

DOI: <https://doi.org/10.34069/AI/2023.66.06.20>

How to Cite:

Zrybnieva, I., Pichugina, J., Sigaieva, T., Saienko, V., & Korolkov, V. (2023). Benchmarking in the logistics management system of Ukrainian enterprises. *Amazonia Investiga*, 12(66), 206-224. <https://doi.org/10.34069/AI/2023.66.06.20>

Benchmarking in the logistics management system of Ukrainian enterprises

Evaluación comparativa del sistema de gestión logística de las empresas ucranianas

Received: May 31, 2023

Accepted: July 7, 2023

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Abstract


The relevance of this study is manifested in the need of Ukrainian logistics companies to effectively manage and increase their competitiveness. Establishing benchmark enterprises and applying benchmarking allows identifying best practices and management principles. The use of statistical data on the economic and economic activity of the logistics industry allowed for statistical, parametric and correlation analyzes, which contributes to an objective study of trends in the transport and logistics industry of Ukraine. The proposed hypothesis on the use of a wide sample of statistical data reflects the potential for developing an algorithm and implementing the benchmarking methodology in the logistics industry management system. It is found that motor transport enterprises occupy leading positions in the Ukrainian market of transport and logistics services. Freight and logistics services, in particular transportation of ore products, prevail in the field of motor transport.


Resumen


La relevancia de este estudio se manifiesta en la necesidad de las empresas logísticas ucranianas de gestionar eficazmente y aumentar su competitividad. El establecimiento de empresas de referencia y la aplicación del benchmarking permiten identificar las mejores prácticas y principios de gestión. El uso de datos estadísticos sobre la actividad económica y coyuntural de la industria logística permitió realizar análisis estadísticos, paramétricos y de correlación, lo que contribuye a un estudio objetivo de las tendencias en la industria del transporte y la logística de Ucrania. La hipótesis propuesta sobre el uso de una amplia muestra de datos estadísticos refleja el potencial para desarrollar un algoritmo e implementar la metodología de evaluación comparativa en el sistema de gestión de la industria logística. Se constata que las empresas de autotransporte ocupan posiciones de liderazgo en el mercado ucraniano de servicios de transporte y logística. Los servicios de carga y logística, en particular el transporte de productos minerales,

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The analysis of regional peculiarities revealed that Dnipropetrovska oblast, Kyiv and Donetsk oblast are favorable for freight and logistics activities. It was also found that privately owned companies predominate among the specialized enterprises in this industry. The benchmarking analysis confirmed that it is possible to use profile data to identify benchmark enterprises with the best economic performance and to use their experience to improve the competitiveness of other companies. Such analysis reveals the strengths and weaknesses of enterprises, provides opportunities for improvement and development, and facilitates informed decision-making to improve the productivity and quality of logistics processes. Thus, the benchmarking methodology proves to be an effective tool for assessing and comparing the economic and financial performance of logistics companies, contributing to their competitiveness and market position.

Keywords: benchmarking analysis, logistics industry, economic efficiency, competitiveness, statistical analysis.

Introduction

Logistics plays an important role in Ukraine's economy, ensuring the efficient organization and coordination of the movement of goods and material resources from suppliers to end users. Its role is to solve complex problems related to optimizing the supply chain, reducing costs, improving service levels, and implementing innovative solutions in the field of logistics (Popelo et al., 2023; Kolodiichuk, Cherevko & Popivniak, 2023; Zomchak & Starchevska, 2023). An efficient logistics system contributes to the productivity and competitiveness of enterprises. It reduces the time of delivery of goods, optimizes the use of transport resources, reduces stocks in warehouses, and avoids delays in production. This has a positive impact on product quality, customer satisfaction, and increased profitability (Komchatnykh, Klymenko & Levishchenko, 2022; Kozlova, 2022; Ding, Wang & Chan, 2023). Logistics is also an important factor in the development of international trade and foreign economic relations of Ukraine. Effective management of logistics processes allows to ensure fast and reliable delivery of goods abroad, increase the competitiveness of Ukrainian enterprises in foreign markets, and attract foreign investment (Liashenko, Khaustova & Trushkina, 2023; Dyczkowska & Reshetnikova, 2022; Lee et al., 2022). In addition, the development of logistics contributes to the creation of new jobs and

prevalecen en el ámbito del autotransporte. El análisis de las peculiaridades regionales reveló que Dnipropetrovska oblast, Kyiv y Donetsk oblast son favorables para las actividades de carga y logística. También se constató que entre las empresas especializadas en este sector predominan las de propiedad privada. El análisis comparativo confirmó que es posible utilizar los datos del perfil para identificar las empresas de referencia con los mejores resultados económicos y utilizar su experiencia para mejorar la competitividad de otras empresas. Este análisis revela los puntos fuertes y débiles de las empresas, ofrece oportunidades de mejora y desarrollo y facilita la toma de decisiones informadas para mejorar la productividad y la calidad de los procesos logísticos. Así, la metodología del benchmarking se revela como una herramienta eficaz para evaluar y comparar los resultados económicos y financieros de las empresas logísticas, contribuyendo a su competitividad y posición en el mercado.

Palabras clave: análisis comparativo, industria logística, eficiencia económica, competitividad, análisis estadístico.

employment in Ukraine. Expansion of logistics infrastructure, development of transport networks, warehouses, and logistics services help to expand opportunities for businesses and attract new investments. This helps to stimulate economic growth and development of various logistics-related industries (Khaustova, Boiko & Trushkina, 2022; Yurchenko & Yarova, 2022; Trushkina, Buhaieva & Skoptsov, 2022). It is important to take into account that effective logistics management has a significant potential to increase the competitiveness of Ukrainian enterprises in global markets. It allows for a quick response to changes in customer requirements, flexible adaptation to market conditions, and a high level of service (Kovalenko et al., 2021; Riabov & Riabova, 2021; Bushman, 2021). However, there are some challenges and problems related to the development of logistics in Ukraine. Infrastructure instability, insufficient development of transport networks, bureaucratic procedures, and insufficient funding are key factors that limit the development of logistics in the country. Solving these problems requires government attention, effective partnerships between government, business, and academia, as well as the development of a favorable business environment (Horoshkova & Sumets, 2023; Sirenko, Baryshevska & Melnyk, 2023; Doroshuk, Mironova & Protsyuk, 2022). The

full-scale unprovoked military aggression of the Russian Federation in Ukraine creates serious problems in the organization of logistics. Restricted access to the territories, destroyed transportation networks, and danger to personnel complicate the transportation of goods and ensure normal logistics activities. In addition, economic instability and rising security costs lead to difficulties in financing logistics operations. Given these factors, organizing logistics in times of war requires adapting to the conditions of conflict, ensuring the safety of personnel and cargo, and finding alternative routes and sources of supply (Gruenwald, 2022; Zrybnieva, 2022; Jankowski-Guzy & Kamińska, 2022). Thus, logistics plays an important role in Ukraine's economy, contributing to the efficiency of enterprises, development of foreign economic relations, job creation and stimulation of economic growth. However, in order to achieve the full potential of logistics in Ukraine, it is necessary to continue to address the challenges and problems affecting the development of logistics. One of the methods to improve the efficiency of logistics enterprises in Ukraine is the benchmarking method (Uusitalo & Laine, 2022; Chen et al., 2022; El Ouadi, Malhene, Benhadou, & Medromi, 2022). The theoretical part of the research establishes the conceptual foundations of benchmarking, its principles of application, and its potential impact on the management system of logistics enterprises. In the practical part of the study, a statistical analysis of the subject area was conducted, which subsequently enabled the application of benchmarking analysis to selected specialized enterprise. Based on the results of comparative analysis, an optimal benchmarking implementation scheme for the logistics sector of Ukraine was developed.

The purpose of the study is to develop effective mechanisms for the implementation of benchmarking methods in the system of management of logistics activities of Ukrainian enterprises.

Research Objectives:

1. Conduct a theoretical analysis of the conceptual framework of benchmarking analysis and assess the likelihood of its application for optimizing the logistics sector in Ukraine.
2. Perform a statistical analysis of the subject area, identifying leading sectors, top companies, and indicators suitable for benchmarking analysis.
3. Carry out benchmarking analysis for a selected leading enterprise.
4. Develop an optimal algorithm for implementing benchmarking analysis in the Ukrainian logistics sector.
5. Formulate analytical conclusions regarding the feasibility of applying benchmarking strategies in the management system of Ukrainian logistics enterprises.

