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ABSTRACT

Of the dissertation for the degree of Doctor of Philosophy

DIRECTIONS FOR INCREASING THE EFFICIENCY OF INVESTMENT IN AZERBAIJAN'S TRANSPORT SECTOR

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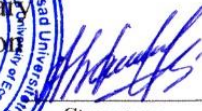


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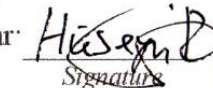
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GENERAL CHARACTERISTICS OF THE WORK

Relevance and Level of Study of the Research Topic

Over the past five years, the share of the non-oil sector in Azerbaijan's economy has been rapidly increasing. One of the key sectors ensuring the country's sustainable and stable economic development is transportation. To enhance local and international transportation, strengthen the country's competitiveness, and boost its transit potential, the government has been prioritizing the transport sector and implementing significant reforms.

Several strategic documents, such as the Strategic Roadmap for the Development of the Azerbaijani Economy, Azerbaijan-2030: National Priorities for Socio-Economic Development, COP-29, and the Turkic World-2040 Vision, outline the necessity of increasing the efficiency of investments in the transportation sector for both public and private institutions. Given the accelerating global flow of freight and passengers, investment in the transportation sector has become one of the primary directions of national economic development.

A notable example of this trend is the AZN 4.613 billion invested in the transportation sector in 2022, which accounted for 25.8% of total investments in the national economy that year. It is no coincidence that, to ensure the effective utilization of Azerbaijan's transit freight potential, a Coordination Council for Transit Freight Transportation was established by a Presidential Decree.

The Council's primary responsibilities include:

- Optimizing tariffs
- Establishing unified principles and conditions for transportation
- Coordinating activities between transport operators and government agencies
- Simplifying and improving transit procedures
- Reducing the number and duration of transit formalities
- Implementing a fully efficient and transparent transit freight system
- Expanding cooperation between Azerbaijan and relevant countries and institutions
- Organizing the efficient operation of transport corridors passing through the country

These measures are crucial for strengthening Azerbaijan's role as a key transit hub in the region and enhancing the efficiency of the

transportation sector as a whole.

The fertile investment environment, which has become a leading factor in the transport sector, stimulates the formation of modern forms of management, the exchange of new technologies, and the expansion of economic relations. The efficient use of investments opens up vast opportunities for addressing unemployment and other social problems, as well as for the development of sectors and regions. The investigation of these opportunities is one of the pressing issues constantly under the attention of economists.

The development of the transport sector in Azerbaijan is shaped against the backdrop of the decisive influence of an investment policy that aligns with the requirements of the modern era. Studying the patterns of this influence is crucial in exploring ways and methods to increase the efficiency of investments.

The effective use of investments directed towards the transport sector, which plays a significant role in Azerbaijan's economy, and their role in the process of involving energy, industry, tourism, agricultural products, and human resources into economic circulation requires a comprehensive evaluation of these investments. The relevance of using investments directed towards the transport sector stems from the need to reduce dependency on oil in the national economy and promote the development of the nonoil sector.

Efficient management of state investments, the comparative analysis of various forms of utilizing investments in the transport sector, studying international experiences, evaluating necessary aspects in the context of specific conditions, and regulating investment processes in the transport sector are among the issues that need to be addressed. Solving these problems proves the relevance of the dissertation topic.

Currently, the study of investment flows directed towards transport among the leading economic sectors in countries is under the focus of researchers as a significant condition for the formation of the global economic system.

In the Commonwealth of Independent States, as well as in Eastern and Central European countries, relevant studies have their own distinctive characteristics.

The theoretical, methodological, and practical aspects of the

utilization of investments directed towards the Azerbaijani economy have been studied by Azerbaijani economists such as T.H. Huseynov, R.R. Guliyev, S.Z. Isayev, S.Q. Cümşüdoğ, A.M. Asadov, E.A. Aliyev, T.A. Yadigarov, S.H. Purhani, A.Sh. Shekaraliyev, T.H. Ajderov, S.A. Heydarov, A.M. Hasanov, T.I. Imanov, and others, focusing on the various aspects of investments directed towards sectors like construction, industry, agriculture, and manufacturing in the transport sector and Azerbaijan's national economy.

Research by Russian-speaking authors such as S.A. Obukhov, N.P. Lyubushin, L.B. Mirodin, V.M. Kostyukeviç, A.A. Stepanov, S.N. İvaşkovskiy, and others draws attention.

Among English-speaking researchers, K. Button, S. Jara, A. Reggiani, R. Dornbusch, S. Fischer, R. Stars, G. Meyer, S. Shaheen, T. Erik, Eugene F. Brigham, R. Zelenika, and Joel F. are noteworthy.

