

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

APPROVED
Head of the Department

Grygorak M.Yu.
(signature, surname and name)
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BACHELOR THESIS

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OF GRADUATE OF ACADEMIC DEGREE
«BACHELOR»

THEME: «Organization of freight transportation by a logistics company»

Speciality 073 «Management»

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Done by Ilya I. Kitsio
(surname and name) (signature, date)

Supervisor Semeriahina M.M.
(surname and name) (signature, date)

Standards Inspector Kaban N.D.
(surname and name) (signature, date)

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МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
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(шифр і назва)
освітньо-професійна програма «Логістика»
(шифр і назва)

Виконавець: Кіціо Ілля Ігорович
(прізвище, ім'я та по батькові) (підпис, дата)

Науковий керівник: Семерягіна М.М.
(прізвище та ініціали) (підпис, дата)

Нормоконтролер: Кабан Н.Д.
(прізвище та ініціали) (підпис, дата)

Київ 2020

NATIONAL AVIATION UNIVERSITY
Faculty of Transport, Management and Logistics
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Academic degree Bachelor

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(signature, surname and name)
«05» June 2020

TASK

FOR COMPLETION THE BACHELOR THESIS OF STUDENT

Ilya I. Kitsio
(surname and name)

1. Theme of the master thesis: «Organization of freight transportation by a logistics company» was approved by the Rector Directive №553/CT. of May 04, 2020.
2. Term performance of thesis: from May 25, 2020 to June 21, 2020.
3. Date of submission work to graduation department: June 05, 2020.
4. Initial data required for writing the thesis: general and statistical information about US road transport market, information of the company «Continental Logistics», production and financial indicators of the company «Continental Logistics», literary sources on logistics and freight transportation, Internet source.
5. Content of the explanatory notes: introduction, the essence of freight transportation and logistics; process of organization of freight transportation; approaches to optimization of freight transportation; common characteristics of the «Continental Logistics» company; analysis the activity of the company «Continental Logistics»; SWOT-analysis of the company's activity; identification of main directions for improving the organization of freight transportation; recommendations for «Continental Logistics» company; calculation of the economic effect of the proposed measures; conclusions.
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 | 25.05.20-27.05.20 | Done |
| 2. | Collection of statistical data, timing, detection of weaknesses, preparation of the first version of the analytical chapter | 28.05.20-29.05.20 | Done |
| 3. | Development of project proposals and their organizational and economic substantiation, preparation of the first version of the project chapter and conclusions | 30.05.20-01.06.20 | Done |
| 4. | Editing the first versions and preparing the final version of the master thesis, checking by standards inspector | 02.06.20-03.06.20 | Done |
| 5. | Approval for a work with supervisor, getting of the report of the supervisor, getting internal and external reviews, transcript of academic record | 04.06.20 | Done |
| 6. | Submission work to Logistics Department | 05.06.20 | Done |

Student _____
(signature)

Supervisor of the master thesis _____
(signature)

8. Consultants of difference chapters of work:

| Chapter | Consultant (position, surname and name) | Date, signature | |
|-----------|--|--------------------|-----------------------|
| | | The task was given | The task was accepted |
| Chapter 1 | Senior Lecturer, Semeriahina M.M. | 25.05.20 | 25.05.20 |
| Chapter 2 | Senior Lecturer, Semeriahina M.M. | 28.05.20 | 28.05.20 |
| Chapter 3 | Senior Lecturer, Semeriahina M.M. | 30.05.20 | 30.05.20 |

9. Given date of the task May 25, 2020.

Supervisor of the master thesis: _____
(signature of supervisor)

Semeriahina M.M.
(surname and name)

Task accepted for completion: _____
(signature of graduate)

Kitsio I.I.
(surname and name)

ABSTRACT

The explanatory notes to the bachelor thesis «Organization of freight transportation by a logistics company» comprises of 72 pages, 27 figures, 9 tables, 51 references.

KEY WORDS: LOGISTICS COMPANY, TRANSPORT COMPANY, FREIGHT TRANSPORTATION, IT TECHNOLOGY, ELECTRIC CARS, OPTIMIZATION

The purpose of the research is to study theoretical approaches, as well as to develop practical recommendations for improving the organization of freight transportation by a logistics company.

The object of the research is the process of organization of freight transportation by «Continental Logistics» company.

The subject of the research is using the electric cars for organization of freight transportation by «Continental Logistics» company.

Methods of research are scientific inquiry, empirical, analysis and synthesis, modeling, expert assessments, extrapolation of time series.

Materials of the thesis are recommended for use during scientific research, in the educational process and in the practical work of specialists of logistics departments.

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NOTATION

| | |
|--------|---|
| ACEA | – Association of European Automobile Manufacturers; |
| B2B | – Business to Business; |
| BEV | – Battery Electric Vehicle; |
| BNEF | – Bloomberg New Energy Finance; |
| CIS | – Commonwealth of Independent States; |
| FREVUE | – Freight Electric Vehicles in Urban Europe; |
| FTL | – Full-truckload; |
| HEV | – Hybrids Electric Vehicles; |
| IT | – Information Technology; |
| KPI | – Key Performance Indicators; |
| LCV | – Light Electric Vehicles; |
| LEFV | – Light Electric Freight Vehicles; |
| LTL | – Less-than-truckload; |
| NPV | – Net present value; |
| PHEV | – Plug in Hybrid Electric Vehicle; |
| PL | – Party Logistics Provider. |

INTRODUCTION

According to Wikipedia [30], transportation is defined as the movement of people, animals and goods from one location to another. Modes of transport include air, rail, road, water, cable, pipeline and space. The field can be divided into infrastructure, vehicles and operations. Transportation is important since it enables trade between people, which in turn establishes civilizations. I find it an interesting point that transportation is an enabler of civilization, but this makes sense, as it enables the ability to trade and communicate.

The Council of Supply Chain Management Professionals defines logistics as the process of planning, implementing, and controlling procedures for the efficient and effective transportation and storage of goods including services, and related information from the point of origin to the point of consumption for the purpose of conforming to customer requirements [32]. This definition includes inbound freight management, outbound, internal, and external movements.

Transportation is the driver of logistics, but logistics is the race car driver in the seat of transportation. In fact, it's easy to see from that sentence alone, the pure difference. Logistics requires planning, transportation is just the mode to execute the planning, when getting freight from point A to point B. Clearly, they are not the same thing, but transportation is just simply a part of logistics.

When it comes to logistics, logistics executives must make further decisions beyond the mode of transportation to include:

- packaging;
- containerization;
- documentation;
- insurance;
- storage;
- importing and exporting regulations;
- freight claims management;

- choosing the correct LTL freight class LTL freight class for your shipment;
- working & collaborating with other executives within the supply chain;
- managing vendors and partners;
- responsible for mitigating risk and mitigating expenditures.

Transport is an important component of the economy: many European companies are world leaders in infrastructure, logistics, transport equipment and transportation management systems. However, today, vehicles generate about a quarter of total greenhouse gas emissions and are their largest source. That is why today the production and use of so-called "green transport" – any type of transport with low negative impact on the environment – is actively developing.

In practice, transport should use less energy, which should be cleaner, better exploit modern infrastructure and reduce its negative impact on the environment and key natural objects such as water, land and ecosystems. Based on this, the transition to electric cars is becoming widespread, as evidenced by the growth of sales of hybrid cars and electric cars in the world.

All this determines the relevance of the chosen topic of the research.

The purpose of the research is to study theoretical approaches, as well as to develop practical recommendations for improving the organization of freight transportation by a logistics company.

The object of the research is the process of organization of freight transportation by «Continental Logistics» company.

The subject of the research is using the electric cars for organization of freight transportation by «Continental Logistics» company.

To achieve this purpose, the following tasks were set:

- identify the essence of freight transportation and logistics;
- consider the process of organization of freight transportation;
- consider approaches to optimization of freight transportation;
- analyze the main indicators of «Continental Logistics» company's activity;
- made SWOT-analysis of the company's activity;

- identify the main directions for improving the organization of freight transportation;
- develop recommendations for improving company's organization of freight transportation;
- calculate the economic effect of the proposed measures.

In the process of writing the thesis was used materials of internal reporting of the enterprise, data from statistical directories and materials of practicing specialists in the field of logistics and management, published in periodicals, monographs, textbooks and electronic sources.

CHAPTER 1

THEORETICAL PRINCIPLES OF ORGANIZATION OF FREIGHT TRANSPORTATION

1.1 The essence of freight transportation and logistics

Freight transportation is the physical process of transporting commodities and merchandise goods and cargo. The term shipping originally referred to transport by sea but in American English, it has been extended to refer to transport by land or air (international English: "carriage") as well [30].

The operation of transportation determines the efficiency of moving products. The progress in techniques and management principles improves the moving load, delivery speed, service quality, operation costs, the usage of facilities and energy saving. Transportation takes a crucial part in the logistics operation. Therefore, transportation is the base of efficiency and economy in business logistics and expands other functions of logistics system [14].

The Council of Supply Chain Management Professionals defines logistics as the process of planning, implementing, and controlling procedures for the efficient and effective transportation and storage of goods including services, and related information from the point of origin to the point of consumption for the purpose of conforming to customer requirements [32].

Managers traditionally have viewed logistics as a mandatory cost bucket. But top-performing companies now recognize that mastering supply chain and logistics can be more than that: It can be the source of competitive advantage.

This strategic shift opens up significant growth opportunities for logistics providers, with winners using different paths and business models to foster growth. The major challenges for providers are aligning corporate strategy with the right organizational model and matching that strategy to targeted customer segments – by

size, footprint, vertical category and market. Leading logistics providers excel at understanding key customers’ needs and purchasing behaviors—and they know that understanding is a key ingredient to building a solid strategy and defining the most efficient commercial approach and offerings.

Many companies now outsource all or part of their supply chain to logistics specialists when it’s not a core business. For logistics providers, the value proposition rests on three key pillars: optimizing logistics costs for customers, shortening the length of the order completion cycle and reducing the number of fixed assets.

