MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
NATIONAL AVIATION UNIVERSITY
Faculty of Transport, Management and Logistics
Logistics Department

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«03» June 2024

QUALIFICATION PAPER

(EXPLANATORY NOTES)

OF GRADUATE OF ACADEMIC DEGREE

«BACHELOR»

THEME: **«Organisation of a «door-to-door» delivery system using air transport»**

Speciality 073 «Management»

Educational Professional Program «Aviation Logistics »

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I certify that in this qualification paper there are no borrowings from the works of other authors without appropriate references *Anastasiia TKACHENKO*
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Kyiv 2024

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
НАЦІОНАЛЬНИЙ АВІАЦІЙНИЙ УНІВЕРСИТЕТ
Факультет транспорту, менеджменту і логістики
Кафедра логістики

ЗАТВЕРДЖУЮ
В.о. завідувача кафедри логістики
Світлана СМЕРІЧЕВСЬКА
(підпис, власне ім'я та прізвище)
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КВАЛІФІКАЦІЙНА РОБОТА

(ПОЯСНЮВАЛЬНА ЗАПИСКА)

ЗДОБУВАЧА ОСВІТНЬОГО СТУПЕНЯ

«БАКАЛАВР»

ТЕМА: **«Організація системи доставки «від дверей до дверей» з використанням авіаційного транспорту.»**

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Засвідчую, що у цій кваліфікаційній роботі немає запозичень з праць інших авторів без відповідних посилань *Анастасії ТКАЧЕНКО*
(підпис) (власне ім'я та прізвище здобувача)

Київ 2024

NATIONAL AVIATION UNIVERSITY
Faculty of Transport, Management and Logistics
Logistics Department

Academic Degree Bachelor

Speciality 073 «Management»

Educational Professional Program «Aviation Logistics »

APPROVED
Acting Head of the Department
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«13» May 2024

TASK

FOR COMPLETION THE QUALIFICATION PAPER OF GRADUATE

Anastasiia Tkachenko
(name and surname)

1. Theme of the qualification paper: «Organisation of a «door-to-door» delivery system using air transport» was approved by the Rector Directive №624/ст. of April 24, 2024.
2. Term performance of the paper: from May 13, 2024 to June 16, 2024.
3. Date of submission paper to graduation department: June 03, 2024.
4. Initial data required for writing the paper: general and statistical information of the companies «JIT Trans» and DHL, production and financial indicators of the activities of the companies «Jit Trans» and DHL, literary sources on cargo transportation management, supply chains, Internet sources.
5. Content of the explanatory notes: theoretical approaches to avoiding untimely delivery of goods; general characteristics of the company «Jit Trans»; analysis of production and financial indicators of «Jit Trans»; analysis of the organization of transportation of various cargoes by DHL and «Jit Trans»; determination of directions for improvement of the company's activities and elimination of the problem of untimely delivery, using air transport; development of recommendations for improving cargo transportation management by DHL; calculation of the effect of project proposals.
6. List of obligatory graphic matters: tables, charts, graphs, diagrams illustrating the current state of problems and methods of their solution.

7. Calendar schedule:

№	Assignment	Deadline for completion	Mark on completion
1	2	3	4
1.	Study and analysis of scientific articles, literary sources, normative legal documents, preparation of the first version of the introduction and the theoretical chapter	13.05.24-16.05.24	Done
2.	Collection of statistical data, timing, detection of weaknesses, preparation of the first version of the analytical chapter	17.05.24-20.05.24	Done
3.	Development of project proposals and their organizational and economic substantiation, preparation of the first version of the project chapter and conclusions	21.05.24-26.05.24	Done
4.	Editing the first versions and preparing the final version of the qualification paper, checking by standards inspector	27.05.24-29.05.24	Done
5.	Approval for a work with supervisor, getting of the report of the supervisor, getting internal and external reviews, transcript of academic record	30.05.24-02.06.24	Done
6.	Submission paper to Logistics Department	03.06.24	Done

Graduate_____
(signature)

Supervisor of the qualification work _____
(signature)

8. Consultants of difference chapters of paper:

Chapter	Consultant (position, surname and name)	Date, signature	
		The task was given	The task was accepted
Chapter 1	Associate Professor, Katerna O.K.	13.05.24	13.05.24
Chapter 2	Associate Professor, Katerna O.K.	17.05.24	17.05.24
Chapter 3	Associate Professor, Katerna O.K.	21.05.24	21.05.24

9. Given date of the task May 13, 2024.

Supervisor of the qualification paper: _____ Olga KATERNA
(signature of supervisor) (surname and name)

Task accepted for completion: _____ Anastasiia TKACHENKO
(signature of graduate) (surname and name)

ABSTRACT

The explanatory notes to the qualification paper «Organisation of a «door-to-door» delivery system using air transport» comprises 97 pages, 39 figures, 28 tables, 53 references and 1 appendix.

KEY WORDS: AIRLINE, CARGO TRANSPORTATION, LAST MILE, «DOOR-TO-DOOR», SUPPLY CHAIN.

The theoretical basis of door-to-door delivery of goods by air transport was studied in the qualification work. The activity of the airline «Jit Trans» on the cargo transportation market, its production and financial indicators and existing approaches to the organisation of transportation of various cargoes were analysed.

As a result of the study, possible directions for improvement of the airline's activities were determined and recommendations were developed to eliminate the problem of untimely delivery of «Jit Trans». The main goal of this project is the development of practical recommendations for the use of the latest technologies, which will contribute to the improvement of control over the delivery process «from door to door».

The theoretical part is devoted to the study of the theoretical foundations of the organisation of the delivery system by air transport. The analytical part is devoted to the analysis of the financial and economic activities of Jit Trans LLC and the identification of bottlenecks in the business processes of the supply chain in the case of the use of information technologies. The project-recommendation part is devoted to the development of a conceptual model of the digitalization of the logistics process management system in the new supply chain of «Jit Trans» LLC

The materials of this qualification work are recommended to be used during scientific research, in the educational process and practical activities of logistics department specialists.

CONTENT

NOTATION

JIT - Just in time

3PL - Third Party Logistics

D2D - Device-to-device

B2B - Business-to-Business

B2C - Business-To-Consumer

DHL - Dalsey, Hillblom and Lynn

LLC - Limited liability company

VAS - Visual analogue scale

INTRODUCTION

Relevance of the qualification work using the door-to-door delivery system in air transport is becoming more and more relevant in today's world, where the speed and efficiency of logistics operations is a key success factor for many companies. The growing demands of consumers for fast delivery of goods, as well as the globalization of markets, necessitate the development of such delivery systems. The theoretical foundations of door-to-door delivery systems using air transport have been studied by many scientists and practitioners in the field of logistics and transport management. However, due to the rapid development of technologies and changes in market conditions, new challenges and opportunities for improving such systems constantly arise.

Research object of qualification work is door-to-door delivery system using air transport.

Subject of research of qualification work is processing of organisation and optimization of the door-to-door delivery system using air transport at the logistics enterprise «JIT Trans».

The theory on the topic of the role of air transport in the logistics chains of cargo delivery was analyzed by the following authors: Demchenko D.O. [13, p. 125], Gasimov A.A., Miltsov V.E. [9, p. 116], [9, p. 68]. K. Molchanova, Voytsechovsky V.S. [26, c. 81], E.V. Krykavskyi, N.I. Chukhrai, Chernopyshka N.V. [23, p. 27], V. M. Kisliy, O. A. Bilovodska, Smerichevska S.V[53],O. M. Olefirenko and O. M. Solyanyk[21, p. 111], The theory on the topic of «door to door delivery» was analysed by the following authors: Yung - yu TSENG[51], Turan Pater and Ivan Vos[22], Christopher and Helen Parn[26], O.M. Kovalev,[23],O. M. Sobko[23].

However, issues of digitization of domestic postal and courier services remain insufficiently covered.

The purpose of the qualification work is to research and develop recommendations for the implementation of a new supply chain in logistics to

increase the efficiency, reliability and quality of services, as well as reduce costs and ensure sustainability, using the example of «Jit Trans».

The main tasks, the solution of which is necessary to achieve the purpose of the qualification paper are:

- to analyze the existing theoretical and practical approaches to the organization of door-to-door delivery systems using air transport.

- to dentify the key factors affecting the effectiveness of such delivery systems.

- to develop a model for optimizing the processes of planning, management and control of the door-to-door delivery system using air transport.

- to propose methods of integration of different types of transport (aviation, automobile, etc.) to ensure the continuity of the supply chain.

- to develop recommendations for the implementation of the developed model in the practical activities of logistics companies.

During the preparation of the work, general scientific research methods were used, such as structural-logical analysis and generalization to build the substantive part of the work, while preparing the theoretical, analytical-research and project-recommendation sections, methods of induction and deduction, analysis and generalization, abstract-logical method were used.

Materials of qualification paper are recommended to be used during scientific research, in the educational process and in the practice of specialists of logistics departments.

CHAPTER 1
THEORETICAL FOUNDATIONS OF THE DOOR-TO-DOOR DELIVERY SYSTEM USING AIR TRANSPORT

1.1 The role of air transport in logistics chains of goods delivery

Problems of the development of cargo transport in Ukraine are in the focus of attention of many scientists. Demchenko D.O. [13, p. 125] systematised factors that negatively affect the state of the industry: technical and economic backwardness of transport infrastructure, high wear and tear of cargo aircraft and other main means of cargo air transport, their non-compliance with EU environmental criteria, non-fulfillment of other conditions of competitiveness. He sees the goal of state regulation in the industry in the formation of a strategic, long-term nature of the economic and administrative environment.

Gasimov A.A., Miltsov V.E. [9, p. 116] emphasise the important role of the «Quality Management System» in the development of cargo air carriers, which must constantly improve the work processes of the management system, set «goals in the field of quality» for the relevant functions, levels. It should be agreed with S.I. Hrytsenko, who an urgent task today is the creation and improvement of logistic automated information systems of cargo air carriers, designed to coordinate the actions of all participants in the transport process for the growth of added value in all its chains by providing access to reliable information about the location and condition of the transported cargo, as well as about the availability of free warehouses areas at the terminals [26, p. 68]. K. Molchanova also considers electronic data exchange an important factor in the development of cargo air transport [26, c. 167].

Voytsechovsky V.S. [8, c. 81] draws attention to the changing role of cargo air transport due to the influence of integration and globalization, the formation of new cargo delivery systems (express, multimodal) using electronic systems, etc. Modern

trends are: strengthening of integration and commercial cooperation between air carriers, creation of their global alliances, liberalization of cargo air transportation in the conditions of the Common Aviation Space of Europe, etc.

It should be agreed with S.I. Hrytsenko that the urgent task of today is the creation and improvement of logistic automated information systems of cargo air carriers, designed to coordinate the actions of all participants in the transport process for the growth of added value in all its chains by providing access to reliable information about the location and condition transported cargo, as well as about the availability of free warehouse space at the terminals [26, p. 68]. K. Molchanova also considers electronic data exchange an important factor in the development of cargo air transport[26, c. 167].

Ukrainian scientist Karpun O.V. came to the conclusion that it is advisable to clearly distinguish the concepts: service is a specific type of product that satisfies the needs of the consumer, service is a process, that is, a set of actions performed by the service producer during direct contact with the consumer; and service is an integrated set of services provided in the process of serving consumers with the aim of the most complete satisfaction of their needs [10, p. 348; 5, p. 23].

Such a point of view can be substantiated by summarizing the research publications of the above-mentioned scientists and the demarcation of concepts. service and service, which are often translated into English as «»service«». Ukrainian scientists E.V. Krykavskyi, N.I. Chukhrai also support the point of view that service is a process. and Chernopyshka N.V. [23, p. 27].

The main participants (elements) of the international logistics supply chain are: exporters, exporters of goods (services), customs brokers, importers of goods (services), end consumers, forwarders, warehouses, distributors, customs, banks, insurance companies, etc. Also, the exporter and the supplier of the exporter, as well as the importer and the final consumer can be one person. Exporters receive goods from suppliers (suppliers) and supply them to importers. It can involve different intermediaries. The importer receives the goods (services) and pays the exporter in accordance with the terms of the international agreement. Depending on the contract,

both the importer and the exporter may be required to arrange insurance and transport of the goods. There may be several intermediaries between the importer and the final consumer. The selection of a specific option of the international logistics chain is carried out by the logistics manager. The foreign trade supply chain can be represented as follows (Fig. 1.1).

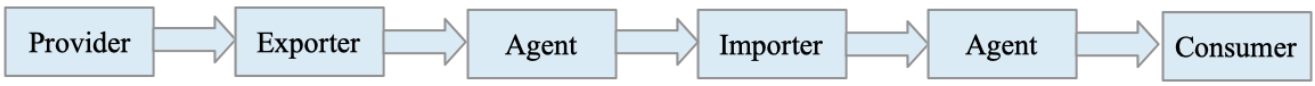

Figure 1.1 - The foreign trade supply chain

Source: developed by author according to [24]

The general structure of the complete international supply chain in the foreign market is shown in (Fig. 1.2).

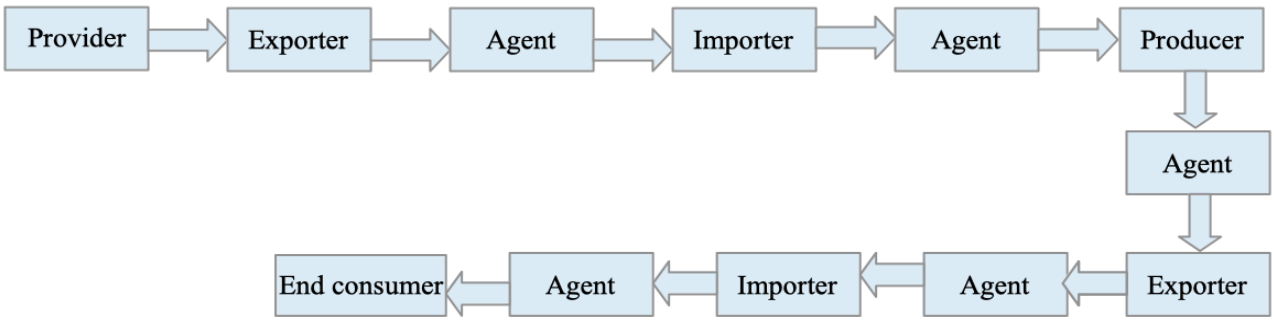

Figure 1.2 - A complete international supply chain

Source: developed by author according to [24]

The main difference between international logistics and national (domestic) logistics is the fact that the delivery process involves overcoming state borders and customs. There are differences between extreme regions, climate, infrastructure, population density, economic development, political systems, cultures.

The search for ways to achieve the logistical tasks defined above in the management of supply chains and a comprehensive analysis of the latest trends in the

development of the digital economy makes it possible to determine and propose strategic solutions for the management of supply chains to ensure their competitiveness (Table 1.1).

Table 1.1 – Matrix of strategic decisions in supply chain management, taking into account current trends in the digital economy

Digital platforms of integrated supply chain management	Internet of «Things technology»
Provides integration of automation and optimization tools for supply chain management into a single and integrated infrastructure.	It allows you to combine all material flows into a single network, which increases the transparency and controllability of supply chains. Opportunities for continuous monitoring, analysis and control of changes in supply chains are opening up
Predictive analytics	Robotization
The use of machine algorithms, artificial intelligence and Big Data in forecasting is a valuable resource that allows you to prepare the supply chain in advance for possible threats	The use of drones and robots allows solving the problem of labor shortage in the long term.
Clustering	Logistics of return flows
End-to-end digitalization is one of the main factors of socio-economic development and the driver of the application of a cluster approach to supply chain management as an effective organizational form of ensuring effective interaction between supply chain participants.	Effective automation of reverse logistics ensures an increase in the quality of the audit and a reduction in costs. Continuous monitoring increases the transparency of supply chains, and smart planning trends increase the level of sustainable development.

Source: developed by author according to [11]

In the Table 1.1 was presented the model which is a process-object decomposition of supply chains, in which integration and interaction are most important. The presented strategic directions of supply chain management involve the integration of information flows and the use of joint forecasting and planning algorithms in supply chains based on the most modern digital technologies.

As noted by V. M. Kisliy, O. A. Bilovodska, O. M. Olefirenko and O. M. Solyanyk: «»The movement of material flows in logistics chains is impossible

without the concentration in certain places of the necessary amount of stocks (material and technical resources, finished products , goods, etc.), for the preservation of which various warehouses are used» [21, p. 111]. Why many carriers choose to transport goods by air shows in (Fig. 1.3)

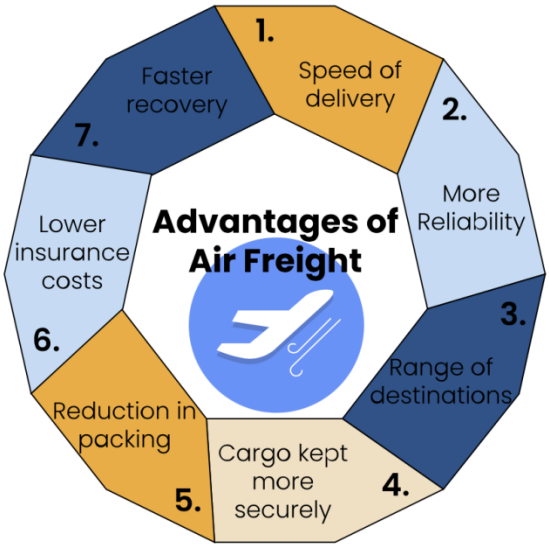

Figure 1.3 - Advantages of freight

Source:[16]

At the same time, the company's transition to outsourcing may be accompanied by negative aspects. One of the significant arguments against the use of outsourcing services is the loss of control over internal resources. Under such circumstances, the company's management may lose the ability to supervise specific aspects of the business, which may lead to ineffective decisions. In other words, an outsourcing company will always remain less managed than an in-house department. In addition, it is always necessary to remember that in the presence of outsourcing there is a possibility of losing important internal information. In this case, internal organization of logistics operations by the company on its own may be justified. This is due to the fact that low standards of logistics services can negatively affect the company's reputation and the loss of customers. When working with outsourcers, there is a risk of reducing the productivity of one's own employees. This may occur due to the

transfer of part of the staff to a third-party company or as a result of mass layoffs, which often accompany outsourcing and lead to a decrease in employee motivation.

In addition, many complaints and disappointments in relation to outsourcing are explained by the discrepancy between the expectations of the customer and the executor, which is often caused by a low level of mutual understanding and cooperation [24,25,26].

Having revealed the main aspects of positive and negative aspects, we will consider the key elements of logistics outsourcing services and who can implement them (Table 1.2).

Table 1.2 - Key elements of logistics outsourcing services

Service	Involved representatives of the logistics environment
Fulfilment	All types of online stores
Responsible storage	Manufacturers, suppliers, private individuals
Cross-docking	Manufacturers, retail chains, distributors, online stores
Fast flow	Internet stores
Co Packing	Suppliers, retailers, online stores
Customs licensing services	To importers, exporters, distributors
Complex logistics	To online stores, importers, exporters, manufacturers, distributors

Source: developed by author according to[18]

Given the importance of logistics support for the operational processes of enterprises in supply chains and the growing interest in outsourcing, in particular, in the field of logistics, it is essential to study the role, types and functions of logistics providers.

A third-level logistics provider is a logistics company that outsources all or most logistics operations. Unlike carriers or couriers, providers coordinate a range of services related to goods management. This usually includes warehousing, inventory management, freight forwarding, picking, packing and delivery of orders. With the

help of the services of logistics providers, the enterprise receives a full range of services in the field of logistics, which allows it to focus on more important tasks [23;24, p. 44–45]. 3PL operators have the proper infrastructure, cooperate with reliable courier services, use software for accurate accounting of cargo arriving at their warehouses. The formation of the supply chain shows in (Fig. 1.4)

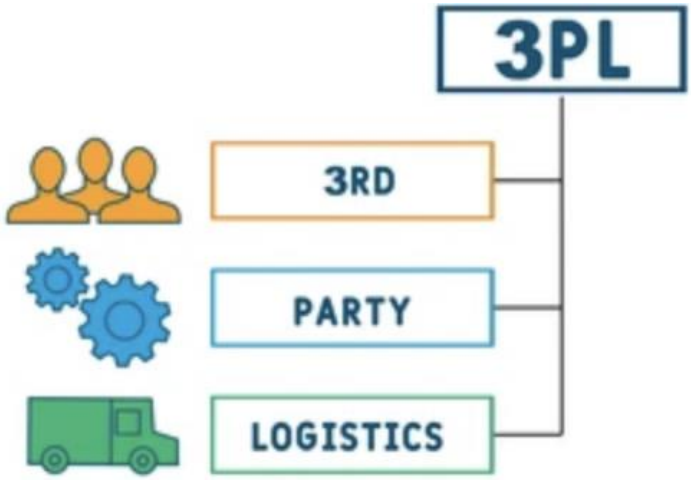

Figure 1.4 - Value 3PL

Source: [24]

Due to extensive experience and resources, they can organize an extremely efficient supply chain. Among the main services provided by logistics operators, it is appropriate to single out:

- warehouses for appropriate storage;
- organization of order delivery for online retailers (fulfillment);
- end-to-end storage or cross-docking;
- packaging, packing and labeling of products (co-packing).

In addition to the main ones, there is the possibility of additional services of fast flow, customs and license support, complex logistics, and VAS services.

In conclusion it can be said that the concepts of «service» and «service» are distinguished, while «service» is defined as a certain type of product that satisfies the needs of the consumer, and «service» is a process or set of actions performed by a

service provider. The main players in the international logistics supply chain, such as exporters, importers, customs brokers, freight forwarders and middlemen, are discussed, as well as the importance of logistics managers in choosing the appropriate supply chain option. A matrix of strategic decisions in supply chain management, taking into account current trends in the digital economy, such as the Internet of Things, predictive analytics, robotics, clustering and reverse logistics. Discusses the role of outsourcing in logistics operations, its advantages and disadvantages, and key elements of logistics outsourcing services such as fulfillment, warehousing, cross-docking and customs licensing services. Summarizing the challenges and opportunities in air cargo and international logistics supply chains, emphasizing the importance of government regulation, digital technologies, outsourcing and strategic decision-making to improve efficiency and competitiveness.

