models can be used to forecast the dynamics of production sectors. The knowledge gained during the research can also be utilized for monitoring economic dynamics in the short, medium, and long term and can be taken into account in investment policies for the manufacturing sector.

Data Sources of the Research. The data sources of the research include the annual statistical data of the State Statistical Committee of the Republic of Azerbaijan for the years 2005-2022, statistical bulletins of the Central Bank of Azerbaijan, country rankings in terms of foreign direct investment, as well as indicators from the World Bank and other obtained data. The following applied software was used for data processing: "Excel" and "Gretl."

Approbation of the research and application of the results of the work. The main findings of the dissertation and the proposals derived from the research have been included in the materials of four international and national scientific-practical conferences. Additionally, five articles have been published in journals recommended by the Higher Attestation Commissions of Azerbaijan, the Russian Federation, and Ukraine.

The structure and volume of the dissertation. The dissertation consists of an introduction, three chapters, a conclusion, and a bibliography containing 170 references. A total of 35 tables, 4 figures, 16 diagrams, and graphs were used for analysis and evaluation.

The total volume of the dissertation work is 241,593 characters, including the title page and table of contents (1,555 characters), introduction (14,616 characters), Chapter I (78,758 characters), Chapter II (50,052 characters), Chapter III (66,715 characters), conclusion (5,765 characters), and the list of references (24,127 characters). Excluding tables, figures, diagrams, and the list of references, the dissertation work consists of 178,185 characters.

THE STRUCTURE OF THE DISSERTATION WORK

Introduction

Chapter I. Theoretical and Methodological Foundations of Systematic Analysis in Attracting Investments to the Processing Sector at the Modern Stage of Economic Development

1.1. Theoretical Foundations of Attracting Investments to the Economy

1.2. Methodological Aspects of the Systematic Approach in Investment Attraction at the Modern Stage of Economic Development

1.3. International Experience in Investment Attraction

Chapter II. Analysis and Evaluation of the Current State of Investment Attraction in Azerbaijan's Processing Sector

2.1. Analysis of the Current State of Investment Provision in the Processing Sector

2.2. Econometric Evaluation of the Utilization of Investments in the Processing Industry

2.3. Assessment of the Efficiency of Investments in Azerbaijan's Processing Sector

Chapter III. Improvement of Investment Attraction Mechanisms in Azerbaijan's Processing Sector

3.1. Modeling the Impact of Investments in the Processing Sector on the Macroeconomic Environment

3.2. Expansion of Investment Activities in the Processing Sector through the Active Circulation of Bills of Exchange

3.3. Stimulating Systematic Investment Growth in the Processing Sector through the Application of Blockchain Technology

Conclusion

List of used literature

MAIN CONTENT OF THE RESEARCH

The introduction of the dissertation outlines the relevance of the topic and the degree of its development, the object and subject of the research, the purpose and tasks, the methods, the main thesis defended, the scientific novelty, theoretical and practical significance, approbation, and application.

In the first chapter, titled "**Theoretical and Methodological Foundations of Systematic Analysis in Attracting Investments to the Processing Sector at the Modern Stage of Economic Development**" the dissertation examines and generalizes the works of Azerbaijani and foreign researchers on the subject. It explores the theoretical foundations of attracting investments to the economy, the methodological aspects of the systematic approach considered appropriate for achieving this goal, and the international experience of attracting investments to the processing industry.

The investment process must be considered both as an independent system and as a subsystem of the broader economic system. The investment process cannot be analyzed separately from financial, innovative, resource, and material-technical resources. From the standpoint of a systematic approach, one of the key problems in characterizing the investment process is determining and analyzing the essence of its main factors (elements), which contributes to the system's integrity and its efficient functioning in the future[2]. The factors creating this system can be divided into internal and external ones.

Many developed countries focus on reducing the tax burden when improving the investment attraction process. Numerous studies confirm that a 1% reduction in the tax rate results in a corresponding 3% increase in direct investment inflows[3]. Additionally, it is important to use other fiscal instruments such as tax privileges and incentives.

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[2] Майорова Т.В., Системный подход в определении сущности инвестиционного процесса // Т.В. Майорова // Деньги, учет и аудит, – 2011. – Вып. 17., - с.142.

[3] Comprehensive Study of the Interrelationship between Foreign Direct Investment (FDI) and Foreign

Portfolio Investment (FPI): A staff paper prepared by the UNCTAD secretariat (23 June 1999). Geneva: UNCTAD, - 1999. – p.46.