Outsourced logistics activities commonly fall into three types of services: contract logistics, freight forwarding and transportation. These businesses are deeply interconnected, with some overlap (fig. 1.1). For example, freight forwarding operations frequently involve activities associated with contract logistics services that are performed when goods are collected and received, such as cross-docking and warehousing. Similarly, contract logistics providers often are responsible for local distribution and derived truck transportation.

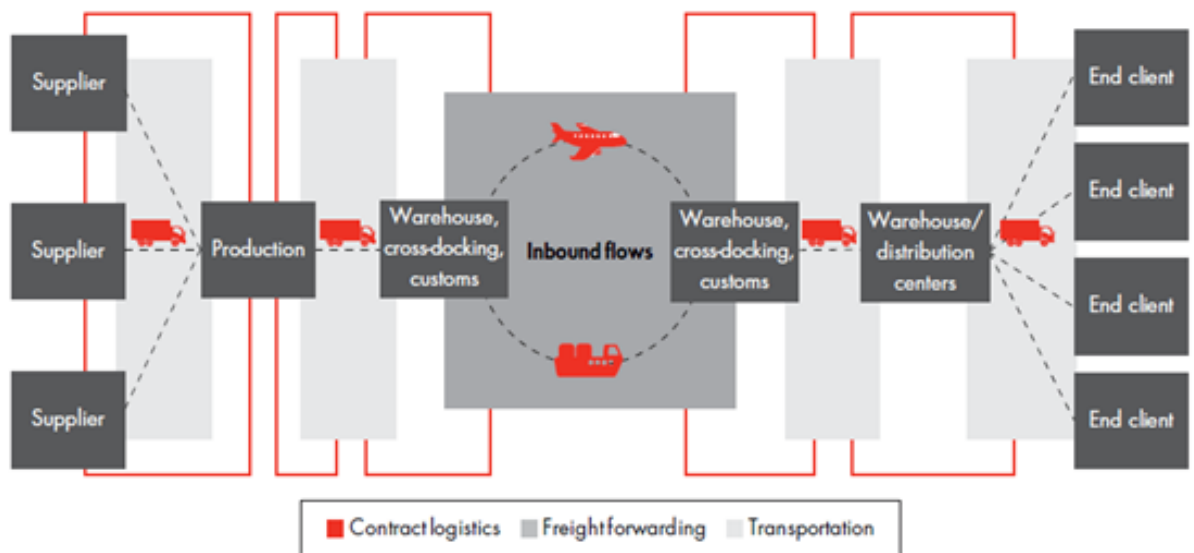


Figure 1.1 – Customer’s supply chain and logistics segments [2]

When deciding on the right supply chain strategy for company, choosing the most effective logistics service is important. Here are the most prominent logistic strategies used in the market today (fig. 1.2).

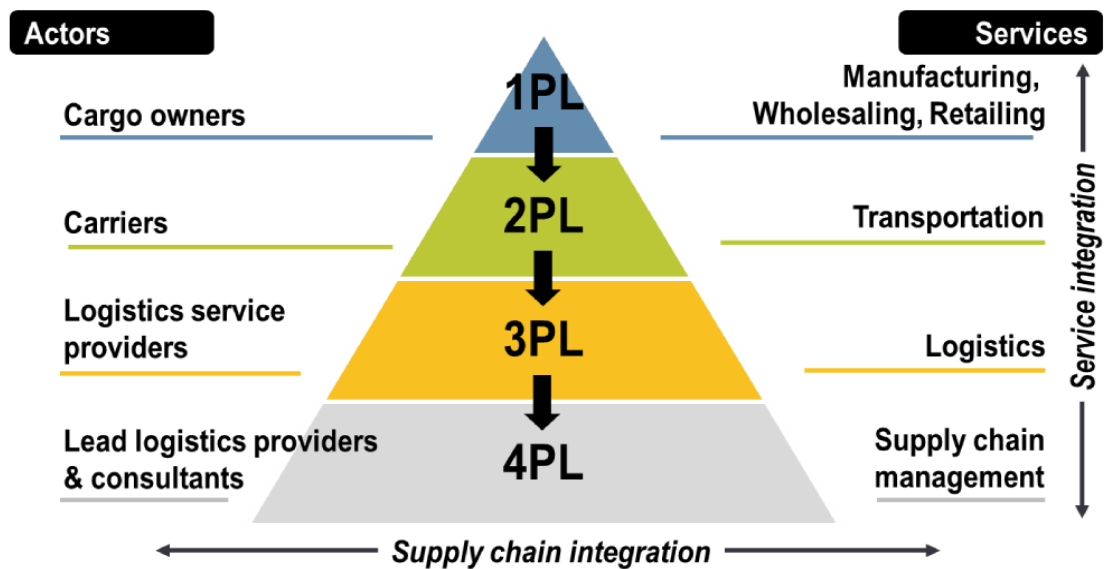


Figure 1.2 – Types of logistics providers [22]

1PL: First Party Logistics [28].

First Party Logistics accounts for the two parties benefiting from the transaction – the manufacturer or supplier shipping the goods, and the receiver.

A First Party Logistics provider is specifically the consigner of goods, the transaction party that has organized transport to the receivers chosen destination.

2PL: Second Party Logistics.

Second Party Logistics involves specifically the carriers of goods for the transaction, which can be rail, road, sea and/or air.

Second Party Logistics providers specialise in the transport area of the supply chain, getting goods from one point to another. They can be an asset-based carrier and own the means of transportation, for example shipping lines which charter or lease their own ships, or airlines that are contracted to use their passenger flights to transport air freight from origin A to destination B.

3PL: Third Party Logistics.

Third Party Logistics still primarily concerns goods transportation from a supplier/consigner to a buyer/consignee, but includes additional services involved in the supply chain. These services can include warehousing, terminal operations, customs brokerage, supply chain management, Logistics IT software products and analysis services and track and trace.

A Third Party Logistics provider supplies all these services and manages the obligations of each party from goods departure to destination. For example, a company is a 3PL service provider specializing in domestic and offshore warehousing, international freight forwarding and customs brokerage, but also provides e-fulfilment, specialized export services and other supply chain management services for your business.

4PL: Fourth Party Logistics.

Fourth Party Logistics is essentially employing an overseer for a company's entire supply chain. A 4PL can also manage 3PLs. Sometimes this provider is called the Lead Logistics Provider and many supply chain consulting companies are considered 4PLs. In many cases, a 4PL may have an integrated electronic interface system that address the requirements of all logistic sections and allow measurement of established KPIs.

Fourth Party Logistics providers act as the head administrator for all aspects in the supply chain of a company. They manage any other contracted 3PLs and provide neutral management, feedback to the company about the state of their supply chain, recommendations and solutions to increase efficiency. In saying this, a larger 3PL can also become a company's overarching 4PL or display the same characteristics as a 4PL player.

5PL: Fifth Party Logistics.

Much the same as 4PL, 5PL is a new term circulating within the supply chain industry. A 5PL will plan, organize and implement logistics solutions on behalf of the contracting company with a focus on utilizing the most appropriate technologies. Essentially, a 5PL manages networks of supply chains with an extensive e-business focus across all logistic operations, other than 3PLs and the parent company.

These different types of outsourced providers can be confusing. Determining the right type of logistics provider will often depend on business structure and strategy where ideally select a professional provider that has extensive experience and a credible customer portfolio.

1.2 The process of organization of freight transportation

Organization of transportation is a very responsible process, in which every little thing needs to be taken into account. Indeed, not only the security and safety of the transported goods depends on this, but also the observance of the terms of the order. In general, the stages of the organization of cargo transportation include [47]:

- preparation for loading and transportation;
- vehicle selection;
- determination of the need to use additional mechanisms for loading / unloading;
- development of a route;
- development of a cargo safety plan.

From the transport company point of view, the organization of freight transportation consists of the following stages:

1. Consultations of specialists. The first stage of the organization of freight transportation is the choice of a vehicle in accordance with the type of cargo, its volume and weight. Also, our experts will calculate the transportation of goods and answer all questions of interest – documentation, route and travel time, freight forwarding and organization of cargo transportation in general.

2. Drawing up a contract for the organization of freight transportation. At this stage of cooperation, we draw up a contract, which indicates the list of services of our company, the timing of their implementation and the cost of work. The contract for the organization of freight transportation is a guarantee of the quality of the services provided, the safety of the cargo and meeting deadlines.

3. Preparation of the necessary documentation. This is one of the most important stages of the organization of freight transportation, especially when transporting bulky and heavy cargo. Our specialists, by an additional agreement, exercise control over the correct execution of the documents necessary for the transportation of goods both at the loading stage and, more importantly, at the unloading stage.

4. Shipping to destination. At this stage, the organization of freight transportation includes loading the goods, transporting them to the destination and unloading. It is possible to carry out loading and unloading operations through our special equipment, however, this requires additional coordination.

5. Reporting. The final stage of the organization of freight transportation is the provision of reports on the work done, confirming compliance with the delivery time specified in the contract and the safety of the cargo.

A transaction between a supplier and a customer involves the transfer of inventory from one location to another. For a simple transaction, this can take the form of a single truckload. However, a logistical perspective on this transaction reveals a complex series of tasks and processes (fig. 1.3).