Theoretical Framework or Literature Review

Benchmarking is a strategic tool used to systematically compare an organization's performance, processes or practices with the best performance of well-known companies or sectors. Its purpose is to identify shortcomings, identify potential opportunities for improvement and adapt the best practices of other business entities to your own activities. Benchmarking is the process of systematically comparing an organization's performance, processes or practices with the best performance indicators of well-known companies or sectors. Benchmarking involves collecting and analyzing data, setting metrics and performance indicators, and comparing the results with defined standards or successful leading organizations (Pratap et al., 2023; Angelina & Mulia, 2023; Shirin, 2023). There are different types of benchmarking systems, depending on the object of comparison and the purpose of the study. The main types of benchmarking are internal, competitive, functional, and strategic (Kashyap, Kovrijnykh, Li & Pavlova, 2023; Basuki & Adriansyah, 2023; Yesmine et al., 2023):

- Internal benchmarking: This type involves comparing performance indicators and processes between different internal units or departments of an organization. The goal of internal benchmarking is to identify best practices within your own organization and apply them to other parts of the company to improve overall performance.
- Competitive benchmarking: This type involves comparing the performance, strategies and processes of an organization with its competitors in the market. The purpose of competitive benchmarking is to identify advantages and disadvantages compared to competitors, which helps in developing strategies to increase competitiveness and take a leadership position in the market.
- Functional benchmarking: This type involves comparing specific functions or processes of an organization with similar functions or processes in other



organizations, regardless of their industry or market status. Functional benchmarking helps to identify best practices that can be used to improve a specific function of the organization. This type of benchmarking allows an organization to observe successful practices in other industries and transfer them to its own functional processes. It can help to identify effective strategies, innovative approaches, and innovative ideas that have already been used successfully in similar areas of activity.

- Strategic benchmarking: This type of benchmarking is used to compare strategies and management approaches between organizations that may be external to their own industry. The purpose of strategic benchmarking is to obtain insights and ideas from other industries that can be applied to develop the strategic directions of your own organization and achieve competitive advantage.

Benchmarking parameters include various factors and metrics against which organizations' processes, performance, and results are compared. Some of the main benchmarking parameters include (Disch, 2023; Goswami, Daultani, Chan & Pratap, 2022; Nurgaliyeva, Ismailova & Sarybayeva, 2022, Ihnatenko, 2022):

- Costs: A comparison of the costs of producing, distributing, storing, and transporting goods or services. This can include general costs, resource costs, personnel, materials, etc.
- Time: Analyzing the duration of processes and the speed at which tasks are completed. This may include production, delivery, order processing, and other important criteria related to time efficiency.
- Quality: An assessment of the quality of a product or service, which may include criteria such as accuracy, reliability, quality standards, customer satisfaction, and other quality indicators.
- Productivity: An analysis of resource efficiency and labor utilization, including measures such as production capacity, cost per unit of output, labor hour productivity, and other performance indicators.
- Innovation: Assessing the level of innovation and adoption of new ideas, technologies or practices. This may include indicators such as the number of innovations, patents, and the level of research and development.

- Customer satisfaction: Assessment of customer satisfaction and the requirements of their needs. This may include customer surveys, customer ratings, repeat purchase rates, and other measures of customer satisfaction.

In the context of applying the benchmarking method in the management system of logistics activities of enterprises, let us consider the relevant and up-to-date studies.

The study (Stojanović & Ivetić, 2020) confirms that the use of Incoterms clauses in assessing and benchmarking a country's logistics performance is a significant tool for improving the management of logistics processes. This study emphasizes the importance of using Incoterms in the context of logistics, as well as its potential to increase competitiveness and improve a country's logistics performance.

Su & Ke (2017) note that benchmarking national logistics productivity is an important tool for assessing and comparing the efficiency of logistics systems in different countries. The study emphasizes that benchmarking helps to identify the strengths and weaknesses of national logistics systems and is used to formulate strategies to improve and increase the country's competitiveness in the global logistics context.

The publication (Meryem, Saâd, Mohamed & Fouad, 2019) analyzes best practices in the organization of urban freight transport and benchmarking of urban logistics schemes. The study captures various best practices in urban logistics, such as electric vehicles, resource sharing, and environmental management. Benchmarking of urban logistics schemes allows to compare and evaluate the effectiveness of these practices in different cities.

The goal of the study by Kazaçoğlu, Zbiltekin & Kan-zen (2020) is to develop a sustainable benchmarking methodology for choosing the placement of logistics centers. One of the primary conclusions is that locational criteria for logistics centers should consider sustainability, particularly when considering developing nations. The study demonstrates that a variety of metrics, including carbon emissions, energy use, environmental costs, and social responsibility, can be used to evaluate sustainability.

For example, in a study by Minnow, Eric, and Bányai (2022), available data from the World Bank is used to assess logistics productivity amongst nations. The study's key findings

include the fact that comparing and evaluating the effectiveness of logistics systems across nations using open data is a beneficial tool. In order to compare countries, the study makes use of a variety of metrics, including measures of the effectiveness of logistics and customs environments.

The overall conclusion from the above studies is that benchmarking is an important tool for assessing, comparing, and improving the productivity and efficiency of logistics and transportation systems. They demonstrate the value of benchmarking in identifying best practices, developing strategies, and improving competitiveness.

However, one of the unexplored aspects is the issue of algorithmization of benchmarking methods to improve the efficiency of economic activities of transport and logistics companies, in particular in the context of current conditions in Ukraine. It is necessary to conduct additional research aimed at developing algorithms and methodologies that take into account the peculiarities of the Ukrainian market and the realities of transport and logistics companies. This will help determine the best approaches to benchmarking that will help improve the efficiency and sustainability of the industry in the current environment.

Methodology

In the context of this study, the following methodological approaches were used:

1. **Statistical analysis of the industry:** This method involves collecting and analyzing statistical data related to the logistics industry in order to establish trends, calculate averages, coefficients of variation, and other indicators. Statistical analysis allows you to evaluate the distribution and characteristics of the data under study, identify dependencies and establish statistical significance.
2. **Parametric analysis:** This method involves the use of statistical methods to study the parameters of the industry under study. It is based on the use of statistical models, such as regression analysis or analysis of variance, to assess the impact of various factors and establish statistical relationships between them.
3. **Correlation analysis:** Used as a method of testing a mathematical model on sets of industry statistics, it allows to establish the presence and degree of dependence between

different variables in the studied data set. This method is based on the calculation of correlation coefficients, which indicate the strength and direction of dependence between variables. Using correlation analysis, it is possible to determine whether the hypothesis of a relationship between variables is confirmed, as well as to assess the strength of this relationship. This allows you to verify the adequacy and accuracy of the mathematical model and ensure its use for forecasting, optimization and decision-making in the context of the logistics industry.

4. **Algorithmization:** This method involves the development of algorithms and procedures to perform specific tasks in the logistics industry. The use of algorithmization contributes to the automation of processes, improves efficiency and accuracy, and allows for standardization of procedures and repeatability of results.

These methods, such as statistical analysis of the industry, parametric analysis, mathematical modeling, correlation analysis, and algorithmization, are important and useful tools in the study and improvement of the logistics management system of enterprises.

Statistical analysis of the industry allows us to assess the distribution and characteristics of the data under study, establish statistical significance and identify dependencies between indicators, which provides the basis for further benchmarking and performance improvement.

Parametric analysis is based on the use of statistical models to assess the impact of factors and establish statistical relationships. It allows you to identify significant parameters and influencing factors on the efficiency of the logistics management system.

Correlation analysis establishes the relationship between variables, which helps to understand which factors affect the performance of logistics activities. It allows you to measure the degree of dependence and identify key aspects that need attention to improve processes. Procedures for logistics management can be automated and standardized with the aid of algorithms. Various areas, including warehouse management, transport routing, inventory, and production planning, can be effectively controlled by designing algorithms and procedures. Algorithms help you to optimize resources, ensure high-quality tasks in logistics activities, and create systematic, transparent, repeatable

procedures. The application of these methods in the management system of logistics activities of Ukrainian enterprises will allow for scientifically based research and analysis, establishing dependencies, identifying problem areas and identifying potential ways to improve. This will help to increase the efficiency and competitiveness of logistics processes, as well as contribute to the stable and sustainable development of transport and logistics companies in Ukraine.

Results and Discussion

Statistical analysis of the logistics sector in Ukraine.

Research. In accordance with the definition of benchmarking, applying the analytical methods discussed, we will study the economic indicators of the focus industry in order to establish a reference enterprise. Based on the results obtained, we will further form an algorithmized sequence of implementation of the studied technology for improving the economic performance of logistics enterprises, which provides for the application of the best practices

of the leaders of the focus industry (the actual implementation of the benchmarking method), adequate to the purpose of the study. In accordance with the established methodology, we will perform a statistical analysis of the economic indicators of the focus industry according to the state statistical database (State Statistics Service of Ukraine, 2023). The transport and logistics situation in Ukraine is determined by the statistical typification of transport modes, which is established based on the results of a retrospective statistical analysis - Figure 1 - Figure 4.