Currently, various economic management centers and organizations around the world are conducting fundamental research on the attractiveness of investment in the transport sector of countries. Every year, countries submit reports on international investment attractiveness. These reports generally provide analyses for the world and each country, presenting indices for countries based on various indicators, and calculating the overall investment attractiveness index based on these indices. The rankings of countries based on each subindicator and competitiveness index are determined. The World Bank's annual reports include comprehensive studies on the business environment of countries, providing indepth analysis to determine international investment attractiveness.

However, the efficiency of investments directed towards the transport sector, considering the characteristics of the new era, including the evaluation of investments for oil and gas-exporting countries and identifying favorable investment directions, has not been sufficiently researched in the context of the realities and perspectives of our republic.

The object of the research is Azerbaijan's transport sector and the related sectors, while the **subject** is the trends and patterns of increasing the efficiency of investments directed towards the transport sector, and the factors that condition the role of socio-economic development in transportation.

The main goal and tasks of the dissertation are: The primary aim of the research is to investigate the problems of increasing the efficiency of investments in Azerbaijan's transport sector in the context of the commissioning of globally significant transport corridors passing through our country. The research will focus on providing grounded proposals and recommendations for addressing these issues.

To achieve this goal, the following scientific and practical tasks have been set in the research:

Determining the theoretical and methodological basis for the efficiency of investment;

Identifying methods for studying investments in the transport sector;

Determining empirical approaches to increasing efficiency in the transport sector from global experience;

Defining the current situation and development trends of Azerbaijan's transport sector;

Evaluating the efficiency of Azerbaijan's transport sector;

Determining the impact of technological innovations on the efficiency of investments in the transport sector;

Quantitative evaluation of the influence of efficiency determinants in Azerbaijan's transport sector.

Research Methods: Depending on the selected research object, tasks, and goals, various methods have been used. The dissertation employs statistical analysis, mathematical econometric modeling, logical generalization, and comparative analysis. The information base of the research includes official data from the State Statistical Committee of the Republic of Azerbaijan, the Ministry of Digital Development and Transport of the Republic of Azerbaijan, and relevant international research institutions.

Main propositions presented for defense:

When studying the theoretical and methodological foundations of the efficiency of investment in the transport sector, it was found that a combination of the available raw materials, human resources, and the use of new technologies can be established in such a way that high efficiency can be achieved from investments directed towards the transport sector.

The main formula for determining the economic efficiency criteria of investments directed towards the transport sector, in both quantitative and

qualitative terms, is based on achieving a safe, intensive, and uninterrupted working regime in freight and passenger transportation, cargo handling, and other transport services.

Although many different models have been developed in the transport sector in developed countries, it is observed that developing countries benefit more from these technologies.

In terms of increasing investments in Azerbaijan's transport sector, it would be important for the relevant authorities to consider the systematized problems presented in the dissertation.

Transnational companies making investment decisions in the transport sector use discounted cash flow analysis. When deciding on new project implementation and equipment procurement, state and private transport companies in Azerbaijan must first investigate how much capital is needed to bring the project into operation and how much revenue it will generate annually.

The production function of the transport sector can be more efficiently achieved through the comprehensive development of all its components, particularly the transport enterprises.

As an economic activity sector, the revenue from work and services in the transport sector affects the growth of GDP, like other economic sectors. Therefore, evaluating the factors that influence income growth in this sector and determining its potential development is of special importance.

Scientific novelty of the research:

It has been determined that directing investments towards increasing freight turnover is more appropriate for enhancing the competitiveness of the transport sector.

The establishment of a special organization to forecast trends in the transport sector at the national, regional, and global levels, and to prepare effective measures for their implementation in Azerbaijan, has been identified as beneficial.

It has been proposed to encourage national companies in the transport sector to specialize in the implementation of intelligent transport and multimodal systems.

An unconventional financing mechanism ensuring the sustainable development of companies in the transport sector has been revealed, and it

has been determined to be effective in investment allocations.

It has been determined that accumulating a portion of the revenues from the unified transport system in a special fund for the more operational financing of large and significant projects is advisable.

A very high correlation has been found, according to the Cheddock scale, between the volume of investments directed towards main capital and the value of fixed assets in the transport sector, based on revenues from freight transport.

Existing problems in the transport sector have been identified and systematized. It has been found that equipment is mostly imported from foreign countries and that the training of highly qualified specialists for local production is essential for increasing competitiveness. Effective proposals have been made in this direction.

It has been determined that organizing liner systems in maritime transport allows the concentration of total cargo flows in a single freight corridor, enabling the use of the largest tonnage and fastest specialized vessels for transport in the same directions. This increases the utilization and efficiency of existing vessels.