1.2 Theoretical foundations of the door-to-door concept

«Door to Door» delivery is a type of transportation in which the «Doors» are warehouses, factories, industrial factories or other points specified by the consignor and consignee. Shippers only need to indicate the addresses of these places. DTD («door-to-door», or «D2D») transportation is carried out between points that are in the area of responsibility and coverage of the services of the selected carrier or forwarder.

D2D (Door to Door) «door to door» delivery of goods is the transportation of goods from the sender's warehouse to the recipient's warehouse, or delivery literally to the recipient's door.

A supply chain using the last mile, transportation can take place using any mode of transport, but the end result will be at the customer in a timely manner shows in (Fig. 1.5)

Figure 1.5 - Last mile in the Supply chain

Source: [24]

Door-to-door service can be provided in the traditional way: by train or truck. However, it is particularly advantageous when using multimodal transport based on container transport. With the help of this solution, you get transport optimization in terms of costs and time. The use of containers makes the whole process fast and efficient, because on the entire route - regardless of the used transport - only one loading unit without the need to reload the cargo when changing the type of transport. Currently, on the European market, including the Polish market, we are dealing with more and more shipping companies that offer a door-to-door service. Representatives of our company - specialists in the organization of transport claim that more and more companies are interested in this type of service, which can be clearly seen in the change in the characteristics of accompanying purchases. International and intercontinental delivery.

According to the book «»Digital Transformation of Logistics«» by Christian Bukert and Juliana Engelke[47], the door-to-door service includes the following stages and services:

Table 1.3 - Door-to-door services

Preparation for shipment (Pick-up)	Collection of cargo from the sender and its loading
	Checking compliance of documentation and product packaging.
Transportation	Movement of cargo from the sender to the terminal/transshipment point by various modes of transport.
	Tracking the movement of cargo using digital technologies.
Handling/storage	Temporary storage and sorting of cargo at intermediate terminals/warehouses.
	Consolidation of cargo for further delivery.
Final delivery	Transportation to the final destination.
	Delivery of cargo directly to the consignee.

Source: developed by author according to[47]

In the book «Logistics 4.0: The Digital Transformation of Supply Chains» (2020) by Turan Pater and Ivan Vos[24], it is noted that door-to-door services can also include:

- customs clearance and compliance with regulatory requirements for international transportation;
- cargo insurance throughout the supply chain;
- document flow management and electronic data exchange;
- use of digital platforms and applications for tracking and managing logistics processes.

Thus, the modern concept of door-to-door service involves a comprehensive approach to logistics operations, including the physical movement of goods, customs clearance, insurance, digital tracking and process management to ensure efficiency and transparency of the supply chain.

In addition, the book “Logistics and Supply Chain Management by Martin Christopher and Helen Parn” (2020) highlights the importance of digital technologies in door-to-door services, including [25]:

- Using online platforms for ordering and tracking shipments

- Application of artificial intelligence and machine learning technologies for route optimization and resource management
- Integration of various information systems of supply chain participants

Today, the demand for e-commerce and, accordingly, the delivery of goods to the customer's door has increased significantly, which led to the rapid development of «last mile» logistics. «Last mile» is an international term in logistics, which is used to denote the last stage in the delivery from the manufacturer to the customer. At the same time, the concept of «last mile» refers not only to the delivery of products over short distances - this concept is used to implement the last stage of the supply chain between countries and even continents. «Last mile» logistics is a fairly popular and promising direction of development both in the context of micro-logistics and global logistics systems.

Depending on the model of «supplier-consumer» interaction, the scheme of logistics operations will change: if we have the «last mile» B2B, which involves the delivery of raw materials to the production facility and includes the transportation of finished products to the point of sale, the chain will be simpler and include a standard set of operations, if the «last mile» of B2C, which consists in the delivery of products purchased via the Internet, directly to buyers, we will face a more complex type that requires an individual approach, the search for new solutions and optimal routes. Here, the manager may face a number of challenges, for example, the main problems are: long waiting time for delivery; arrival of the courier with a significant delay; lack of possibility to deliver the first time (for example, due to the fault of the courier or recipient); rude attitude of the delivery service staff; lack of route optimization; accidents on the road, traffic jams, difficulties with access; lack of reverse logistics; irresponsible approach to the organization; improper condition of the parcel due to non-compliance with the conditions of transportation, etc.

One of the most common B2C models. The model used in the last mile theory improves the timeliness of product delivery. (Fig. 1.6)

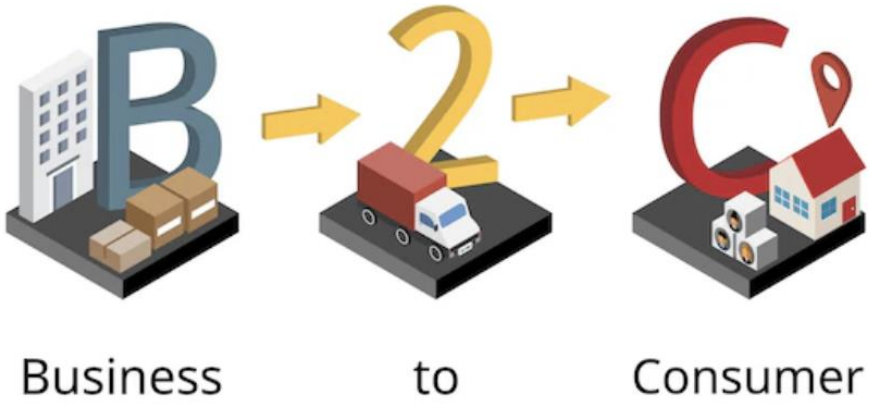

Figure 1.6 – Model of delivery B2C

Source: according to [24]

Civilizational values and priorities of the city dweller are also gradually changing – speed, timeliness, predictability, customer orientation and environmental friendliness – customer requirements that will determine the last mile delivery market. This service can be performed in a traditional way, but its implementation based on container transportation allows better control of transportation time and the level of costs incurred. Door-to-door service is implemented with the help of freight forwarders based on the needs of this client, at the same time, full responsibility for this load at all stages of transport rests on the freight forwarders. Freight forwarders, even before the start of the service, carefully analyze the route of cargo transportation, which allows for the maximum reduction of time and leads to the minimization of costs. It is also one of them the choice of the appropriate capacity, which will be adapted to a specific product. The shipping company not only collects the goods from the sender and delivers them to the recipient, but also handles the entire process of transshipment, and after reaching the destination, they also rest on it the formalities associated with the goods customs.

The main trends and tendencies of last mile logistics are summarised in Fig. 1.7.

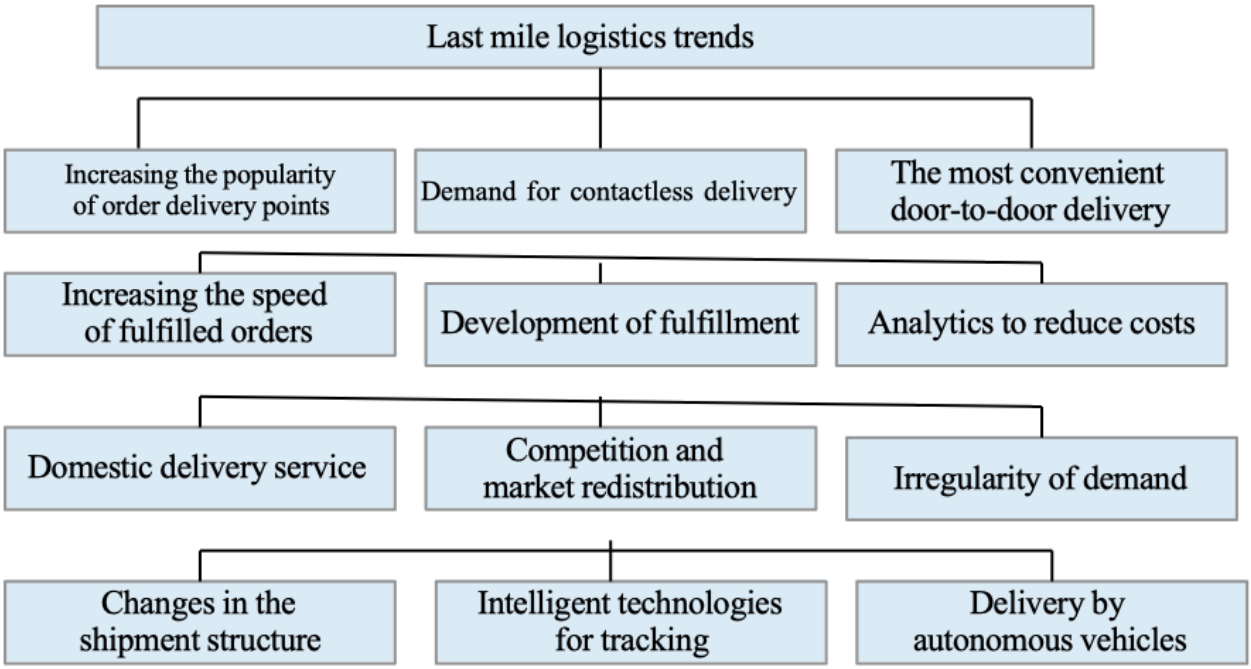

Figure 1.7 - Last mile logistics trends

Source: developed by author according to [20,21]

Therefore, today it is important for enterprises to know and use many new available tools that will allow them to manage logistics processes with maximum efficiency, and «»last mile«» logistics can become one of these tools. To evaluate its effectiveness in the company, you need to pay attention to four aspects: transparency of the supply chain, efficiency of use of resources, ways to deal with volatility of demand and level of customer service and solve the problem with the help of own delivery, testing new scenarios and automating logistics.

Figure 1.8 shows a supply chain using the last mile, which includes the following factors [25]:

1. Delivery time. When making a decision in which online store to place an order, not only the duration of delivery is taken into account, but also the speed and completeness of the operators' answers to the questions of potential customers. Retail businesses, particularly those in the e-commerce space, are competing to offer faster and more flexible delivery options for consumers. Consumer expectations and

demands are growing, with approximately 25% of shoppers willing to pay extra for same-day delivery. The understanding of fulfilment in logistics service shows Fig.1.8.

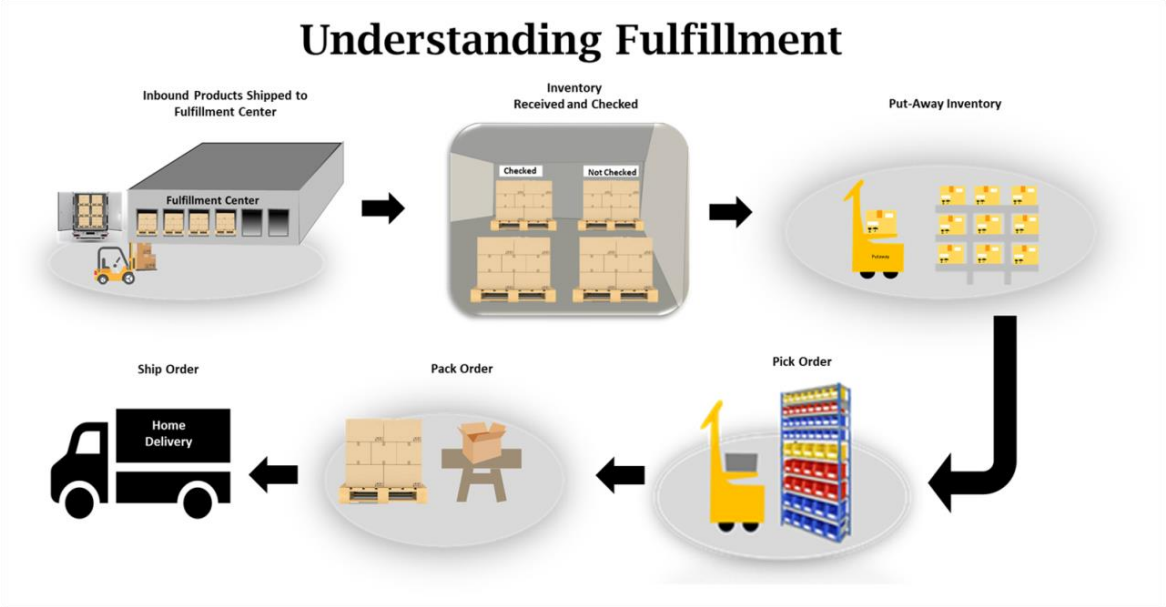

Figure 1.8 - «Last mile» logistics service

Source: [25]

2. Tracking accuracy. Information about the location of the order at the «last mile» stage is a very important aspect for the buyer. Information about the day and time of the order's arrival allows him to plan his time and adjust his own plans. Most often, a high level of client informativeness is provided by appropriate mobile applications that are convenient and easy to use.

3. Guarantees and insurance. One of the important factors is the provision of guarantees of compliance with obligations regarding terms of delivery and preservation of goods.

4. Convenience. It can be considered both the convenience of time parameters, the flexibility of delivery by courier, and in terms of the location of points of delivery of orders.

5. Cost and price. It is necessary to ensure a rational price of delivery, which both provides profit for the enterprise and is attractive for the client.

Currently, a key factor in the development of models and strategies for managing the capital structure of enterprises is the introduction and testing of intellectual resources and products, which significantly affects the efficiency of the enterprise.

The term «intellectual capital» was introduced by J. Galbraith in 1969, that is, during the period of industrial dominance and the emergence of the post-industrial economy. But this concept became more widespread only in the 90s of the 20th century, which is connected with the transition of humanity to the information economy [23]. Under intellectual capital, the majority of modern scientists, sums up O.M. Kovalev, means the ability to create new value of intellectual resources and intellectual products [23].

Researcher O. M. Sobko believes that the main forms of development of the intellectual capital of the enterprise are within the limits of each of the constituent elements, the creation of «»intelligent enterprises«» that are characterised by a high level of innovation and elasticity - the ability to quickly adapt to changes in the environment can be traced [23]. Among the tasks of the application of intellectual resources is the expansion of the use of the advantages of information technologies for obtaining added value of the enterprise and the rapid formation of the so-called «»intellectual environment«» of the enterprise.

In conclusion, «Door to Door» delivery is a comprehensive logistics service that involves the transportation of goods from the sender's warehouse to the recipient's warehouse or doorstep, offering a range of benefits including cost and time optimization, increased efficiency, and improved customer satisfaction. The modern concept of door-to-door service encompasses a wide range of services, including customs clearance, insurance, digital tracking, and process management, to ensure a seamless and transparent supply chain. The growing demand for e-commerce and last-mile logistics has led to the rapid development of door-to-door services, with companies increasingly seeking to optimise their logistics operations to meet the changing needs of customers. The use of digital technologies, such as online platforms, artificial intelligence, and machine learning, is playing a crucial role in

enhancing the efficiency and effectiveness of door-to-door services. Ultimately, the door-to-door service has the potential to revolutionise the logistics industry, offering a flexible, efficient, and customer-centric approach to transportation and delivery. As the market continues to evolve, companies that invest in digital technologies, intellectual capital, and innovative logistics solutions will be best positioned to meet the changing needs of customers and stay competitive in the market.

Chapter 1 summary

The concept of «door-to-door» delivery involves complex logistics operations for the transportation of goods from the sender's place to the door of the final recipient. This includes services such as cargo reception, intermodal transportation, handling/consolidation at terminals, final delivery to the consignee, and additional services such as customs clearance, cargo insurance, document management and digital tracking/management platforms.

Key aspects emphasised are the integration of digital technologies (e.g. online platforms, AI/ML, information systems integration) to provide end-to-end visibility, optimization and automation of supply chain processes. Efficient door-to-door delivery is critical for e-commerce and last-mile logistics, where speed, tracking accuracy, convenience and cost-effectiveness are critical factors.

Overall, the door-to-door concept aims to provide seamless and transparent logistics by combining physical transportation with digital means and value-added services to meet changing customer expectations in today's global supply chain environment.

Thus, the development of cargo transportation in Ukraine faces a number of problems, including technical and economic backwardness, high wear and tear of cargo aircraft, non-compliance with EU environmental standards and other competitive conditions. Solving these problems requires a strategic and long-term

approach to economic and administrative regulation, as well as direct and indirect influence at the national level. Integration and globalisation, the formation of new cargo delivery systems and the change in the role of air cargo transportation under the influence of digital technologies require the consolidation and expansion of commercial cooperation between airlines, the creation of global alliances and the liberalisation of air cargo transportation. In the logistics industry, the concept of door-to-door delivery, which includes the physical movement of goods, customs clearance, insurance, digital tracking and process management, is becoming increasingly popular. «Last mile» logistics is also a promising direction of development, which means the final stage of the supply chain between countries and continents. To assess the effectiveness of last-mile logistics, companies need to consider factors such as supply chain transparency, resource efficiency, ways to deal with demand fluctuations, customer service, and costs and prices. The implementation and testing of intellectual resources and products has a significant impact on the efficiency of the enterprise and has become an important factor in the development of models and strategies for managing the capital structure of the enterprise.

CHAPTER 2.
ANALYSIS OF ASPECTS OF DOOR-TO-DOOR DELIVERY ORGANIZATION BY JIT TRANS

2.1 General characteristics of the enterprise - «JIT Trans»

The base of the internship was the company JIT+, JIT Trans is the main company, the owner is one and the same person. The main office is located in the city of Kyiv on the street Levka Lukyanenko 29B, office 300, there is also a branch in Mykolaiv, on the street Nikolskaya 25/1, office 2. The main office of the company can be seen on the Fig 2.1. , where the most important issues of the company are resolved, and only then transferred to warehouses or branches.

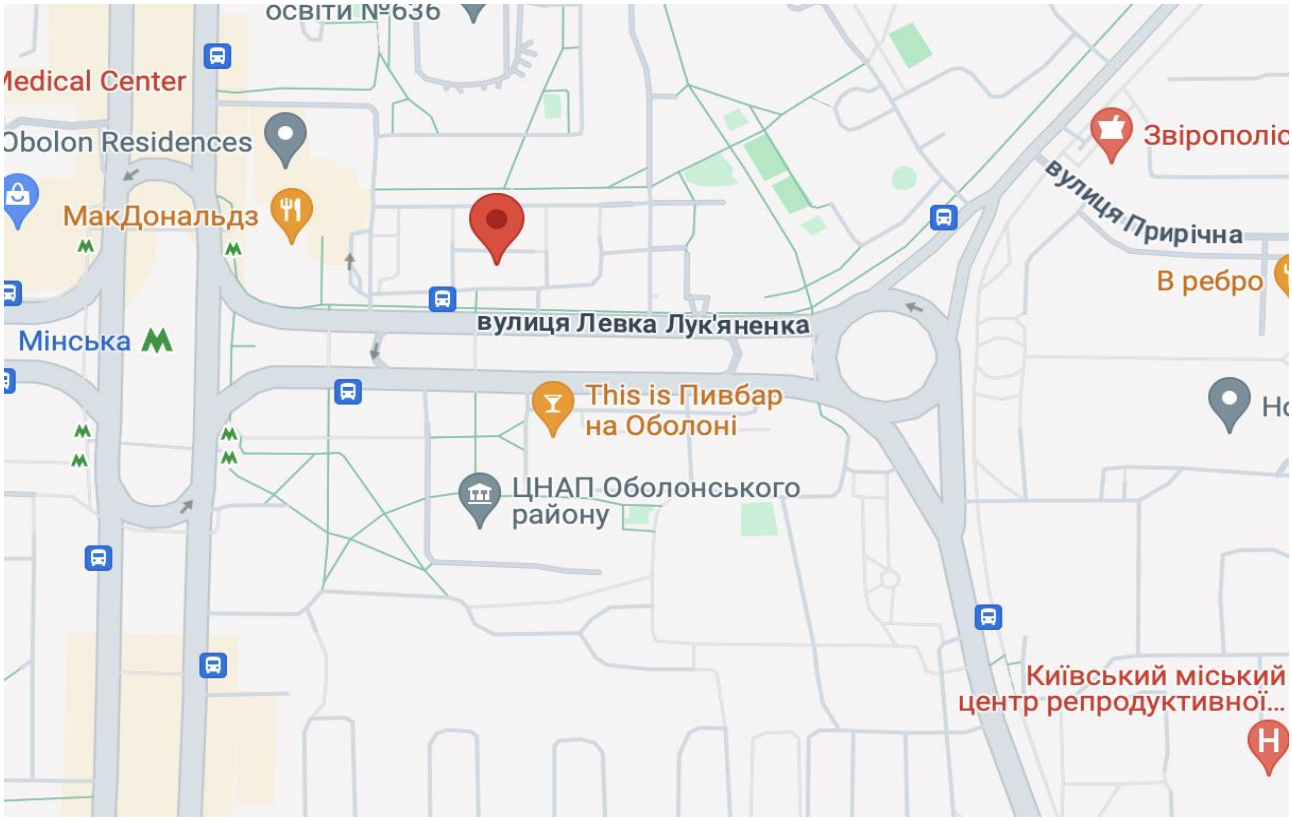

Figure 2.1. - The main office of «JIT Trans»

Source: developed by author according to[30]

Currently there are no branches abroad, but expansion is planned in the following countries: Germany, Poland and other European countries. JIT Trans is an advanced transport and forwarding company in the field of transportation and logistics, which provides high-quality services for the transportation of goods on the territory of Ukraine and Europe. Own fleet consists of 51 road trains from 86 to 92 m3, including awnings and semi-trailers and reefers. Our range of services covers the transportation of a variety of cargoes, including pallets (pallets), equipment and machinery, agricultural bulk cargo, construction materials and many other cargoes. We guarantee our customers efficiency in terms of delivery and favorable prices. As an innovative company in the field of logistics, we are focused on using advanced technologies to optimize transport processes. The company has several small warehouses of 600-700 square meters in size. One of the largest is the warehouse in the city of Mykolaiv, measuring 850 square meters. In figure 2.1.2, you can see the location of the warehouse. It is located not far from one of the largest ports of the city, which provides the opportunity to deliver goods from the warehouse to the ship in a short period of time.