According to the analytical data provided (Figure 1 - Figure 4), it was found that the main cargo and logistics flows in Ukraine are road, rail and pipeline modes of transport, with the road freight transportation flow remaining the leader of the focus industry during the study period. Taking into account the leading position of this type of logistics companies, we will establish the prevailing areas of application of road transport among the existing range of transport and logistics services offered on the Ukrainian market - Figure 5 - Figure 8.

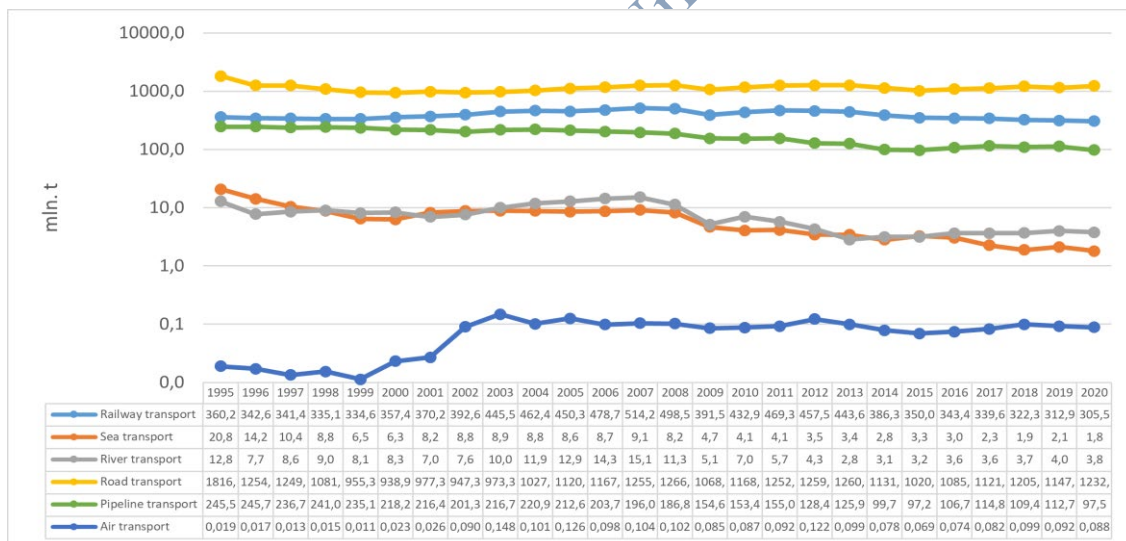


Figure 1. Retrospective Statistical Analysis of the Transport and Logistics Situation in the Ukrainian Freight and Transportation System.

Source: created by the author on the basis of statistical data from the State Statistics Service (State Statistics Service of Ukraine, 2023)

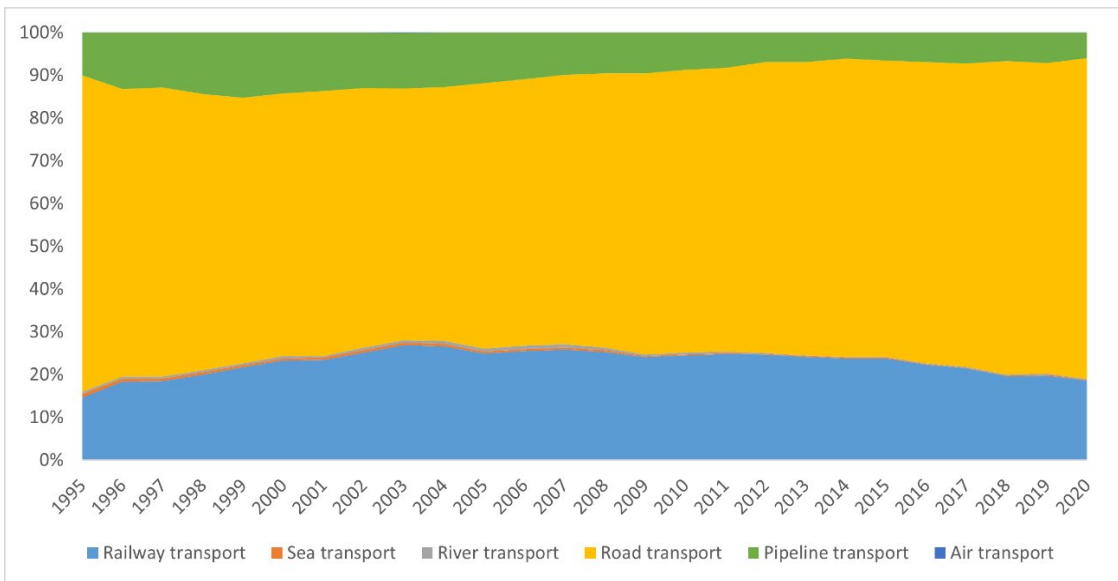


Figure 2. Retrospective statistical analysis of the leading mode of transport that has the greatest impact on the transport and logistics situation in Ukraine.

Source: created by the author on the basis of statistical data from the State Statistics Service (State Statistics Service of Ukraine, 2023)



Figure 3. Retrospective statistical analysis of the load on cargo and logistics flows of Ukrainian cargo turnover.

Source: created by the author on the basis of statistical data from the State Statistics Service (State Statistics Service of Ukraine, 2023)

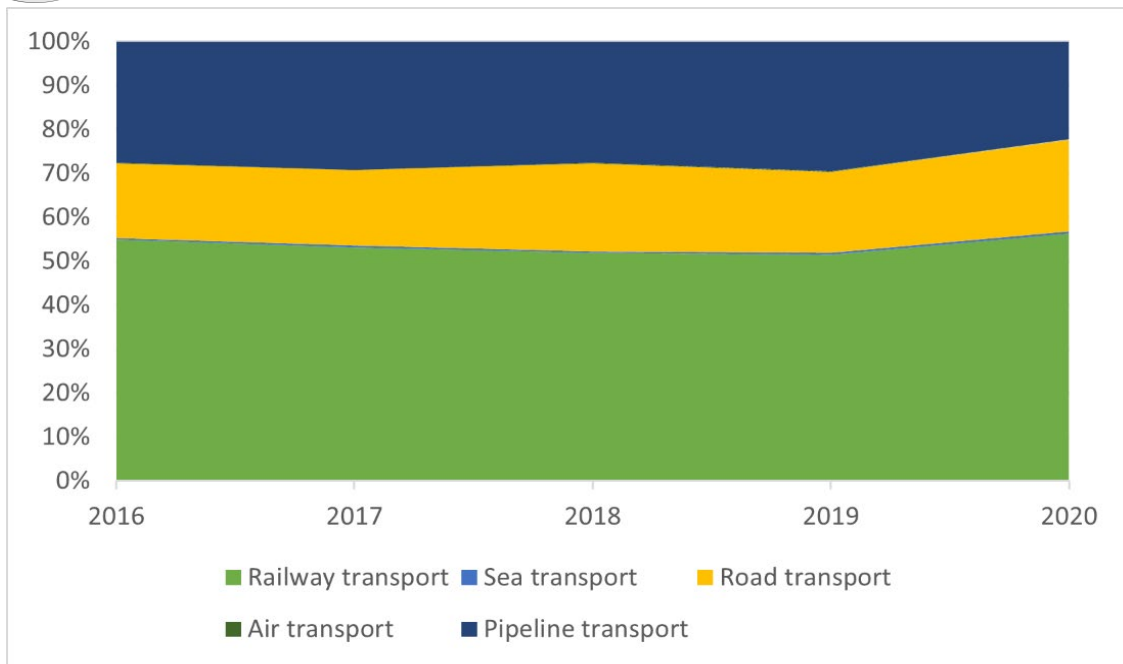


Figure 4. Retrospective statistical analysis of the specific load of the most used modes of transport in Ukraine (by cargo turnover)
Source: created by the author on the basis of statistical data from the State Statistics Service (State Statistics Service of Ukraine, 2023)