Theoretical and Practical Significance of the Dissertation Results:

The results of the dissertation open wide opportunities for determining the scientificpractical foundations of improving the efficiency of investments in the transport sector of the country. The research materials and results can be used in the preparation of normative-legal and methodological documents aimed at improving the performance of the transport sector and in the development of measures to create a favorable environment for the growth of this sector.

Approval and Application of the Dissertation Results: The results of the dissertation have been presented in reports at international and national conferences, and have been reflected in 19 scientific articles and theses.

Organization where the Dissertation was Conducted: The dissertation was carried out at the Azerbaijan State University of Economics, Institute of Economic Research.

Logical and Structural Foundations of the Dissertation: The logical foundations of the dissertation were determined based on its subject, object, goals, and tasks. The research consists of an introduction,

three chapters, conclusion and recommendations, and a list of references. The total work spans 267,163 characters and is 152 pages long. The work contains 22 tables, 5 graphs, 12 figures, and references from 128 sources. The first chapter consists of 43 pages, the second chapter is 57 pages long, and the third chapter is 29 pages. The dissertation also includes a list of abbreviations, introduction, three chapters, conclusion, and a bibliography.

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Main Content of the Research

The introduction of the dissertation justifies the relevance of the topic, outlines the level of study of the problem, and states the research objectives and tasks. The object and subject of the research are explained, as well as the theoretical-methodological foundations, information base, and theoretical-practical significance. The scientific innovations obtained are listed, and the approval process is described.

In the first chapter, titled "Theoretical and Methodological Foundations of Investment in the Transport Sector," the theoretical-methodological foundations of the formation of economic efficiency in investment in the transport sector are reviewed. The theories of economists on investments are analyzed, and a specific approach to increasing the efficiency of investments in Azerbaijan's transport sector is studied. The key factors of the transport sector in the current situation are examined, and a separate analysis of the valuation of investments for the transportation of cargo and passengers is presented. The chapter also investigates the characteristics of development in the transport sector, the related problems, and the practical implementation possibilities of the proposed measures.

In this chapter, the following key results have been obtained: Considering that there is no universally accepted approach to the concept of "investment in the transport sector," and in order to ensure the longterm economic growth sustainability of this sector, it has been substantiated that directing investments towards increasing cargo turnover is more appropriate for enhancing the competitiveness of the transport sector.

Based on the data published by the Azerbaijan State Statistics Committee, as shown in Table 1, in 2023, the share of transport in the country's economy in terms of investments in fixed capital is 25.4%. In 2023, 6.2% of the value added, 7.4% of the total profit, and 8.7% of the average annual number of employees in the country are related to Azerbaijan's transport sector.

Table 1. The Share of Transportation in the National Economy, in Percentage¹

	2018	2019	2020	2021	2022	2023*
Additional Value	6,1	5,9	7,1	6,9	6,1	6,2
Total Profit	6,7	6,6	8,6	7,8	6,7	7,4
Net Profit	5,8	6,0	6,6	7,1	5,7	6,3
Average Annual Number of Employees	8,1	8,0	8,3	8,4	8,5	8,7
Average Monthly Nominal Salary	148,2	134,8	125,2	130,3	133,8	136,9
Fixed Assets	7,6	7,4	6,5	6,7	7,0	6,9
Investments in Fixed Capital	11,2	11,8	12,1	17,0	25,8	25,4

As seen from Table 1, in 2023, the share of the transportation sector in the investments directed to the Azerbaijani economy is 25.4%, amounting to 5,417 million manats, which is 804 million manats more compared to 2022 (4,613 million manats). Financial resources are a key component in ensuring the sustained economic growth dynamics of the transportation sector. There are various constructive proposals from different economic schools of thought regarding the solution to the issue of insufficient funding in investments. For example, classical economists argue that savings depend on the interest rate, while Keynesians associate changes in savings with the volume and changes in income. As a result, the amount of investments is determined by the forecasted efficiency of investment allocations and the interest rate being the same.

Therefore, based on the factors mentioned above, we suggest considering the following points in order of importance for our country's transportation sector:

The production of vehicles and the cargo-passenger transportation capacity that meet the requirements of national, regional, and global transportation services. Of course, this is a key category in the development of the transportation sector. The weakness of this factor in the production of vehicles and the provision of transportation services is a specific issue for Azerbaijan. This is one of the most important problems of Azerbaijan's transportation sector. Firstly, the sector in which Azerbaijan is specialized in the international division of labor regarding the production of vehicles and their spare parts has not been defined, and the existing transportation

https://www.stat.gov.az/menu/6/statistical_yearbooks/

services are either limited to transit cargo and passenger transportation or, at the regional level, the production and repair of a small number of vessels for the Caspian Sea region countries, which shows that the existing opportunities in the transportation sector are not being used effectively.