However, the use of all these tools should be inextricably linked to the overall investment strategy and government policy, taking into account the state and development prospects of the processing industry[4].

To gain a deeper understanding of the mechanisms for attracting investments, it is essential to familiarize oneself with international experience. In Azerbaijan, the experience of Hungary in attracting investments to the industrial processing sector, including tax incentives, creating new jobs, and increasing wages, draws attention. Highlighting Hungary's experience in investment attraction, it is important to emphasize tax incentives for investments in the research and development sector. The value of wages, license and patent fees, and related expenses are deducted from the taxable base, which significantly improves the financial condition of the investment subject and encourages its focus on scientific development. Opportunities for subsidies, grants, interest-free loans, and other incentives are considered individually, depending on the characteristics and priorities of the investment project[5].

It should be noted that the tools and methods of investment policies used by developed countries must be directly applied in activating the investment attraction process and establishing a stable investment environment. Preferential conditions should be applied in strategically significant areas and should contribute to the country's economy, creating conditions for its long-term development. The use of foreign countries' experiences in attracting investments should align with the existing socio-economic realities and the overall national priorities.

In the second chapter of the dissertation, titled "**Analysis and Evaluation of the Current Situation of Investment Attraction to Azerbaijan's Processing Sector**" official statistical data are used to first analyze the current state of investment provision in the processing sector, followed by an econometric analysis of the factors and variants

[4] Корчагин Ю.А. Инвестиционная стратегия. Корчагин Ю.А. – Ростов н/Д: Феникс, 2006. – с.316.

[5] Investment Climate Statements 2020: Hungary: – Режим доступа: Url: https://www.state.gov/reports/2020-investment-climate statements/hungary/

influencing the use of investments in the sector, and the evaluation of investment efficiency.

For a more detailed analysis of the investment attractiveness of Azerbaijan's manufacturing sectors, it is necessary to group them from 2005 to 2022. As a result of the analysis, the manufacturing sectors are categorized into the following groups: those with unchanged share, those with decreased share, those with increased share, and those with a significant increase in share.

These industrial groups were analyzed in parallel with the respective dynamics of the investments made in them.

Table 1.

№	Manufacturing Industries Group	Names of Manufacturing Sectors
1	Manufacturing sectors with a constant share over 8 years:	• Clothing production • Production of building materials • Production of machinery and equipment
2	Manufacturing sectors with a decreasing share	• Production of petroleum products • Production of computers, electronics, and optical products • Production of electrical equipment
3	Manufacturing sectors with a significantly increasing share over 8 years:	• Food production • Production of rubber and plastic products • Production of tobacco products • Chemical industry • Metallurgical industry
4	Manufacturing sectors with an increasing share over 8 years:	• Beverage production • Textile industry • Paper and cardboard production • Printing products production • Production of finished metal products • Furniture production

Source: Compiled by the author.

Based on correlation analysis and using the least squares method, the following regression models 1 and 2 were constructed:

Model 1.

^oil = 867 + 323*ioil_3 + 0,578*oil_l

(276) (46,6) (0,118)

T=14, R-square=0,68

Interpretation of Model 1:

According to Model 1, an increase of 1 million manat in investment in the previous year leads to an approximate 0.6 million manat increase in the production of oil products in the current year. In the current year, a 1 million manat increase in investment results in a 323 million manat increase in oil product production over three years, meaning the investment in oil production will generate a 0.6 million manat return within a year, and these investments will yield a return of 323 million manat over the three-year period.

The investments made in the first and third years describe 68% of the observed investments in this industry, as confirmed by the coefficient of determination (R^2). This indicates that approximately 70% of the oil refining industry's output is characterized by one- and three-year investment lag. The remaining 30% (unexplained variance) can be attributed to other factors not considered in this research.

All econometric characteristics of Model 1 are adequate, and all coefficients for the variables are statistically significant. This model can be used for monitoring and forecasting oil product production in the planning and development of the oil refining industry.

Model 2

^oil = -1,23e+ 05 + 251*ioil_3 + 62,2*t

(2,47e+04) (26,9) (12,3)

T = 14, R-square = 0,84

Interpretation of Model 2:

In the oil product refining sector, investments with a three-year lag explain 84% (R^2 = 84%) of the sector's development. Without considering other lags and investments in different years, an increase of 1 million manat in investment over three years results in an increase

of 251 million manat in the sector. This means that a 1 million manat increase in investment leads to a 251 million manat increase in oil product production over the three years. All characteristics and coefficients for the variables are adequate, and the full econometric characteristics of the data are provided in Appendix 3. This model can be used both for short-term financial planning and short-term forecasting. This model best explains investments with a three-year lag.