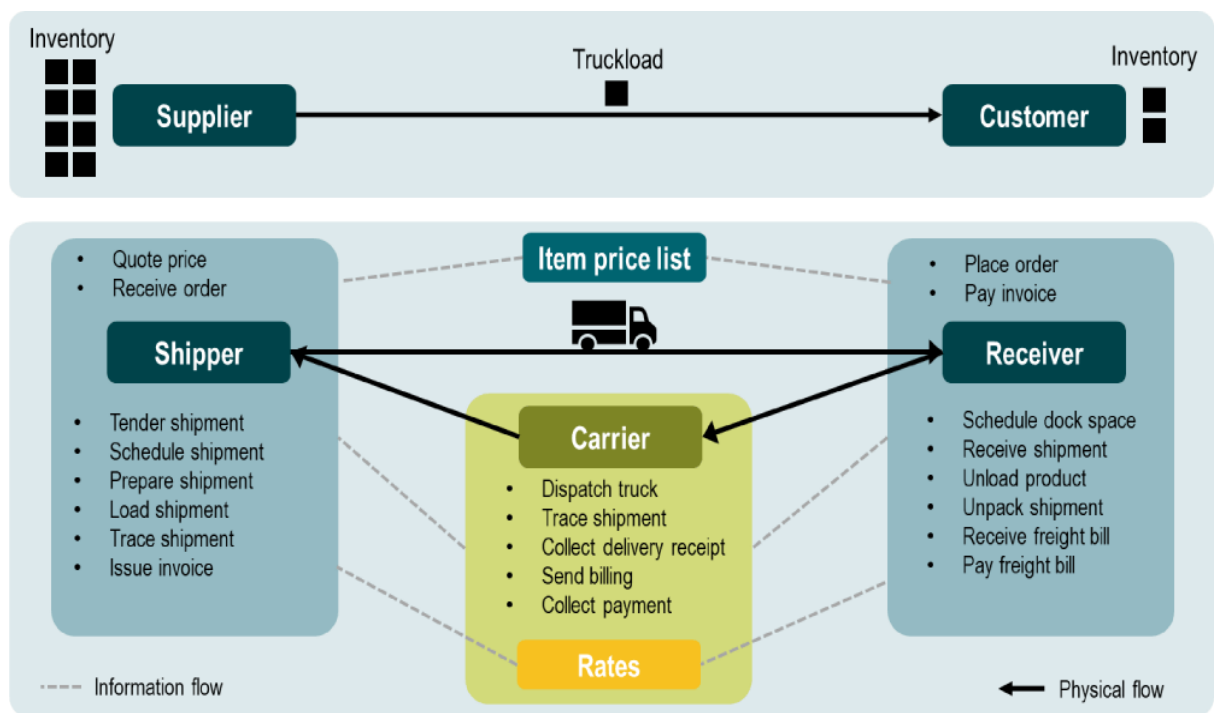


Figure 1.3 – The process of organization of freight transportation [22]

Suppliers usually maintain an item price list for their customers where they can quote a price. A customer can then issue an order, which is acknowledged. At this point, the supplier becomes the shipper while the customer becomes the receiver of the order. If the shipper does not offer own account transportation, the service can be tendered to a carrier at a negotiated rate.

Once a shipment has been tendered and scheduled, it needs to be prepared into a suitable load unit for the conveyance, such as pallets. The carrier will then dispatch a vehicle from its fleet to the shipper's location, so that the shipment can be loaded. The carrier, shipper and receiver will trace the shipment since it is related to the timing of loading (shipper), transport (carrier) and unloading (receiver) assets.

The receiver, expecting the arrival of the carrier, will schedule dock space accordingly, then receive the shipment, unload the items from the vehicle. By collecting the delivery receipt, the carrier then considers its part of the contract fulfilled, allowing it to issue a bill for the service. The receiver can pay the carrier's freight bill and the shipper's invoice.

Road transportation typically is structured around three main segments, based on load type and weight (fig. 1.4):

- full-truckload (FTL) transportation: a single customer for a full truck;
- part-load or less-than-truckload (LTL): several customers with loads weighing more than one to two tons each;
- groupage and express: parcels destined for multiple customers, weighing between 30 to 50 kilograms and one to two tons.

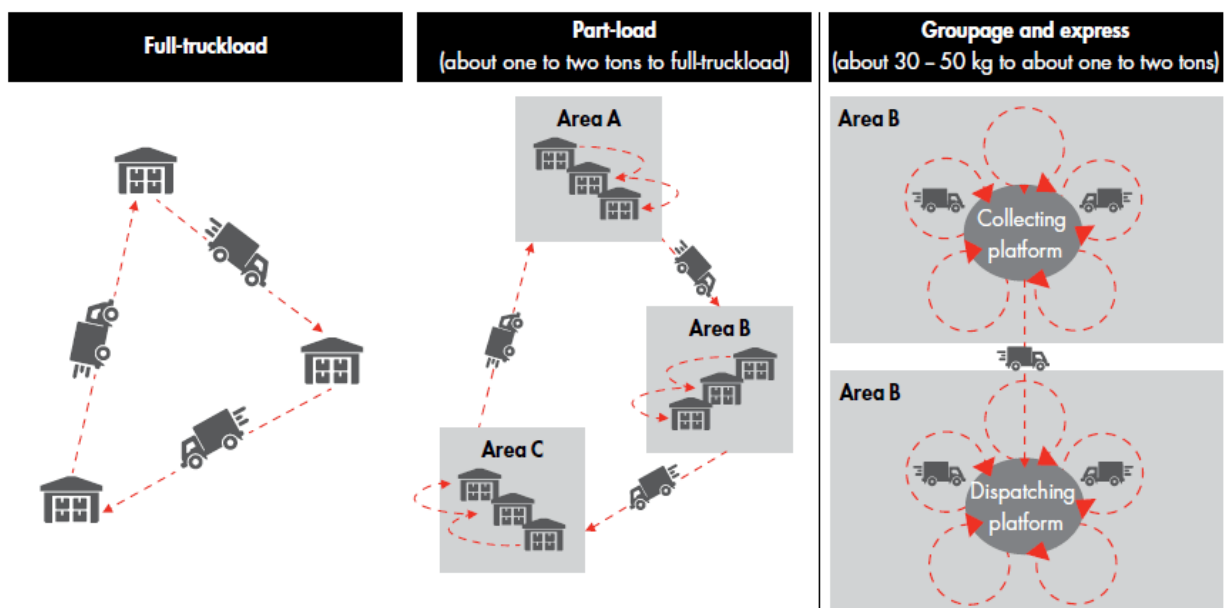


Figure 1.4 – Main segments of transportation, based on load type and weight [2]

While the transportation options are similar, distinct models have emerged to serve different customer segments.

In the FTL and LTL businesses, products are carried between two points. Since customers are only paying for one-way transportation, carrier companies' success in creating value depends on their ability to fill the truck on its return trip. The main challenge then for FTL and LTL carriers is to develop strong customer portfolios on specific routes and plan itineraries to maximize each load [2].

The groupage business is a service that consolidates several small shipments to create a full load. The model employs a network of depots, where parcels are collected and distributed for multiple customers. One of the most efficient forms of groupage is the hub-and-spoke network. Individual shipments are hauled from regional warehouses to a central shipping hub, where parcels are sorted and bundled. A local operation oversees delivery to the end customer. Prices exceed those of the FTL business, based on load, distance and delivery time.

The FTL business is highly local and fragmented –the result of low barriers to entry. The groupage business requires critical mass to develop a vast network of warehouses capable of serving a large national customer base. As a result, the market is dominated by a few national leaders that often are part of global logistics groups.

1.3 Approaches to optimization of freight transportation

The freight transport service procurement process involves all activities required for acquiring freight services from an external source, such as planning, purchasing, logistics, receipt and payment, monitoring and reporting, as well as inventory management. The correct management of the procurement process is crucial because it helps the organization to save money, run effective delivery times and get qualified freight suppliers. There are six key activities involved in the freight transport service procurement process (fig. 1.5).

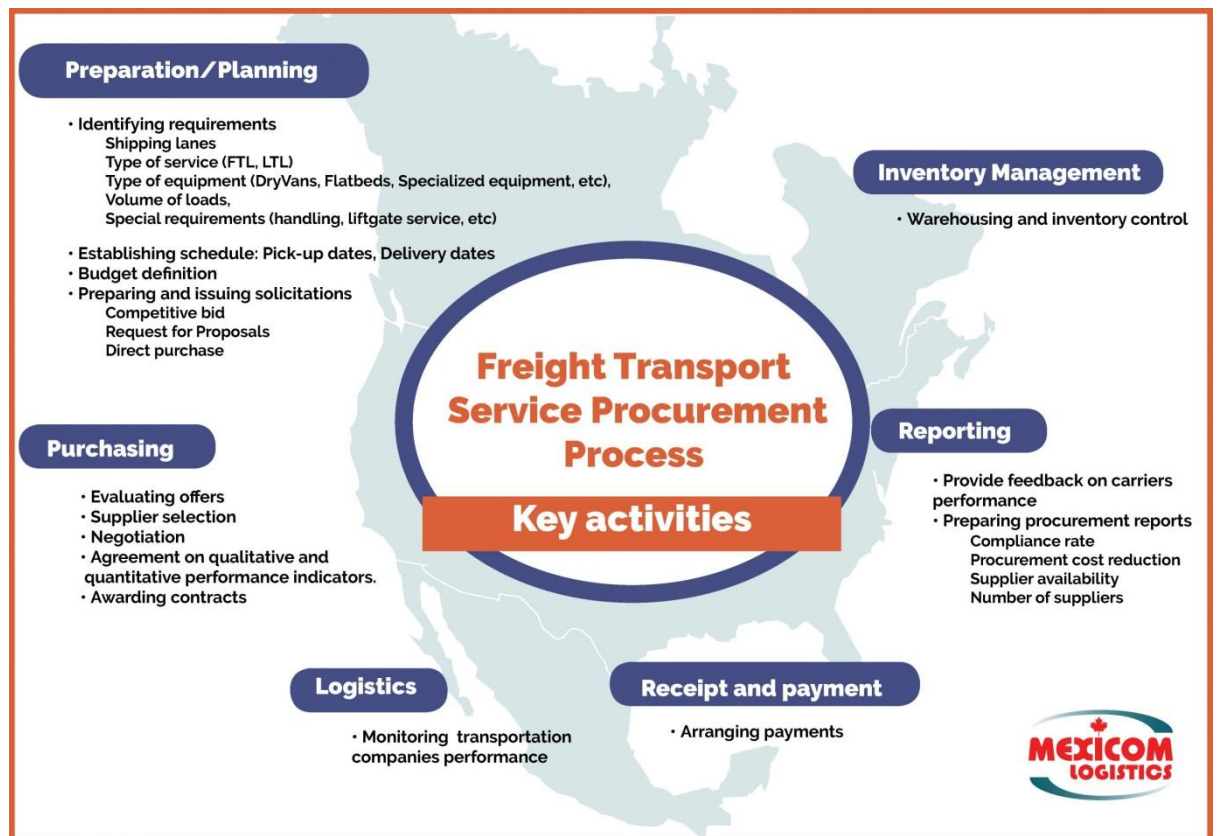


Figure 1.5 – Key activities involved in the freight transport service procurement process [24]

1. Preparation/planning.

1.1. Identifying requirements:

- shipping lanes;
- type of service (FTL, LTL);
- type of equipment (DryVans, Flatbeds, Specialized equipment, etc);
- volume of loads;
- special requirements (handling, liftgate service, etc).