As a result of the analysis and measures taken to increase the efficiency of investments directed toward the transportation sector, the improvement of vehicle safety, increased movement speed, increased cargo turnover, and the targeted use of warehouse facilities lead to a sustained and stable growth of revenue in this sector.

The relationship between the speed of cargo turnover and economic efficiency in the transport sector is determined by the following formula:

$$S_y = \frac{g * O_q * (v_g^1 - v_g^2)}{365} \quad (1)$$

The speeds of cargo turnover in two different periods.

This formula is used to assess how changes in the speed of cargo turnover affect economic efficiency.

Where: S_y – The economic efficiency related to the speed of cargo turnover

g – The cargo transported during the year

O_q – The average transportation cost of 1 ton of cargo

v_g^1, v_g^2 - The time spent on cargo transportation before and after the increase in the speed of cargo turnover, in days.

According to the State Statistics Committee's electronic database, in 2022, Azerbaijan's transport sector earned 8,633,943 thousand manat from cargo transportation, and the total amount of cargo transported was 218,716 thousand tons. In 2021, the amount of transported cargo was 193,903 thousand tons.

Average transportation cost per 1 ton = 8633943 thousand manats (т) / 218716 thousand ton = 39,48 manats (т)

Time spent on freight transportation after cargo turnover increased, in days = 365*1000 / 218716 thousand ton = 0,00166

Time spent on freight transportation before freight turnover increased, in days = 365*1000 / 193903 thousand ton = 0,00188

$$v_g^1 - v_g^2 = 0,00188 - 0,00166 = 0.00022$$

$$S_y = \frac{g * O_q * (v_g^1 - v_g^2)}{365} = \frac{218716000 * 39,48 * 0.00022}{365} = 1899 \text{ thousand } 680 \text{ manats}$$

(n)

As a result of our calculations, it has been determined that in our country, the total economic efficiency related to freight turnover in 2022 increased by 1,899,680 manat compared to the previous years. In order to improve economic efficiency in the transport sector, it is necessary not only to increase freight flows but also to increase the freight turnover, or the average transportation cost per ton of cargo. In terms of enhancing the competitiveness of the national transport sector, it is more appropriate to direct investments towards increasing freight turnover.

2. Determining the benefit of establishing a special organization responsible for forecasting trends in the transport sector at the national, regional, and global levels, and based on this, developing effective measures for implementation in Azerbaijan:

Depending on the type of cargo and transportation conditions, the average cost of transporting one ton of goods is calculated according to the exchange rate. The dynamics of cargo transportation in the transport sector from 2012 to 2023 can be clearly observed in the chart (Figure 1).

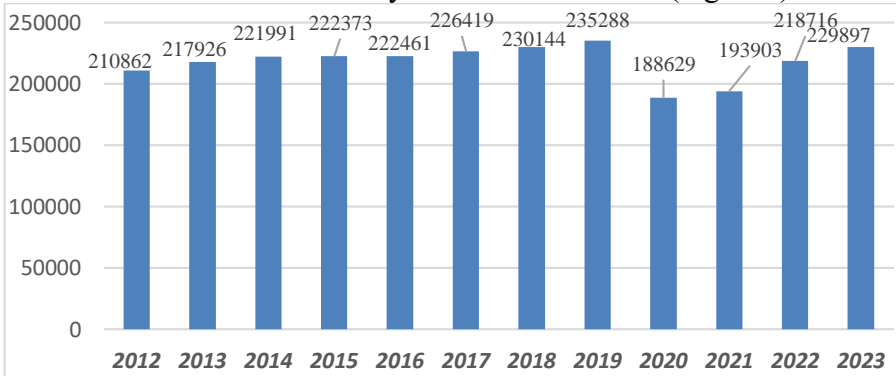


Image 1. Transportation in the Transport Sector of Azerbaijan, 1000 Tons ¹

One of the key elements of economic growth is investment. Research results from economic theory schools related to investments, and the study of their manifestation in the transport sector, taking into account the economic capacities of the country, suggest that after implementation in this sector, there are opportunities to generate high revenue from cargo

¹ https://www.stat.gov.az/menu/6/statistical_yearbooks/

transportation (calculated based on the type of cargo and transit rates) in strategic foreign currencies.

It is worth mentioning that for every 1 ton of transit freight passing through our country, a profit of 8-18 USD is generated. This is approximately equivalent to the amount allocated from the state budget to enhance the country's military defense power. Considering the above, it is necessary to establish a special institution (or body) to monitor important factors that influence investments in the transport sector, and to conduct research on the forecast of changes, in order to increase the efficiency of investment in the transport sector at the regional and global levels.