Currently, the company «JIT Trans» is a 3PL (Third Party Logistics) - an operator, the list of services of such an operator includes warehousing and additional services, as well as the use of subcontractors. According to the information presented on the official website of Jit Trans, the development of services at the level of a 4PL operator is currently a promising development direction for the company: full integration of its own resources, capacities and technologies with the resources and technologies of a partner in the supply chain. Warehouse space is actively increasing, which currently amounts to 80,000 m2 in Ukraine due to the construction of our own warehouse, and warehouse space in Poland is also expanding to 5,000 m2. The company is actively working to win the largest market share among service operators in Ukraine, services in Poland are developing rapidly, the company is working to improve the quality and flexibility of services, and is conducting an active marketing campaign. The rolling stock is represented by modern cars: Volvo, Renault, Volkswagen, Hyundai, Citroen, MAZ with a carrying capacity from 0.5 to 25 tons.

Figure 2.2 - The biggest warehouse of «JIT Trans»

Source: developed by author according to[30]

According to the strategy for 2021-2023, the company is actively engaged in the development of representative offices in Poland and China, and it is also planned to expand the geography of presence: studying the market of Kazakhstan and the USA with the aim of opening representative offices, which will help attract an even greater number of customers in the future. Let's consider some of these indicators in more detail. Due to the non-functioning airport in the city of Mykolaiv, the company opened additional small warehouses located outside the city, not far from Kyiv airports. The company is also adapted to the special needs of certain industrial sectors, such as the chemical, pharmaceutical or food industry and agriculture. The transport company's activities cover both domestic and international markets, where it can offer international cargo transportation to various European countries. The efficiency of the JIT Trans transport company lies in the ability to competently plan,

coordinate and control processes, which guarantees the preservation of cargo and timely delivery to the final destination. The company is engaged in transportation not only by road, sea, but also by air.. The freight forwarding company JIT Trans provides cargo transportation services, and adheres to numerous norms regarding technical compliance with international legislation and licensing, as well as provides adequate insurance of the carrier's liability for the cargo and its vehicles. The company «JIT Trans» is engaged in the organisation of sea transportation to Ukraine from China, the USA, Europe, Africa, Southeast Asia, in the reverse direction and between third countries. We also carry out sea transportation in the USA for e-commerce to Amazon's FBA warehouses. Currently, there are not many logistics organisations that perform their work well. One of the domestic logistics organisations is «JIT Trans».

The owner of the company is Bikulov Vadym Viktorovych. According to the latest achievements in the theory and practice of management, the organisational structure of the enterprise should ensure the implementation of its activity strategy. Since strategies tend to change over time, there is a need for appropriate adjustments to organisational structures. The «structure» category reflects the structure and internal form of the system. The connection of elements in the structure is subject to the dialectic of the relationship between the part and the whole. The presence of a structure is an integral attribute of all actually existing systems, because it is the structure that gives them integrity. The structure provides for relatively stable connections existing between the elements of the organisation and contributes to maintaining a stable state of the system. Regarding the system, the structure is an indicator of its organisation. The organisational structure is a structure of an enterprise with a formal or informal expression, on the basis of which it is managed. It covers the channels of power and communication between various administrative services and employees, as well as the flow of information transmitted through these channels. The construction of organisational management structures is influenced by a system of factors that affects both the object and the subject of management. Among the factors are regulated and unregulated, as well as those that have a direct

or indirect impact. Fig. 2.3. shows the organisational structure of the Jit Trans company. Each of the departments is responsible for its transportation chains, because this helps not only to speed up the execution of all tasks, but also to optimise routes.

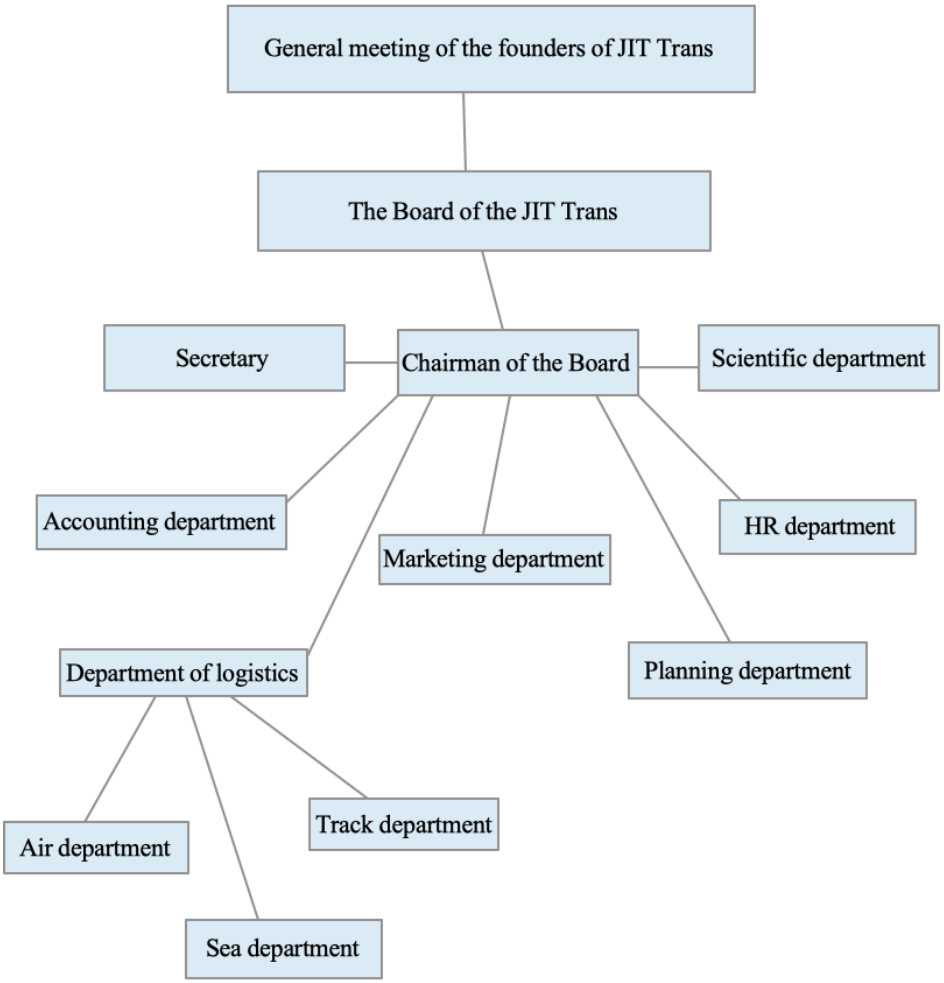

Figure 2.3. - The organisational structure of JIT Trans

Source: developed by author according to [30]

A manager is assigned to each transportation project, who will provide you with informational support 24/7. Oversized cargo, as well as building materials, coal, wood, metal, cement, limestone, petroleum products, and grain are usually delivered by rail. If speed and increased safety are a priority, you should choose air transportation. The company deals with various types of transportation and cargo, on Fig. 2.4, 2.5, 2.6 - provided services that correspond to each type of transport.

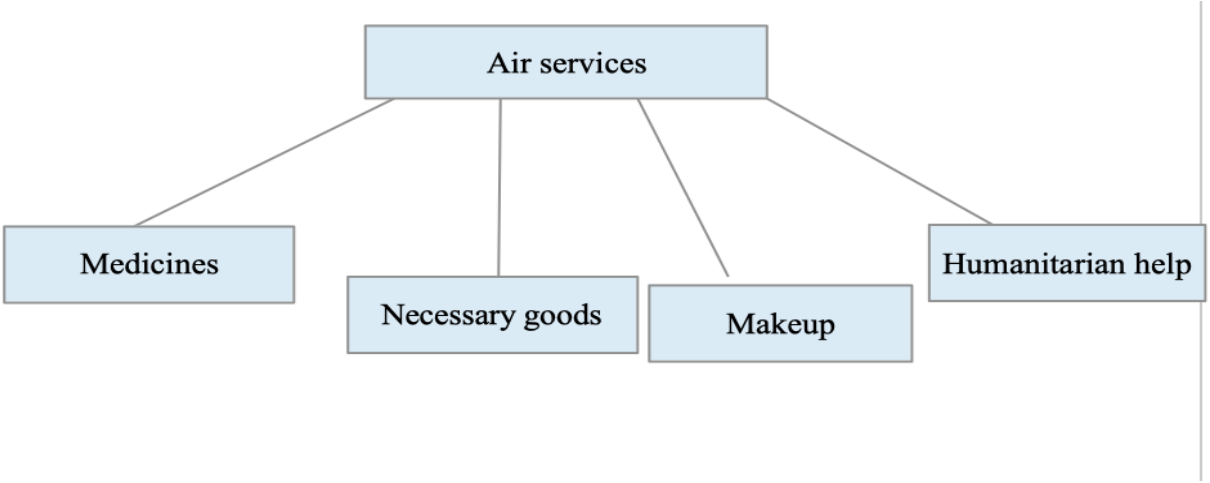

Figure 2.4 - The Air services

Source: developed by author according to[30]

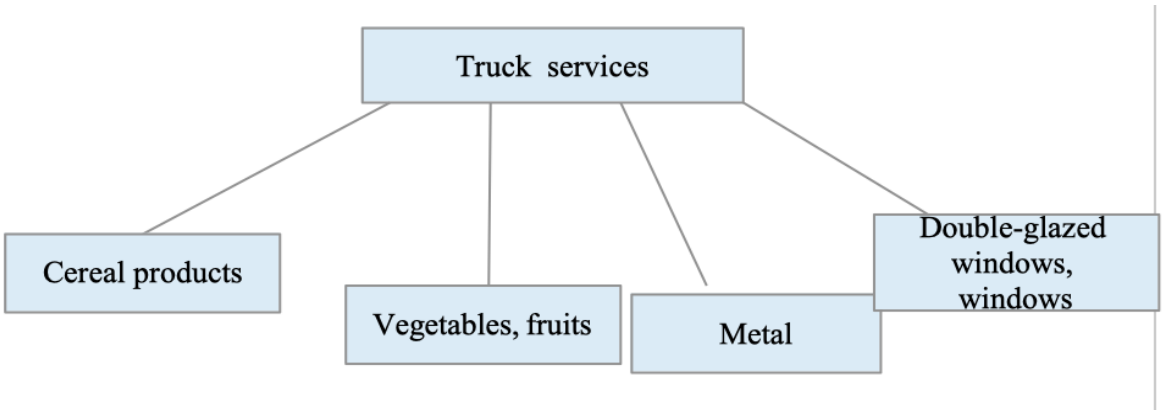

Figure 2.5 - The Truck services

Source: developed by author according to [30]

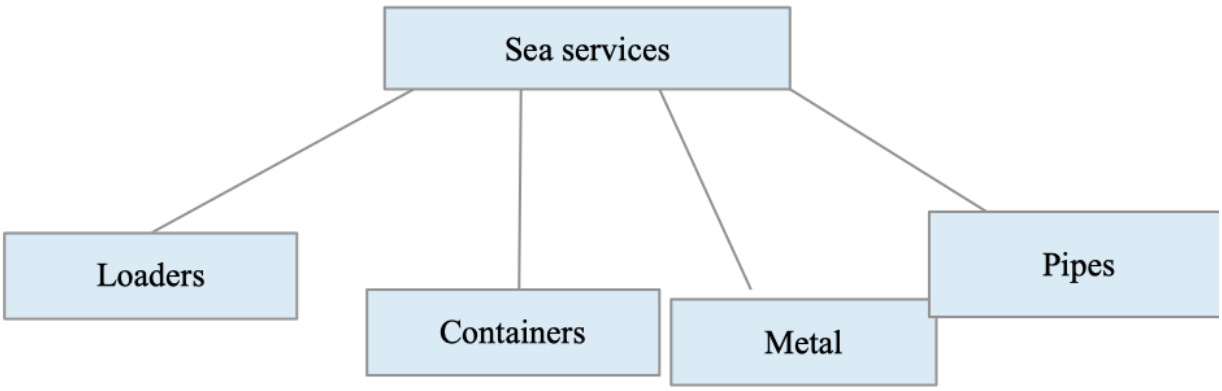

Figure 2.6 - The Sea services

Source: developed by author according to [30]

Fig. 2.7 shows the percentage of cargo transportation for 2023. Due to the closure of the sky, in 2023 transportation was exclusively using cargo transportation.

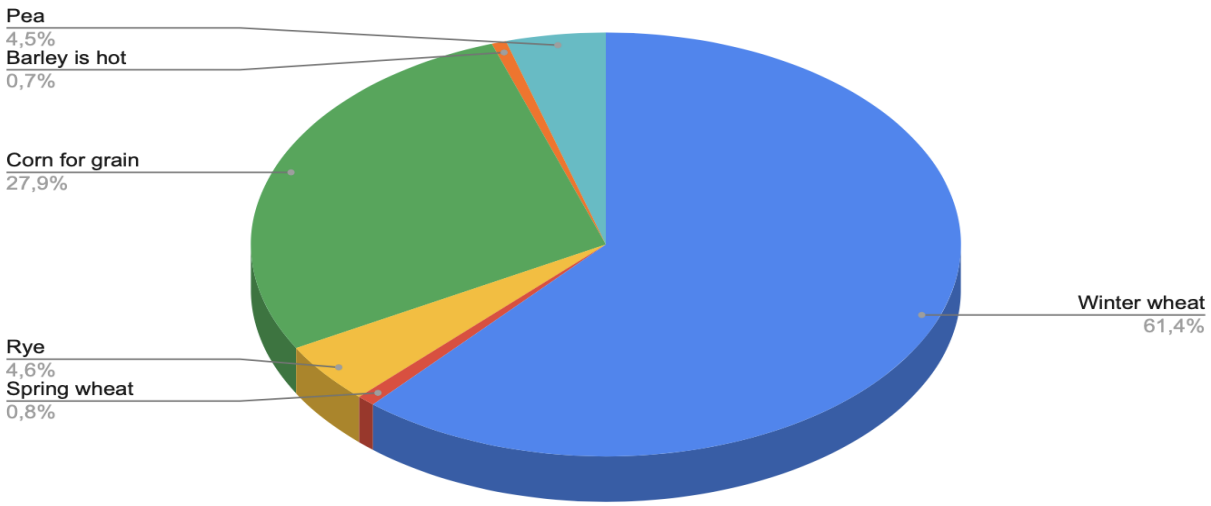

Figure 2.7 - The percentage of transportation in 2023 by JIT Trans

Source: developed by author according to[30]

In this way, the Jeet Trans company, the main services, vehicles, and the transportation of goods during the war in the country were analysed. As a result of the implementation of these measures, the enterprise has significant opportunities in the near future to increase the efficiency of production and sale of products and further strengthen the financial and economic condition. Therefore, in the future. It was focused on the diagnosis of the existing level of logistics activity of the enterprise. The «structure» category reflects the structure and internal form of the system. The connection of elements in the structure is subject to the dialectic of the relationship between the part and the whole. The presence of a structure is an integral attribute of all actually existing systems, because it is the structure that gives them integrity. The structure provides for relatively stable connections existing between the elements of the organisation and contributes to maintaining a stable state of the system. Regarding the system, the structure is an indicator of its organisation. The organisational structure is a structure of an enterprise with a formal or informal

expression, on the basis of which it is managed. The Fig. 2.8 shows the ways of cargo transportation on the territory of Ukraine and abroad.

Figure 2.8 - Ways of transportation

Source: developed by author according to [30]

Due to the closure of the sky on the territory of Ukraine, the goods are transported on the territory of Ukraine with the help of trucks. For delivery abroad, the goods are delivered to Moldova, Chisinau by truck, and then to other countries by Moldovan airlines.Jit Trans company, it is possible to provide the main competitors of the company. Below are examples of companies that are competitors of «JIT Trans»: DHL Ukraine, Nova Post, FM Logistics, Raben Ukraine, Ukrposhta. Fig. 2.9 shows the TOP 6 best logistics companies in the country.

It should be note that the first place is occupied by the postal company «Nova Poshta», the second place is the company «JIT Trans». Ukraine's logistics providers were hit hard after a full-scale invasion. The war changed the country's supply structure. For example, if earlier about 80% of logistics companies' capacities were located in the Kyiv region, then with the beginning of the conflict, most businesses moved their goods to the western part.

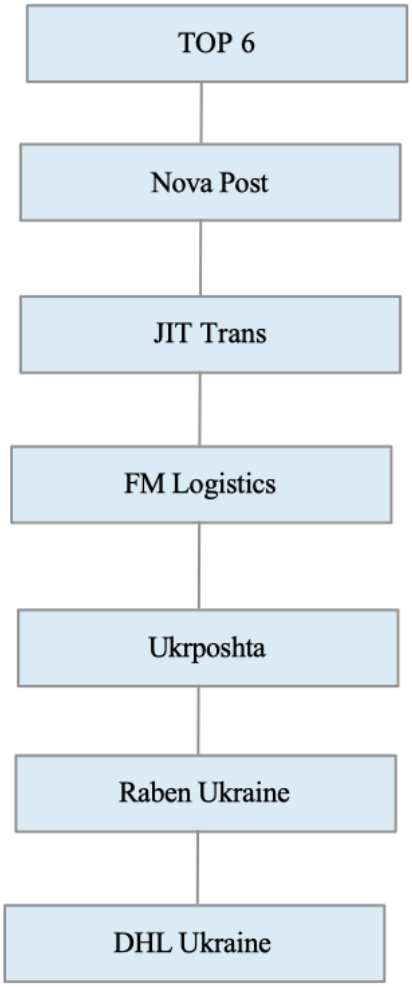

Figure 2.9 - TOP 6 best companies

Source: developed by author according to [30]

Moreover, it was not clear how to transport goods with a large number of checkpoints, inspections and unclear conditions of movement during the curfew. And this is only part of the problems faced by logistics providers. The profit of large logistics companies depends on two factors - the demand for warehouse logistics and transportation. This is influenced by production volumes. In September 2023, the State Statistics Service published data according to which the country's industrial production fell by 2.9% in the first half of the year.

In 2023, the volume of the fall was 31.9%. (ed. — data updated in October 2023) So it can be said: Ukrainian industry is slowly coming back to life, and along with it, the logistics industry, which is responsible for delivering products to

manufacturers and end consumers. If we talk about positive developments in Ukrainian third-party logistics, we can say about the following trends: the warehouse infrastructure is gradually branching out. If at the beginning of the full-scale invasion, logistics providers moved the main part of their logistics capacities to the west of Ukraine, closer to Lviv, now they have begun to restore warehouses in other cities of Ukraine. This has a positive effect on the processes of transportation of goods.there is a demand for small warehouses. These are the so-called logistics hubs that can help transport goods across different regions of the country. Logistics providers are introducing new services and solutions for their customers. For example, there is currently a great demand for transportation from Poland to Ukraine. Logistics providers are developing systems of automobile communication between other countries. The demand for logistics outsourcing is growing. In 2023, more and more businesses will turn to 3PL providers for their services, because it is not an easy task to independently organize logistics in wartime. This has a positive effect on the profitability of Ukrainian logistics companies.

Of course, the Ukrainian logistics industry is also affected by challenges — reformatting of transport and warehouse infrastructure, improvement of mobility and restoration of business processes. The first most important competitor is Nova Poshta. Ukraine's largest courier service ««Nova Poshta«» also offers services as a logistics provider, organising large pallet deliveries. The company launched in the first half of 2022. For this, warehouses were opened in various cities of Ukraine - near Kyiv, Dnipro, Lviv, Vinnytsia and Kropyvnytskyi. In just six months of 2022, «Nova Poshta» delivered more than 110+ million cargoes and parcels. Nova Poshta contract logistics services include: warehousing, LTL pallet transportation., international transportation, forwarding, service of dangerous ADR cargoes, customs brokerage service, insurance. Among the advantages of cooperation with the company are round-the-clock support and cargo handling, high speed of delivery of goods thanks to an extensive system of warehouses, individual loading of transport only with goods of a specific company, a transparent processing system at all stages, dispatching,

visual reporting, integration options, loyalty program for regular customers, calculation of the amount of services using a tariff calculator.

The second one is DHL: DHL is a leader in the logistics industry. The company was founded in 1969, in Germany. Although DHL's established specialty is express delivery, there are also Global Forwarding, Freight, Supply Chain and Parcel divisions. Currently, the company operates in 220 countries around the world, has 600,000 employees, and 118,482 vehicles. It delivers 1+ billion parcels every year. DHL offers the following services: delivery of documents and parcels, air transportation, sea transportation, automobile transportation, railway transportation, warehousing, customs service. The company has been present in Ukraine since 2006 on the territory of Ukraine. The third one is: This leading logistics company was founded in France in 1967. FM Logistics became the first 3PL provider to introduce the pooling method. It consists in the simultaneous service of several customers with the help of its own warehouse and transport infrastructure. As of 2023, the global brand has 28+ thousand employees, 4 million warehouse spaces, and 3+ thousand own vehicles. According to statistics for 2020, the company specializes mainly in warehouse logistics. Its share is 54%. Transportation of goods accounts for 36%. The fourth one is: The Raben parent company was founded in 1913 in the Dutch city of Oss. It currently operates in 15 countries, has 1+ million square meters of warehousing capacity and delivers 13+ million shipments every year. The specialty of the company is the special Fresh. In order to make it easier for you to compare the income of the TOP logistics companies in Ukraine, we have summarized the information in a single table. For the analysis, we used the Open Data Portal from the Ministry of Digital Transformation of Ukraine. Fig. 2.10, 2.11, 2.12 show the revenue for 2023 in all competitive companies in different transportation of different goods.