1.2. Establishing schedule: Pick-up dates, Delivery dates.

1.3. Budget definition.

1.4. Preparing and issuing solicitations:

- competitive bid;
- request for proposals;
- direct purchase.

2. Purchasing:

- evaluating offers;
- supplier selection;
- negotiation.
- agreement on qualitative and quantitative performance indicators.
- awarding contracts.

3. Logistics:

- monitoring transportation companies performance.

4. Receipt and payment:

- arranging payments.

5. Reporting:

5.1. Provide feedback on carriers performance.

5.2. Preparing procurement reports:

- compliance rate;
- procurement cost reduction;
- supplier availability;
- number of suppliers.

6. Inventory management:

- warehousing and inventory control.

Principles of effective transportation (fig. 1.6):

1. Cost of transportation decrease with increasing loads of transportation. Also transportation vehicles having larger holding capacity cost less than those with smaller.

2) Principles of transportation distance: unit cost of transportation decreases with increasing distance in transportation.

The two principles state that transportation management decisions should aim to maximize size of load & distance of shipment in order to obtain cost benefits, taking care of customers' requirements & satisfaction.

As the range of production expanded, transport systems adapted to the new operational realities of local, regional and international freight distribution.

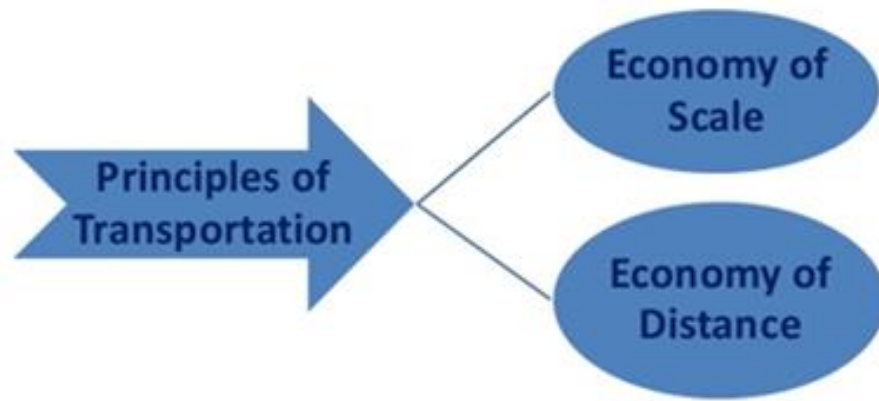


Figure 1.6 – Principles of effective transportation [11]

Freight transportation offers a whole spectrum of services catering to cost, time and reliability priorities and has consequently taken an increasingly important role within value chains. Improvements in freight transportation are associated with more efficient value chains. Among the most important improvements [21]:

- improvements in transport efficiency incited an expanded territorial range to value chains, which has expanded the range of procurement and market options;
- the development of information technologies, enabling corporations to establish a better level of control over their value chains. The coordination of flows within value chains has improved, particularly their reliability and timeliness;
- technical improvements, notably for intermodal transportation, enabled more efficient connectivity between different transport modes, especially land / maritime connectivity, and thus within value chains.

The outcomes have been an improved velocity of freight, a decrease of the friction of distance and a spatial division of production. This process is strongly embedded with the capacity and efficiency of international and regional transportation systems. The production stages of a good occur at multiple locations in a complex web of relations and flows along supply chains.

The velocity of freight is more than simply the speed at which it moves along modes; the shipment speed. It also includes the transshipment speed, which concerns the effectiveness of intermodal operations. Many transportation modes, particularly maritime and rail have not shown any significant speed improvements in recent

decades. This is an indication that a technical speed barrier may have been reached and that intermodal operations have become one of the most important elements behind the increased velocity of freight. Containerization has been the fundamental factor behind such a radical change, as prior to containerization the shipment speed may have been adequate, but acute delays linked with inefficient transshipment prevented any forms of effective operational time management of freight distribution.

With containerization, the velocity of freight has reached a level (logistical threshold) where time based management of distribution becomes practical, such as just-in-time and inventory in transit strategies. This velocity must also be accompanied with a level of reliability in terms of schedule integrity. This enables a move from push (supply based) to pull (demand based) logistics where most of the inventory can be kept in circulation, minimizing warehousing (fig. 1.7).

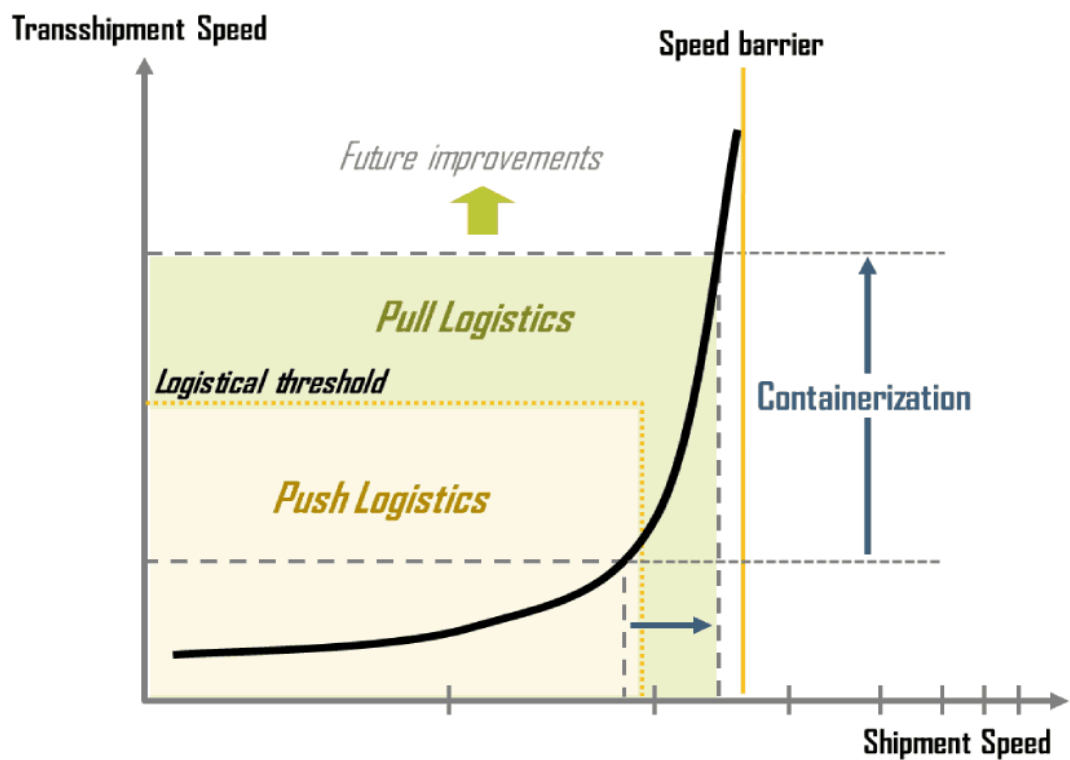


Figure 1.7 – The Velocity of Freight [21]

It is very likely that any future improvements in the velocity of freight are dominantly going to be based on the transshipment dimension, both from an

intermodal (between modes) and transmodal (within components of the same mode) perspective. Still, the velocity of freight is also being challenged by traffic growth, which may eventually lead to congestion either along transport segments or at terminals. This can have a negative impact on the velocity of freight and the effectiveness of the supply chains it supports.

1.4 Chapter 1 summary

The first chapter dealt with the theoretical principles of organization of freight transportation.

We have noticed that freight transportation is the physical process of transporting commodities and merchandise goods and cargo. Transportation takes a crucial part in the logistics operation.

Many companies now outsource all or part of their supply chain to logistics specialists when it's not a core business. For logistics providers, the value proposition rests on three key pillars: optimizing logistics costs for customers, shortening the length of the order completion cycle and reducing the number of fixed assets.

Organization of transportation is a very responsible process, in which every little thing needs to be taken into account. Indeed, not only the security and safety of the transported goods depends on this, but also the observance of the terms of the order. In general, the stages of the organization of cargo transportation include: preparation for loading and transportation; vehicle selection; determination of the need to use additional mechanisms for loading / unloading; development of a route; development of a cargo safety plan.

The two principles state that transportation management decisions should aim to maximize size of load & distance of shipment in order to obtain cost benefits, taking care of customers' requirements & satisfaction.

CHAPTER 2

ANALYSIS OF THE COMPANY “CONTINENTAL LOGISTICS” ACTIVITIES AT THE UKRAINIAN FREIGHT MARKET

2.1 General characteristics of the «Continental Logistics» company

«Continental Logistics» is a reliable transport company with a fleet specializing in the transportation of goods in the B2B segment throughout Ukraine, Europe and the CIS. «Continental Logistics» transports all types of cargo by road (fig. 2.1).

Common information about the company «Continental Logistics»:

1. Full name of the legal entity and abbreviated if available – Limited Liability Company «Continental Logistics» (LLC «Continental Logistics»);
2. Location of legal entity – 68000, Odessa region, Chornomorsk, Oleksandriiska Street, building 3, apartment 60;
3. Location in Kyiv – E. Konovaltsa Street, 32-A;
4. Date and number of entry in the Unified State Register on the state registration of a legal entity – Record date: April 29, 2016; Record number: 1 554 102 0000 003736;
5. Types of activities:
 - code ISIC 08.11 Excavation of decorative and building stone, limestone, gypsum, chalk and clay slate;
 - code ISIC 46.18 Activities of intermediaries specializing in trade of other goods;
 - code ISIC 46.73 Wholesale of wood, building materials and sanitary equipment;
 - code ISIC 46.90 Non-specialized wholesale trade;
 - code ISIC 47.00 Retail trade in non-specialized stores with food, beverages and tobacco goods;

TRANSPORTATION OF GENERAL CARGO



GROUPAGE CARGO TRANSPORTATION



TRANSPORTATION OF DANGEROUS GOODS



CARRIAGE OF GOODS BY REFRIGERATOR



OVERSIZED CARGO TRANSPORTATION



TRANSPORTATION OF LIQUID GOODS



Figure 2.1 – Types of transported goods by «Continental Logistics» [17]

- code ISIC 47.00 Retail trade with stall and in markets with other commodities;
- code ISIC 47.00 Other non-store retail trade;
- code ISIC 49.41 Freight road transport;
- code ISIC 49.42 Providing transportation services (relocation);
- code ISIC 52.10 Warehousing;
- code ISIC 52.21 Auxiliary land transport services;
- code ISIC 52.29 Other support activities in the field of transport (basic).