Among the traditional methods used to determine the effectiveness of investments is the Return on Investment (ROI) method. This method involves determining the expected return on invested funds (undiscounted) within an economically justified period. The ROI, measured as a percentage, is used to calculate profitability. In scientific literature, this coefficient is also called the investment profitability coefficient. The profitability calculation is performed using a 100% scale:

- A 100% rate represents the break-even point.
- If the ROI is higher than 100%, it indicates the profitability of the investment, showing that income is generated from every manat invested.
- If the ROI is lower than 100%, it signifies that the investment is unprofitable and has not yielded returns.

It should be noted that the ROI percentage can vary depending on the activity or industry sector.

This indicator is universal for analyzing the appropriateness of allocating financial resources to a specific investment project since every investor aims to generate financial profit from the executed investment activity.

The key indicators for calculating ROI are:

- Total cost of the product (or service).
- Investment amount.
- Gross revenue (before expenses).

These indicators are used in the formula for calculating the payback of investments.

$$ROI = \frac{income\ from\ investments\ -\ amount\ of\ expenses}{amount\ of\ investments} * 100\%$$

Investment Income – the profit obtained from the sale of goods (services) during the reporting period.

Amount of Expenses – the amount spent over a specific period.

Investment Amount – the amount of investment placed in the investment object.

The ROI method has both advantages and disadvantages. The advantages include the simplicity of its use and its rough measurement of risks. The probability of obtaining a beneficial effect is also dependent on existing information about the duration and efficiency of similar investment projects.

However, this ratio should not be considered a universal investment analysis tool for all types of activities. ROI is also one of the financial indicators that have some drawbacks, which include the following:

- The static nature of this ratio (the calculation covers a specific period without considering many factors, such as exchange rates).
- Difficulty in identifying income sources (all profits are generalized without distinguishing between regular and one-time revenues, making it difficult to analyze the effectiveness of investment activities).
- Difficulty in identifying income sources (all profits are generalized without distinguishing between regular or one-time revenues, which complicates the analysis of investment activity effectiveness
- The absence of a discount (the time value of money is not taken into account).
- Low informational value of the obtained evaluation (difficulty in obtaining accurate calculations considering all the characteristics of the investment object).
- Subjectivity of management in determining the payback period.

The profitability rates of investments vary across the manufacturing industry.

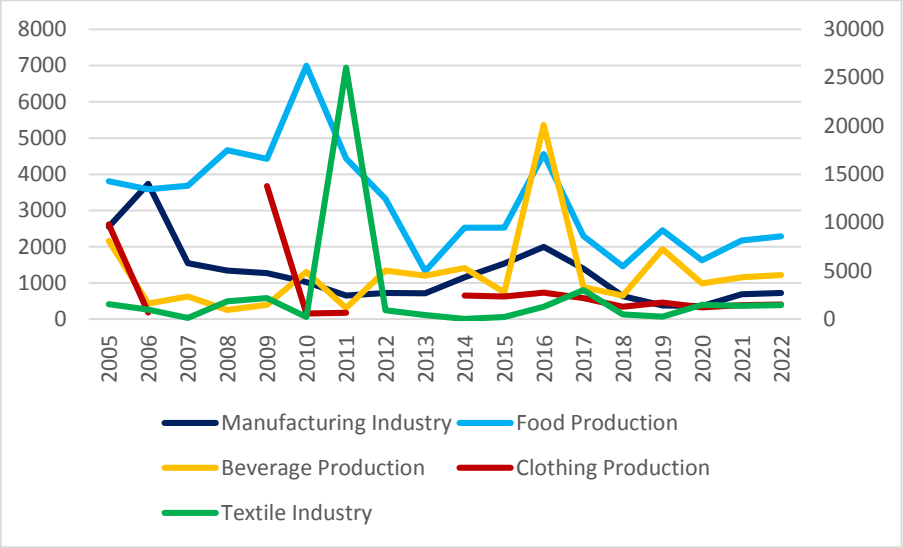


Diagram 1. ROI dynamics for some sectors of the manufacturing industry (*Compiled by the author based on the data from the State Statistics Committee - https://www.stat.gov.az/source/industry/*).

In the third chapter of the dissertation titled **"Improvement of Mechanisms for Attracting Investments to Azerbaijan's Manufacturing Industry"** a model has been developed to analyze the impact of investments in the manufacturing sector on the macroeconomic environment. This model also includes mechanisms for expanding investment activities in the manufacturing sector through the active circulation of bills, as well as stimulating the systematic growth of investments in the manufacturing sector through the application of blockchain technologies.