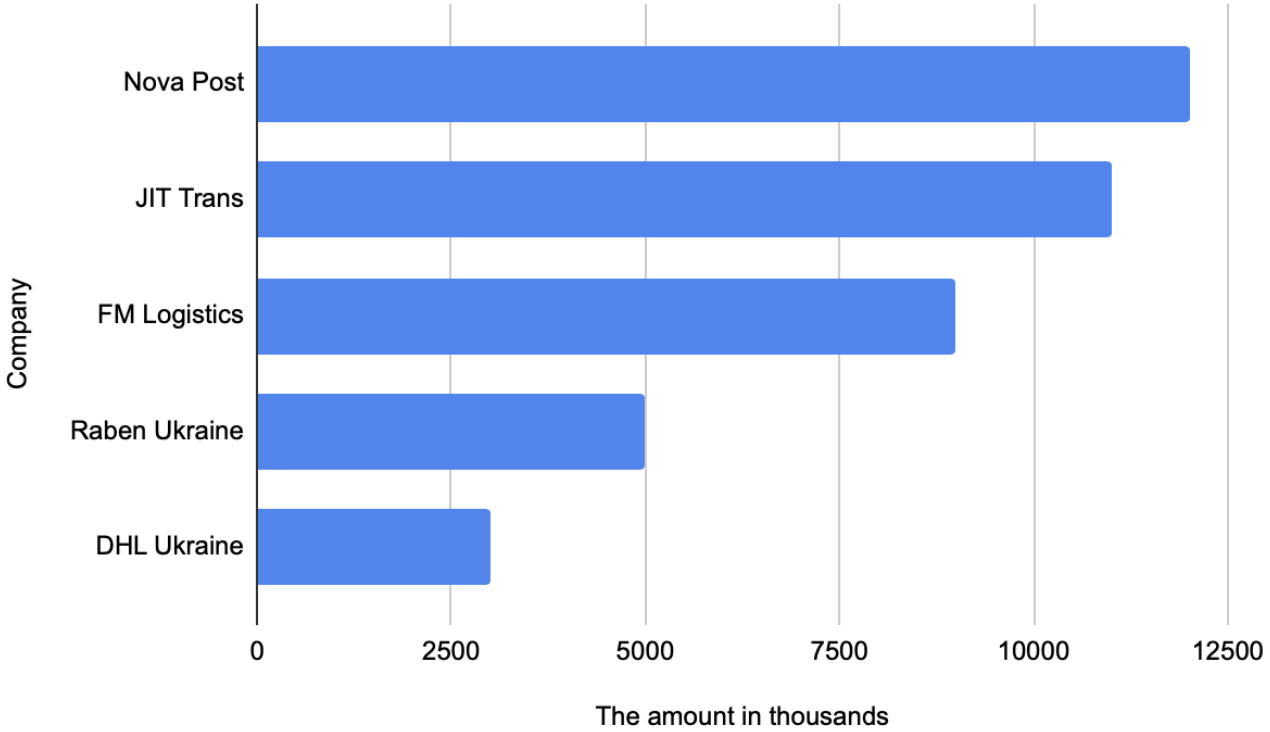

Figure 2.10 - Transportation of humanitarian aid

Source: developed by author according to [30]

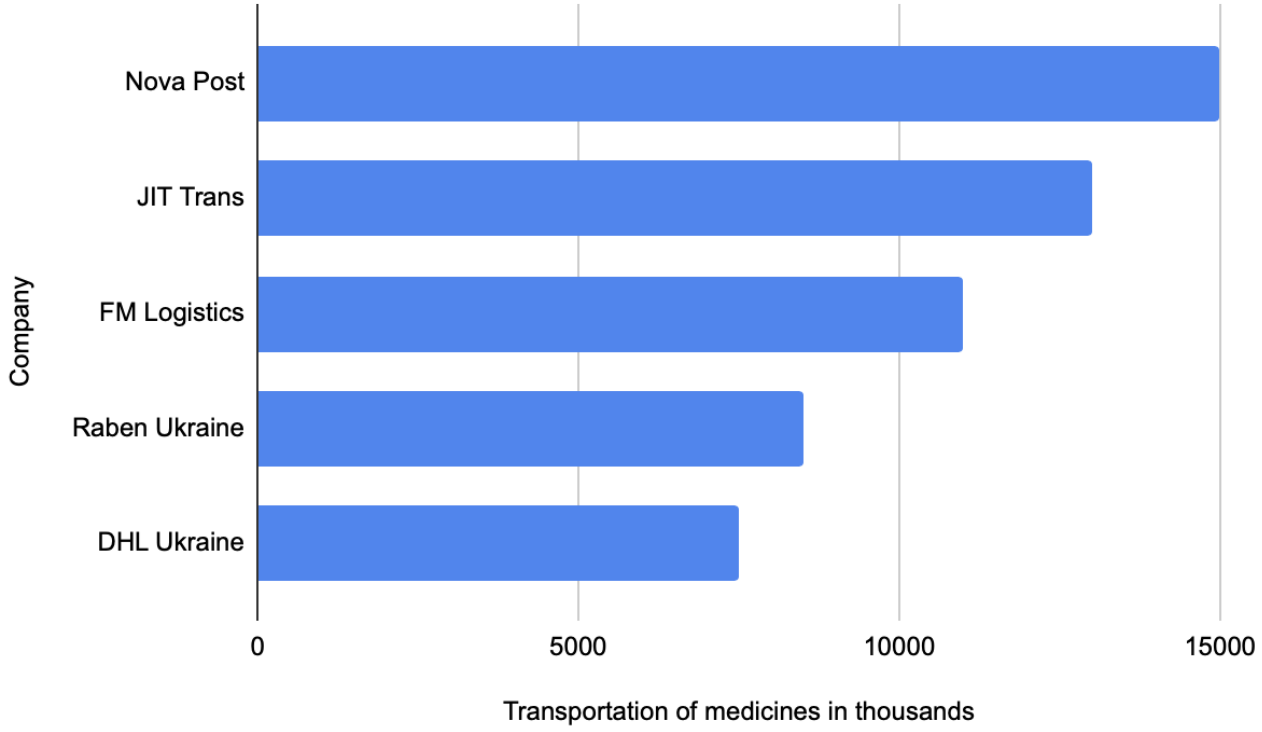

Figure 2.11 - Transportation of medicines

Source: developed by author according to [30]

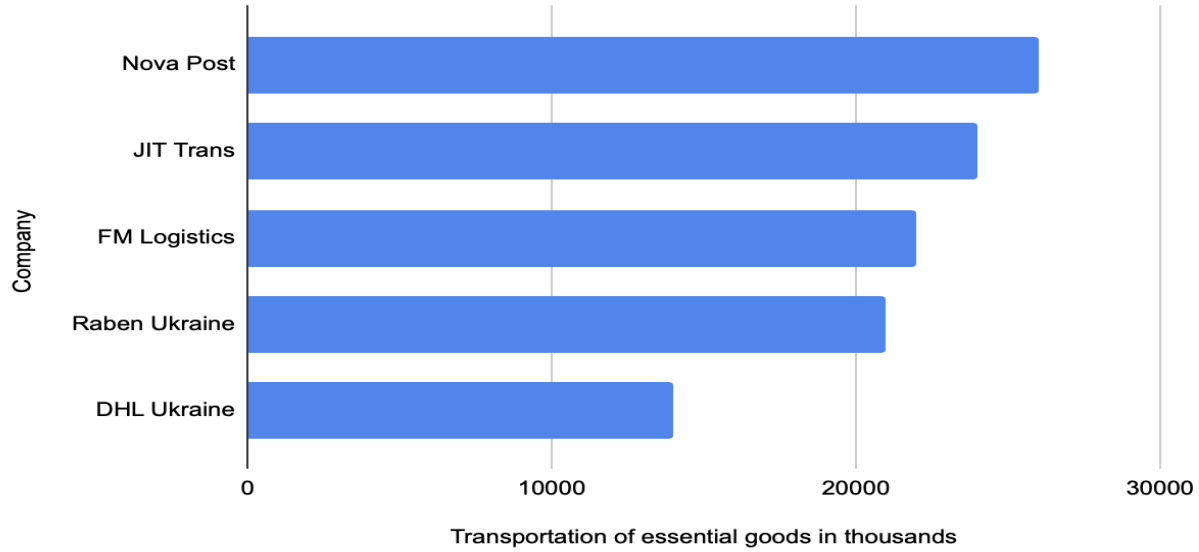

Figure 2.12 - Transportation of essential goods

Source: developed by author according to [30]

The company transports various types of cargo, but it can be seen that the most essential goods were transported. After analysing all the graphs, we can say that the most used companies are Nova Post and JIT Trans. Like most companies, Jit Trans has its pros and cons. Table 2.1 presents the SWOT analysis of the company.

Table 2.1 - SWOT analysis

Strengths:	Weaknesses
- Expertise - Well known locally - Good location in Kyiv - Very comfortable place of main office - Very comfortable location of the warehouses	- No online store - Limited storage space - Not on time delivery - Delivery for more than 4 days
Opportunities	**Threats**
- Online sales to reach a broader market - Increase product range - Optimize the delivery system	- Parking restrictions - Delivery of goods in more than 5-6 days in domestic transportation - Delivery of goods in more than 14-18 days in international transportation(depends on border queue)

Source: developed by author according to [30]

Looking at the SWOT analysis, we can say that the main problem of the company is not on time delivery. Although Ukraine's logistics industry, particularly contract logistics, has been hit hard by the effects of a full-scale invasion, 3PL providers still continue to operate and serve customers. In addition, there is a gradual recovery of industrial production, which may have a positive effect on the recovery of industries in the future. According to our rating, the TOP logistics provider in Ukraine became the Nova Poshta company, which in 2022 received an income of 2+ billion hryvnias.

In conclusion, the JIT Trans company is a leading logistics provider in Ukraine, offering a range of services including transportation, warehousing, and customs clearance. The company's competitors in the Ukrainian market include DHL Ukraine, Nova Post, FM Logistics, and Raben Ukraine. However, according to the rating, the TOP logistics provider in Ukraine is Nova Poshta, which received an income of 2+ billion hryvnias in 2022. The SWOT analysis of JIT Trans reveals that the company's strengths include its expertise, good location in Kyiv, and comfortable offices and warehouses. However, the company's weaknesses include limited storage space, no online store, and not on-time delivery. The company's opportunities include online sales to reach a broader market, increasing its product range, and optimizing its delivery system. The company's threats include parking restrictions, delivery of goods in more than 5-6 days in domestic transportation, and delivery of goods in more than 14-18 days in international transportation. Overall, JIT Trans is a reliable and efficient logistics provider in Ukraine, and its services are essential for the country's economy. Despite the challenges posed by the war, the company continues to operate and serve its customers, and its expansion to other European countries is a positive development for the company and the Ukrainian economy.

2.2 Analysis of the main production indicators of the «JIT Trans» during 2021-2023

The company is constantly updating its technical base and investing in logistics assets. For example, in 2021, 40 new trucks were purchased, which can be explained by the growth of investment in logistics assets, which amounted to UAH 1,178,000 in 2021. and compared to 2022 increased by 34.1%. Thus, the average annual cost of logistics assets in 2021 was estimated at UAH 18,768,000. As you can see, the average annual cost increases over the years: in 2023, the cost increased by 4.77% compared to 2022, in 2024 - by 6.99%. It is worth noting that the company's logistics assets include trucks and cars, trailers, mobile containers, cranes, loading and unloading machines, industrial and household equipment. The number of unloadings/shipments has an increasing trend and is 8,976 times in 2023, a total increase of 30.05% in 2022 compared to 2021 and 28.43% in 2023 compared to 2021. This trend can be explained by the increase in the number of orders, which increased by 7.27% and 4.05% in 2022 and 2023, respectively, the increase in the number of loaders, as well as the increase in the productivity of each employee.

Table 2.2 - Main indicators of logistics activity of the enterprise «JIT Trans»

Indicators/Year	Value			Absolute deviation		Relative deviation	
	2021	2022	2023	21/22	22/23	21/22	22/23
Numbers of unloading/shipments	5374	6989	8976	1665	1987	30,05	28,43
The number of completed orders	69888	71223	76578	1335	5355	1,9	7,5
The number of pickers	71678	76890	80000	5212	3110	7,27	4,04
Numbers of loaders	156	167	183	11	16	7,05	9,58
The number of pickers	87	98	115	11	17	12,64	17,34
Number of sales agents	50	67	78	17	11	34	16,41
Average annual value of logistics assets, thousands UAH	16789	17590	18768	1101	878	4,77	6,69

The end of the Table 2.2

Investments in logistics assets, thousands UAH	801	878	1178	77	300	9,6	34,1
Actual capacity loading	480	530	560	50	30	10,41	5,66
Regulatory capacity loading	620	670	700	50	30	8,06	4,47
General logistics costs	11847 ,2	13066	15800	1218,8	2734	10,28	20,92
Gross profit	1337	3798	6061	2461	2263	184,06	59,58
The number of orders completed on time	65320	70560	73656	5240	3098	8,02	4,38
Orders are implemented from the warehouses	45661	48560	73656	5240	3096	8,02	4,38
Number of complains	5	6	9	1	3	20	50

Source: developed by author according to balance sheet [Appendix A]

One of the components of motivation is the material incentive of workers according to the length of service. In addition, the company monitors the work of each employee and follows trends and new methods of unloading, packing and sorting goods, ensuring the quality and speed of processes. On the basis of Table 2.2, a graph was drawn on the number of fulfilled orders.

Fig. 2.13 shows the number of orders placed. You can understand that the number of orders increases every year.

Despite the state of war in the country, the company continued to work. It can be concluded from the graph that the number of fulfilled orders increases over the years. Despite the war that began in 2022, the work did not stop, but everything improved. In connection with the closure of the airspace, the company focused on transportation by land and water transport, which did not interfere with the work of the logistics enterprise. At the same time, only modern equipment is used for loading and unloading operations, namely: car unloaders, loading and unloading ramps, loaders, lifting and transport equipment.

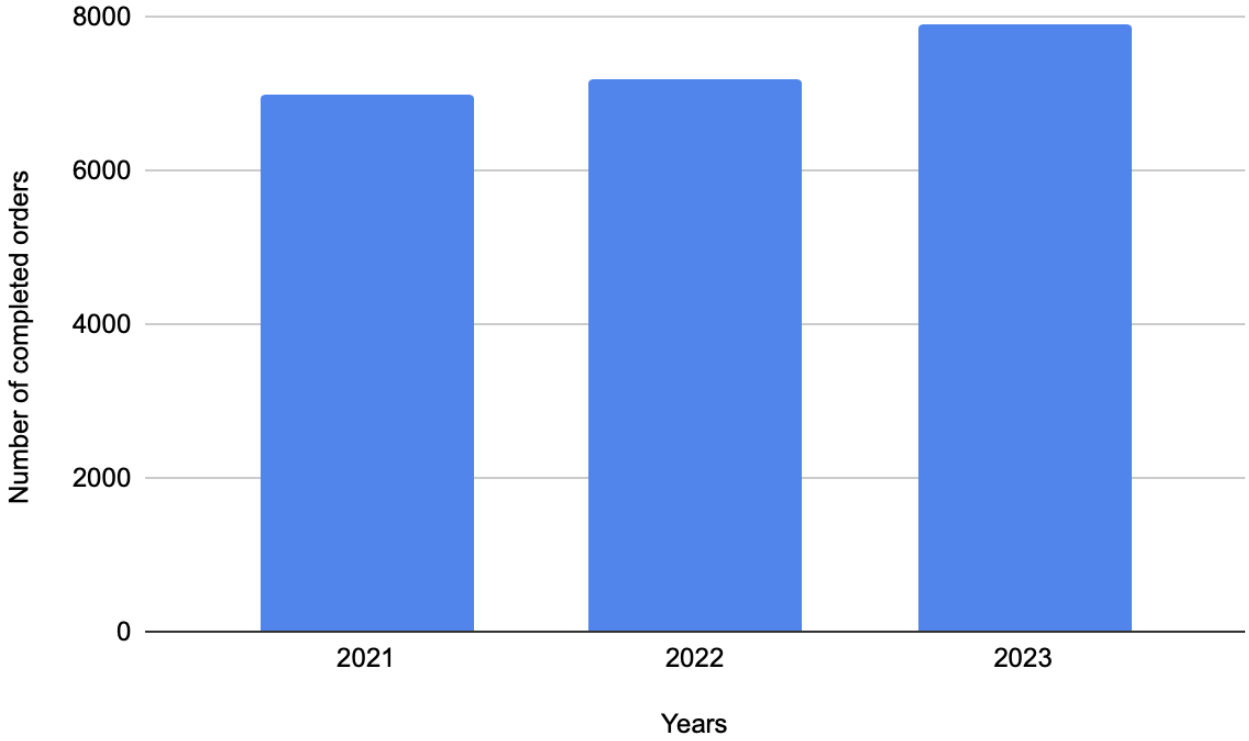

Figure 2.13 - The number of completed orders

Source: developed by author according to balance sheet [Appendix A]

Statistics show that up to 12% of the final cost of the product for the consumer is made up of the manufacturer's costs for logistics and storage of the product in the warehouse. Accordingly, in order to reduce the cost of the product, that is, to make it more attractive to the buyer, it is necessary to reduce logistics costs, shorten and simplify the logistics supply chain. It is worth considering the economic component of the «»cross-docking«» technology used by the company, since it allows the company to meet the needs of those customers for whom the time of completion of tasks is of particular importance: this can include advertising events and other time-planned marketing actions, ensuring deliveries «»exactly on time«», consolidation of complex deliveries, etc. The reasons and needs that cause the need to use cross-docking can be diverse, but they always arise when it is necessary to quickly speed up the process of sending and receiving goods (cargo) of the ordered volume and completeness by the end consumer in such operations as: direct transshipment of goods (cargo) from a truck into a container or into several smaller vehicles; assembly

of goods into sets (re-assembly, re-assembly, etc.) from various shipping warehouses; direct transshipment of goods (cargo) from one vehicle, the destination of which is the cross-docking platform, to another vehicle, the unloading point of which will be the final consumer.

If we talk about the term «»cross-docking«», then the etymology of this word indicates the designation of transshipment (or transfer) of goods directly on the dock (hence «docking»). To be more precise, cross-docking (from the English Cross - directly, to cross, and dock - dock, wharf, cargo platform, docking, connection) - a technology, the process of receiving and shipping goods and cargo through the warehouse directly, without placement for storage. One of the features of the cross-docking technology is that in most cases, vehicles are considered as a means of delivery on the inbound and outbound flow, although the term cross-docking can also be used to distinguish a technology in which not all cargo is unloaded from vehicles, but only its part (smaller) going in the other direction. Other products with the same purpose are added to the remaining part of the cargo within the vehicle. But now, except for railway transport, this method is not used for a number of reasons when sorting small shipments on the way. The second feature of cross-docking is direct work not only with goods, but also with orders, since the latter are initially not completed in the warehouse of the cross-docking operator, but by the supplier of the goods during shipment. This makes it possible to significantly reduce the cost of their processing, as well as transfer the responsibility for preserving the product package to the supplier. It should be noted that cross-docking approaches to logistics operations, as well as used equipment, are very similar to distribution technology, except that the distribution of goods between recipients is carried out directly from the warehouse. So, to date, cross-docking provides the following number of advantages to the company: increasing the speed of cargo transportation; saving the customer's money, due to the reduction of warehouse costs; Consider the cross-docking structure of the «JIT Trans» company in the Fig. 2.14.

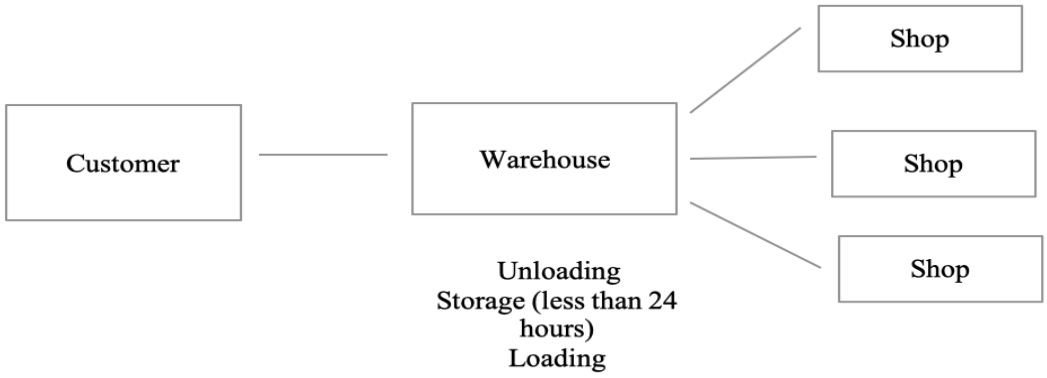

Figure 2.14 - Cross-docking scheme of the Jit Trans company

Source: developed by author according to balance sheet [Appendix A]

The company offers the calculation of this service: optimization of processes for the online store, reduction of costs, release of financial and human resources for the development of the company, construction of a more competitive business model and the possibility of additional profitable offers to end consumers. At the same time, it is not advisable to use fulfillment for all online stores. Fulfillment requires the integration of IT processes of the client and the service provider.

As a result, customers receive the following benefits:

- comprehensive service;
- individual decisions;
- personal manager;
- attractive commercial conditions;
- low rate of errors (0.02%);
- a high degree of involvement and responsibility for the project;
- reduction of costs for storage facilities, communications, personnel;
- optimization of operating costs;
- the possibility of tracking the performance indicators of the warehouse.

That is, we see that there is a company that provides fulfillment services a full-fledged responsible partner. It should be noted that the company has a positive growth trend logistic indicators. In addition, due to additional capabilities such as cross-docking and fulfillment, it is possible to attract a larger number of customers

and make maximum use of warehouse and transport capacities.Regular air transportation is carried out with the help of regular flights by airlines specially designated by the state on the lines specified in the relevant international agreement. At the same time, after the state has designated an airline for flights on contractual lines, it must notify the other party to the agreement in writing. The latter, in turn, is often obliged to grant such an airline an operating permit for flights, provided that the issues of the schedule and tariffs are agreed upon.

And the second is that the order arrives at the warehouse immediately before shipment. In this way, the minimum period of stay of the goods in the warehouse is ensured, and in this regard, it is necessary to coordinate very precisely in time the provision of certain goods (orders) that came from suppliers, specific orders of consignees.

Table 2.3 - Types of transportation of the enterprise «JIT Trans»

The number of completed orders	Value		
	2021	2022	2023
Truck transportation	5824	6200	5371
Railway transportation	4216	3283	3981
Sea transportation	3215	2199	2863
Air transportation	3483	1843	2100

Source: developed by author according to balance sheet [Appendix A]

On Table 2.3, you can start the number of orders from 2022-2024. As we can see, at the beginning of 2022, the number of shipments was greater, especially by air. Due to the closure of the airspace, air transport was spread only outside the country, therefore the number of shipments fell. The types of transportation was shown in Fig. 2.15.