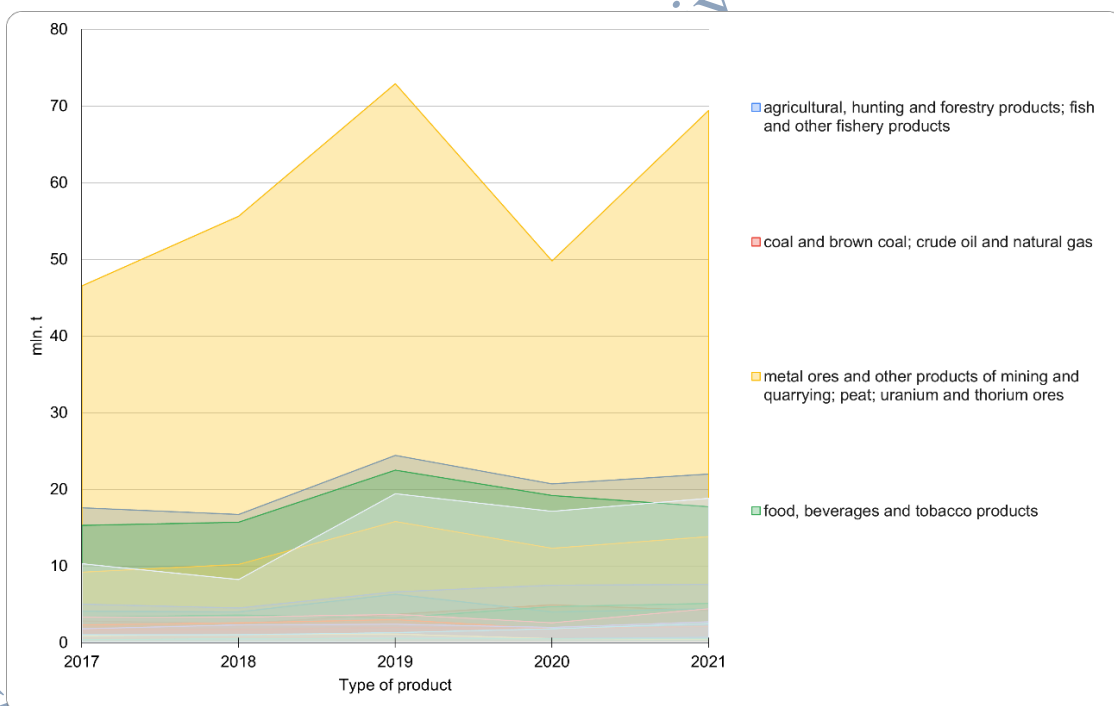


Figure 5. Retrospective statistical analysis of the areas of application of freight and logistics services involving motor vehicles (total indicator)
Source: created by the author on the basis of statistical data from the State Statistics Service (State Statistics Service of Ukraine, 2023)

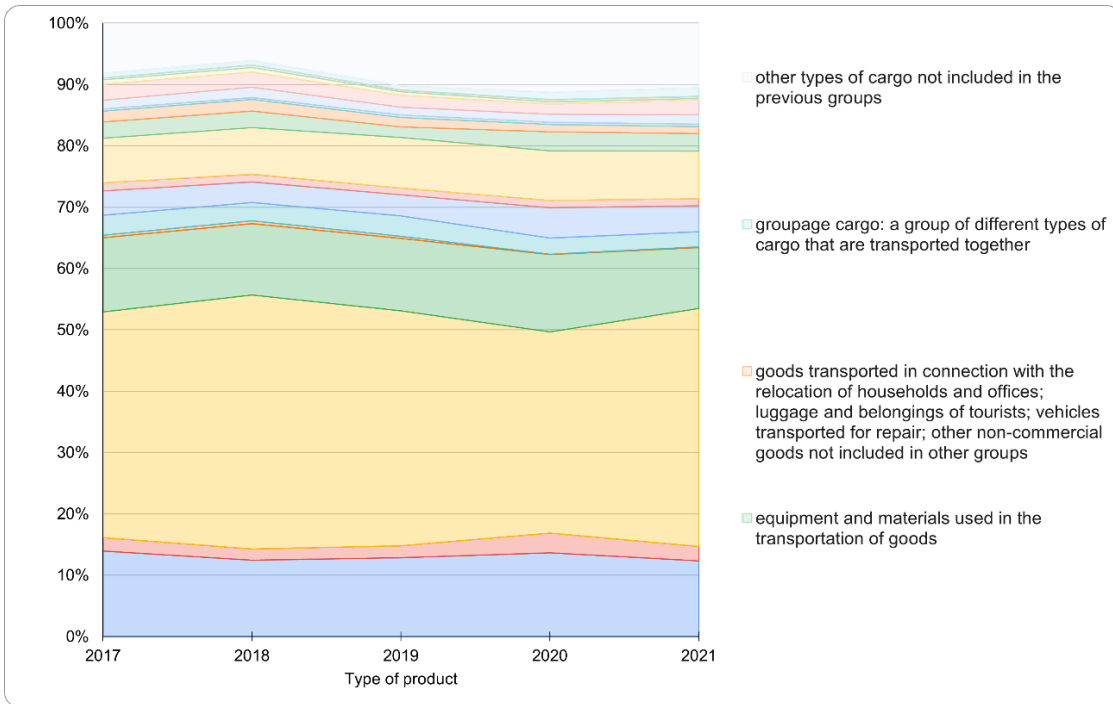


Figure 6. A retrospective statistical analysis to determine the leading sphere of attracting road freight and logistics flows (total indicator)
 Source: created by the author on the basis of statistical data from the State Statistics Service (State Statistics Service of Ukraine, 2023)

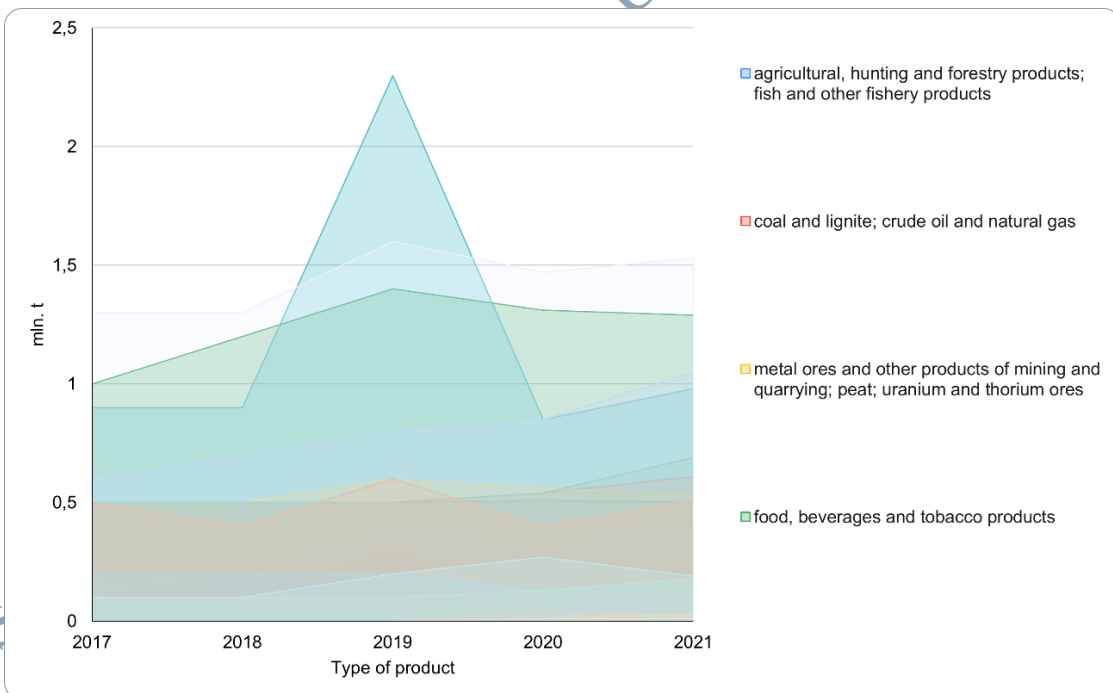


Figure 7. A retrospective statistical analysis of the areas of application of freight and logistics services involving motor vehicles (transportation in international traffic)
 Source: created by the author on the basis of statistical data from the State Statistics Service (State Statistics Service of Ukraine, 2023)