A comprehensive assessment has been made of the dependence of investments in the manufacturing industry on key macroeconomic factors. Based on the correlation analysis, a strong relationship has been identified between the indicators presented in the following table.

Table 2

№	Indicator Name	Indicator Name	Correlation Coefficient Indicator Description of the Type of Relationship
1	Expenditures on technological innovations in the industry according to product innovations, thousand manat	Expenditures on technological innovations in the industry according to the types of manufacturing industry innovations, thousand manat	0,93 Direct very strong linear correlation relationship
2	The established minimum wage levels in the Republic	Investments directed to fixed capital in the manufacturing industry (at current prices), million manat Fixed assets by type of activity in the manufacturing industry, at the end of the year, at current prices, million manat The number of employed population by the Classification of Economic Activities (thousand people) The established minimum wage levels in the Republic	0,76 Direct strong linear correlation relationship 0,96 Direct very strong linear correlation relationship 0,89 Direct very strong linear correlation relationship 0,98 Direct very strong linear correlation relationship
3	The value of manufactured goods (works, services) in the manufacturing industry, at current prices, million manat	Investments directed to fixed capital in the manufacturing industry (at current prices), million manat Fixed assets by type of activity in the manufacturing industry, at the end of the year, at current prices, million manat Number of employed population by the Classification of Economic Activities (thousand people) Average monthly nominal wage according to the Classification of Economic Activities The established minimum wage levels in the Republic	0,72 Direct strong linear correlation relationship 0,97 Direct very strong linear correlation relationship 0,96 Direct very strong linear correlation relationship 0,93 Direct very strong linear correlation relationship 0,96 Direct very strong linear correlation relationship

Source: Compiled by the author as a result of calculations in the Gretl program.

Based on the correlation analysis presented in the table above, the following conclusions can be drawn:

The increase in the cost of manufacturing industry products (works, services) is directly influenced by investments directed towards fixed capital in the manufacturing industry, the fixed assets by types of activities in the manufacturing sector, the number of employed people by the Classification of Types of Activities, and the level of the minimum wage set in the country. According to the characteristics of the correlation coefficient, this direct relationship is mutual, and therefore, it can be concluded that to improve the minimum wage and, consequently, the well-being of the population, it is necessary to ensure the growth of manufacturing industry products (works, services). This is possible only through targeted investments, activation of the banking sector, i.e., an increase in the relative share of the banking system in the overall structure of investments in the industry.

Furthermore, regressions applied to the observed macroeconomic indicators showed that current-year investments are strongly dependent on previous years' investments, and this dependency varies according to the type of expenditures. The greatest dependence on previous investments was observed in investments directed towards fixed capital and fixed assets by types of activities in the manufacturing industry. The regression of these indicators was statistically significant over the past five years. The depth of dependence on previous investments for technological innovations related to product innovations and technological innovations related to process innovations in the industry was found to be 2 years. This is explained by the fact that this type of expense is related to innovation, and the duration of innovation is relatively short.

Based on the correlation analysis, in addition to correlation and regression, an econometric analysis will be conducted to determine functional dependencies. As the dependent variable, we will take the value of manufacturing industry products (works, services), and as independent variables, we will consider the macroeconomic indicators discussed in the table above. As a result, the following regression models were obtained:

Table 3.

Regression Models of Investment Dependency in the Manufacturing Industry

№	Econometric Models	R^2
1	^d_y = 385 + 0,651*d_x5 + 0,0373*d_x6 (173) (0,351) (0,0165)	0.39
2	^l_y = 6,12 + 0,437*l_x1 (0,325)(0,0536)	0.73
3	^y = + 1,05*x1_2 + 0,996*y_1 (0,427) (0,0535)	0.99

Source: Compiled by the author as a result of calculations in the Gretl program.

To ensure the sustainable development of the manufacturing industry, increase its innovation activity, diversify production through the realization of the production of a wide range of import-substituting products, implement deep processing of raw materials such as chemicals, petrochemicals, non-ferrous metals, and others in accordance with the value chain principle, and achieve the execution of targeted project in these and other essential areas, there is a need to intensify the process of attracting direct foreign investments to the sector. According to official statistics, from 2017 to 2022, a total of 941.4 billion manat of foreign investment was directed to fixed capital in Azerbaijan's manufacturing industry, which constitutes 9.1% of total investments.