According to the State Statistical Committee of the Republic of Azerbaijan, the share of transportation in the structure of investments in fixed capital in the country's economy has fluctuated between 10-25% in various years. From a macroeconomic perspective, this is a relatively high indicator, as transportation is a crucial sector of the economy. It includes various forms of transportation within the country, such as passenger and freight transportation means acquired according to state policies, all types of transportation, maritime transport, air transport, road transport, inland waterway transport, urban and suburban electric transport, and metro transportation, as well as the pipeline transport system located within the country.

The favorable geostrategic location of our country serves as a significant factor in taking advantage of regional and global transport corridors. Through the global-level transport corridors "North-South" and "Asia-Caucasus-Europe" passing through the territory of the Republic of Azerbaijan, the country is equipped to facilitate freight and passenger transportation by various types of transport: rail, sea, road, air, and pipeline. Additionally, the capital city of the country, Baku, also has a functioning metropolitan system as part of its transportation network. There are extensive, constantly updated road and modern navigation infrastructures that ensure the movement of surface and other types of transportation.

In the transport sector, freight and passenger transportation services that meet the demands and are also cost-effective can only emerge as a result of high-quality and professional operations. Such activities require competent and educated personnel.

Investments directed towards the transport sector are part of a field

in the national economy that consistently contributes to:

Companies operating in the transport sector offering freight and passenger transport services that meet international market demands;

The income generated from the transport sector being directed towards enhancing the well-being of citizens;

The continuous renewal and development of the transport sector being supported within the framework of state programs.

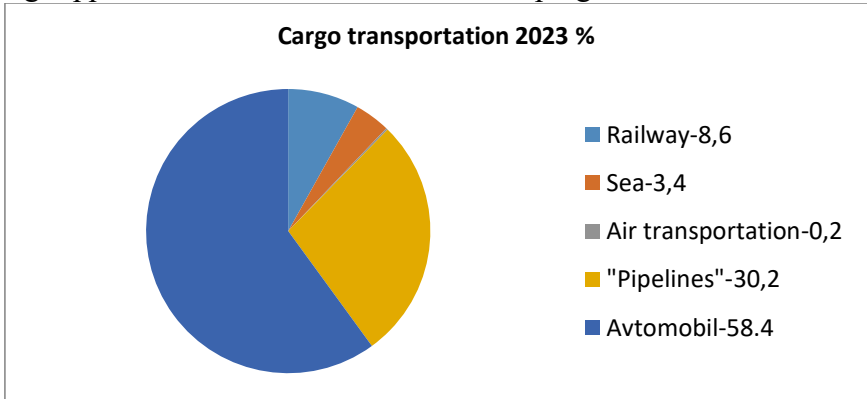


Image 2. Structure of Freight Transportation by Type of Transport in 2023, Dynamics as a Percentage of the Total ¹

Based on the data from ARDSK, as seen in Figure 2, the volume of cargo transportation by road transport was significantly higher than other types of transportation in 2023. This indicates that in the coming years, investments directed towards road transportation for cargo may yield effective results.

In the second chapter titled "Economic Efficiency and Current Situation of Investments in the Transport Sector," the global and regional status of the transport sector, smart transportation systems, and the meso-economic condition of the transportation sector have been analyzed.

The findings obtained by the author in this chapter are as follows:

3. Justification of the appropriateness of encouraging national companies to specialize in the implementation of smart transportation and multimodal systems in the transport sector.

Transportation-related factors and enterprises positively influence

https://www.stat.gov.az/menu/6/statistical_yearbooks/

the economic-geographical distribution of production categories. It is currently recognized at the international level that the transportation sector accounts for approximately 12% of the global GDP. It is known that the difference in GDP percentage, which is used to forecast the volume of the freight and passenger transportation market, has been linked to inefficiencies in supply chains across many regions of the world, leading to increased demand for significant investments compared to previous years.

According to the research and consulting-oriented company "Armstrong & Associates Inc.," the volume of the international transportation market in 2018 amounted to \$9.6 trillion USD. Costs associated with inventory storage in maritime, railway, and air transport accounted for one-third of the total expenses. The company has forecasted that the annual growth rate of total international transportation costs will continue at more than 5% until 2025. Analysis has shown that by 2025, the total volume of the freight and passenger transportation market will reach 12trillion USD. Other research companies forecast that investments related to transportation infrastructure—such as roads, ports, railways, and airports—will increase, and the volume of the international logistics industry will exceed 15 trillion USD by 2025.

The growing demand for both passenger and freight transportation services to be carried out efficiently, safely, and in an environmentally friendly manner has become a globally recognized phenomenon. Intelligent Transportation Systems (ITS), developed through the use of information and communication technologies, simplify the resolution of economic, environmental, and social challenges by providing fast and effective access to data. These solutions inherently ensure the integration of road transport with other modes of transportation, allowing each mode to complement the other and contributing to the development of a more efficient global transportation system. While many different models have been developed in the transportation sectors of developed countries, it has been observed that developing countries are striving to benefit more from these technologies.