The company’s activities take place in the legal field according to the regulatory documents.

In the organizational structure of «Continental Logistics» company exist several departments that provided different types of activity. The organizational chart is presented on the fig. 2.3.

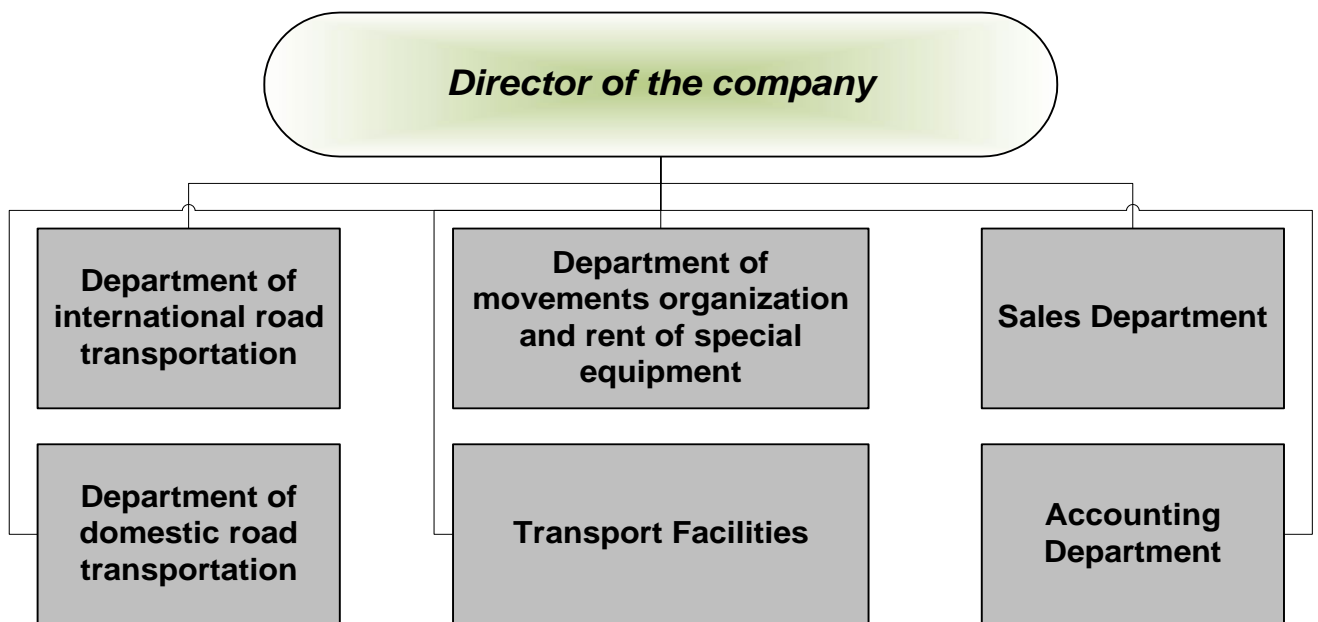


Figure 2.2 – Organizational structure of the «Continental Logistics» company [17]

In addition to the departments indicated on the organizational structure, the company works on the principles of outsourcing with a lawyer, customs brokers and transport facilities of special equipment.

The main «Continental Logistics» company’s clients are shown in fig. 2.3.



Figure 2.3 – The main «Continental Logistics» company’s clients [17]

Services provided by the company «Continental Logistics» are presented in the fig. 2.4.



Figure 2.4 – Services provided by the company «Continental Logistics» [17]

1. «Continental Logistics» company carrying out international shipping by road transport. These types of goods are accepted for transportation:

- general cargo;
- consolidated cargo;

- dangerous goods;
- oversized cargo;
- bulk liquid cargo;
- cargo that require temperature control.

«Continental Logistics» company provides international cargo transportation. The cost of delivery depends on the region, on the direction of movement of the cargo, on the configuration and type of freight, as well as its volume. We also note that fuel prices are strongly influenced and therefore the calculation of the cost of transportation is determined individually for the client. After all, each client has its own business specifics, respectively, and there are requirements for the transportation of cargo, and of other necessary logistics services in the delivery.

International cargo transportation is one of the most flexible ways to deliver goods. This is obvious, since the network of roads in any country is much more extensive than the network of railways, not to mention the air and sea routes of communication. In addition, when delivering goods by truck, there is always an opportunity to deliver the goods to the customer's doors, without overloading.

The organization and provision of international cargo transportation involves the preparation of the necessary documents and customs clearance of the cargo. Company helps clients with the organization of workflow and ensuring the process of obtaining the necessary permits.

2. «Continental Logistics» company carrying out cargo delivery by road transport in Ukraine. Company carries out trucking in Ukraine from any city to any city, subject to the availability of roads between cities.

Type of transport: trucks 20 tons, volumes of 86-110 cubic meters.

Truck type: curtain-sided trucks, refrigerator, isotherms, open side.

Types of loading: back, top, side.

Delivery time is calculated at the rate of 500 km per day. In the summer, it is possible to reach 800 km per day, in winter there may be delays when closing roads in case of heavy snowfall.

Special conditions are possible with long-term cooperation, including a deferred payment, if there is a constant volume of freight.

The cost of transportation depends on the region, on the direction of cargo movement, on the type of body and its volume, on changes in fuel prices and is determined individually for the client, under his direction, under his cargo, under his traffic volumes.

Additional services are possible such as security, movers, loading equipment, cranes. The cost of additional services is calculated based on the average market value of these services in the region where they are used.

Cargo transportation in Ukraine is a daily necessity for many companies. «Continental Logistics» company offers transportation services regardless of the type of cargo and its transport features.

A large fleet of vehicles allows us to take on the implementation of a variety of orders. Delivery of goods in Ukraine is carried out constantly, regardless of weather conditions. In this case, the client pays only an economically reasonable amount for services rendered.

The cost of freight traffic in Ukraine is formed individually. For a more economically reasonable price of transportation, you can order a place in the groupage cargo. This is a profitable offer for customers who do not need to pay the whole truck. Note that the cost of freight for 1 km in Ukraine depends on the characteristics of the route and speed of delivery.

3. «Continental Logistics» company organizes offices, warehouses and apartments movement in Ukraine, Europe and CIS.

The complexity of the organization of the move depends on its scale. Conventionally, travel differs according to two main criteria – the distance of the route (moving within a settlement, intercity, international) and the nature of the property being transported (apartment / country and office moving). However, it is not always possible to get quality services. Also very often the price of moving services is different.

It's not easy to arrange relocation on your own. It is not surprising that many people are afraid of moving, because they have many difficult tasks – to collect and pack things, to drop things and furniture from the floor, to load everything you need into a car and to quickly transport to a new place. Then you need to unload everything, raise it to the required floor and bring everything into an apartment or office, then put everything in its place. This process performed on its own often takes more than one day.

With the help of our transport to solve the issue of moving is very easy and simple, and our staff will help with loading and packing your belongings. You can always contact us on the transfer of goods requiring careful treatment. Cooperating only with proven and largest partners in Ukraine, we can ensure uninterrupted work for your business.

«Continental Logistics» company helps to organize the move as an office or warehouse, and performs work on the apartment moving. For example, one of the services is the transportation of personal belongings, the cost of such services is usually determined by the weight and volume of the transported items, as well as by the distance to which delivery must be made.

4. «Continental Logistics» company provides rental services for special equipment in Kyiv and Ukraine.

Rental of construction machinery – profitable cooperation for any construction organizations. Rental of special equipment helps in situations where need equipment for a very short period, but its acquisition will now be inappropriate. Rent gives you the ability to quickly access any modern building technology while eliminating the need to keep your fleet, repair shop, operators and support staff, and other benefits.

Construction companies very often do not know what kind of special equipment is required to perform certain tasks at the facility. Therefore, it could be say that the service of providing equipment is one of the types of services when renting cars is much more economical than using your own.

«Continental Logistics» company provides special equipment both for one shift and for a long period. Rent will allow clients to significantly reduce material costs for

maintenance of special equipment. Company has high technical requirements for the quality of work performed by staff, which results in impeccable service when renting special equipment. Choosing the most convenient rental option for special equipment clients will pay only for work, but not downtime.

2.2 Analysis of financial and operational activities of the «Continental Logistics» company

The main results of «Continental Logistics» company activities are presented on the fig. 2.5.