Research shows that the absolute share of domestic investments directed to fixed capital in the manufacturing industry is composed of depreciation allowances. During the studied period, a total of 267.7 million manat of innovative products were produced in the sector, which accounted for only 0.34% of the total output of the manufacturing industry.

It is also important to note that in recent years, due to the establishment of new enterprises in the manufacturing industry, the share of innovative products increased from 0.15% in 2017 to 0.59% in 2022. While only two sub-sectors of the manufacturing industry

produced innovative products between 2015 and 2018, by 2019-2022, the number of such sub-sectors increased to eight. In other words, innovative products were typical in the food, beverage, chemical, rubber and plastic mass, construction, machinery and equipment, their repair, and furniture sectors. Despite the progress made, the innovation activity of manufacturing enterprises is ten times lower than the recommended international threshold for innovation.

Analysis shows that in 2017-2022, only 159.5 million manat was spent on technological innovations in the manufacturing industry. Of this, 72.4% was directed to product innovations, while 27.6% was directed to process innovations. Between 2019-2022, out of the 110 million manat spent on technological innovations in the manufacturing industry, 69 million manat, or 62.7%, was financed by the enterprises' own resources. This fact indicates that targeted innovation-investment projects were widely implemented in traditional manufacturing enterprises. On the other hand, many foreign-invested and joint ventures that produced innovative and import-substituting products were liquidated for various reasons. Chemical products produced in the Sumgayit Technology Park, as well as many agricultural processed products, are exported as raw materials.

In our opinion, the local processing of these products, the diversification of manufacturing production as a whole, the intensification of the process of attracting direct foreign investment, and the broad application of targeted investment projects in manufacturing enterprises with low innovation activity can not only help address the mentioned issues but also create conditions for regulating dependence on imports to some extent.

The level of foreign investment attraction is crucial for the sustainability of the economy. As shown in **Diagram 2**, a decline has been observed in the landscape of foreign investment since 2016. It should be noted that such a negative trend could reduce the level of expectations regarding the successful attraction of foreign capital.

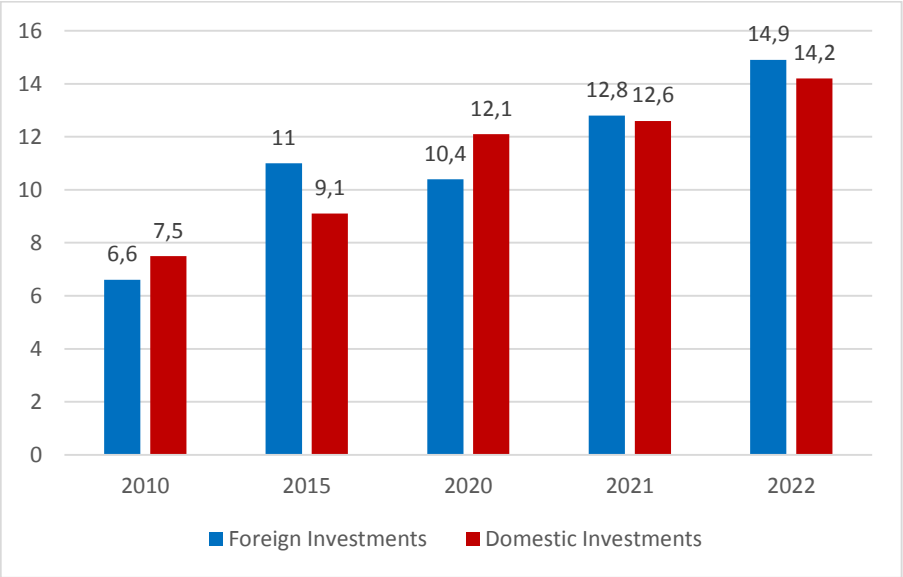
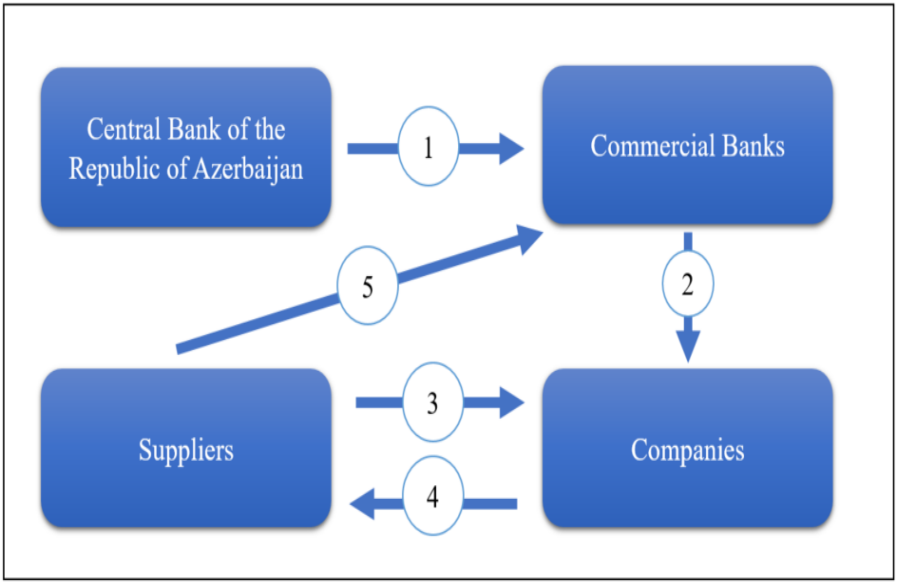