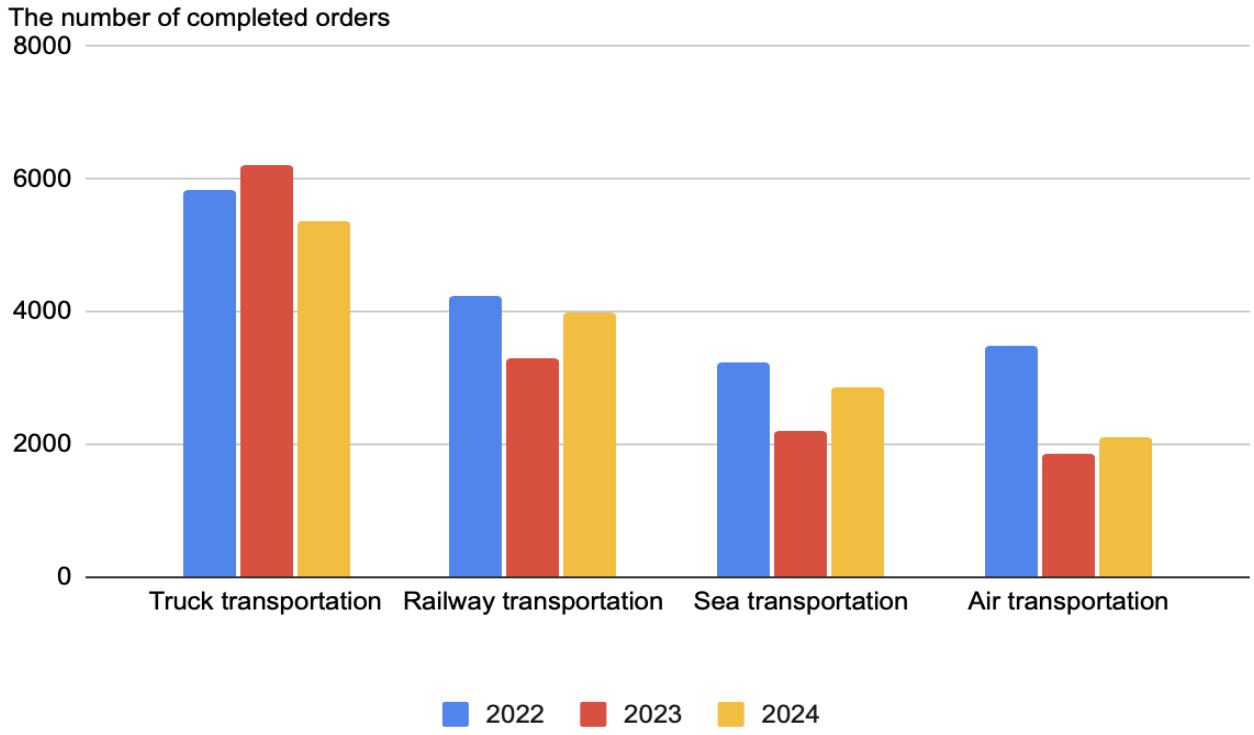

Figure 2.15 - Types of transportation of the enterprise «JIT Trans»

Source: developed by author according to balance sheet [Appendix A]

Analysing Fig. 2.15, we can say that over the past 3 years, trucks have been the main form of transport in the company. The number of completed orders was greater than all other modes of transport.

In conclusion, the company «JIT Trans» is a leading logistics provider in Ukraine, with a strong focus on road transportation. The company has been constantly updating its technical base and investing in logistics assets, which has led to an increase in the number of orders and shipments. The company's logistics assets include trucks, cars, trailers, mobile containers, cranes, loading and unloading machines, and industrial and household equipment. The company's logistics indicators have shown a positive growth trend, and the company has been able to attract a larger number of customers by offering fulfilment services. Despite the challenges posed by the war in Ukraine, the company has continued to operate and serve its customers. The company JIT Trans has demonstrated consistent growth and investment in its logistics assets, with a 34.1% increase in investments in 2022 compared to 2021. The company's logistics assets include a range of vehicles,

equipment, and machinery, and the average annual cost of these assets have increased over the years. The number of unloadings/shipments has also seen an upward trend, with a 30.05% increase in 2022 compared to 2021. The company's focus on workforce motivation, including material incentives based on length of service and monitoring of employee performance, has contributed to the growth in completed orders. Despite the challenges posed by the war, the company has continued to operate and even increased the number of fulfilled orders. The cross-docking structure of JIT Trans is designed to increase the speed of cargo transportation, reduce warehouse costs, and optimize operating costs. JIT Trans offers fulfillment services, providing customers with a comprehensive and individualized service experience. The company's positive growth trend in logistics indicators and additional capabilities such as cross-docking and fulfillment make it an attractive partner for customers looking to optimize their supply chain and reduce logistics costs.

2.3 Analysis of the main production indicators of the «JIT Trans» during 2021-2023

The company «JIT Trans» is one of the largest transport enterprises of Ukraine, it is the Ukrainian leader in the field of international road and air cargo transportation. Let's highlight the main financial and economic indicators of the «JIT Trans» company, which are most affected by the tax system. Such indicators should include profit, which changes directly under the influence of taxes, the value of fixed assets, which, on the one hand, are taxed in the process of their acquisition, and on the other hand, the tax burden affects the possibilities of their reproduction, equity capital, which is formed at the expense of the company's profit and share capital. These types of capital are directly related to taxation. Financial investments directly related to the formation of fixed assets, the investment activity itself, as a rule, is carried out at the expense of profit, accordingly, this indicator is directly related to the amount of tax.

As for the impact of the European integration process, Ukraine has entered a new stage of adaptation of domestic legislation to EU legislation, having started the negotiation process with the European Union regarding the conclusion of a new Free Trade Agreement with the aim of further acquiring the right to unimpeded movement of goods, services, labor and capital. Currently, all 27 members of the Commonwealth are involved in the development of the transport services market, which is evidence of the extensive system of economic relations between Ukraine and the European Union. The purpose of the integration of Ukrainian carriers into the market of transport services of the EU countries is the state's desire to ensure the development of the export of transport services, to use the transit potential more effectively, and to increase the competitiveness of domestic transport on the international market of transport services. The threat of Ukraine's default, the further devaluation of the hryvnia, the lack of gold and currency reserves to support it leads to the instability of the macroeconomic situation and has a negative impact on the activities of the «JIT Trans» company.

The significant deterioration of indicators of the functioning of the transport system of Ukraine during the financial and economic crisis is caused by a decrease in the demand for transport services from the leading freight-forming branches of the economy and from the population. Ukraine's economy turned out to be too vulnerable to the manifestations of the world crisis, it still has not gotten rid of the deep structural deformations of the previous period, it lags far behind developed countries in terms of the aggregate productivity of available factors of production, the level of population well-being, and the ability to ensure sustainable development. During the period of the financial and economic crisis, the amount of funding for the development of the transport complex of Ukraine, which was insufficient even before, decreased to a level that does not provide even a simple reproduction of the main production assets. In this regard, the volumes of cargo and passenger transportation on all modes of transport (except pipeline) decreased by 3-5 times. Currently, in difficult economic conditions, the population of Ukraine is interested in work, and the increase in the level of wages allows us to draw a conclusion about the

positive dynamics of this factor. In view of inflation, most consumers want to invest money in goods or services, which leads to an increase in the number of potential customers. Competitive influence of consumers. The power of influence of consumers of the services of the company «JIT Trans» is great, since there are many providers of international transportation services, the prices of which do not differ much, and therefore it is not difficult for the consumer to change the seller. In addition, he can independently choose the place and time of purchase of the service. If the price of the service does not satisfy the consumer, he will buy it later, when it has decreased, or where it is lower at the moment. Therefore, the company needs to fight for each client, because at any moment the consumer can refuse the services of this company and choose another company without significant costs.

Competitive pressure from suppliers. Competitive influence from suppliers is insignificant, since «JIT Trans» is a company that provides its own services.

For example, this is a cost disadvantage that does not depend on the size of a new enterprise that intends to enter the market, since existing enterprises have advantages in the form of the presence of already functioning capacities, the learning effect. It will be difficult for small businesses to reach a high level of competitiveness also due to the need for fairly significant initial capital investments, since the realization of a high-quality product requires the use of new technological lines, which are expensive.

Table 2.4 - Dynamics of financial results of «JIT Trans», ths. Uah

Indicators	Value			Absolute deviation		Relative deviation	
	2021	2022	2023	21/22	22/23	21/22	22/23
Net income	109463	136381	146826	26918	10445	24,59	7,66
Cost sales of products	99513	116929	130240	17416	13311	17,5	11,38
Gross profit	9950	19452	16586	9502	-2866	95,5	-14,73
Other operating income	6720	9100	11438	2380	2338	35,42	25,69
Administrative expenses	6154	7777	8904	1623	1127	24,37	14,49

The end of the Table 2.4

Selling expenses	392	405	390	13	-15	3,32	-3,7
Other operating expenses	8213	11120	10655	2907	-465	35,4	-4,18
Financial results	1911	9250	8075	7339	-1175	384,04	-12,7
Other financial income	4	4	1	0	-3	0	-75
Other income	4615	141	777	-4774	636	-96,94	451,06
Financial expenses	4972	9134	7948	4162	-1186	83,71	-12,98
Other expenses	1059	70	462	-989	392	-93,39	560
Financial results from ordinary activities	499	191	443	-308	252	-61,72	131,94
Income tax from ordinary activities	278	34	266	-244	232	-87,77	682,35
Net profit(loss)	221	157	177	-64	20	-28,96	12,74

Source: developed by author according to balance sheet [Appendix A]

Competition from providers of substitute services from other industries. As for the services of substitutes, there are none, since the services of this industry cannot be replaced by any other services. Therefore, there is no competition for «JIT Trans» from the appearance of substitute services.

The main risks of Jit Trans LLC's activity are economic (inflation, in particular, rising dollar exchange rate), political (increasing uncertainty in business conditions). Factors that have a positive effect on the activities of Jit Trans LLC are mainly the involvement of new technologies, expansion of the range of services, and motivation of work in the company. It was analyzed the dynamics of the financial results of JIT Trans LLC for 2021-2023 in the table. Threat from new competitors in the industry. The possibility of the appearance of new competitors in the industry depends on two factors - entry barriers and the expected reaction of the enterprises operating on the market to the appearance of a new competitor. There are certain barriers for new enterprises in this industry.

In 2022, the total net income of Jit Trans LLC amounted to UAH 109,463 thousand. In 2022, the growth was 24.59% compared to the previous year. In 2023, the total net income of Jit Trans LLC will increase by 7.66% compared to the previous year. An

increase in the volume of goods and services provided has a positive effect on the company's financial position and increases its market share. At the end of 2022, the total amount of net income was UAH 146,826 thousand.

In 2022, the increase in the volume of revenue exceeds the increase in the cost of production. This is a positive trend that indicates an effective cost management system. It is obvious that the business entity uses available reserves to reduce costs. In the second half of the period, the situation is the opposite and the cost price changes at a faster rate compared to the amount of revenue. The increase in the value of the indicator is 11.38% compared to the previous year.

In 2021, the amount of gross profit of «JIT Trans» LLC was 9,950,000 hryvnias. In general, a positive value of the indicator indicates effective control over the cost of production. The reverse phenomenon means the excess of the cost price over the income from the sale of goods and services of the enterprise. In 2022, the amount of gross profit amounted to UAH 19,452,000, and in the last year - UAH 16,586,000. Initially, namely in 2021, the amount of sales costs amounted to UAH 392,000. The increase in sales costs in 2022 was 3.32% compared to the previous year. Sales expenses are extremely necessary for product promotion and sales volume growth. After that, we observe a change in the trend and a decrease in the amount of sales expenses by 3.7%. At the end of 2023, the amount of commercial expenses of Jit Trans LLC amounted to UAH 390,000. At the beginning of 2021, the amount of administrative expenses of «JIT Trans» LLC amounted to UAH 6,154,000. In 2022, the increase in the cost item was 26.37% compared to the previous period. Next year, there is a further increase in the amount of management costs by 14.49% compared to the previous year. At the end of 2023, the amount of management costs amounted to UAH 8,904,000.

In 2021, the amount of the financial result from operational activity was UAH 1,911,000. A positive value of the indicator indicates the effective core activity of the enterprise, which is capable of generating profit. A negative value of the indicator means low efficiency of the operational process. In 2022, the amount of profit (loss)

of «JIT Trans» LLC from operating activities amounted to 9,250,000 hryvnias, and in the last year - 8,075,000 hryvnias.

«JIT Trans» LLC does not receive profit from investing financial resources in securities that testify to participation in the statutory fund of other enterprises.

In 2021, the amount of financial expenses was UAH 4,972,000. The increase in the indicator in 2022 is 83.71% compared to the previous year. In the second half of the period, a trend reversal is observed and the amount of financial profits decreased by 12.98%. At the end of 2023, the amount of financial expenses was UAH 7,948,000.

In 2021, the amount of the financial result before taxation of Jit Trans LLC was 499,000 hryvnias. A positive value of the indicator indicates the efficient operation of the enterprise. A negative or low value of the indicator indicates the need to find ways to reduce costs and increase the company's income. In 2022, the amount of profit (loss) before taxation of Jit Trans LLC was 191,000 hryvnias, and in the last year it was 443,000 hryvnias.

As a result of the factors discussed above, Jit Trans LLC generated a positive net financial result in 2021, which amounted to UAH 221,000. The amount of net profit in 2022 is UAH 157,000. This is a positive phenomenon that indicates that the company is operating efficiently and can generate income for its investors. At the end of the researched period, the company also generated a net profit, which confirms the conclusion about efficient operations. For the year 2023, the amount of net financial result from the activities of «JIT Trans» LLC amounted to 177 thousand hryvnias.

In 2021, the total amount of net income of Jit Trans LLC amounted to 109,463 thousand hryvnias. In 2022, the growth was 24.59% compared to the previous year. In 2023, the total net income of Jit Trans LLC will increase by 24.59% compared to the previous year. At the end of 2022, the total amount of net income of Jit Trans LLC amounted to UAH 146,826 thousand.

Table 2.5 - Dynamics of income elements of Jit Trans LLC for 2021-2023, thousand hryvnias

Indicators	Value			Absolute deviation		Relative deviation	
	2021	2022	2023	21/22	22/23	21/22	22/23
Net profit	109463	136381	146826	26918	10445	24,59	7,66
Other operating income	6720	9100	11438	2380	2338	35,42	25,69
Other income	4615	141	777	-4474	636	-96,94	451,06
Other financial income	4	4	1	0	-3	0	-75
Total income	120802	145626	159042	24824	13416	20,55	9,21

Source: developed by author according to balance sheet [Appendix A]

For 2023, the amount of interest income amounted to UAH 1,000. In 2021, the total amount of income of Jit Trans LLC is 120,802 thousand hryvnias. In 2022, the amount of income of «JIT Trans» LLC will increase by 20.55%, i.e. by 24,824 thousand UAH. In 2023, the trend continues and the increase is about 9.21% compared to the previous year. In table 2.5. analyzed the dynamics of liquidity indicators of Jit Trans LLC for 2021-2023.

Table 2.6 - Dynamics of liquidity indicators of «JIT Trans» for 2021-2023

Indicators	Value			Absolute deviation		Relative deviation	
	2021	2022	2023	21/22	22/23	21/22	22/23
Current liquidity ratio	1,93	2,51	1,97	0,57	-0,54	29,71	-21,37
Rapid liquidity ratio	1,78	2,18	1,74	0,4	-0,45	22,68	-20,5
Absolute liquidity ratio	0,13	0,27	0,08	0,14	-0,18	107,4	-68,55

Source: developed by author according to balance sheet [Appendix A]

In 2022, for every hryvnia of current liabilities, there are 2.51 hryvnias of current assets. In 2023, liquidity was within the norm and for every hryvnia of current liabilities, there are 1.97 hryvnias of current assets. Regarding the indicator of quick

liquidity of «JIT Trans» LLC, in 2021, the company could quickly repay 177.97% of current liabilities. That is, the value of the indicator is higher than the normative value. In 2022, the value of the indicator was 2.18. That is, the value of the indicator is higher than the normative value. At the end of the studied period — 1.74. In 2022, the value of the indicator was 0.27, and at the end of the studied period - 0.08. The profitability of JIT Trans LLC assets in 2021 amounted to 0.85%, i.e. for each hryvnia of assets, the company received 0.85 kopecks of net profit. In 2022, for every hryvnia invested in assets, 0.33 kopecks of net profit was received. In 2023, the value of the return on assets indicator was equal to 0.41%.

Regarding the return on equity of Jit Trans LLC, in 2021, each hryvnia invested by the owners brought them 1.75 kopecks of net profit.

Table 2.7 - Dynamics of profitability indicators of Jit Trans LLC for 2021-2023, %

Indexes	2021	2022	2023	Absolute deviation		Relative deviation	
				21 to 22	22 to 23	21 to 22	22 to 23
Return on capital (assets) by net profit	0,85	0,33	0,41	-0,52	0,08	-61,6	25,19
Return on equity	1,75	0,62	0,7	-1,13	0,08	-64,52	12,44
Profitability of production assets	1,32	0,53	0,78	-0,79	0,25	-60	48,03
Profitability of sold products based on sales profit	3,11	8,26	4,97	5,15	-3,3	165,73	-39,9
Profitability of sold products based on profit from operating activities	1,75	6,78	5,5	5,04	-1,28	288,5	-18,91
Profitability of sold products based on net profit	0,2	0,12	0,12	-0,09	0,01	-42,98	4,72
Reinvestment ratio	106,24	0,36	0,44	-105,88	0,07	-99,66	19,82
Coefficient of sustainability of economic growth	0,93	0	0	-0.93	0	-99,76	34,68

Source: developed by author according to balance sheet [Appendix A]

Regarding the return on equity of Jit Trans LLC, in 2021, each hryvnia invested by the owners brought them 1.75 kopecks of net profit. This is a low

indicator, which indicates the unsatisfactory efficiency of the enterprise. In 2022, each hryvnia of funds invested by the owners brought them 0.62 kopecks of net profit, that is, the efficiency of work for this year was low. In 2023, each hryvnia invested by the owners brought them 0.7 kopecks of net profit, which is not a high indicator. The profitability of production assets in 2021 was 1.32%, i.e. for each hryvnia of production assets, Jit Trans LLC received 0.01 hryvnia of net profit. In 2022, for every hryvnia invested in production funds, 0.01 hryvnia of net profit was received. In 2023, the value of the indicator of profitability of production assets is equal to 0.78%. The indicator of profitability of sales by profit from sales shows how much profit is from sales per unit of revenue. It allows you to determine the amount that remains after deducting the cost price, commercial and administrative expenses to cover other expenses (other operating expenses, interest on the loan, income tax). In 2021, the value of the indicator was 3.11%. That is, JIT Trans LLC had funds left for other expenses. In 2022, the profitability of sales on profit from sales is 8.26%. At the end of the studied period, each hryvnia of revenue made it possible to obtain 0.05 hryvnia of profit from sales. Profitability of sold products by net profit shows how much net profit per unit of revenue. As a rule, an enterprise where the management works at a high level have higher incomes, because they manage the available resources better. In 2021, each received hryvnia of revenue made it possible to receive 0 hryvnias. net profit. In 2022, the profitability of sales on profit from sales is 0.12%. At the end of 2023, the value of the indicator was 0.12%. The coefficient of sustainability of economic growth indicates the rate of growth of equity at the expense of net profit. In 2021, 92.8% of the equity capital of «JIT Trans» LLC was increased due to net profit. In 2022, 0.22% of equity was increased due to net profit. At the end of the period, the value of the indicator is 0.3%.

Let's consider the specifics of the international activity of «JIT Trans» LLC as an enterprise specializing in international cargo transportation.Air transport is actively developing in various directions. Let's analyze the dynamics of export and import of transport services of «JIT Trans» LLC (Table 2.8)

Table 2.8 - The export and import of transport services of «JIT Trans» LLC

Indexes	2021	2022	2023	Absolute deviation		Relative deviation	
				21 to 22	22 to 23	21 to 22	22 to 23
Export of transport services, thousand UAH.	46933,6	49163,9	75743,9	2230,3	26580	4,8	54,1
Import of transport services, thousand UAH.	19418,4	19136,5	25300,6	-281,9	6164,1	-1,5	32,2

Source: developed by author according to balance sheet [Appendix A]

From the data in Table 2.8. , it can be determined that the enterprise has an active foreign trade balance during the analysed period, that is, the export of transport services exceeds the import of transport services. Fig. 2.17, 2.18, 2.19 show import of transport services for all years.