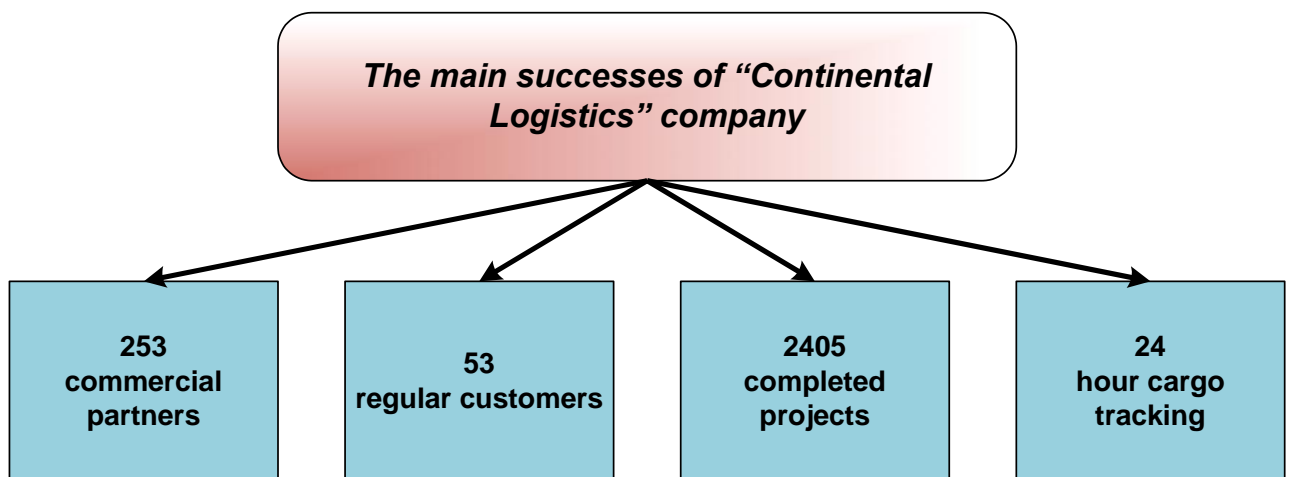


Figure 2.5 – The main results of «Continental Logistics» activity [17]

For more detail diagnostic let's analyze the number of contracts in each company activities fields. Statistic information about number of contracts is considered in the table 2.1.

We need take into account that company start its activities in 2016. And indicators shows quite successful start and current activities. This proves that the company's services are in steady demand in the transport market. Dynamics of changes in indicators by year are shown on the fig. 2.6.

Table 2.1 – The number of contracts is signed by «Continental Logistics»

| № | The field of company activities | Years | | | |
|---|--------------------------------------|-------|-------|-------|-------|
| | | 2016 | 2017 | 2018 | 2019 |
| 1 | 2 | 3 | 4 | 5 | |
| 1 | International cargo transportation | 723 | 985 | 1236 | 1490 |
| 2 | Relative change,% | – | 36,24 | 25,48 | 20,57 |
| 3 | Domestic cargo transportation | 369 | 695 | 914 | 1279 |
| 4 | Relative change,% | – | 88,35 | 31,51 | 39,95 |
| 5 | Organization of movements | 39 | 42 | 45 | 49 |
| 6 | Relative change,% | – | 7,69 | 7,14 | 9,89 |
| 7 | Rental services of special equipment | 205 | 316 | 426 | 552 |
| 8 | Relative change,% | – | 54,15 | 34,81 | 29,65 |

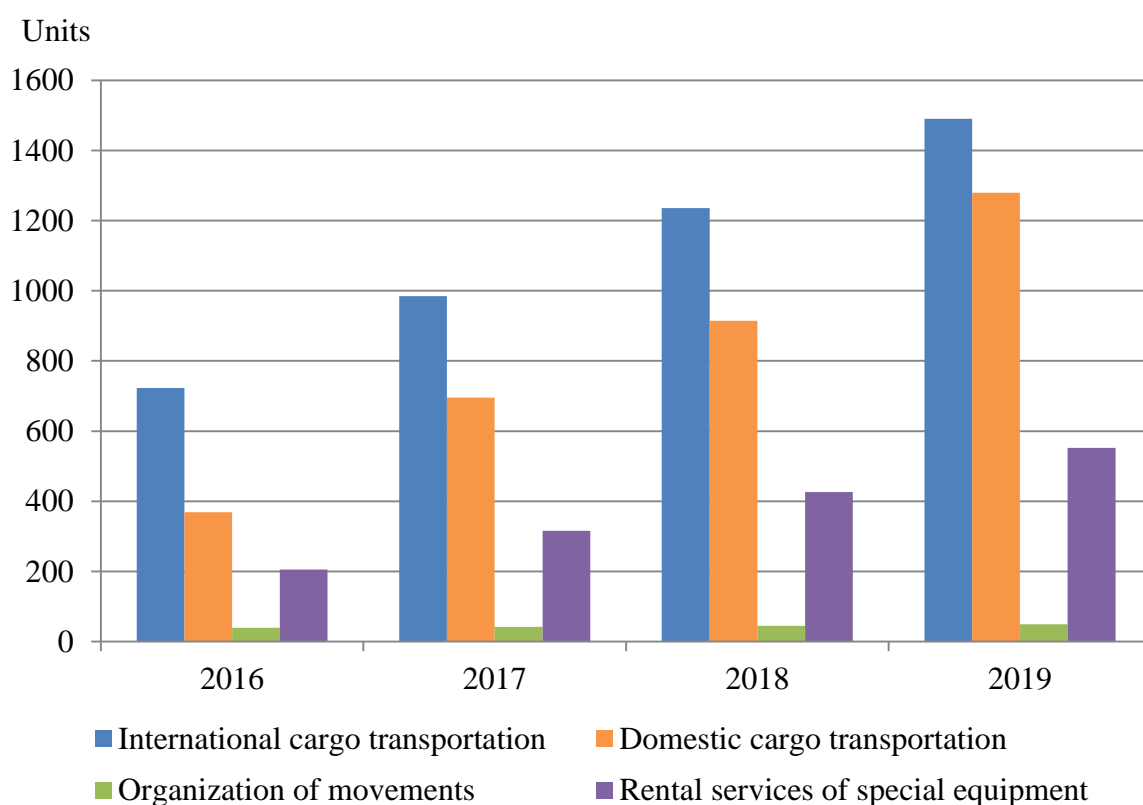


Figure 2.6 – Dynamics of changes in indicators by year

Positive dynamics is explained by the fact that from the very beginning of its activity, the company has established itself as a reliable partner. One of the priorities of the company is to ensure a high level of quality services. This allowed the company to conquer its niche among many other companies in the transport market of Ukraine.

It's also important under company diagnostic to analyze financial indicators. Let's consider the indicators level of financial performance for 2016-2018 years. Statistic information is presented in the table 2.2.

Table 2.2 – Analysis of financial indicators of the enterprise «Continental Logistics», ths. UAH

| № | Indicators | 2016 | 2017 | 2018 | 2019 |
|----|--|--------|--------|--------|---------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | Income (revenue) from sales of services | 3527,8 | 5016,5 | 8234,9 | 12614,0 |
| 2 | Value Added Tax | 534,0 | 867,0 | 1298,0 | 1988,2 |
| 3 | Net income (revenue) from the sale of works and services | 2993,8 | 4149,5 | 6936,9 | 10625,8 |
| 4 | Cost of goods sold (works, services) | 2284,5 | 3412,9 | 5087,1 | 7591,2 |
| 5 | Gross profit | 709,3 | 736,6 | 1849,8 | 3034,6 |
| 6 | Other operating income | 58,6 | 101,5 | 146,7 | 233,1 |
| 7 | Administrative expenses | 611,8 | 635,1 | 1348,2 | 2130,8 |
| 8 | Other operating expenses | 59,4 | 79,9 | 178,5 | 319,4 |
| 9 | Operating financial result (profit or loss) | 96,7 | 123,1 | 469,8 | 817,4 |
| 10 | Other income | 3,4 | 8,9 | 9,4 | 17,3 |
| 11 | Other expenses | 6,4 | 8,7 | 8,1 | 9,3 |
| 12 | Financial result before tax | 93,7 | 123,3 | 471,1 | 825,4 |
| 13 | Income tax expenses | 16,9 | 22,2 | 84,8 | 148,6 |
| 14 | Net financial result | 76,8 | 101,1 | 386,3 | 676,9 |

For a better understanding of the financial condition of the company, it is necessary to describe each of the financial indicators.

Income (revenue) from sales of services – this is the revenues from the sale of products (goods, works and services), which is calculated based on the volume of sales and current prices.

The Value Added Tax is a general, broadly based consumption tax assessed on the value added to goods and services.

Net income (revenue) from the sale of works and services is calculated as Income from sales of services minus the Value Added Tax.

Cost of goods sold (works, services) reflects the production cost of goods sold (works, services) and / or cost of items sold.

Gross profit it's difference between net income from the sale of works and services and Cost of goods sold (works, services).

Other operating income reflects the amount of other income from the operating activities of the enterprise, except for income from sales of products (goods, works, services), namely income from:

- operating exchange differences;
- reimbursement of previously written off assets;
- operating lease of assets (unless investment properties are leased or rental is the main activity);
- royalties;
- interest received on balances on current accounts with banks or demand deposit accounts;
- received free current assets;
- the sale of current assets (other than financial investments), non-current assets held for sale, and a disposal group;
- write-off of payables;
- recognized fines, penalties, penalties, etc.

Administrative expenses reflects general expenses associated with the management and maintenance of the enterprise.

Other operating expenses. In this line is reflected:

- the cost of realized inventories, non-current assets held for sale, and disposal group;
- losses from operating exchange differences;
- losses from the depreciation of stocks;
- deductions for the creation of a reserve for doubtful debts and the amount written off in excess of the reserve for uncollectible receivables;
- recognized economic (financial) sanctions;
- deductions for securing future operating expenses;
- other expenses arising in the process of the company's operating activities (except for expenses that include the cost of products, goods, works, services).

Operating financial result is calculated as gross profit plus other operating income minus administrative and other operating expenses.

Other income. This line reflects income from:

- implementation of financial investments;
- non-operating exchange rate differences;
- changes in the carrying value of financial instruments measured at fair value (except for enterprises whose main activity is trading in securities);
- other revenues that arise in the course of economic activity, but are not related to the operating activities of the enterprise.

Other expenses. In this line reflect:

- cost of sale of financial investments;
- losses from devaluation of financial investments and non-current assets;
- losses from non-operating exchange rate differences;
- expenses of enterprises (except for those whose main activity is trading in securities) from changes in the carrying value of financial instruments measured at fair value;
- other expenses that arise in the course of business activities (except financial expenses), but are not related to the operating activities of the enterprise.

Financial result before tax shows operating financial result plus other income and minus other expenses. Income tax expenses is equal 18% in Ukraine.

Let's review the dynamics of the main financial indicators (table 2.3).