Figure 2. Foreign and Domestic Investments Directed to the Azerbaijani Economy, Billion Manats *(Source: Compiled by the author based on the data from the State Statistics Committee - https://www.stat.gov.az/source/industry/)*.

Therefore, in modern conditions, it is important to focus on internal sources for modernization. However, the development and implementation of the bill financing mechanism for the rapid growth of economic modernization seems very relevant. The proposed mechanism could help increase public trust in the banking system, as statistical data currently shows that trust in the system is at a low level. While the ratio of the banking system's assets to GDP in Azerbaijan is approximately 41.4%, in many developed countries, this figure ranges from 200-300%. For instance, in the United States, this indicator reaches 350%, which indicates higher confidence in the financial system of the country.

Such measures will help strengthen bills, one of the main sources of increasing investment activity in the manufacturing industry, and will also contribute to the stable and sustainable development of the industry.

The circulation of promissory notes is an effective mechanism for increasing investment activity and the development of Azerbaijan's manufacturing industry. The financial scheme based on the use of transfer promissory notes through the Central Bank has several advantages that help stimulate investments and support industrial development in the country (Picture 1).



Picture 1. The application of promissory note circulation as an auxiliary investment tool for manufacturing enterprises (*Source: Prepared and proposed by the author*).

The proposed financing scheme, utilizing bills through the Central Bank, reflects an efficient mechanism that contributes to activating investment activity and supporting industrial development. It is based on the principles of targeted financing for enterprises and the activation of cashless circulation in the economy. In the context of attracting investment to Azerbaijan's manufacturing industry, let's take a closer look at the key advantages of this scheme for stimulating economic development.

Table 4

The investment process through the circulation of promissory notes by enterprises.

Activity	Description
1	The Central Bank provides a certain amount of funds to commercial banks in the form of promissory notes.
2	Enterprises purchase these promissory notes from commercial banks at a significantly discounted price (usually 15-25%) compared to the initial amount. These promissory notes have a clearly defined use, and the bank has the right to verify the enterprise's business plan.
3	The enterprise uses the obtained promissory notes for settlements with resource suppliers.
4	The supplier provides the enterprise with the necessary resources in exchange for the promissory note.
5	After completing the operations related to the delivery of resources, the supplier cashes the promissory note at a commercial bank and receives the full amount specified in the note.

Source: Prepared and proposed by the author.

The application of the financing scheme through the use of bills helps activate cashless circulation in the economy and ensures targeted financing for enterprises. This mechanism promotes cashless operations, which enhances the efficiency and transparency of financial transactions while directing funds to specific investment projects.

The participation of the banking sector in this scheme enhances its role in supporting the real economy. Banks play a key role in presenting bills and auditing business plans of enterprises, which strengthens confidence in financial transactions and increases the transparency of processes.

Thus, the implementation of this scheme for financing enterprises through bills not only helps increase cashless circulation and targeted financing but also strengthens the connection between the

banking sector and the real economy. This is crucial for stimulating investment and industrial development in Azerbaijan, and in turn, can contribute to strengthening the country's economy and increasing its competitiveness at both the regional and global levels.

As a result, the application of modern sources based on systematic principles to increase investment activity in the manufacturing industry is an important step in the development of this sector. For the successful implementation of bill technologies, legal, infrastructure, and tax support from the government is essential. In this regard, special attention should be paid to the development of strategies for managing financial risks and the active development of bill programs at all levels of participation, from enterprises and banks to government institutions.

Bill circulation has the potential to become a powerful tool for attracting investments and stimulating the development of the manufacturing industry in Azerbaijan. Historical precedents and international experience demonstrate the value of bills as a financing instrument.