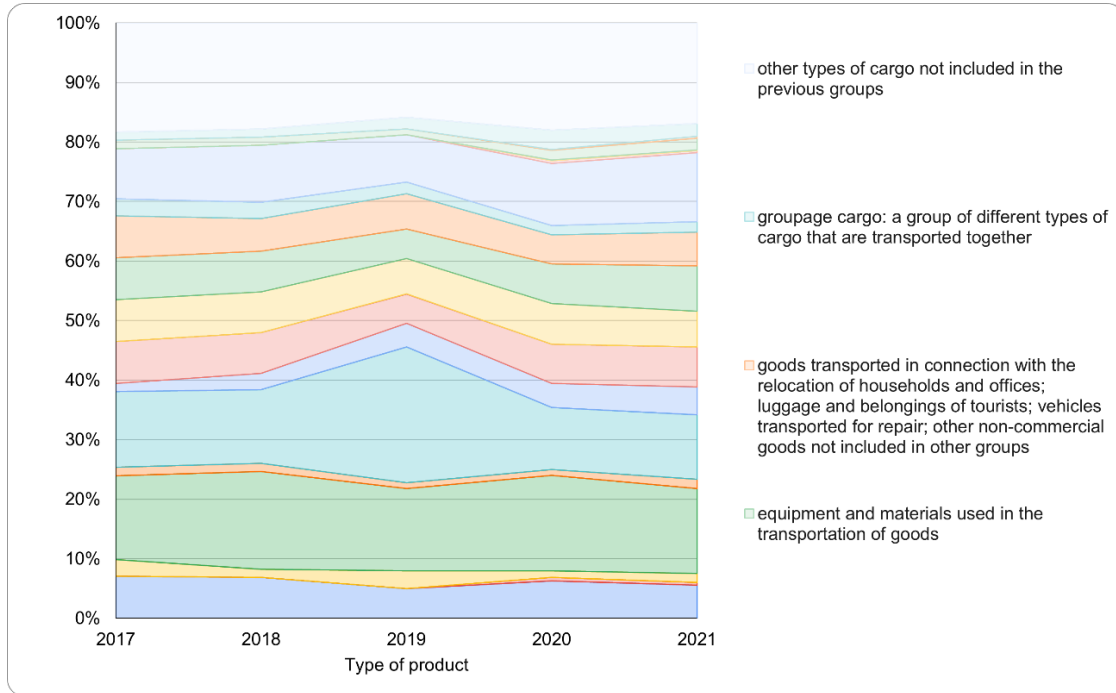
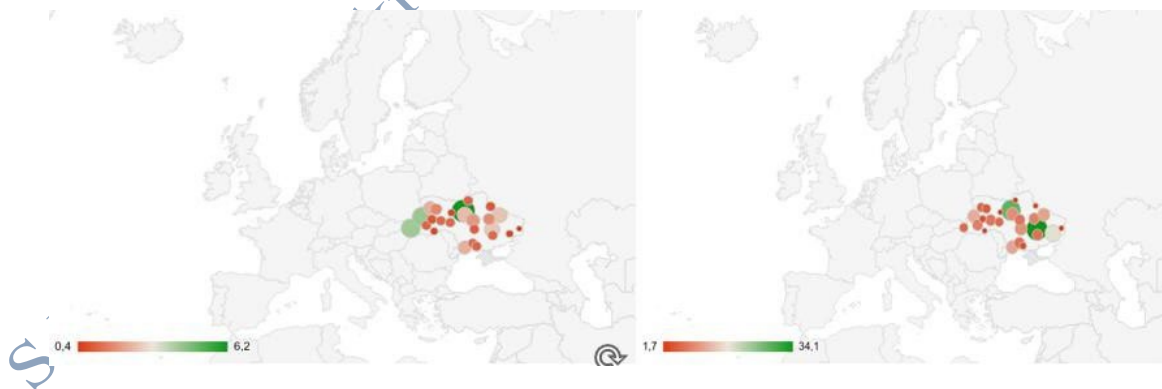


Figure 8. A retrospective statistical analysis to determine the leading sphere of attracting road freight and logistics flows (transportation in international traffic)

Source: created by the author on the basis of statistical data from the State Statistics Service (State Statistics Service of Ukraine, 2023)

According to the analytical data (Figure 5 - Figure 8), it was found that the predominant area of application of motor vehicles is cargo and logistics services for the transportation of ore products, but in the international road traffic in the study period, the transportation of food products prevails.

It is also worth considering the regional aspect of the use of freight and logistics services involving motor vehicles, according to which (Figure 9), the largest logistics centers in 2021 are Dnipro region, as well as the city of Kyiv and Donetsk regions. Thus, it should be assumed that transport and logistics companies in these regions are more successful in the context of the benchmarking method of adopting best practices.



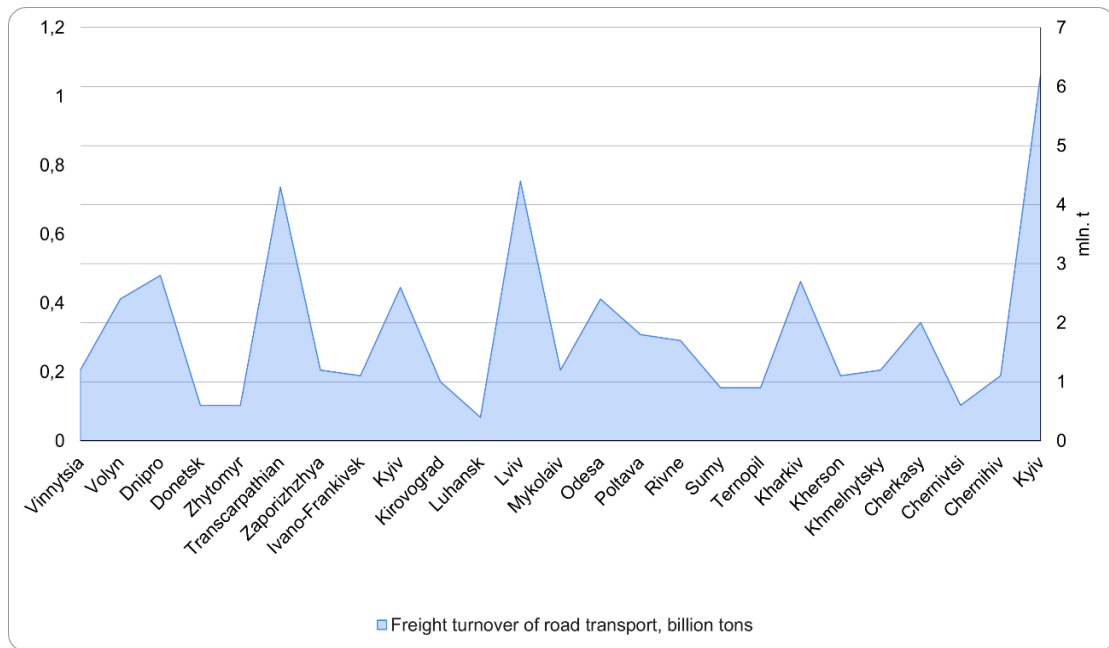


Figure 9. Evaluation of the regional aspect of the use of freight and logistics services involving motor vehicles based on the results of 2021.
 Source: created by the author based on statistical data from the State Statistics Service (State Statistics Service of Ukraine, 2023)

Similarly to benchmarking methods, we study the quantitative and qualitative structure of participants in the Ukrainian market of

transportation and logistics services using motor vehicles - Figure 10, Figure 11.

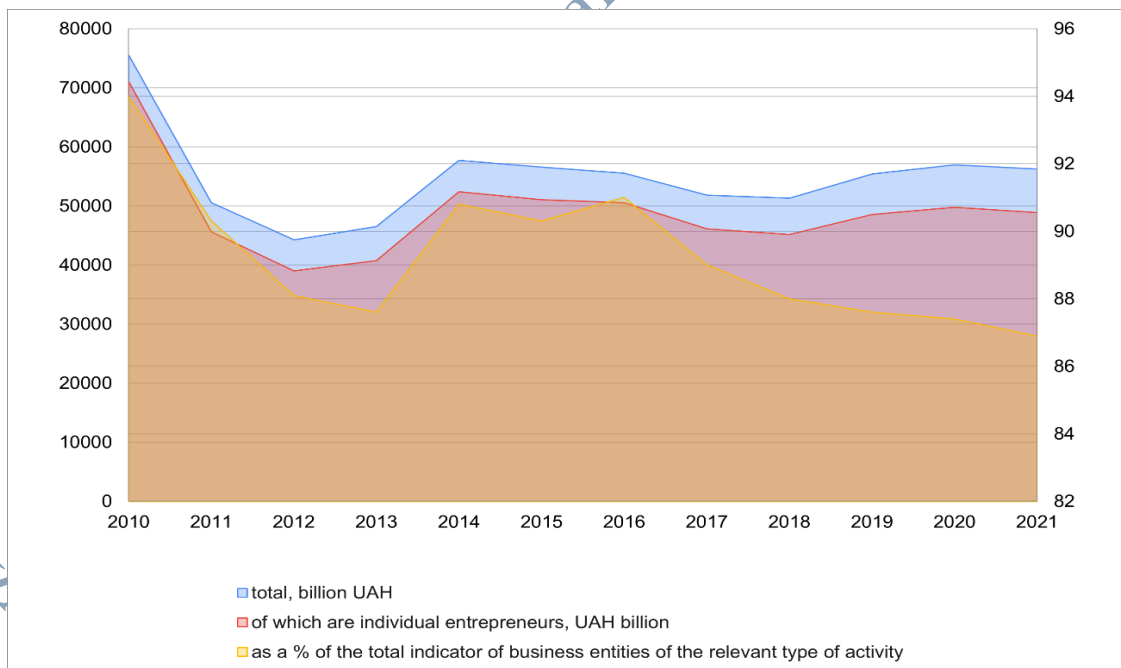


Figure 10. A retrospective statistical analysis of the quantitative and qualitative composition of participants in the Ukrainian road transport market of cargo and logistics services.
 Source: created by the author on the basis of statistical data from the State Statistics Service (State Statistics Service of Ukraine, 2023)

