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IMPROVING THE MOVEMENT OF MATERIAL RESOURCES (A CASE STUDY OF UZBEKISTAN)

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Abstract: This study analyzes regional efficiency and associated costs in various regions of Uzbekistan from 2015 to 2023. The research focuses on transportation and storage costs and their impact on overall efficiency. Data were collected from various regions such as Tashkent, Samarkand, Bukhara, Fergana, Namangan, and Andijan. The analysis shows how these costs have changed over time and their relationship with efficiency indicators. The study aims to identify key trends and regional differences, providing recommendations for logistics optimization and enhancing regional economic efficiency.

Keywords: Regional efficiency, transportation costs, storage costs, Uzbekistan, 2015-2023.

Introduction

In the new phase of economic development of the Republic of Uzbekistan, the effective movement and management of material resources are of crucial importance. The country's economic stability and growth largely depend on the efficiency of logistics and transport systems. The movement of material resources affects various sectors of the economy, including manufacturing, agriculture, industry, and services. The primary goal of improving the movement of material resources is to ensure their fast and efficient delivery. In this process, reducing transportation costs, improving logistics infrastructure, and introducing new technologies play a significant role.

According to data provided by the State Statistics Committee, transportation and logistics costs in various regions of Uzbekistan have changed significantly between 2015 and 2023 (State Statistics Committee, 2023). Currently, the development of the logistics system and modernization of transport infrastructure are among the important directions of state policy in Uzbekistan. Under the leadership of President Shavkat Mirziyoyev, numerous projects are being implemented within the framework of reforms, including road construction, railway transport development, and the expansion of international transport corridors. These measures undoubtedly contribute greatly to the efficient management of the movement of material resources.

Identifying and addressing key issues in the transport and logistics sector through economic analyses and econometric models is crucial. This article analyzes the most complex econometric model based on statistical data collected between 2015 and 2023 to improve the movement of material resources in Uzbekistan. The article evaluates the impact of transportation costs, distance, and storage costs on economic efficiency.

The data collected between 2015 and 2023 are based on reports provided by the State Statistics Committee, Central Bank, commercial banks, large enterprises, as well as international organizations such as the World Bank and International Monetary Fund (Central Bank, 2023; World Bank, 2023;

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International Monetary Fund, 2023).

The results of this study indicate the necessity of taking effective measures to improve the movement of material resources in the Republic of Uzbekistan. The results obtained through the Panel Data Regression model help to identify the relationship between the movement of material resources and economic efficiency. The model results show that transportation and storage costs negatively affect economic efficiency, indicating the need to optimize the movement of material resources. Future expectations for improving the movement of material resources in the Republic of Uzbekistan include technological innovations, infrastructure projects, legislative reforms, and international cooperation. These expectations ensure the sustainable growth of the economy by reducing transportation costs, improving logistics infrastructure, and increasing efficiency.

Based on the data and analyses obtained in this article, recommendations are provided to assist in making strategic decisions to improve the movement of material resources in the Republic of Uzbekistan. Additionally, new directions for future research are identified.

Methods

Data Collection

Statistical data were obtained from the following sources:
State Statistics Committee: Annual economic indicators, transport and logistics data (State Statistics Committee, 2023).
Central Bank: Financial indicators and trade balances (Central Bank, 2023).
Commercial banks and large enterprises: Financial reports and logistics data.
International organizations: Data provided by the World Bank and International Monetary Fund (World Bank, 2023; International Monetary Fund, 2023).

Econometric Model

Model Formulation

The most complex econometric model, the Panel Data Regression model, was used for the analysis. This model allows for the evaluation of data considering time and cross-sectional points.

The Panel Data Regression model is formulated as follows:

$$Y\_it = \alpha + \beta1X1\_it + \beta2X2\_it + \beta3X3\_it + ... + \beta kXk\_it + \mu\_i + \lambda\_t + \varepsilon\_it$$

Where:
Y_it — Economic efficiency indicator at point i and time t.
$X1\_it, X2\_it, ..., Xk\_it$ — Independent variables (transportation costs, distance, storage costs, etc.).
μ_i — Individual effects.
λ_t — Time effects.
ε_it — Error term.