Blockchain technology continues to gain momentum in the modern economy, and this is reflected in the increase in investments reaching significant amounts. Investors are showing growing interest in the blockchain sector, seeing its potential to transform traditional business models and create new economic and social systems. This technology is becoming the foundation for innovative projects and promising sectors, including payment infrastructure.

Using blockchain technology to attract investments requires ensuring trust and sustainability. Blockchain is a decentralized accounting and operational system that can significantly improve the investment environment. The table presented below outlines several key ways in which blockchain can be used in this context.

Thus, the use of blockchain in the manufacturing industry, for example, by simplifying financial transactions and improving management, can increase investors' confidence and access to capital. These factors, when combined, can become a source of increased investment activity in the industry, helping it grow and develop.

Table 5.

Advantages of Using Blockchain Technology in Investment Activities

Method Name	Description
Transparency and Reliability of Data	One of the main aspects of blockchain that encourages investment is its ability to ensure the transparency and reliability of data. All transactions and records on the blockchain are immutable and verifiable for every network participant. This means that investors can obtain detailed information about the company's operations, financial status, and supply chain. Such transparency helps reduce information asymmetry and strengthens investor confidence.
Improved Financial Transactions	Blockchain offers a variety of tools to improve financial transactions in the manufacturing industry. Smart contracts on the blockchain allow for the automation of processes such as dividend payments and cost accounting. This reduces operational costs and the risk of errors. Additionally, using cryptographic mechanisms, blockchain ensures secure financial transactions, reducing the likelihood of fraud and unauthorized access.
Initial Coin Offerings and Crowdfunding	Initial Coin Offerings (ICO) and crowdfunding on the blockchain enable companies to raise capital directly from investors without intermediaries. This can help finance startups and projects, leading to new investment opportunities in the manufacturing industry.
Access to Global Markets	Thanks to blockchain technology, investors from various countries can more freely invest in industrial and service sectors. This expands access to capital and encourages the diversification of financial sources.
Supply Chain and Product Quality Management	Blockchain can also be used to improve supply chain management and product quality assurance. This can increase investor trust as they know that operations and products are being tracked and verified through a transparent system.

Source: Compiled by the author.

However, there are challenges such as low transaction speed, high energy consumption, and limitations in the scalability of the technology. These issues could hinder the achievement of some of the

promised benefits of blockchain. It should be noted that the effective implementation of this technology will require cooperation between different sectors and countries, as well as the development of regulatory bodies.

Blockchain technology promises to create a new economy where participants can carry out financial transactions directly, without intermediaries, which reduces costs and simplifies processes. It also facilitates the creation of new business models, allowing entrepreneurs to innovate and develop startups.

It is important to note that the application of blockchain requires significant training and infrastructure development. Nevertheless, efforts in this direction suggest that blockchain technology has the potential to transform economic systems, providing a more transparent and democratic environment for economic and financial operations.

Despite the challenges, blockchain presents new investment opportunities and stimulates the development of innovative projects. Analysis of expert positions and global investment data highlights the growing interest in this technology and its potential to drive systematic growth.

Overall, blockchain is a crucial tool for the modern economy, and its successful implementation could significantly improve the quality of economic and social systems.

RESULTS AND RECOMMENDATIONS

The results of the theoretical, methodological, and practical research conducted in the dissertation are presented below:

1. Based on a systematic analysis of the investment attractiveness of the industrial sectors in Azerbaijan's manufacturing sector, industrial groups with similar development dynamics were identified. The main dependencies of manufacturing output in these sectors on the investments made, as well as the investment periods for the industries, were determined. The dynamics of efficiency in the industrial sectors of the economy were assessed, and the linear dependence of manufacturing industry products on the development indicators of the manufacturing sector was evaluated.

2. The impact of the dynamics of fixed assets and trade balances in different manufacturing activities on the production of manufacturing industry products was identified. However, these factors were found to be secondary.

3. The dependence of manufacturing industry products on investments made in the sector's fixed capital was determined. This dependency explains 73% of the production of goods and services in Azerbaijan's manufacturing industry. Time lags and dependencies between investments and returns were identified. It was found that the maximum return on investment occurs two years after the investment.

4. It was concluded that for the advancement of the manufacturing sector, it is crucial to ensure its sustainable development, as the current production is reliant on the sector's previous indicators.

5. The correlation analysis revealed strong and direct dependencies between investments directed to fixed capital in the manufacturing sector, the fixed assets in sub-sectors, and the employed population.