Table 2.3 – Analyses of the dynamics of the main financial indicators

| № | Indicators | Years | | | |
|---|--------------------------------|--------|--------|---------|---------|
| | | 2016 | 2017 | 2018 | 2019 |
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | Total income, ths. UAH | 3589,8 | 5126,9 | 8391 | 12864,4 |
| 2 | Relative change,% | – | +42,82 | +63,67 | +53,31 |
| 3 | Total expenses, ths. UAH | 2962,1 | 4136,6 | 6621,9 | 10050,7 |
| 4 | Relative change,% | – | +39,65 | +60,08 | +51,78 |
| 5 | Net financial result, ths. UAH | 76,8 | 101,1 | 386,3 | 676,9 |
| 6 | Relative change,% | – | +31,64 | +282,10 | +75,22 |

For better understanding we'll present these indicators in the fig. 2.7.

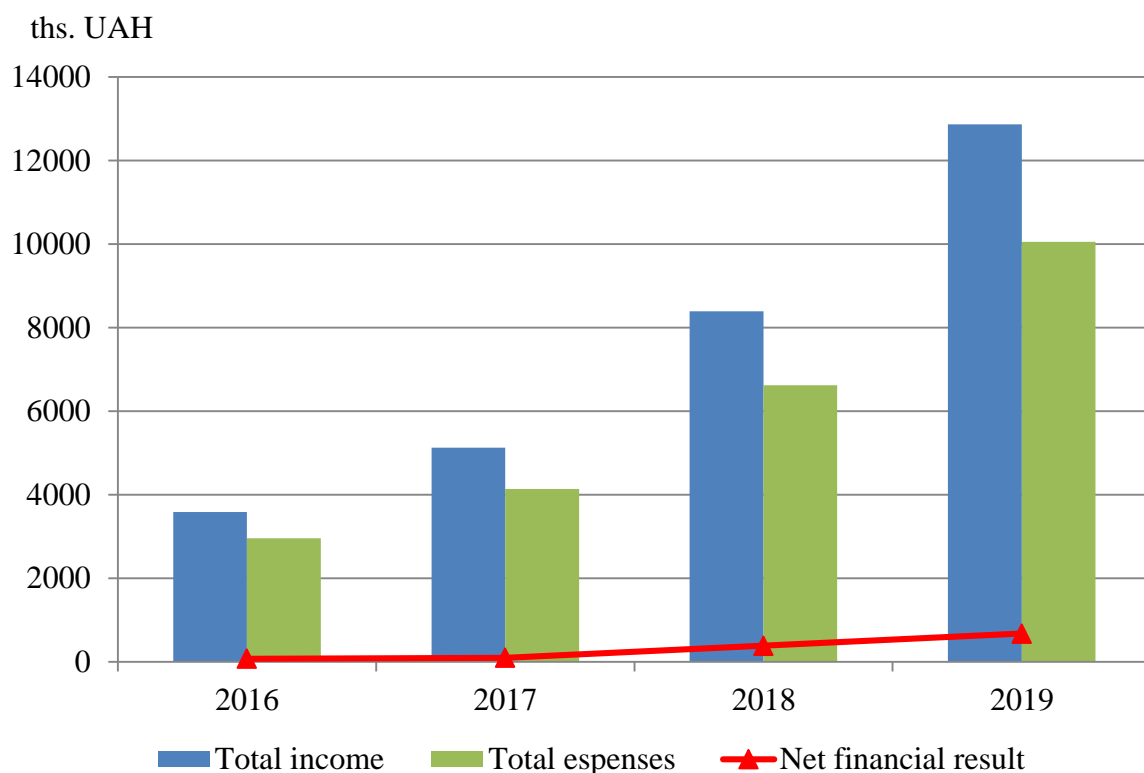


Figure 2.7 – The dynamics of the main financial indicators

Thus, we can see that the total income of the company «Continental Logistics» are growing from year to year. The growth dynamics is different:

- from 2016 to 2017, the income growth rate was 42,82%;
- from 2017 to 2018, the income growth rate was 63,67%;
- from 2018 to 2019, the income growth rate was 53,31%.

The company's total expenses also tend to increase:

- from 2016 to 2017, the expenses growth rate was 39,65%;
- from 2017 to 2018, the expenses growth rate was 60,08%;
- from 2018 to 2019 the expenses growth rate was 51,78%.

The company's net financial result also tend to increase:

- from 2016 to 2017, the net profit growth rate was 31,64%;
- from 2017 to 2018, the net profit growth rate was 282,10%;
- from 2018 to 2019 the net profit growth rate was 75,22%.

Therefore, after analysis we can say that «Continental Logistics» company is profitable. The profit that the company received will be further invested in development.

2.3 SWOT-analysis of the company's activity

There are many methods of assessing the conditions of the enterprise. One of the most common and recognized methods is SWOT analysis. To perform a SWOT-analysis at the enterprise, the relevant information support is required, which should include: a database; methods and models required for SWOT-analysis; a set of organizational and methodological techniques necessary to increase the reliability of information support.

The methodology of SWOT-analysis is based on an approach that allows studying the external and internal environment of the enterprise together. With the help of this technique, it is possible to establish the relationship between the strength and weakness inherent in the enterprise, and external threats and opportunities. First, they identify strengths and weaknesses, as well as threats and opportunities, and then establish relationships between them that can be used to develop the enterprise.

SWOT – analysis, as a tool for assessing the environment of the enterprise, consists of two parts.

The first part is aimed at studying the external opportunities (positive moments) and threats (negative moments) that may arise for the company in the present and future. Strategic alternatives are revealed here.

The second part is related to the study of the strengths and weaknesses of the company. Here the potential of the enterprise is estimated.

In other words, the SWOT-analysis allows conducting a comprehensive study of the external and internal state of the economic entity, which is shown in table 2.4.

Table 2.4 – SWOT–analysis «Continental Logistics» activity

| № | Strengths | Weaknesses |
|---|---|--|
| 1 | 2 | 3 |
| 1 | <ul style="list-style-type: none"> – high professionalism and qualification of staff; – financial stability; – a wide range of services; – clearly formed strategy; – full interaction with clients; – quick response to any external changes | <ul style="list-style-type: none"> – location of the main office; – lack of schedules for vehicles; – insufficient investment in marketing activities; – high component costs for transportation; – there is no possibility to track vehicle downtime; – lack of comprehensive information support, as Transport Management System |
| 2 | Opportunities | Threats |
| 3 | <ul style="list-style-type: none"> – stabilization of cooperation with clients; – establishment of market relations in Ukraine; – use of electronic cars | <ul style="list-style-type: none"> – presence of competitors on the market of transport services; – growth retardation of investment activity; – unstable political situation; – instability of economic, tax, banking and other legislation in Ukraine; – imperfection of the legislation. |

The procedure for SWOT-analysis is as follows:

1. Identify strengths and weaknesses.
2. Identification of external threats and potentials.
3. Establishing the relationship between the components.
4. Positioning of different ways of further development.
5. Analyze the company using the SWOT method easily and quickly.

There are five rules of SWOT-analysis:

Rule 1. The industry should be thoroughly defined for each indicator. Firms often focus on a general SWOT analysis that covers all business processes in the company. Such an analysis is usually very generalized and useless for management, who are interested mainly in opportunities in a particular market or segment. SWOT analysis can be focused, for example, on specific segments. This will help identify strengths and weaknesses, threats and opportunities.

Rule 2. Elements of SWOT-analysis can differ in strengths and weaknesses, opportunities, threats. Speaking about the internal features of the firm, in the SWOT-analysis we consider the strengths and weaknesses – those that it has the ability to control. As for the characteristics of the market environment, the opportunities and threats that operate in it, the organization cannot cope.

Rule 3. Parties are strong and weak only if they are considered by consumers. Only those strengths and weaknesses that are relevant to the case should be present in the SWOT analysis. They should be identified in the SWOT-analysis in relation to the proposals of competing companies. Strengths are such and should be reflected as such in the analysis only if they are perceived as such in the market. For example, the strength and capability of a product will be its quality if it starts to work more efficiently than the products of competing companies. Ultimately, strengths and weaknesses can be represented in large numbers, and it is difficult to understand in the analysis process which opportunities are the main ones. To avoid this indicator, the SWOT analysis should rank the weaknesses according to the degree of importance in the eyes of the consumer.

Rule 4. When conducting a SWOT analysis, you should remain objective and use a variety of input information. Of course, it is often not possible to conduct a SWOT analysis based on large marketing research with their end result. At the same time, one person does not have the opportunity to cope with SWOT-analysis, which may not be as accurate and deep as possible, in contrast to SWOT-analysis, conducted jointly in the format of discussions and communication of ideas by members of a large group. SWOT analysis is not just a list of suspicions of management. It should be based mainly on research results and specific data relevant to objective reality.

Rule 5. It is better not to state ambiguous and expansive statements in the SWOT-analysis. Often this analysis is weakened precisely due to the inclusion of such statements, which in the analysis do not carry any information for a larger percentage of consumers. Accurate wording makes SWOT analysis as useful as possible.

According to the analysis, it can be concluded that the company as one of the leaders in the international market has a strong position and has a steady and stable income. Of course, even such a large-scale company always has room to develop and improve.

2.4 Chapter 2 summary

The second chapter dealt with the analysis of the company «Continental Logistics» activities at the Ukrainian freight market.

«Continental Logistics» is a reliable transport company with a fleet specializing in the transportation of goods in the B2B segment throughout Ukraine, Europe and the CIS. «Continental Logistics» transports all types of cargo by road.

Services provided by the company «Continental Logistics» are include:

- international transportation;
- domestic transportation;
- organization of movements in Ukraine, Europe and CIS;
- rent of special equipment;

Positive dynamics in company's activity is explained by the fact that from the very beginning of its activity, the company has established itself as a reliable partner. One of the priorities of the company is to ensure a high level of quality services. This allowed the company to conquer its niche among many other companies in the transport market of Ukraine.

After conducted analysis we can say that «Continental Logistics» company is profitability. The profit that the company received will be further invested in development.