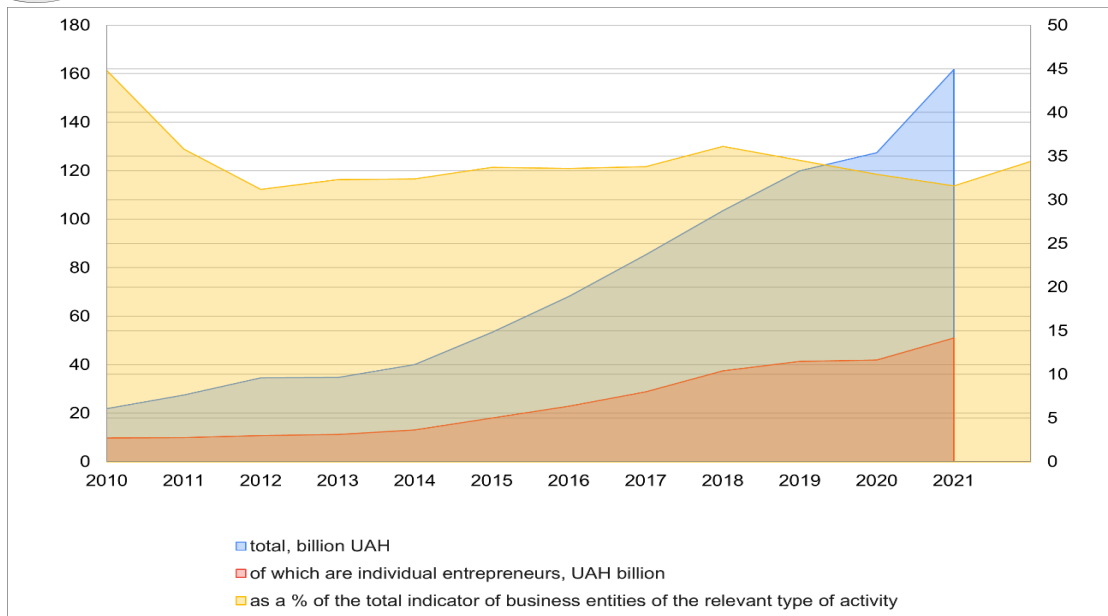


Figure 11. A retrospective statistical analysis of the quantitative and qualitative composition of participants in the Ukrainian road transport market of cargo and logistics services by the indicators of economic efficiency.

Source: created by the author on the basis of statistical data from the State Statistics Service (State Statistics Service of Ukraine, 2023)

Results. According to the analytical data (Figure 10), in the period under study, the number of participants in the market of freight and logistics services in the road transportation sector is relatively stable (54869 enterprises), with the majority of enterprises organized under private ownership - 89% (or 49073 enterprises). On the contrary, a cross-section of economic indicators (Figure 11) shows that the total profitability of private carriers is below the industry average (for enterprises of different ownership) at 34%. The established analytical data indicate that the economic situation in the Ukrainian market of freight and logistics services is determined by larger players of non-private ownership, but there is reason to believe that the private form of organization of a company providing logistics services for the transportation of goods by road is optimal (due to the widespread use of this form of management).

Identification of the leading specialized enterprise.

Research. Using the analytical platform YouControl (YouControl, 2023), we will test the formed hypothesis (based on the results of statistical, parametric and correlation analyzes) on the application of a comprehensive benchmarking methodology for the logistics industry of Ukraine - Figure 12, Figure 13.

Results. According to the data obtained using the analytical platform YouControl (YouControl, 2023) (Figure 12, Figure 13), it was found that the leader of the studied sector of the Ukrainian market in terms of economic efficiency is the private enterprise Trans Logistic, which provides road freight transportation and is based in the Dnipro region. The results obtained are fully correlated with the hypothesis formed on the basis of the sectoral statistical analysis regarding the characteristics of the enterprise that is the focus of the benchmarking methodology and clearly confirm the effectiveness of the applied statistical-correlation analytical search.

Table 1.

Parameters of financial and economic efficiency of the transport and logistics company (PE "Trans Logistic") for benchmarking analysis

Parameter of economic and financial efficiency	2020	2021	2022
MarketScore	A		
FinScore	A		
Revenue	2,127,041,000 UAH	2,814,878,000 UAH	3,253,709,000 UAH
Relative revenue growth for the year, %	6,6%	32,3%	25,8%
Assets	959,215,000 UAH	1,043,329,000 UAH	1,400,028,000 UAH
Cash and cash equivalents	20,252,000 UAH	25,519,000 UAH	476,529,000 UAH
Long-term liabilities	13,420,000 UAH	11,978,000 UAH	6,132,000 UAH
Short-term loans from banks	–	–	–
Net income	159,748,000 UAH	255,568,000 UAH	366,665,000 UAH
Net debt	329,567,000 UAH	592,846,000 UAH	131,870,000 UAH
EBITDA	347,108,000 UAH	451,859,000 UAH	582,980,000 UAH
Net debt to EBITDA ratio	0,9	1,3	0,2

Source: created by the author based on YouControl statistics (YouControl, 2023)

Results. The results of the benchmarking analysis of Trans Logistic PE for the period from 2020 to 2022 (Table 1):

1. *MarketScore*: The company has a high level of market position (A).
2. *FinScore*: The company demonstrates high financial stability (A).
3. Revenue: Over the three-year period, the company's revenue increased from UAH 2,127,041,000 in 2020 to UAH 3,253,709,000 in 2022. The relative revenue growth for the year also shows positive dynamics, growing from 6.6% in 2020 to 25.8% in 2022.
4. Assets: The total value of the company's assets increased from UAH 959,215,000 in 2020 to UAH 1,400,028,000 in 2022.
5. Cash and cash equivalents: The amount of cash and cash equivalents in the company's assets increased from UAH 20,252,000 in 2020 to UAH 476,529,000 in 2022.
6. Long-term liabilities: The amount of long-term liabilities decreased from UAH 13,420,000 in 2020 to UAH 6,132,000 in 2022.
7. Net profit: The company's net profit increased from UAH 159,748,000 in 2020 to UAH 366,665,000 in 2022.
8. Net debt: The company reduced its net debt from UAH 329,567,000 in 2020 to UAH 131,870,000 in 2022.
9. *EBITDA*: The company's EBITDA increased from UAH 347,108,000 in 2020 to UAH 582,980,000 in 2022. This indicates an increase in the company's profitability and improvement of its financial results. The increase in EBITDA may be the result of

higher sales, lower costs, or improved operational efficiency.

10. Net debt to EBITDA ratio: The ratio of net debt to EBITDA decreased from 0.9 in 2020 to 0.2 in 2022. This indicates a decrease in the company's financial risk, as the ratio has become lower. The decrease in this ratio may be due to a decrease in net debt, an increase in EBITDA, or a combination of both.

Thus, Trans Logistic has demonstrated positive dynamics in many economic and financial indicators, increasing revenue, assets, net profit and EBITDA. The decrease in long-term liabilities and the ratio of net debt to EBITDA also indicate an improvement in the company's financial stability. However, we should continue to closely monitor these indicators and work to ensure the company's sustainable growth.

Formulate analytical conclusions regarding the feasibility of applying benchmarking strategies in the management system of Ukrainian logistics enterprises.

Research. Due to the successful confirmation of the effectiveness of the method of finding a benchmark company based on the results of the industry statistical analysis (which is, in particular, confirmed by the high values of the financial and economic parameters of the efficiency of the established benchmark company), we will form an appropriate algorithm for applying the benchmarking methodology to the Ukrainian logistics services market - Figure 14.