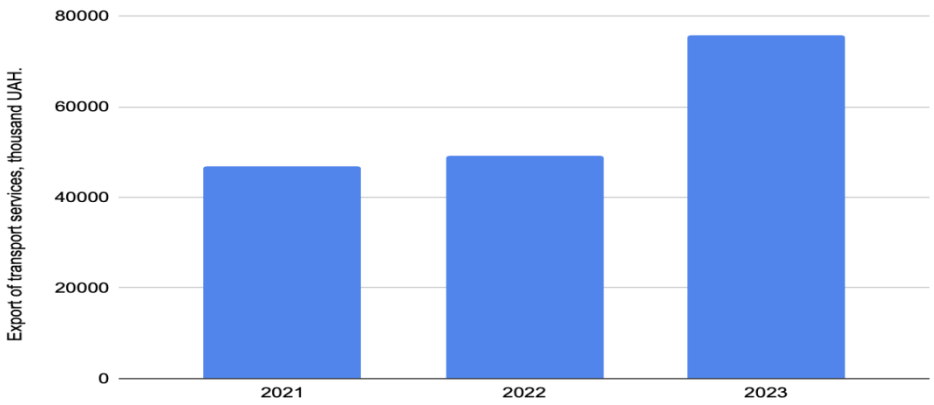

Fig. 2.16 - Export of transport services during 2021-2023

Source: developed by author according to balance sheet [Appendix A]

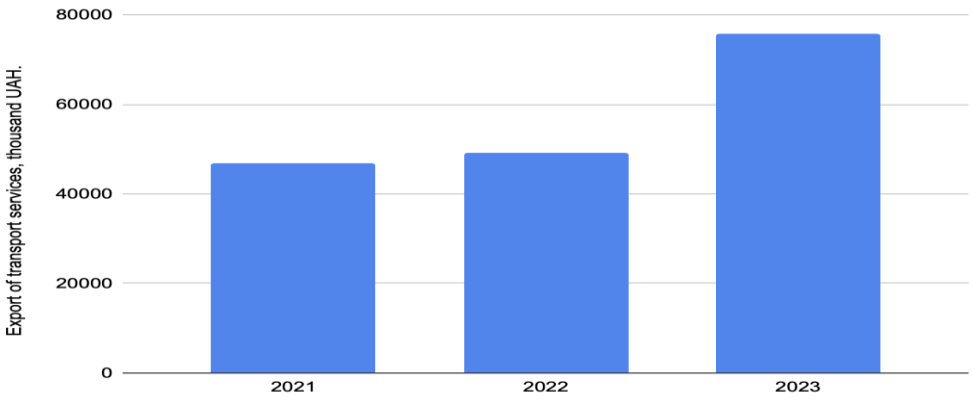

Fig. 2.17 - Export of transport services during 2021-2023

Source: developed by author according to balance sheet [Appendix A]

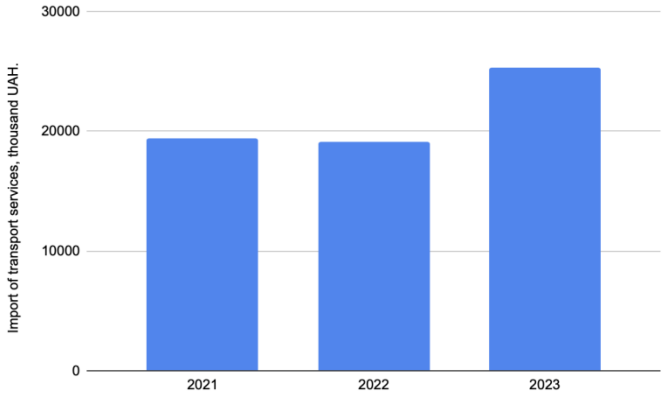

Figure 2.18 - Import of transport services during 2021-2023

Source: developed by author according to balance sheet [Appendix A]

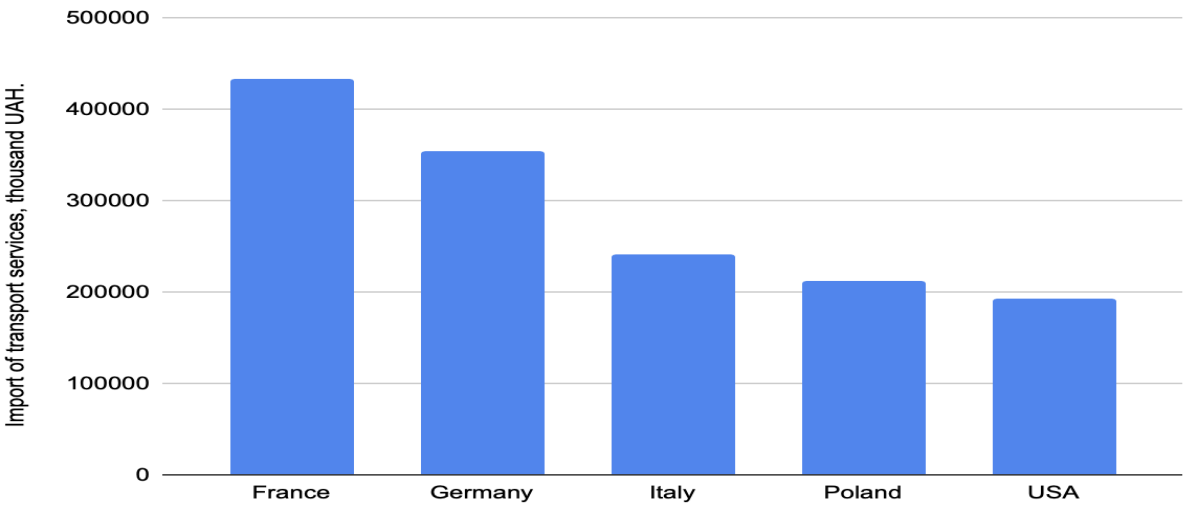

Figure 2.19 - Import of transport services during 2023

Source: developed by author according to balance sheet [Appendix A]

As we can see, the most active year is 2023, as the number of imported goods is more than in previous years. As can be seen from Fig. 2.20 the most active directions of international transportation are France and Germany.

Table 2.9 analyzes the export and import of the Jit Trans company. The number of services provided and the amount of expenses are given.

It can also be seen that the value of the implemented services increases every year, which is a great advantage for the company.

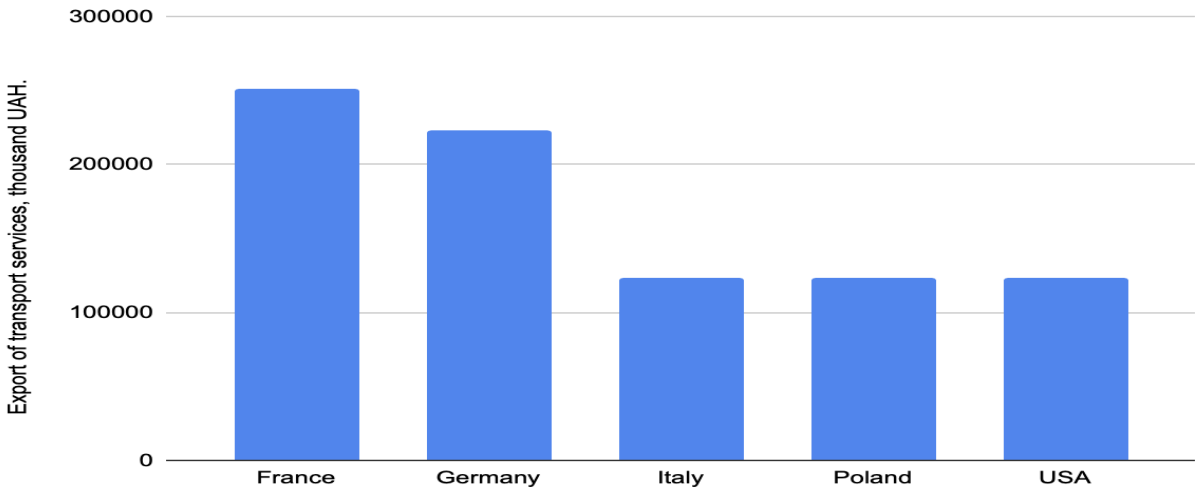

Figure 2.20 - Geographical structure of export of international transport services

Source: developed by author according to balance sheet [Appendix A]

Table 2.9 - Export and import of transport services of «JIT Trans»

Indexes	2021	2022	2023	Absolute deviation		Relative deviation	
				21 to 22	22 to 23	21 to 22	22 to 23
Transport services for export, thousand UAH.	46933,6	49163,9	75743,9	2230,3	26580	4,8	54,1
Aggregate income (revenue) from the provision of services, thousand UAH.	66352	68300,4	101045	1948,4	32744,6	2,9	47,9
The specific weight of the export of transport services in the amount of income (revenue) from the sale of services,%	70,73	71,98	74,96	1,25	2,98	1,8	4,1
Transport services for imports, thousand UAH.	19418,4	19136,5	25300,6	-281,9	6164,1	-1,5	32,2
The cost of the implemented services, thousand hryvnias.	26325,8	27325,6	45325,6	999,8	18000	3,8	65,9
The specific weight of the import of transport services in the structure of the cost of realized services, %	29,27	28,02	25,04	-1,25	-2,98	-4,3	-10,6
The effect of exporting transport services	25429	33282,5	42579,1	7853,5	9296,9	30,9	27,9
Effect of import of transport services	6907,4	8189,1	20025	1281,7	11835,9	18,6	144,5

The end of the Table 2.9

Efficiency of export of transport services	1,78	1,8	1,67	0,02	-0,13	1,1	-7,2
Import efficiency of transport services	0,74	0,7	0,56	-0,04	-0,14	-5,4	-20

Source: developed by author according to balance sheet [Appendix A]

In connection with the use of only one air carrier, there was a problem of untimely delivery. Table 2.10 shows the number of timely and untimely deliveries of goods.

Table 2.10 - The number of timely and untimely deliveries of goods

Indexes	2021	2022	2023
Timely completed orders	53325	53054	49600
Orders not completed on time	52325	23836	30400

Source: developed by author according to balance sheet [Appendix B]

From Table 2.10, it can be seen that the number of fulfilled orders during 3 years is decreasing, and the number of unfulfilled orders is increasing.

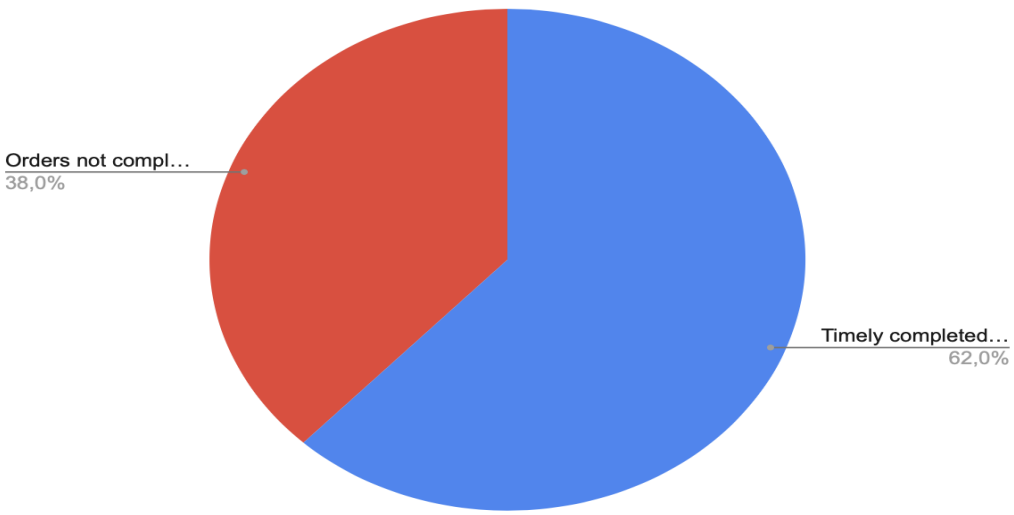

Figure 2.21 - Percentage of timely and late orders in 2023

Source: developed by author[31]

Figure 2.21 shows the number of timely and late orders. 62% Timely completed orders and 38% Orders that not completed on time in 2023.

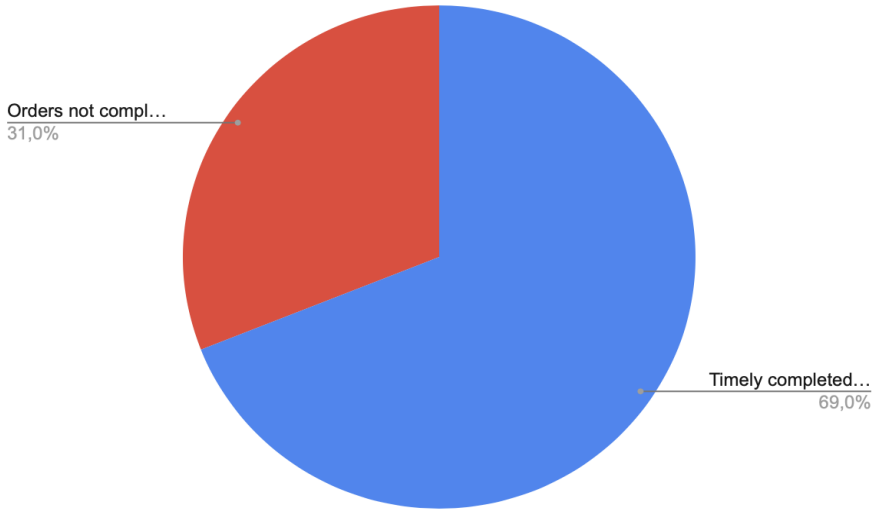

Figure 2.22 - Percentage of timely and late orders in 2022

Source: developed by author according to balance sheet [Appendix A]

Figure 2.22 shows the number of timely and late orders. 69% Timely completed orders and 31% Orders that not completed on time in 2022.

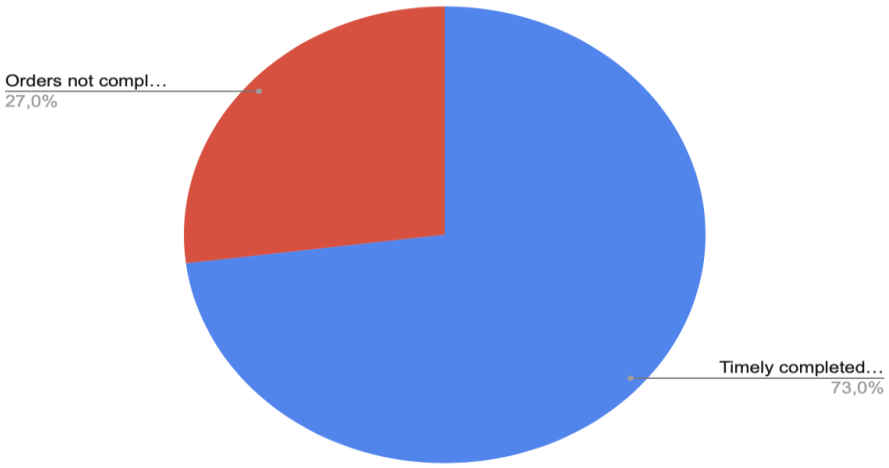

Figure 2.23 - Percentage of timely and late orders in 2021

Source: developed by author according to balance sheet [Appendix A]

Figure 2.23 shows the number of timely and late orders. 73% Timely completed orders and 27% Orders that not completed on time in 2021. Figures 2.3.6, 2.3.7, 2.3.8 show that the number of untimely completed orders increases every year. The company has a problem with delivery in the last miles. The main component of the problem is not enough air transport, which transports goods to different parts of the world.

In conclusion, the «JIT Trans» company is one of the leading transport enterprises in Ukraine, specializing in international road and air cargo transportation. The company's financial and economic indicators, such as profit, value of fixed assets, equity capital, and financial investments, are significantly affected by the tax system.The company faces competitive pressure from other providers of international transportation services, and the power of influence of consumers is high due to the large number of providers with similar prices. The company's success depends on its ability to efficiently manage costs, increase revenue, and provide high-quality services to its customers. The analysis of the company's financial results for 2021-2023 shows an overall positive trend, with an increase in net income, gross profit, and profit from operating activities. However, there was also an increase in financial expenses and a decrease in the financial result before taxation. The geographical structure of export and import of transport services shows that France and Germany are the most active directions of international transportation. The company needs to address the issue of untimely deliveries, as the number of untimely completed orders has been increasing over the past three years. Overall, the «JIT Trans» company has been performing well financially, but it needs to improve its delivery processes and adapt to the changing economic and political situation in Ukraine to maintain its competitiveness in the international transportation market.

Chapter 2 summary

The specific weight of the import of transport services in the structure of the cost price of the implemented services amounted to 27.4% on average for three years. This indicator indicates a growing trend in the company's orientation towards the import of transport services. This policy allows the company to expand the scope of services, improve the range of services, and reduce costs. The effect of the export of transport services during the studied period is growing and amounts to UAH 42,579.1 thousand at the end of 2022, which is UAH 9,296.6 thousand. more than the indicator of 2021. The effect of the import of transport services also increases during the studied period. Thus, in 2021 it amounted to UAH 8,189.1 thousand, and in 2022 it increased by UAH 11,835.9 thousand and amounted to UAH 20,025 thousand. As can be seen from the calculations, the efficiency of the export of transport services during the studied period was greater than 1, which indicates that the implementation of services on the foreign market is more profitable for «JIT Trans» LLC compared to the implementation within the country. Next, we will conduct an analysis of cargo transportation by «JIT Trans» LLC. International cargo transportation is the main activity of JIT Trans LLC. Due to its long and meaningful experience, the company has a wide customer base and developed connections, which, together with the technical and professional base, create high-quality transport services for the foreign economic activities of customers. LLC «JIT Trans» is a transport and forwarding enterprise that has already formed its own specifics of logistics service and established its own standards for the implementation of transport and logistics services. For the transportation of goods of all types of products, «JIT Trans» uses its own cars and trailers (semi-trailers), which comply with the provisions of the International Convention on Road Traffic and the European Agreement regarding the work of crews of vehicles serving international road transport (EUTR), the requirements for ensuring traffic safety . Each car, trailer (semi-trailer) is registered with the traffic police authorities and has a registration certificate, as well as an

identification mark of the state of Ukraine. Jit Trans LLC generated a positive net financial result in 2021, which amounted to UAH 221,000. The amount of net profit in 2022 is UAH 157,000. This is a positive phenomenon that indicates that the company is operating efficiently and can generate income for its investors. At the end of the researched period, the company also generated a net profit, which confirms the conclusion about efficient operations. During the analyzed period, the enterprise has an active foreign trade balance. The export of transport services is constantly growing during the analyzed period. Thus, in 2023 (preliminary data), the export of transport services will increase by UAH 26,580,000. compared to 2022, the import of transport services also increases by UAH 6,164.1 thousand. in 2023 (preliminary data) compared to last year. «JIT Trans» LLC provides international transport services in the following directions: Germany, France, USA, etc. The effect of international transportation by road transport of Jit Trans LLC during 2021-2023 is growing. So, in 2021 - 40801.9 thousand hryvnias, in 2022 - 41343.9 thousand hryvnias, in 2023 - 65404.5 thousand hryvnias. The efficiency of international transportation by road transport of Jit Trans LLC in 2021 is 6.1, in 2022 – 5.9, in 2023 – 10. The effect of the export of transport services during the studied period is growing and amounts to UAH 42,579.1 thousand by the end of 2023, which is UAH 9,296.6 thousand. more than the indicator of 2022. The company has a problem with delivery in the last miles. The main component of the problem is not enough air transport, which transports goods to different parts of the world.

CHAPTER 3
PROJECT PROPOSALS FOR THE ORGANISATION OF THE DOOR-TO-DOOR DELIVERY SYSTEM OF LLC «JIT Trans» USING AIR TRANSPORT

3.1 Organization of the cargo delivery scheme with the participation of air transport

«Last mile» - the final stage of the supply chain, includes the delivery of goods from the manufacturer or distribution center to the final recipient, which is the buyer or store. The «»last mile«» is one of the key components of the logistics chain. With the increase in the number of online orders and the development of the e-commerce industry, the task for carriers is becoming much more difficult. At the same time, the quality of service at this stage is of great importance for the shipper, ultimately it affects customer loyalty. Any problems with product delivery increase the risk of customer dissatisfaction with the overall service. Therefore, the probability of re-choosing this company decreases. Therefore, the shipper must make every effort to ensure a high level of «last mile» organization. This will help ensure an efficient supply chain and lower financial costs.

Last-mile logistics has become a major challenge for many companies operating in the competitive world of e-commerce. World statistics show that the «»last mile«» problem exists for 67% of online stores. Very often, due to failures in the «»last mile«», online stores lose customers, and even their reputation. An angry person, not satisfied that his order was not delivered on time, writes a bad review about the store on the Internet, not understanding that the fault is not the store, but the delivery service. And all the seller's efforts to promote his store, product, attract customers, increase their loyalty are reduced to zero. The following factors should be taken into account for the organization of last-mile logistics: Delivery speed. In most

cases, the product will be selected from an online store that offers same-day or next-day delivery. Retail businesses, particularly e-commerce, are competing to offer faster and more flexible delivery options to attract consumers. Consumer expectations and demands are growing, approximately 25% of buyers are ready to pay extra for same-day delivery. For example, Amazon offers its customers daily delivery of more than 10 million products and confidently declares the same fast delivery to Europe.

However, buyers increasingly pay attention to clearly defined time limits and consider how convenient they are. For example, if delivery on the day of the order is possible only during working hours (of the buyer), and the product is food, then the buyer's choice will most likely be in favor of convenience, i.e., the possibility of choosing a delivery time on another day , often even on a day off. Therefore, when choosing a courier service or organizing their own last-mile logistics, sellers should take into account the type of goods and how urgently they may be needed. Buyers also pay attention to the possibility of product delivery in the evening hours and on weekends. Which again indicates an emphasis on convenience, especially bulky goods and household appliances, which are inconvenient to transport, because often buyers specify two (or more) addresses in their personal account in order to adjust to receiving delivery - a working address in the case if the delivery is during working hours, and the home delivery is delivered mainly in the evening and on weekends. Tracking accuracy. Information about the location of the order at the stage of the last mile for the buyer is a rather important aspect. Information about the day and time of the order's arrival allows him to plan his time and adjust his own plans, since most often the time range of delivery in various courier services and stores' own delivery varies from 2 to 7 hours.

Moreover, the most convenient, according to buyers, is the method that uses a push notification about the collection of the order, its loading into the car and, as on the Zakaz.ua service, informing the buyer that the courier is nearby. Guarantees and insurance. One of the important factors is the provision of guarantees for the terms of delivery and insurance of goods. Nova Poshta – the national postal operator – promised its customers a refund of the delivery cost for violating the predicted

delivery terms, which users liked very much, but then slightly increased the terms, which actually differed by 1-2 days. The vast majority of courier delivery services in Ukraine include the cost of cargo insurance in the delivery price and, in the event of insured events, refund the full amount in accordance with the established procedure. However, it is worth noting that this applies to shipments with inspection and packaging at offices, and not to independently processed and packaged cargo. Convenience. It can be considered both the convenience of time parameters, the flexibility of delivery by courier, and in terms of the location of points of delivery of orders. Rozetka offers customers about 15 stores and delivery points in Kyiv, Odessa, Brovary and 4 mobile delivery points for small-sized goods in branded cars. Justin has placed 90% of its own branches in supermarkets and shopping and entertainment centers, which saves time both on searching for the nearest branch and on the way to it. Cost and price. It is necessary to take into account the cost of the chosen type of delivery for the enterprise and the price determined for the client.