The widespread adoption of Intelligent Transportation Systems (ITS) brings significant economic benefits, including increased employment in this field, the development of new technologies, and easier

access to global markets, along with the growth in the number of companies operating based on this concept. In the United States, the total revenue of companies implementing ITS reached 48 billion USD in 2009. Additionally, the number of employees in these companies was estimated at 180,000, while total employment in the sector was approximately 445,000. The legal foundation for the implementation of Intelligent Transportation Systems (ITS) in our country can be attributed to the Decree of the President of Azerbaijan, Ilham Aliyev, dated April 2, 2018, which amended the Charter of the Baku Transport Agency. As a public legal entity, the agency's primary mission is to ensure the safe, uninterrupted, and convenient movement of vehicles and pedestrians within the capital city.

The main objectives of ITS implementation are: ensuring transportation safety, increasing the efficiency of transportation infrastructure, improving the quality of services provided to transport users, minimizing the environmental and social impacts of traffic flows, enhancing efficiency in freight and passenger transportation, introducing technological innovations in public transport, and increasing the investment attractiveness of the transport sector. Since the administrative jurisdiction of the Baku Transport Agency is limited to the capital city, it is evident that the legal distribution of responsibilities for ITS implementation among different institutions across Azerbaijan has not yet been clearly defined. In Azerbaijan, the public sector has been more active in ITS implementation compared to the private sector. The private sector struggles to compete with the state due to its relatively weaker access to human, financial, physical, and informational resources. Therefore, the participation of national private companies in ITS projects should be encouraged by the state.

Potential issues that may arise in the process of ITS implementation include: protecting sensitive data used in these systems, enhancing compliance with international standards, extending ITS solutions to regional levels, ensuring adherence to international regulations for customs clearance of goods transported for commercial purposes, and expanding the use of electronic auditing in freight and passenger transportation operations to reduce costs.

4. Determining the feasibility of allocating a portion of the

revenues generated from the unified transportation system to a dedicated fund to ensure the more efficient and timely financing of large-scale and strategically important projects;

One of the primary reasons for the varying value of investments made at different times is the fact that the resources of the investment fund in the transportation sector become increasingly constrained as projects are implemented. As a result, the available funds cannot fully meet the demand for all planned initiatives. Consequently, it is considered reasonable to postpone or delay a portion of the investments allocated to certain transportation projects, provided that such postponement does not adversely affect the overall progress of the work.

However, it is unacceptable to unjustifiably delay investments due to certain difficulties (e.g., decisions made by project organizations and departments related to construction, installation, and technological processes) by spreading the investments across several years without valid grounds. Our research indicates that the creation of a dedicated fund, into which revenues from the national transportation system are deposited, could facilitate the more efficient and timely financing of large-scale and strategically important projects.

In the third chapter, titled "Ways to Improve the Efficiency of Investments in Azerbaijan's Transportation Sector," the impact of implementing scientific and technological innovations on the efficiency of transportation investments is examined. Additionally, an econometric assessment is provided regarding the factors influencing the revenue generated from freight transportation in Azerbaijan.

5. Explaining the non-traditional financing mechanisms that ensure the sustainable development of companies operating in the transportation sector and determining their effectiveness in investment activities;

In the transportation sector, state and private companies responsible for making investment decisions typically use discounted cash flow analysis. When considering the implementation and supply of a new project, the initial step involves determining the required capital to launch the project and estimating the annual income it will generate.

It is noteworthy that as interest rates rise, companies tend to be more cautious with their investment decisions. Consequently, in the

transportation sector, access to financial resources for various projects becomes more challenging with increasing interest rates, reducing the likelihood of companies investing in new projects. According to data from the Central Bank of Azerbaijan, the structure of credit allocations to the economy in 2021 was as follows: state banks accounted for 19.5%, private banks for 77.8%, including foreign-capitalized private banks at 23.2%, fully foreign-owned banks at 7.4%, and non-bank credit organizations at 2.7%. In Western countries, governments implement measures to maintain low-interest rates on bank loans, thereby enhancing the efficiency of investments. Additionally, financing mechanisms are simplified for strategically significant sectors. In 2023, the structure of credit allocations to the economy remained relatively consistent: state banks accounted for 19.3%, private banks for 77.8%, including foreign-capitalized private banks at 25.1%, fully foreign-owned banks at 8.5%, and non-bank credit organizations at 2.7%. In Western countries, governments take measures to reduce interest rates on bank loans to enhance the efficiency of investment activities. Financing mechanisms for strategically significant sectors are simplified. In the transportation sector, each company prepares investment project plans and corresponding income and expense schedules at any given time.