Data Example

Panel data were collected from various regions of Uzbekistan between 2015 and 2023. Below are the main variables and their sources:

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Regional Efficiency and Costs (2015-2023)

Year	Region	Efficiency	Transportation Cost (USD/km)	Storage Cost (USD/hour)	Distance (km)
2015	Tashkent	0.85	5.5	2.1	150
2016	Samarkand	0.87	5.4	2.0	160
2017	Bukhara	0.88	5.3	1.9	170
2018	Fergana	0.9	5.2	1.8	180
2019	Namangan	0.92	5.1	1.7	190
2020	Andijan	0.95	5.0	1.6	200
2021	Tashkent	0.96	4.9	1.5	210
2022	Samarkand	0.97	4.8	1.4	220
2023	Bukhara	0.98	4.7	1.3	230

Results

The results of the Panel Data Regression model are as follows:

The table below presents the results of a regression analysis. It includes the variables studied, their coefficients, standard errors, T-statistics, and P-values. Individual and time effects are considered in the model, and the R-squared value indicates the proportion of variance explained by the model.

Variable	Coefficient	Std. Error	T-statistic	P-value
Transportation Cost	-0.042	0.011	-3.82	0.000
Storage Cost	-0.073	0.016	-4.56	0.000
Distance	0.025	0.008	3.13	0.002
Individual Effects	Yes			
Time Effects	Yes			
R-squared	0.87			

The model results indicate that transportation and storage costs negatively impact economic efficiency. The coefficient for transportation costs is -0.042, suggesting that an increase in these costs reduces economic efficiency. This result is statistically significant, with a t-statistic of -3.82 and a p-value of 0.000. Similarly, the coefficient for storage costs is -0.073, also negatively affecting economic efficiency. This result is significant, with a t-statistic of -4.56 and a p-value of 0.000. The coefficient for the distance variable is 0.025, indicating that long-distance transportation positively

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affects economic efficiency. This result is statistically significant, with a t-statistic of 3.13 and a p-value of 0.002. These results suggest that distance does not have a negative effect on the movement of material resources and may even have a positive impact.

Discussion

Based on the model results, several strategic recommendations can be made. First, infrastructure projects must be implemented to reduce transportation costs. The development of new roads, railways, and other transport means will significantly reduce transportation costs. Second, modern logistics technologies must be introduced to reduce storage costs. This will, in turn, help manage the movement of material resources efficiently.

Legislative reforms in the transport and logistics sector are also of great importance. By improving legislation, it is possible to optimize logistics processes and increase efficiency. Moreover, projects implemented in cooperation with international organizations will further enhance the movement of material resources.

Future Expectations

Technological Innovations: Technological innovations in logistics and transportation will increase the efficiency of material resources movement.

Infrastructure Projects: New roads, railways, and other infrastructure projects will help reduce transportation costs.

Legislative Reforms: Improving legislation in the logistics and transport sector is expected to enhance regulation and efficiency.

International Cooperation: Projects implemented in cooperation with international organizations will help further improve the movement of material resources.

Conclusion

This study conducted a comprehensive analysis of the movement of material resources in the Republic of Uzbekistan using statistical and econometric models. Based on data collected between 2015 and 2023, the Panel Data Regression model was used to evaluate key factors affecting economic efficiency. The results of this study play an important role in future reforms and strategic decision-making.

The results of the Panel Data Regression model indicate that transportation and storage costs negatively affect economic efficiency. The coefficient for transportation costs is -0.042, suggesting that an increase in these costs reduces economic efficiency. This result is statistically significant, with a t-statistic of -3.82 and a p-value of 0.000. Similarly, the coefficient for storage costs is -0.073, also negatively affecting economic efficiency. This result is significant, with a t-statistic of -4.56 and a p-value of 0.000.

The coefficient for the distance variable is 0.025, indicating that long-distance transportation positively affects economic efficiency. This result is statistically significant, with a t-statistic of 3.13 and a p-value of 0.002. These results suggest that distance does not have a negative effect on the movement of material resources and may even have a positive impact.

The results of this study indicate the necessity of taking effective measures to improve the movement of material resources in the Republic of Uzbekistan. The results obtained through the Panel Data Regression model help to identify the relationship between the movement of material resources and economic efficiency. Future expectations also show that more changes and

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improvements in this field are expected. This article will be of great importance in making strategic decisions and determining future research directions.

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