6. The wage factor is insufficient to attract workers to this sector, as it is significantly lower compared to relevant indicators and the general average in other sectors. By considering the identified indicators and dependencies in monitoring and planning the development of the manufacturing sector, quality changes in the production process and innovative development can be enhanced, which, in turn, will contribute to the sustainable development of the sector.

7. By attracting direct foreign investments and applying them to targeted projects in the manufacturing sector, diversification of production, and increasing the depth of processing across all subsectors based on the value chain principle, the export potential of the sector will be enhanced.

8. Currently, the internal investments in the form of depreciation allocations should be directed toward renewing the active part of fixed production assets, using them for major and current repairs of the assets, and, where necessary, applying accelerated depreciation rates for these assets.

9. For many years, large quantities of raw materials such as ethylene-propylene, large and small livestock hides, cotton fiber and yarn, aluminum, ferrous metals, etc., have been exported to foreign countries. The establishment of processing facilities in favorable regions of the country by attracting funds from the Entrepreneurship Support Fund, KOBIA, and foreign investments, along with the involvement of small and medium-sized enterprises, will create new high-paying jobs, reduce dependence on imports, generate product surplus in the domestic market at lower prices, and help generate added value.

10. The application of blockchain technology in the modern economy presents significant prospects and challenges. This technology can contribute to the development of inclusive financial systems and the protection of economic and intellectual property rights. Despite the challenges, blockchain presents new investment opportunities and stimulates the development of innovative projects. Overall, blockchain is an important tool for the modern economy, and its successful implementation can significantly improve the quality of economic and social systems.

11. A block diagram is proposed for using the bill of exchange circulation as a supplementary investment tool for manufacturing enterprises. The proposed financing scheme, using bills of exchange, helps activate cashless circulation in the economy and ensures targeted financing for enterprises.

The findings and conclusions in this dissertation can be utilized by governments and companies in developing countries (including Azerbaijan) in their practical activities aimed at effectively increasing the flow of foreign investments into the national economy.

The main content of the dissertation is reflected in the author's published scientific works listed below.

1. Nazarov V.S., Analyzing international experience of investments attraction // Abstracts of XX International Scientific and Practical Conference, -Munich, -2023, UDC 01.1 İSBN-9-789-40368-892-3, p.113-117.

2. Nazarov V.S., Analysis of the Role of Investment in the Post-COVID-19 Period // The XXXIV International Scientific and Practical Conference «Problems of the development of modern science», - Madrid, - 2022, ISBN–979-8-88796-818-6 DOI-10.46299 ISG.2022.1.34, p.55-56.

3. Nəzərov V.Ş., İnvestisiyaların təhlilində sistemli yanaşmanın mahiyyəti və prinsipləri // Odlar Yutdu Umiversitetinin Elmi və Pedaqoji Xəbərləri, - Baku, -2023, ISSN 1682-9123, s.89-94.

4. Nazarov V.S., Problems of attracting investments into the country's economy // Сучасні інноваційно-інвестиційні механізми розвитку національної економіки в умовах євроінтеграції, – Полтава, -2023: ФОПП усан А.Ф., No.4, с.35-36

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6. Nazarov V.S., Застосування технології блокчейн у підвищенні якості і стимулюванні системного зростання у сучасній економіці // Економіка та регіон, -Полтава, -2023 № 4(91), с.230-235.

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8. Nəzərov V.Ş., Post Covid-19 dövründə investisiyalara yəni nəzərlər və yanaşmalar // International Baku Scientific Research Congress,(November 30 - December 1, 2022), -Baku, -2022, №4 ISBN: 978-625-7898-71-3, p.21-22

9. Назаров В.Ш., Оценка инвестиционной зависимости некоторых отраслей обрабатывающей промышленности Азербайджана // Экономика и управление: проблемы, решения, - Российская Федерация,-2024, № 1, с.70-78

10. Mammadov, E., Valiyev, A., Azimzadeh, A., Feizullaev, B., Aliyeva, A., & Nazarov, V., The Potential and Challenges of Alternative Energy in Azerbaijan: A Current Assessment // International Conference on Smart Environment and Green Technologies – ICSEGT2024 (April 11-12, 2024), -Baku, -2024, p.417-424.

The defense of the dissertation will take place on April 11, 2025, at 11:00 during the meeting of the Dissertation Council ED 1.10 of Supreme Attestation Commission under the President of the Republic of Azerbaijan operating at the Institute of Economics under the Ministry of Science and Education of the Republic of Azerbaijan.

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The dissertation can be reviewed at the library of the Institute of Economics of the National Academy of Sciences of Azerbaijan.

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