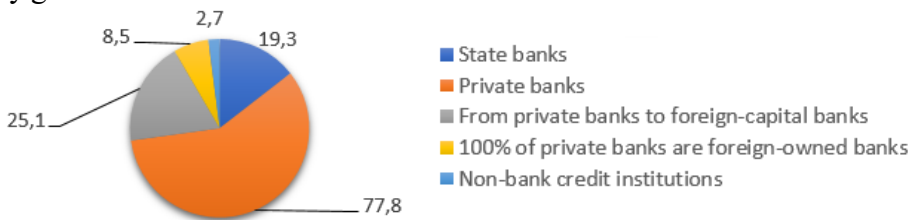


Figure 3. Structure of credit investments in the economy by credit institutions for 2023, in percentage terms¹

Companies decide whether to proceed with these projects depending on the cost or affordability of financial resources. If we aggregate the investment demand of state and private companies in Azerbaijan’s transportation sector, it becomes possible to calculate the total investment demand based on the cost of financial resources.

¹ [<https://uploads.cbar.az/assets/8571ed025b9871f5f43376c70.pdf>]

The findings indicate that one of the exogenous problems hindering the development of the transportation sector is the high cost of financial resources required for investments. Therefore, compared to the transportation companies in neighboring countries, the introduction of a non-traditional, interest-free financing mechanism could significantly contribute to ensuring the sustainable development and strengthening the competitiveness of national transportation companies in Azerbaijan.

6. Justifying the existence of a high correlation between the revenue generated from freight transportation, the volume of investments directed towards the basic capital, and the value of fixed assets in the transportation sector, based on the Cheddock scale;

Since the early 21st century, the increase in economic stability, labor productivity, corporate profits, and purchasing power of the population in countries worldwide has conditioned the rapid expansion of global economic relations. International trade of goods, as well as the trade of international services, has also grown. Among these, the transportation sector holds the most prominent position in service trade.

The development of foreign trade relations is directly dependent on the level of the transportation factor. As a classic element, transportation itself plays a vital role in industrialization, contributing to the development and location of productive forces, as well as expanding international connections. Therefore, transportation is of great significance in the global economic landscape. Given that the overall income from work and services in the transportation sector impacts the Gross Domestic Product (GDP), evaluating the factors influencing the growth of income in this sector and determining its future development is crucial.

Several factors affect the increase in revenue from transportation services, such as investments in the country's capital, the value of fixed assets in the transportation sector, the volume of freight traffic, trade turnover, GDP, and the population's income.

Based on ARDSK data, regression analysis can be conducted using established mathematical software packages like EViews, MatLab, MS Excel, and MathCad to assess the correlation between factors affecting the revenue generated from transportation services in Azerbaijan from 2000 to 2022.

Using the Eviews-12 software package, the following results were

obtained based on ARDSK data: The research concluded that a 1% increase in the value of fixed assets in Azerbaijan leads to a 1.015% increase in transportation revenue, while a 1% increase in investments directed towards fixed capital in the transportation sector results in a 0.225% increase in revenue from freight transportation.

There is a strong correlation between the volume of investments directed towards fixed capital and the value of fixed assets in the transportation sector, based on the Cheddock scale.

According to the findings from Eviews, the prices and standard errors of the revenue from freight transportation in Azerbaijan were determined, and the application of the equation for forecasting purposes revealed that, according to projections, the revenue from freight transportation in Azerbaijan will continue to grow until 2030.

7. "The existing problems in the transport sector have been identified and systematized. It has been found that the equipment in use is imported from foreign countries, and in order to achieve local production, there is a need for highly specialized expert training to enhance competitiveness. Effective proposals should be made in this regard."

"The demand for quality personnel training for the industrial processing and transportation of oil in Azerbaijan has existed since the late 19th century. However, the technology used in the national transport sector is still imported, and the quality of specialized technical training is lower compared to developed countries. In 2023, more than 50% of the state budget revenues were derived from the sale of crude oil. However, by producing scientific and technology-intensive products, it is possible to increase income from the sale of finished products within the national income. Our proposal for solving this problem is to form an education strategy suitable for the country's geographical location, physical resources, financial opportunities, and national-spiritual values. It should also be taken into account that when any scientific-technical innovation is applied in production, 14% of workers are laid off. In the near future, it is predicted that automation will result in the reduction of 800 million jobs worldwide. Therefore, the knowledge provided by educational institutions in Azerbaijan's transport sector is not enough for high-level specialist training. Alongside quality teaching, guarantees must be provided for

students to gain practical experience in state and private institutions.

The education system in Azerbaijan's transport sector should transform into a space where the latest research results from scientific studies are integrated with superior skills developed in production. Although the education and training system is responsible for organizing results-oriented education, this issue should be given strategic importance in terms of our people's material and moral future. Families, state institutions, and society as a whole should be made aware of this matter."