Figure 3.1 - New supply chain

Source: developed by author according to balance sheet [Appendix A]

To avoid the problem of timely delivery of goods, a new supply chain using an additional company was shown in Fig. 3.1. DHL took into account the wishes of

customers and at the beginning of 2020 introduced in the mobile application the ability to track the movement of the parcel sent to the user during the entire delivery time. The practice of using crowdsourcing for courier delivery services, including goods from online stores, is spreading not only among logistics companies. Many global organizations for the delivery of goods, such as Postmates, Instacart, Deliv, etc., have collectively attracted several billion dollars of investments. Each works a little differently, but they all follow a similar vision for delivering. Looking for couriers who are not employees of postal services and actual delivery, Walmart has been using the Spark delivery service for more than two years.

Table 3.1 - The main characteristics of the activities of courier delivery services

Criterion	DHL	Nova Post	Meet express	Justin
Number of branches	>10000	>6000	2654	>740
Delivery time	1-2 days	1-2 days	1-3 days	1-3 days
Mobile application	+	+	+	-
Bonus programs	+	+	-	-
Fulfillment	+	+	-	-
EDI «»On Time«»	+	+	-	-
API	+	+	+	+
Delivery of several orders to choose from	+	-	-	-
International delivery	+	+	+	-
Delivery on time	+	-	-	+

Source: developed by author according to balance sheet [Appendix A]

Table 3.1 shows all possible delivery services on the territory of Ukraine and abroad. It was concluded that of all the proposed companies, DHL is the best.

In the fig. 3.2 it was shown the main supply chain in DHl company. Increasing urbanization is making the last mile of delivery more complex and critical for the success of e-commerce companies, according to new research by DHL and market research company Euromonitor.

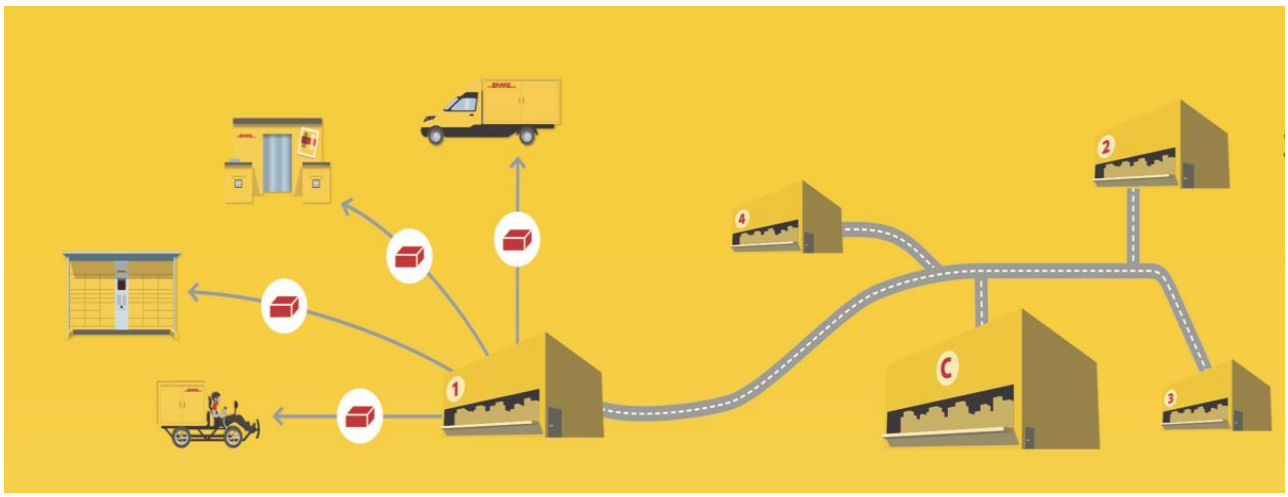

Figure 3.2 - Supply chain of DHL

Source: according to [31]

With more than 600-million more people forecast to live in urban environments by 2030 and new technologies creating opportunities for both service enhancement and disruption, online retailers and their logistics partners are being challenged to embrace bold new approaches in order to survive and compete. With more than 600-million more people forecast to live in urban environments by 2030 and new technologies creating opportunities for both service enhancement and disruption, online retailers and their logistics partners are being challenged to embrace bold new approaches in order to survive and compete. Figure 3.2 shows the delivery schedule involving DHL. Thus, the situation of late delivery can be corrected. With the use of the new supply chain, the number of late orders will decrease to 0.

Since the beginning of the full-scale invasion, Ukrainian exports have decreased significantly. In 2021, Ukraine exported goods worth 68.2 billion dollars, in 2022 - by 44 billion dollars, in 2023 - by 36 billion dollars, which is 36% less than in 2021. The key items of Ukrainian exports are traditionally food (especially grain) and metals. Their export volumes depend heavily on logistics, which remain complicated by the war. The Table 3.2 shows all types of products for export from Ukraine to Europe.

Table 3.2 - Export from Ukraine to the Europe

Types of products	Exports, million $
Groceries	16765,3
Cereal crops	5216,6
Black metals	3724,5
Vegetable oils	3651,9
Ore and slag	2643,6
Electrical machines and equipment	1854,8
Oil seed	1712,4
Wood and products from it	1335,4
Reactors, boilers, equipment	835,8
Ferrous metal products	703,1
Feed, food industry waste	638,3

Source: developed by author according to[32]

Fig. 3.3 shows that 42.9% of food products were exported, which is the most exported product among all products

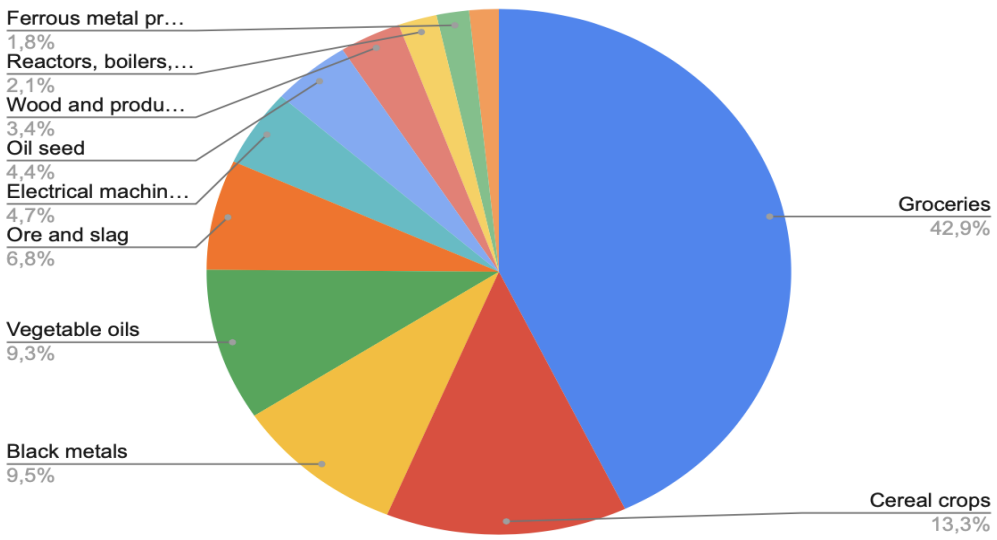

Figure 3.3 - Exports

Source: developed by author according to[31]

Fig. 3.3 shows that 42.9% of food products were exported, which is the most exported product among all products.

The main directions of transportation are Poland, Germany and China. Germany — $5.9 billion China — $5.8 billion; Poland — by $3.8 billion;

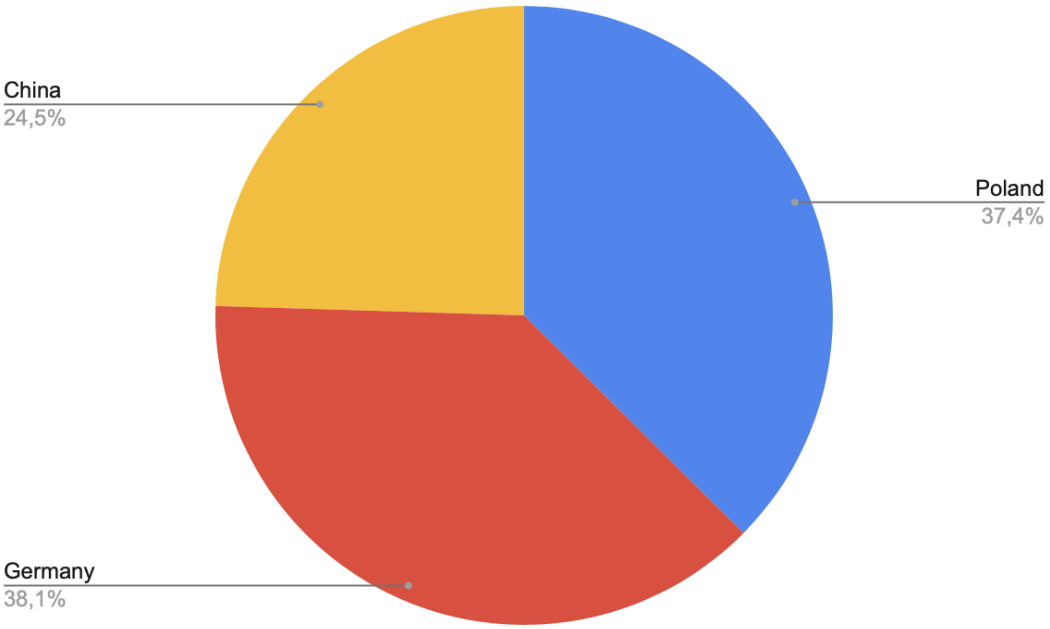

Figure 3.4 - Exports countries

Source: developed by author according to[31]

Fig. 3.4 analyses the 3 main countries to which the product is exported, it can be concluded that the most exported country is Germany.

DHL (Dalsey, Hillblom and Lynn) is a German international express delivery company of goods and documents, a world market leader. Works in more than 120,000 cities in 220 countries and territories. As of 2019, DHL delivers 1.5 billion parcels annually.

Like any other company, DHL has its main competitors, such as: Nova Poshta, Ukrposhta, which are on the Ukrainian market.

Table 3.3 - Competitors of DHL company

Services	DHL	Nova Post	Amazon
Delivery time in Europe	2-3 days	3-4 days	3-4 days
Cost of transportation	Varies based on weight and destination	Varies based on weight and destination	Varies based on weight and destination
Cargo tracking	+	+	+
Frequency of deliveries	Daily	Daily	Daily
Own transport	+	+	-
Timely delivery	+	-	+

Source: developed by author according to[27,31]

Looking at table 3.3, concluded that DHL is the best company for transporting any type of goods.

Next, weighting coefficients (weights) for quantitative and qualitative criteria are calculated according to the formula:

$$Wi = \frac{2(N-j+1)}{N(N+1)} \quad (3.1)$$

In Table 3.4 the criteria most often used when choosing a carrier, ranked in the traditional order of importance, where rank 1 is the highest, rank 10 is the lowest. Table 3.4 shows the main competitors of DHL.

Table 3.4 - The results of a questionnaire regarding the choice of a carrier

	Company	DHL	Nova Post	Amazon	Rang	Wi
1	Availability of a certificate	Yes	Yes	Yes	-	-
2	Product forwarding is possible	Yes	Yes	Yes	-	-
3	Tariff	2,2	1,5	1,6	2	0,196
4	Delivery term	perfect(2-3 days)	very good (3-4 days)	very good (3-4 days)	1	0,235
5	Quality of transport services	very good	good	satisfactory	3	0,343
6	Control over the movement of goods	perfect	very good	good	4	0,136
7	Financial stability	2	1	1	5	0,09
	Quantitative indicators					1

Source: developed by author according to[27,31]

In the Table 3.5 presented quantitative indicators include the tariff and financial stability of companies.

Table 3.5 - Quantitative indicators

№	Indicators	Wi	Extremom
3	Tariff	0,196	max
7	Financial stability	0,09	max

Source: developed by author according to[27,31]

Table 3.5 presents the quantitative indicators of all companies. It can be seen that the extremum is the maximum, and W_i for the tariff is 0.196, and for financial stability is 0.09.

Table 3.6 - Reference value

	Indicators	Reference value
3	Tariff	4,5
7	Financial stability	2

Source: developed by author according to[27,31]

Table 3.6 presents the reference value for each of the quantitative indicators used in the estimated integral indicator.

Table 3.7 - Quantitative indicators

№	Indicators	DHL		Nova Post		Amazon	
		Value without Wi	Value with Wi	Value without Wi	Value with Wi	Value without Wi	Value with Wi
3	Tariff	0,489	0,096	0,3	0,065	0,36	0,070
7	Financial stability	1	0,18	0,5	0,045	0,5	0,045

Source: developed by author according to[27,31]

According to Table 3.7, it can be calculated the total amount of quantitative indicators of each company.

Table 3.8 - Quantitative value indicators

Company	Value of W_i
DHL	0,276
Nova Post	0,110
Amazon	0,115

Source: developed by author according to[27,31]

According to Table 3.8, it can be concluded that the DHL company is the best in terms of quantitative indicators.

Table 3.9 - Estimated not quantitative indicators

Perfect	>0,950	0,98
Very good	0,875-0,950	0,91
Good	0,690-0,875	0,78
Satisfactory	0,367-0.690	0,53
Bad	0,666-0,367	0,52
Very bad	0,0007-0,066	0,03

Source: developed by author according to[27,31]

Table 3.10 - Not quantitative indicators

№	Indicators	Rating interval	Average
		1-0,950	0,98
1	Availability of a certificate	0,875-0,950	0,91
2	Product forwarding is possible	0,690-0,875	0,78
4	Delivery term	0,367-0.690	0,53
5	Quality of transport services	0,666-0,367	0,52
6	Control over the movement of goods	0,0007-0,066	0,03

Source: developed by author according to[27,31]

Table 3.10 presents the average value of all non-quantitative indicators used to calculate the integral assessment.

The company is the world leader in express delivery, controlling (as of 2022) 39% of the market.

Table 3.11 - Non-quantitative indicators to each company

The average value of the assessment	Indicator	DHL	Nova Post	Amazon
1-0,950				
0,875-0,950	Availability of a certificate	-	-	-
0,690-0,875	Product forwarding is possible	-	-	-
0,367-0.690	Delivery term	0,980	0,910	0,910
0,666-0,367	Quality of transport services	0,910	0,780	0,53
0,0007-0,066	Control over the movement of goods	0,980	0,910	0,78

Source: developed by author according to[27,31]

Table 3.11 provided all the average values for each indicator of each company.

Not quantitative indicators are measures that cannot be expressed in numerical values. They are often qualitative in nature and describe non-numerical characteristics or attributes.

Not quantitative indicators are important for companies to consider as they provide valuable insights into non-numerical aspects of their business. They can help companies to identify areas for improvement, measure the effectiveness of their strategies, and make informed decisions.

Table 3.12 - Not quantitative indicators

№	Indicators	DHL		Nova Post		Amazon	
		Value without Wi	Value with Wi	Value without Wi	Value with Wi	Value without Wi	Value with Wi
4	Delivery term	0,980	0,230	0,910	0,214	0,910	0,21385
5	Quality of transport services	0,910	0,312	0,780	0,268	0,53	0,18179
6	Control over the movement of goods	0,980	0,133	0,910	0,124	0,78	0,10608

Source: developed by author according to[27,31]

According to Table 3.12, it can be calculated the total amount of W_i not quantitative indicators of each company.

Table 3.13 - Not quantitative value indicators

Company	Value of W_i
DHL	0,676
Nova Post	0,605
Amazon	0,502

Source: developed by author according to[27,31]

According to table 3.13, it can be concluded that DCHL is the most attractive company for cooperation in non-quantitative terms.

Table 3.14 - Integral assessment

Company	Integral assessment
DHL	0,952
Nova Post	0,715
Amazon	0,616

Source: developed by author according to[27,31]

In Table 3.14, you can see that the integrated assessment of the DHL company is the largest among all other companies.

According to Fig. 3.5, can be concluded that DHL is the best company for cooperation.

Therefore, according to the results of the research conducted using the method of expert evaluations, it is advisable to give preference to the carrier with higher final evaluations - DHL. The total number of personnel is 408 thousand people (as of 2022).

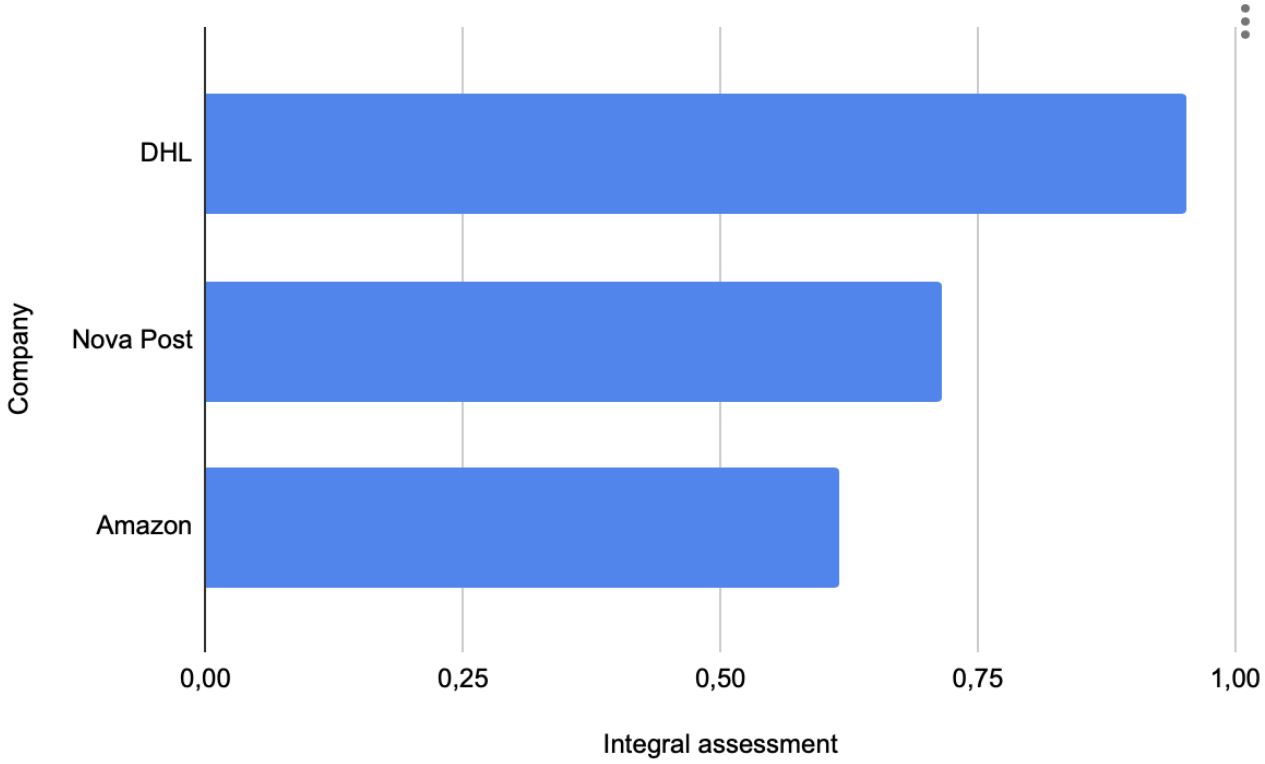

Figure 3.5 - Integral indicators

Source: developed by author according to[27,31]

Express is an international express delivery of letters and parcels, represented in 220 countries and territories, serves 3 million clients per hour, 120 thousand employees, 148 thousand service points, more than 300 aircraft, revenue of 27.6 billion euros; Global Forwarding, Freight — international delivery of goods by air, sea and land transport, serves 250 thousand clients per hour, about 200 cargo terminals, 49 thousand employees, revenue of 30.2 billion euros; Supply Chain —

logistics (transportation and warehousing services), 15 million m² of warehouse space in 50 countries, 10,500 trucks, 185,000 employees, revenue of 16.4 billion euros; eCommerce Solutions — delivery of parcels in the USA and some countries of Europe and Asia, 40 thousand employees, revenue of 6.1 billion euros. So, DHL is the best carrier.

Figure 3.6 - New supply chain with DHL company

Source: developed by author according to[27,31]

Figure 3.6 shows the new supply chain. Various types of goods are transported from Germany to different parts of the world by air transport.

To calculate the integral indicator for the evaluation of transport companies, we can use the data from the provided tables. The integral indicator will be determined as a weighted sum of assessments by all criteria for each company.

Therefore, the integral for DHL is 0,952,for Nova Post - 0,715 and Amazon - 0,616. These indicators indicate that according to these criteria, DHL has a significantly higher integrated score, indicating a better overall assessment of

services. This supports the conclusion that DHL is the preferred choice for the transportation of goods, particularly in the context of the last mile and the use of air transport.

In the conclusion It was discussed the importance of the «»last mile«» in the supply chain, which refers to the final stage of delivery from the manufacturer or distribution center to the end customer. With the rise of e-commerce, the last mile has become a major challenge for companies, as it affects customer satisfaction and loyalty. The article highlights the key factors to consider when organizing last-mile logistics, including delivery speed, tracking accuracy, guarantees and insurance, convenience, and cost. It was also presented a case study on the Ukrainian market, where DHL is considered the best company for transporting goods due to its own transport, timely delivery, and high-quality services. The study uses expert evaluations and quantitative indicators to compare DHL with its competitors, Nova Poshta and Amazon The results of the study show that DHL has a very high integral indicator, making it the preferred choice for cooperation. The article concludes that DHL's services, including its ability to track parcels, provide guarantees and insurance, and offer convenient delivery options, make it the best company for transporting goods, particularly in the context of the last mile and the use of air transport.

3.2 Justification of the «door-to-door» cargo delivery scheme with the participation of air transport in the conditions of martial law in Ukraine

Let's consider the way to deliver goods from Mykolaiv to Great Britain.