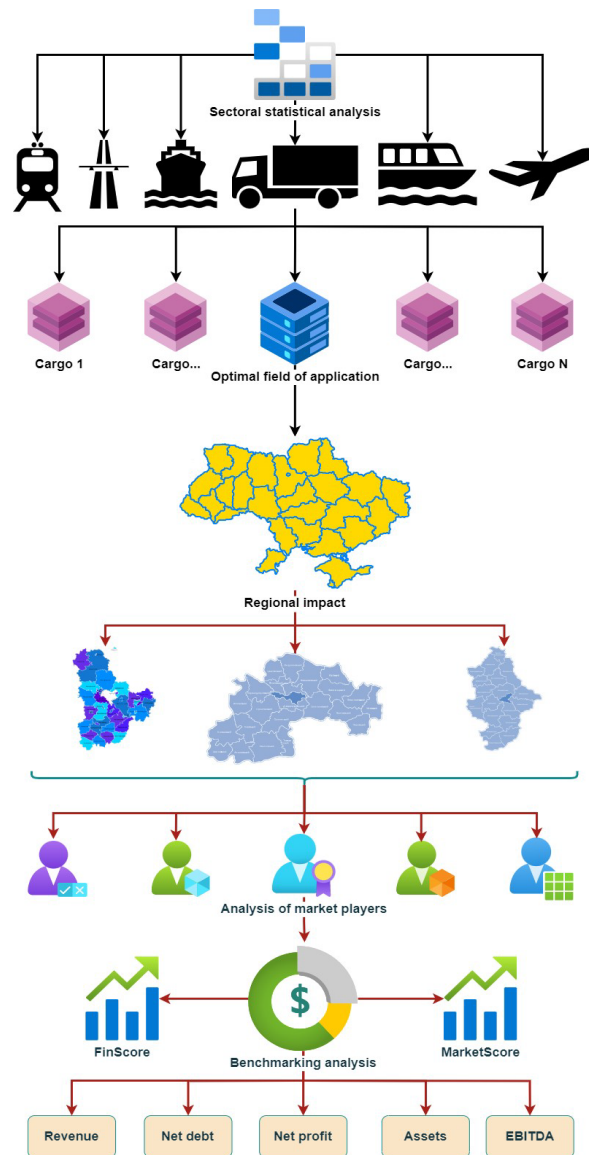


Figure 14. Algorithm for implementing benchmarking analysis in the logistics industry of Ukraine.
Source: author's development.

Results. The proposed algorithmic sequence of benchmarking implementation in the system of management of logistics activities of Ukrainian enterprises (Figure 14) illustrates the possibility of using statistical industry indicators to determine a benchmark enterprise to adopt best practices in organizing business activities for the provision of freight and logistics services. This process allows companies to compare their performance with known benchmarks and identify areas where improvements can be made. The results of the benchmarking analysis help businesses develop a specific improvement plan using the best practices that have been identified. This process can lead to an improvement in the efficiency and productivity of logistics activities of Ukrainian enterprises, as well as contribute to the development of competitive advantages.

The results of the benchmarking analysis of statistical industry indicators provide Ukrainian logistics companies with the opportunity to set high-performance standards and identify benchmarks that can be adopted to achieve better results. This process helps to increase the competitiveness of enterprises, optimize internal processes, improve the quality of service and ensure more efficient use of resources. Given the current circumstances in Ukraine, where the logistics industry is of great importance for the national economy, benchmarking is becoming a valuable tool to support the development and sustainable operation of logistics companies.

Conclusions

The results of the current study revealed the following key aspects:

1. In accordance with the proposed methodology, statistical, parametric and correlation analyzes of the statistical data set of economic and economic activities of the logistics industry of Ukraine were carried out.
2. The hypothesis about the probable possibility of using a wide sample of statistical data to develop an algorithm and implement the benchmarking methodology in the management system of the studied industry is proposed.
3. It has been established that the Ukrainian market of transport and logistics services is represented by a wide range of vehicles, among which the leading positions are occupied by motor transport enterprises during the studied period.
4. It has been found that the predominant area of application of motor vehicles is cargo and logistics services for the transportation of ore products, and in the international road transport in the study period, the transportation of food products prevails.
5. The article identifies regional peculiarities that influence the efficiency of the organization of freight and logistics activities, in particular, the most favorable for the subject economic activity are the Dnipropetrovsk region, as well as the city of Kyiv and Donetsk region.
6. It has been established that the predominant form of organization of freight transport and logistics activities among specialized enterprises is private ownership.
7. Thus, on the basis of parametric analysis, the elements and characteristics of the system for selecting enterprises that can be objectively established as reference companies for benchmarking analysis have been determined:
8. The direct benchmarking analysis allowed to obtain data (indicators of financial and economic efficiency of the studied type of economic activity: MarketScore, FinScore, revenue, relative revenue growth for the year, %, assets, cash and cash equivalents, long-term liabilities, short-term bank loans, net profit, net debt, EBITDA, net debt to EBITDA ratio) that correlate with the previous conclusions drawn from the analysis of the relevant array of industry statistics, which confirmed the hypothesis that it is possible to use specialized data to

establish a reference company for benchmarking.

9. Based on the confirmed effectiveness of the applied methods of analytical search for reference enterprises for benchmarking analysis, an appropriate algorithm has been formed that illustrates the stages of the successful implementation of benchmarking in the logistics sector of Ukraine.

Based on the study, it was found that the benchmarking methodology, which can be used in the system of management of logistics activities of Ukrainian enterprises, is an effective tool for assessing and comparing the economic and financial performance of companies in this industry. The results of the analysis of statistical indicators, such as revenue, assets, cash flows, and others, allow us to identify benchmark companies that are leaders in these indicators and use their experience and best practices to improve the efficiency and competitiveness of other companies. Benchmarking analysis helps to identify the strengths and weaknesses of enterprises, identify opportunities for improvement and development, and creates a basis for making informed decisions in the management of logistics processes. This allows companies to achieve improved productivity, reduced costs and higher quality of their operations, which has a positive impact on their competitiveness and market position.

Bibliographic references

- Angelina, V., & Mulia, M. W. (2023). Technology Implementation Cost: Public and Private Blockchain for Enterprise Level Organization Using Benchmarking Model. In *Blockchain and Applications*, 4th International Congress (pp. 356-365). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-031-21229-1_33
- Basuki, A., & Adriansyah, A. (2023). Response time optimization for vulnerability management system by combining the benchmarking and scenario planning models. *International Journal of Electrical & Computer Engineering* (2088-8708), 13(1). <http://doi.org/10.11591/ijece.v13i1.pp561-570>
- Bushman, I. (2021). The development of the intellectual economy of the future: trends, challenges of the future. *Futurity Economics&Law*, 1(3), 33-42. <https://doi.org/10.57125/FEL.2021.09.25.04>
- Chen, X., Cai, X. W., Ding, X., Song, L., & Chen, C. (2022). Intellectualization and