8. "It has been determined that the organization of linear systems in maritime transport allows the concentration of the overall cargo flow on a single cargo route, which provides a foundation for the use of the largest tonnage and fastest specialized ships in linear navigation to serve transports in the same directions. This, in turn, sharply increases the efficiency and utilization of existing ships"

"The organization of linear systems in maritime transport has the following advantages:

It allows the concentration of the overall cargo flow on a single cargo route with minimal use of main approach ports, which facilitates the use of the largest tonnage and fastest specialized ships in linear navigation, resulting in high efficiency in maritime transport.

In addition to modern specialized fleets with universal capacity, it also creates a foundation for servicing transports in the same directions, which sharply increases the degree of utilization and efficiency of the existing capacity.

The organization of main linear systems in maritime transport focuses on increasing service quality to customers, as well as attracting more foreign cargo, which contributes to the strategic foreign currency earnings of the country's economy.

One of the important issues in the development of maritime shipping in 2020-2025 and the strategic roadmap is the transition of regional (Caspian basin) transport routes to the international system, which is based on the transoceanic mainline system. The transoceanic mainline system refers to the organization of work with large-tonnage specialized fast ships operating on a unified schedule along the main transoceanic route, in conjunction with specialized and universal fleets, at major ports along the main routes.

According to the report by the United Nations Conference on Trade and Development, the volume of intercontinental trade increased from 1.8 trillion US dollars in 1990 to 17.2 trillion in 2013, 28.5 trillion in 2021, and 31 trillion US dollars in 2023. In intercontinental trade, 70% of the transported cargo is carried by maritime transport."

Intercontinental trade volume (in trillions of United States dollars)

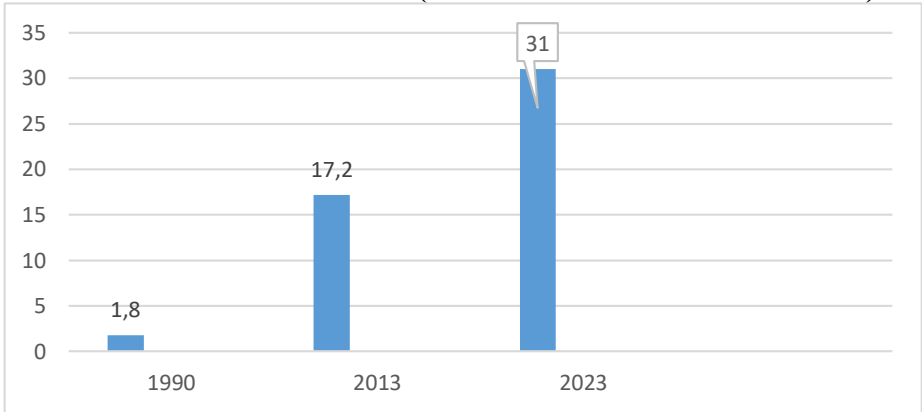


Figure 5. Volume of intercontinental trade (in trillions of United States dollars)¹

"It is not enough for Azerbaijan to maintain its leadership in the Caspian basin in maritime transport. This is because other countries such as Russia, Iran, Kazakhstan, and Turkmenistan have more territorial and economic resources compared to our country. If Azerbaijan increases its competitiveness in maritime trade at both regional and global levels, and competes with large companies in freight and passenger transportation, it will not only maintain its leadership in the Caspian basin but also increase the country's strategic foreign currency reserves, thus contributing to the security of the national economy. Currently, the annual income from maritime transport worldwide exceeds 400 billion US dollars. According to the consolidated financial position report released by AXDG (JSC) on June 30, 2023, the total profit earned by our country from maritime transport in 2022 amounted to 65 million 441 thousand manat. This equals 0.016% of the global revenue earned during the year. However, by

1 [[https:// unctad.org/publication/global-trade-update-march-2024](https://unctad.org/publication/global-trade-update-march-2024)]

increasing the amount and efficiency of investments in maritime transport, this figure can be raised to 0.1% in the coming years. If the growth dynamics are maintained, by 2030, the revenues from maritime transport in our country could reach 2-3 billion US dollars. To achieve the set goals, first and foremost, a plan for the expansion of Azerbaijan Caspian Sea Shipping Company (AXDG) towards Turkey, Russia, Europe, and Iran must be prepared. New modern ships should be purchased, internationally significant ports should be acquired or leased, shipbuilding and repair factories should be constructed in various countries, technical fleets should be strengthened, and Azerbaijan's space capabilities should be widely utilized in maritime transport."

The main provisions and findings of the dissertation are reflected in the author's works listed below:

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