1. The evaluation of the efficiency of transportation options is carried out based on the amount of the calculated reduced costs:

$$P = Eyear + \varepsilon n \cdot (K + Kcargo) \qquad (3.2)$$

where: E_{year} – current annual operating costs of comparative options;

ε_n – is the regulatory efficiency ratio of capital investments (ε_n = 0.8–1);

K – corresponding capital investments in rolling stock and permanent devices in transport;

K_{cargo} – the value of goods that are in the process of transportation.

2. Operating costs for direct transportation of goods the car delivery option is determined by the formula:

$$Ea = E_m^a + Eeks + Ecargo \quad (3.3)$$

where: E_a – the full amount of operating costs for the delivery of one ton of goods from the goods owner to the consignee, UAH/t;

E_m^a – costs of transporting goods by highway, UAH/t;

$Eeks$ – costs for shipping goods, UAH/t;

$Ecargo$ – costs associated with cargo operations, UAH/t.

3. Operating costs are determined by the formula:

$$E_m^a = \frac{(c1 + cq) \cdot la}{q \cdot \gamma \cdot \beta} + K_3 \cdot_1 \cdot (c_2 + c_3 \cdot l_a) + \frac{c_4 \cdot t_1}{q \cdot \gamma} \quad (3.4)$$

where: cq– respectively, variable costs and the road component of costs for one kilometer of car mileage (2 hryvnias/km);

l_a – distance of cargo transportation by highway (km);

q – vehicle carrying capacity (t);

γ – is the coefficient of utilization of the car's carrying capacity (γ=1); β – coefficient of use of car mileage (β=0.5);

Кз – is a coefficient that takes into account additional wages and allowances for drivers for class (Kz =1);

$c_{1,2,3}$ – payment rates to drivers according to dispatch (5 hryvnias/t) and for transportation (10 hryvnias/t*km);

t_1 – is a coefficient that takes into account the increase in wages of drivers depending on the type of cargo (t_1=0.3);

c4 – costs that do not depend on the amount of traffic (2 hryvnias/car-hour)

β – time spent driving the car (h);

$c_{1,2,3}$, cq – tabular data.

4. The time spent driving a car is determined by the formula:

$$t_l = \frac{t_n + t_y}{60} + \frac{l_a}{\beta \cdot v_t} + \Sigma t_{stop} \quad (3.5)$$

where: t_n and t_y- respectively the time for loading and unloading (50 min.);

ν_t – technical speed of the car (80 km/h);

Σt_{stop} – duration of car stops during driving time (hours).

5. The number of short breaks is determined by the formula:

$$N_{mb} = \frac{1}{t} \cdot \left(\frac{t_n + t_y}{60} + \frac{l_a}{\beta \cdot V_t}\right) - 1 \quad (3.6)$$

where: t – is the permissible working time of the driver without short rest (t=3.5–4 hours).

6. When transporting cargo that requires forwarding, the driver is paid an additional payment of 30% of the tariff rate, which is determined by the formula:

$$Eexs = \left(\frac{t_n + t_y}{60} + \frac{l_a}{\beta \cdot V_t}\right) \cdot \frac{c_m \cdot r_2}{q \cdot \gamma} \quad (3.7)$$

where:c_m - the hourly tariff rate for a car driver (determined by the car brand and is UAH 10/hour for MAN TGX);

r_2 - a coefficient that takes into account the additional payment to the driver for forwarding (r2=0.2-0.3).

7. Costs related to cargo operations are calculated according to the formula:

$$Ecargo = Z_g \cdot C_g + Z_r \cdot C_r \quad (3.8)$$

where: Z_g,Z_r – the number of unloading and loading of the goods, respectively, along the entire route (according to the scheme of transportation 1 each);

C_g, C_r – the cost of loading and unloading one ton of goods, respectively (C_g, C_r=450 UAH).

The total annual operating costs for the transportation of goods by road transport are calculated according to the formula:

$$E^a_{year} = \frac{M \cdot (E^a_m + E_{eks} + E_{cargo})}{100} \quad (3.9)$$

where: M - the annual volume of cargo transportation.

8. Capital investments in rolling stock and fixed vehicles are calculated according to the formula:

$$K_a = \frac{M \cdot t_l \cdot K^a_{res} \cdot K_{pp} \cdot P_c}{365 \cdot q \cdot \gamma \cdot n_{ch} \cdot t_{ch}} \quad (3.10)$$

where: P_c – the price of the car;

K_a,K_{res} – a coefficient that takes into account the fleet of cars located in reserve in connection with the repair and unevenness of transportation (Ka = 1.2)

K_{pp} – coefficient that takes into account the cost of permanent devices of road transport (K_{pp}=2.5);

n_{ch} – the number of changes in the operation of cars;

t_{ch} – duration of one shift (t_{ch}=8–12).

Operating costs for the transportation of goods in the direct car delivery option will be:

1. Eam:

   Nmb= ¼((50+50)/60 + 800/(0,5*80))-1 =4,417= 5

   $\sum t_{stop}$ = 5*1=5 hours

   tl = ((50+50)/60)+(800/(0,5*80))+5 = 26,67 hours

   Eam= ((2*800)/(18*1*0,5))+1*0,3*(5+10*800)+((2*26,67)/(18*1))=2582,24 hrn/t

2. E_{exs}:

   E_{exs} = ((50+50)/60+800/(0,5*80))((10*0,3)/(18*1)) = 3,61 hrn/t.

3. E_{cargo}:

   E_{cargo} = (1*450)+(1*450) = 900 hrn

4. K_a:

   K_a = 2582,24 + 3,61 + 900 = 3485,85 hrn /t

As for transportation from Germany to Great Britain, we use air transport at the rates of the DHL company. The Great Britain belongs to the 4th zone of the company's tariff, delivery from Germany to Great Britain of goods over 18 kg will cost 13,220 UAH. The weight of the goods transported from Germany to Great Britain reaches 1 ton.

18 kg = 0,018 t

0,018x= 1*13220

x= 13220/0,018

x= 734444,4

The total amount of transportation of 1 tonne delivery will be:

900+3485,85+734444,4 = 738830,25 hrn/t

In this work, with the aim of improving the efficiency of the use of vehicles, the nature and degree of influence of individual operating factors on the cost of transportation for a simple cycle was established according to the formula:

$$S_m = \frac{l_d}{q\gamma_{aver}\beta} \cdot (K_i^{ch} C_{ch} + \frac{k_i^{ps} \mathrm{C}_{costs}}{V_m}) + \frac{k_i^{ps} \mathrm{C}_{costs} t_r}{q\gamma_{cm}} \qquad (3.11)$$

where: C_{ch} = 35 hryvnias/km - the average value of the variable costs of a car with carrying capacity q in the base period, hryvnias/km;

C_{costs} = 190 hryvnias/hour - the average value of constant costs of carrying capacity q in the base period, hryvnias/hour;

t_r = 0.5 h – the average idle time of the car under load - unloading per drive, h;

l_d = 1804 km – the average distance traveled by a car with a load per trip, km;

k_i^{ps} = 5.95t – the average carrying capacity of the car, t;

V_m = 60 km/h – the average technical speed of the car, km/h;

γ_{cm} = 0.657 – the average value of the mileage utilization factor;

γ_{aver} = 0.957 average value of the coefficient of static use carrying capacity;

K_i^{ch} = 35, kps = 12.5 – coefficients that take into account price indexation.

The cost of transportation for the truck will be:

$$S_m = \frac{1804}{5{,}95 \cdot 0{,}957 \cdot 0{,}657} \cdot (35 \cdot 35 + \frac{12{,}5 \cdot 190}{60}) + \frac{12{,}5 \cdot 190 \cdot 0{,}5}{5{,}95} = 610169\ hrn/t$$

According to formula 3.11, the amount of costs for the transportation of goods by road transport was calculated.

$$Total\ amount = 738830{,}25 + 610169 = 1348999{,}25\ hrn/t$$

According to formula 3.13, the total amount of costs for the delivery of 1 ton of goods from Mykolaiv to Great Britain was calculated.

This information can be useful for logistics companies and businesses that need to transport goods from Mykolaiv to Great Britain, as it provides insight into the costs associated with different transportation options and cargo weights.

This information can be useful for logistics companies and businesses that need to transport goods from Mykolaiv to Great Britain, as it provides insight into the costs associated with different transportation options and cargo weights.

It was considered the direct car delivery option and air transport from Germany to Great Britain.

Table 3.15 - Dependencies of the transportation of cargo and the cost

Cargo weight (kg)	Cargo weight (t)	Transportation cost (UAH)
1	0,001	738,83
5	0,005	3694,15
10	0,01	7388,30
50	0,05	36941,50
100	0,1	73883
500	0,5	369415
1000	1	738830
5000	5	3694150
10000	10	7388300

Source: developed by author according to[27,31]

According to Table 3.15, a Fig. 3.6 of the dependence of cargo transportation on cost was drawn.

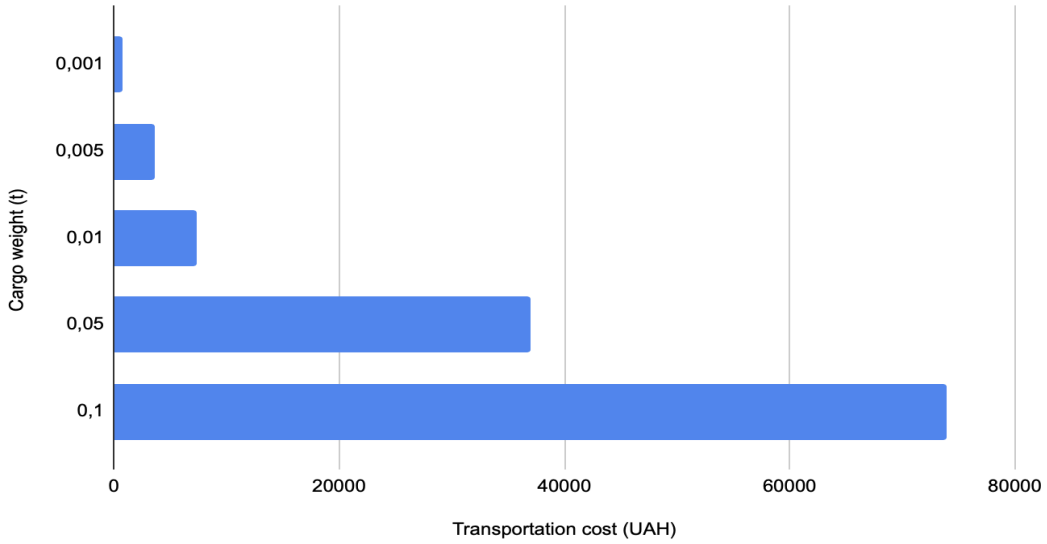

Figure 3.6 - Dependencies of the of cargo(to 1 ton) and the cost

Source: developed by author according to[27,31]

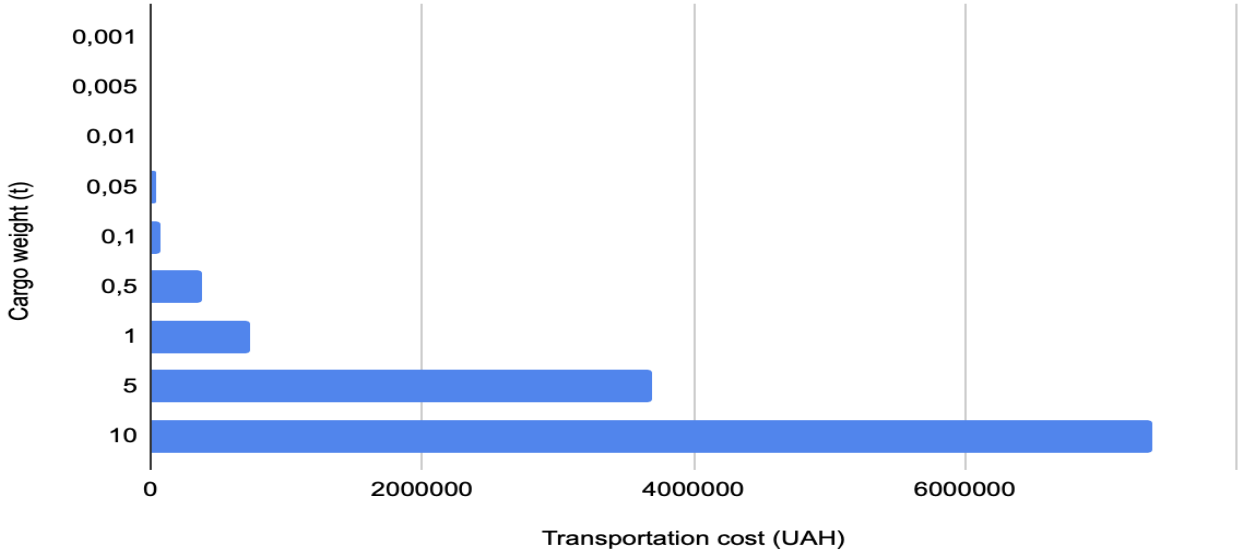

Figure 3.7 - Dependencies of the transportation of cargo(tonnes) and the cost

Source: developed by author according to [27,31]

Figures 3.6 and 3.7 show the amount of goods for a certain number of kilograms and tons. But we can see that the most expensive transportation is a product weighing 10 tons.

In conclusion, this study aimed to evaluate the efficiency of transportation options for delivering goods from Mykolaiv to Great Britain. It was considered the direct car delivery option and air transport from Germany to Great Britain. The total annual operating costs were determined to be 1348999,25 hrn/t. The air transport cost from Germany to Great Britain was calculated based on the DHL company's tariff rates, and the total cost of transportation for 1 ton of goods was found to be 738830.25 UAH/t. By truck transportation, the amount will be 610169 hrn/t. The cost of transportation for a simple cycle was calculated to be 105.9 UAH/t. The results of the study are presented in Table 3.6, which shows the dependencies of cargo transportation on cost. The table demonstrates that the transportation cost increases with the weight of the cargo. The graph of the dependence of cargo transportation on cost is presented in Figures 3.6 and 3.7, which illustrate the relationship between the weight of the cargo and the transportation cost. The study's findings suggest that the most expensive transportation is for a product weighing 10 tons.

Chapter 1 summary

Last-mile logistics has become a major challenge for e-commerce companies, with factors like delivery speed, tracking accuracy, guarantees, convenience, and cost playing crucial roles. Around 67% of online stores face the «last mile» problem.

In project part was proposed a new supply chain involving an additional company (DHL) to address the issue of timely delivery. DHL's mobile app and push notifications help customers track parcels throughout the delivery process, improving customer loyalty. It was compared various courier delivery services like DHL, Nova Poshta, and Ukrposhta, concluding that DHL is the best option based on factors like tariffs, delivery time, service quality, cargo tracking, and financial stability. For transporting goods from Ukraine to Europe, food products (42.9%) are the most exported items, with Germany being the top destination country. A detailed analysis is provided for calculating the cost of transporting goods by road and air, including formulas for operating costs, capital investments, and reduced costs. The cost of air transportation by DHL from Germany to Great Britain for 1 tonne of cargo is estimated to be 738,830.25 UAH. The project part presented a new supply chain involving DHL for air transportation of goods from Germany to different parts of the world, highlighting the cost efficiency of using air transport for the «last mile» delivery. In summary, it emphasized the importance of efficient last-mile logistics, proposed a solution using DHL for air transportation, and provided a detailed cost analysis to justify the proposed supply chain involving air transport.

CONCLUSIONS AND RECOMMENDATIONS

The qualification work is devoted to the improvement of the supply chain based on the company "Jit Trans".

The theoretical part of the qualification work is devoted to issues of improving the system of door-to-door delivery of goods. The conducted research allows us to draw the following conclusions.

A modern trend in the development of the management of logistics processes at enterprises in Western European countries is the formation of a pan-European system of goods movement, which involves the presence of several supporting logistics centers, as well as regional logistics and distribution centers that interact with each other. This will allow to regulate and accelerate the movement of material flows and ensure its continuity. A promising direction for achieving the efficiency of logistics process management, in particular logistics management of stocks, is the connection of the concept of logistics management of stocks and the process approach. Logistics inventory management should be aimed at achieving high economic efficiency of inventory logistics, which involves finding a compromise between reducing costs associated with inventory, meeting the needs of consumers of goods and ensuring the needs of the enterprise's functioning process. The management system of logistics processes at the enterprise is designed to provide the desired level of service with minimal total costs. At the same time, management implements specific target settings of enterprises. Such installations can be, for example, ensuring the delivery of products at the required time with the lowest costs or maintaining the required level of service. Management in this case is largely aimed at coordinating the activities of all units involved in the purchase and sale of products.

Transportation is crucial in the logistics process, as it allows you to quickly deliver goods to the right place and at the right time. In a global logistics strategy, transportation is critical to both inbound and outbound flows. Transportation logistics is an integral part of logistics management, which includes tasks such as truck

selection, transportation optimization, route determination, technical regulation, coordination of production and distribution operations, and financial stability.

Road transport is the main way of delivering goods to wholesale suppliers and retail outlets over short distances. Many types of transport routes, including direct and combined, are used for the transportation of various types of cargo. In transport management, efficiency, reliability and reliability are important concepts. Productivity is subjective and determined by individual preferences and opinions. Quality is evaluated from the user's point of view, and reliability is an objective characteristic determined by the probability of failure-free operation.

To evaluate the efficiency of transportation, such indicators as revenue, delivery costs, transportation costs in revenue and logistics costs per unit of weight are used. These variables help determine the efficiency and profitability of transportation companies. A well-organized transportation system is critical to meeting the needs of public production, ensuring security, and facilitating international trade. It should offer a full range of logistics services, such as storage and preparation of products for transportation.

In connection with the state of war in the country, the public space of Ukraine is closed, therefore the delivery of goods by air from Ukraine to other countries is impossible.

The company «JIT Trans» has achieved great success as one of the world's largest manufacturers of ventilation equipment, which is explained by a diversified product line, compliance with global quality standards, as well as an emphasis on energy efficiency, reliability and safety. The company's achievements include aspects such as a global presence in more than 70 cities, a commitment to technological progress, extensive experience in the development and production of air conditioners, the use of Internet marketing for brand recognition, and dedication to customers. service through service centers and distributors. The analysis of the transport logistics of the Jit Trans company revealed a significant reserve for improvement, namely the creation of a new supply chain using the additional company DHL.

After conducting a detailed analysis of the company and its competitors, we can conclude that DHL will be one of the best carriers in the supply chain. This company has its own transport such as: trucks, planes, trains. It is precisely because of the large number of its own vehicles that the company does not spend money on renting additional vehicles for transportation. Also, the company has optimal prices for the use of any client.

Creating a new supply chain will improve the transportation situation and avoid late delivery situations. This gives the organization more authority over transport operations, reduces dependence on third-party suppliers and improves responsiveness to changing market needs. A short payback period of 4 months, taking into account discounting and the increase in annual income from each batch under the new supply chain.

Currently, in the logistics market, there is a problem of untimely delivery of goods, which leads to a decrease in the number of users on the market. The «JIT Trans» company also faced such a problem, to solve this issue, a new supply chain was proposed using the DHL company to other countries, which will contribute to improving the situation of untimely delivery.

Estimated savings are UAH 10,451.18 thousand, which is 76% of Jit Trans's delivery costs. Net financial result – UAH 8,711 thousand, capital investment – UAH 2,744.16 thousand.

The creation of the new supply chain is expected to lead to a 2.4% increase in operating income and a 3.7% increase in net income based on implementation costs.

Constant monitoring of the market, identification of additional opportunities to use the new supply chain developed for the Jit Trans company, will contribute to increasing its efficiency, maintaining an advantage in the industry.

The practical implementation of the proposed measures will help the enterprise to organize a better implementation of logistics processes and their management, to improve the functioning of the enterprise and to achieve higher indicators of economic efficiency from the implementation of economic activities.

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APPENDIX A

Balance Sheet (Financial Statement) as of 31.12.2023

Актив	Код рядка	На початок звітного періоду	На кінець звітного періоду	На дату переходу на міжнародні стандарти фінансової звітності
1	2	3	4	5
I. Необоротні активи				
Нематеріальні активи:	1000	0	0	0
первісна вартість	1001	142	142	0
накопичена амортизація	1002	-142	-142	0
Незавершені капітальні інвестиції	1005	0	0	0
Основні засоби:	1010	24140	17083	0
первісна вартість	1011	86063	82010	0
знос	1012	-61923	-64927	0
Інвестиційна нерухомість:	1015	0	0	0
первісна вартість	1016	0	0	0
знос	1017	0	0	0
Довгострокові біологічні активи:	1020	0	0	0
первісна вартість	1021	0	0	0
накопичена амортизація	1022	0	0	0
Довгострокові фінансові інвестиції: які обліковуються за методом участі в капіталі інших підприємств	1030	0	0	0
інші фінансові інвестиції	1035	0	0	0
Довгострокова дебіторська заборгованість	1040	0	0	0
Відстрочені податкові активи	1045	2246	2246	0
Гудвіл	1050	0	0	0
Відстрочені аквізиційні витрати	1060	0	0	0
Залишок коштів у централізованих страхових резервних фондах	1065	0	0	0
Інші необоротні активи	1090	0	0	0
Усього за розділом I	1095	26386	19329	0
II. Оборотні активи				
Запаси	1100	2310	2764	0
Виробничі запаси	1101	1861	2217	0
Незавершене виробництво	1102	65	70	0
Готова продукція	1103	0	0	0
Товари	1104	384	477	0
Поточні біологічні активи	1110	0	0	0
Депозити перестрахування	1115	0	0	0
Векселі одержані	1120	0	0	0
Дебіторська заборгованість за продукцію, товари, роботи, послуги	1125	9420	11602	0
Дебіторська заборгованість за розрахунками: за виданими авансами	1130	0	0	0
з бюджетом	1135	2434	2325	0
у тому числі з податку на прибуток	1136	524	428	0
з нарахованих доходів	1140	0	0	0
із внутрішніх розрахунків	1145	0	0	0
Інша поточна дебіторська заборгованість	1155	830	1719	0
Поточні фінансові інвестиції	1160	0	0	0
Гроші та їх еквіваленти	1165	1907	987	0
Готівка	1166	2	1	0
Рахунки в банках	1167	1905	986	0

Figure A.1 - Balance Sheet (Financial Status Report)