- substitution elasticity of capital on the labour force in logistics enterprises: evidence from China and the United States. *Applied Economics Letters*, 1-6. <https://doi.org/10.1080/13504851.2022.2136615>
- Ding, L., Wang, T., & Chan, P. (2023). Forward and reverse logistics for circular economy in construction: A systematic literature review. *Journal of Cleaner Production*, 135981. <https://doi.org/10.1016/j.jclepro.2023.135981>
- Disch, M. (2023). Estimating the Costs of Product Development Projects Based on External Data: The New Product Development Cost Benchmarking Method. *IEEE Transactions on Engineering Management*. <https://doi.org/10.1109/TEM.2023.3237543>
- Doroshuk, H. A., Mironova, A. O., & Protsyuk, M. S. (2022). Problems of transport logistics in Ukraine. 11th International Scientific and Practical Conference «Actual Problems of Theory and Practice of Management». 4. <https://acortar.link/OuMaLw>
- Dyczkowska, J. A., & Reshetnikova, O. (2022). Logistics Centers in Ukraine: Analysis of the Logistics Center in Lviv. *Energies*, 15(21), 7975. <https://doi.org/10.3390/en15217975>
- El Ouadi, J., Malhene, N., Benhadou, S., & Medromi, H. (2022). Towards a machine-learning based approach for splitting cities in freight logistics context: Benchmarks of clustering and prediction models. *Computers & Industrial Engineering*, 166, 107975. <https://doi.org/10.1016/j.cie.2022.107975>
- Goswami, M., Daultani, Y., Chan, F. T., & Pratap, S. (2022). Assessing the impact of supplier benchmarking in manufacturing value chains: an Intelligent decision support system for original equipment manufacturers. *International Journal of Production Research*, 60(24), 7411-7435. <https://doi.org/10.1080/00207543.2022.2075811>
- Gruenwald, H. (2022). Ukraine Military Logistics Early Days. [File PDF] <https://acortar.link/ZVDRIq>
- Horoshkova, L., & Sumets, A. (2023). Assessment of the river ports of Ukraine regarding their logistics zonesorganizational capability. *University Economic Bulletin*, 56, 37-49. <https://doi.org/10.31470/2306-546X-2023-56-37-49>
- Ihnatenko, R. (2022). Targeted advertising technologies: essence and effectiveness. *Financial and Credit Activity Problems of Theory and Practice*, 1(42), 428–435. <https://doi.org/10.55643/fcaptop.1.42.2022.3715>
- Jankowski-Guzy, J., & Kamińska, M. (2022). The Impact of the Coronavirus and the War in Ukraine on the Development of Logistics Operators in Poland. *European Research Studies Journal*, 25(2B), 116-125. <https://www.um.edu.mt/library/oar/handle/123456789/101953>
- Kashyap, A. K., Kovrijnykh, N., Li, J., & Pavlova, A. (2023). Is there too much benchmarking in asset management? *American Economic Review*, 113(4), 1112-1141. <https://doi.org/10.1257/aer.20210476>
- Kazançoğlu, Y., Özbiltekin, M., & Özkan-Özen, Y. D. (2020). Sustainability benchmarking for logistics center location decision: An example from an emerging country. *Management of Environmental Quality: An International Journal*, 31(5), 1239-1260. <https://www.emerald.com/insight/content/doi/10.1108/MEQ-08-2019-0177/full/html>
- Khaustova, V. Y., Boiko, O. V., & Trushkina, N. V. (2022). Vectors of increasing the level of innovation and investment attractiveness of the transport and logistics infrastructure of the national economy of Ukraine. *Problemy Ekonomiky*, (3), 84-97. <https://acortar.link/OGwR8S>
- Kolodiichuk, V., Cherevko, H., & Popivniak, R. (2023). Quality Assessment of Transit Potential of the Transport–Logistics System of Ukraine. *Global Business Review*, 24(1), 171-184. <https://doi.org/10.1177/0972150920907008>
- Komchatnykh, O., Klymenko, I., & Levishchenko, O. (2022, January). Classification of Transport and Logistics Enterprises in Ukraine According to the Level of Innovation Potential. In *TRANSBALTICA XII: Transportation Science and Technology: Proceedings of the 12th International Conference TRANSBALTICA*, September 16-17, 2021, Vilnius, Lithuania (pp. 552-560). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-030-94774-3_54
- Kovalenko Y., Kirdan O., Krivonos A., Dobrovolska O., Gutsul T., Hromov S. (2021). Assessment Of The Place And Role Of Personnel Management In The General Management System Of The Organization. *IJCSNS International Journal of Computer Science and Network Security*, 21(11). <https://doi.org/10.22937/IJCSNS.2021.21.11.37>

- Kozlova, I. (2022). Analysis of the state of logistics system management in Ukraine. *Economic Analysis*, 32(1), 39-46. <http://dx.doi.org/10.35774/econa2022.01.039>
- Lee, P. T. W., Hu, Z. H., Lee, S., Feng, X., & Notteboom, T. (2022). Strategic locations for logistics distribution centers along the Belt and Road: Explorative analysis and research agenda. *Transport Policy*, 116, 24-47. <https://doi.org/10.1016/j.tranpol.2021.10.008>
- Liaschenko, V., Khaustova, V., & Trushkina, N. (2023). Cross-border transport and logistics cluster as a tool for territorial development of Ukraine and Poland: institutional basis. *Journal of European Economy*, 21(4), 503-521. <https://doi.org/10.35774/jee2022.04.503>
- Meryem, O. U. B. I. H. I., Saad, L. E., Mohamed, K., & Fouad, J. (2019, June). Review of good practices in urban freight transportation and benchmarking city logistics schemes. In 2019 International Colloquium on Logistics and Supply Chain Management (LOGISTIQUA) (pp. 1-6). IEEE. <https://doi.org/10.1109/LOGISTIQUA.2019.8907328>
- Minnow, M. D., Eric, Q., & Bányai, T. (2022). Benchmark of countries' performance in logistics: an approach based on world bank open data. *Advanced Logistic Systems-Theory and Practice*, 16(1), 69-84. <https://doi.org/10.32971/als.2022.007>
- Nurgaliyeva, A., Ismailova, D., & Sarybayeva, I. (2022). Regarding the prospects for the introduction of the budgeting system of international financial organizations of the future. *Futurity Economics&Law*, 2(3), 38-47. <https://doi.org/10.57125/FEL.2022.09.25.05>
- Popelo, O., Tulchynska, S., Krasovska, G., Kostyunik, O., Raicheva, L. & Mykhalchenko, O. (2023). The Impact of the National Economy Digitalization on the Efficiency of the Logistics Activities Management of the Enterprise in the Conditions of Intensifying International Competition. *J. Theor. Appl. Inf. Technol.*, 101, 123-134. <http://www.jatit.org/volumes/Vol101No1/11Vol101No1.pdf>
- Pratap, S., Jauhar, S. K., Daultani, Y., & Paul, S. K. (2023). Benchmarking sustainable E-commerce enterprises based on evolving customer expectations amidst COVID-19 pandemic. *Business Strategy and the Environment*, 32(1), 736-752. <https://doi.org/10.1002/bse.3172>
- Riabov, I., & Riabova, T. (2021). Development of the creative sector of the world economy: trends for the future. *Futurity Economics&Law*, 1(4), 12-18. <https://doi.org/10.57125/FEL.2021.12.25.02>
- Shirin, K. (2023). Benchmarking strategy for industrial enterprise development. *European Journal of Research Development and Sustainability*, 4(1), 28-33. <https://scholarzest.com/index.php/ejrd/article/view/3113>
- Sirenko, N., Baryshevska, I., & Melnyk, O. (2023). Comparative Analysis of the Impact of the Pandemic on Agroindustrial Complex and the Financial Support of its Employees in Ukraine and EU Countries. *RIVAR*, 10(29). <https://doi.org/10.35588/rivar.v10i29.5719>
- State Statistics Service of Ukraine (2023). Transportation. <https://www.ukrstat.gov.ua>
- Stojanović, Đ., & Ivetić, J. (2020). Possibilities of using Incoterms clauses in a country logistics performance assessment and benchmarking. *Transport Policy*, 98, 217-228. <https://doi.org/10.1016/j.tranpol.2020.03.012>
- Su, S. I. L. & Ke, J. Y. F. (2017). National logistics performance benchmarking. *Journal of Supply Chain and Operations Management*, 15(1), 55. <https://www.csupom.com/uploads/1/1/4/8/114895679/v15n1p4.pdf>
- Trushkina, N., Buhaieva, M., & Skoptsov, K. (2022). Modernization of Transport Infrastructure in the Context of Sustainable Development of the National Economy: European Practice and Ukrainian Realities. *Innovations for Achieving the Sustainable Development Goals: Science, Education and Economics*, 242-264. <https://acortar.link/X7Jx6S>
- Uusitalo, K., & Laine, P. (2022). Testbed simulation modelling in an open business ecosystem context—benchmarking logistics network performance. *International Journal of Logistics Research and Applications*, 25(2), 181-202. <https://doi.org/10.1080/13675567.2020.1806993>
- Yesmine, T., Hossain, M. E., Khan, M. A., Mitra, S., Saha, S. M., & Amin, M. R. (2023). Benchmarking the banking sector of Bangladesh: a comprehensive analysis of performance and efficiency. *Asian Journal of Economics and Banking*, 7(1), 121-145. <https://doi.org/10.1108/AJEB-08-2021-0094>
- YouControl. (2023). YC. Market. <https://youcontrol.market/app/ua/market-analysis/ukraine>

Yurchenko, A., & Yarova, I. Y. (2022). Modern sustainable logistics trends (Doctoral dissertation), Sumy State University, Ukraine.

<https://essuir.sumdu.edu.ua/handle/123456789/90152>

Zomchak, L., & Starchevska, I. (2023). Macroeconomic Determinants of Economic Development and Growth in Ukraine: Logistic Regression Analysis. In Advances in Intelligent Systems, Computer Science and

Digital Economics IV (pp. 358-368). Cham: Springer Nature Switzerland.
https://doi.org/10.1007/978-3-031-24475-9_31

Zrybnieva, I. (2022). Challenges of logistics in the war conditions (Doctoral dissertation), Chernivtsi National University named after Yury Fedkovich.
<https://archer.chnu.edu.ua/xmlui/handle/123456789/5007>

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