CHAPTER 3

**PROPOSALS FOR IMPROVING ORGANIZATION OF
FREIGHT TRANSPORTATION BY «CONTINENTAL LOGISTICS»
COMPANY**

3.1 The main directions for improving the organization of freight transportation

For improving the organization of freight transportation by logistics companies need to use newly information technologies. There are five main areas of application of information technologies in freight transportation (fig. 3.1):

1. Freight visibility. Ability to track the status and location of shipments.
2. Asset management. Ability to manage transportation assets such as vehicles and containers.
3. Efficiency. Ability to improve the quality of freight information being exchanged as well as the capability to remotely monitor transport conditions.
4. Freight information exchange. Ability to provide easily accessible and real-time freight information systems allowing the provider and consumer of transport services to interact.
5. Regulatory compliance. Ability to comply with regulations, such as customs requirements, in a more efficient and cost-effective manner.

So, as we can see, all these ways for improving the organization of freight transportation by logistics companies include using information technologies. But also we can use new technologies of vehicle production.

As we have noticed above, transport is an important component of the economy: many European companies are world leaders in infrastructure, logistics, transport equipment and transportation management systems.



Freight Visibility (Tracking)

- Improve the reliability of supply chain management.
- Status and locations of shipments (vehicles, rail cars, containers and individual loads).
- Mobile communications and Global positioning systems (GPS).
- Radio-frequency identification (RFID) tags and bar codes.



Asset Management

- Maximize equipment utilization.
- Equipment location (tractors, trailers, rail cars, containers, ships).
- Real Time Locating Systems (GPS and RFID tags).
- Status monitoring of vehicle and cargo conditions.



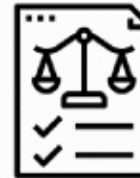
Efficiency Improvements

- Improve productivity and reduce data errors.
- Verification and exchange of shipment information.
- Non-intrusive inspection and information technologies such as optical character readers (OCR), RFID tags and bio-metrics (to identify drivers).



Freight Information Exchange

- Information exchange using web-based technologies and electronic data interchange (EDI).
- Real-time terminal information systems.
- Blockchains.



Regulatory Compliance

- Pre-screen shipments and direct low-risk freight to quick clearance.
- Enhance security at international borders.
- Electronic pre-notification of shipment information.

Figure 3.1 – Key information technology drivers in freight transportation [based on 21]

However, today, vehicles generate about a quarter of total greenhouse gas emissions and are their largest source. That is why today the production and use of "green transport" – any type of transport with low negative impact on the environment – is actively developing. In recent years, transportation has become more energy efficient, but road transport is still dependent on oil and petroleum products for 96% of its needs. But trends are changing quite rapidly. Today, the electric car market has significant growth potential [49].

In practice, transport should use less energy, which should be cleaner, better exploit modern infrastructure and reduce its negative impact on the environment and key natural objects such as water, land and ecosystems. Based on this, the transition to electric cars is becoming widespread, as evidenced by the growth of sales of hybrid cars and electric cars in the world.

EV-volumes published world statistics on electric car sales in the first quarter of 2018. The volume grew by 59% compared to the same period last year. In each month, impressive growth was noted (fig. 3.2).

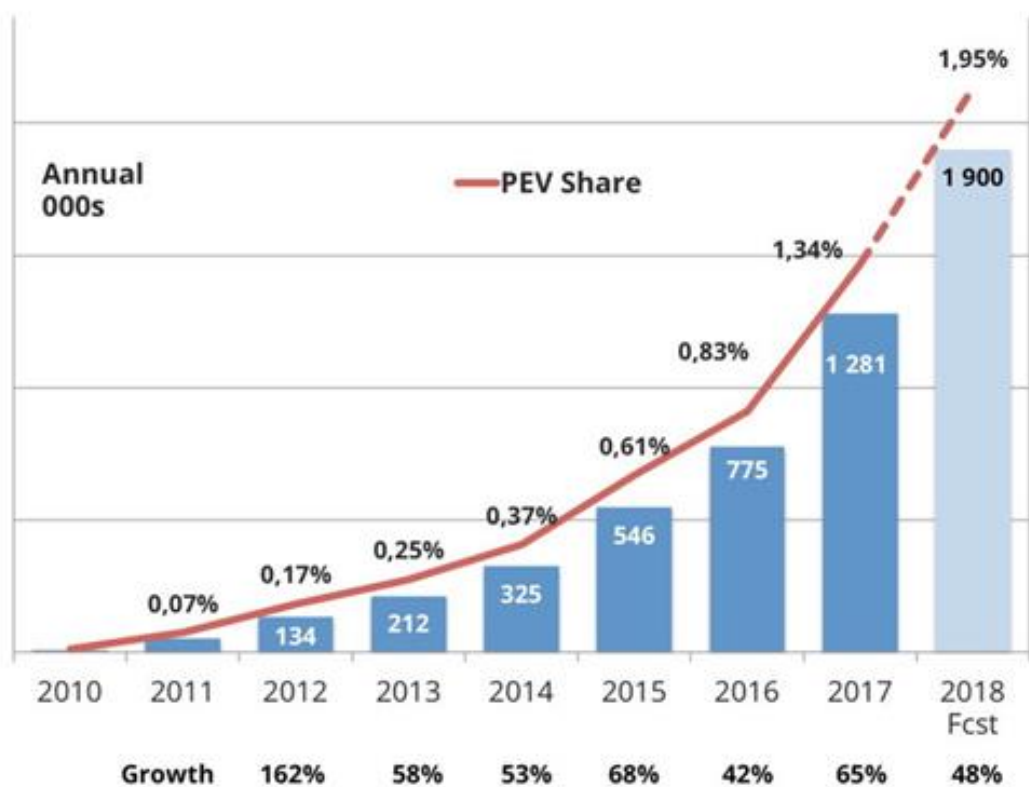


Figure 3.2 – Global plug-in vehicle sales & share [48]

The Association of European Automobile Manufacturers (ACEA) recently published data on the registration of new light commercial vehicles (LCV) in 2019 by type of fuel in the EU (including Norway, Switzerland, Iceland). In Europe, the LCV category includes vehicles weighing up to 3.5 tons (including buses) [50].

The total market of all vehicles is 2,180,528 units, and last year it grew by more than 2% compared to the same period last year (fig. 3.3).

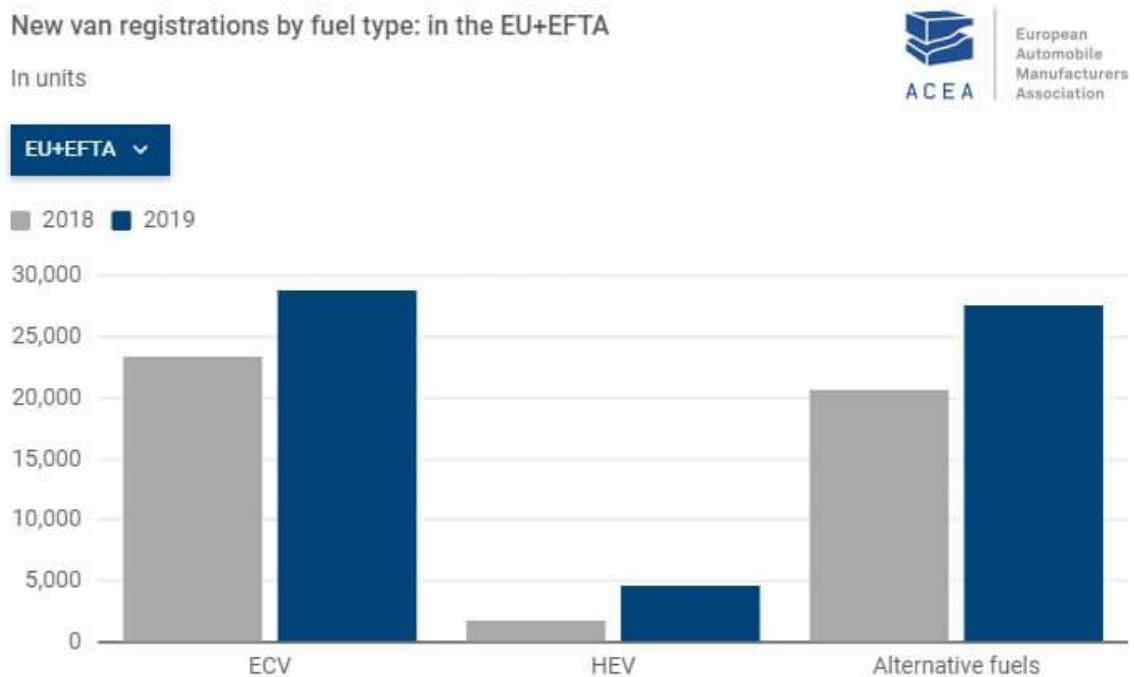


Figure 3.3 – New van registrations by fuel type [50]

Plug-in electric modes of transport (BEV + PHEV) account for 28,704 new registrations (an increase of 23.1% from 23,314 compared to 2018), which is 1.3% of the total sales of light commercial vehicles in the EU. Hybrids (HEV) occupy only 0.2% of the market with the number of registrations of 4 627 light-duty trucks.

According to statistics, France and Germany are the largest markets for light commercial vehicles with electric drive (BEV + PHEV), and Norway and Sweden – by market share (fig. 3.4).

According to ACEA, sales of electric cars and plug-in hybrids in Europe grew by 45% in 2019, and electric buses by 184% compared to 2018 [50].

| | ELECTRICALLY-CHARGEABLE | | | HYBRID ELECTRIC | | |
|-----------------------|-------------------------|---------------|-------------|-----------------|--------------|----------------|
| | 2019 | 2018 | %change | 2019 | 2018 | %change |
| Austria | 504 | 459 | 9.8 | 0 | 0 | |
| Belgium | 400 | 263 | 52.1 | 45 | 18 | 150.0 |
| Cyprus | 4 | – | | 0 | – | |
| Czech Republic | 33 | 22 | 50.0 | 3 | 0 | |
| Denmark | 267 | 222 | 20.3 | 451 | 397 | 13.60 |
| Estonia | 3 | 1 | 200.0 | 0 | 0 | |
| Finland | 60 | 55 | 9.1 | 16 | 16 | 0.0 |
| France | 8,087 | 8,153 | -0.8 | 1,861 | 760 | 144.9 |
| Germany | 6,704 | 6,006 | 11.6 | 312 | 124 | 151.6 |
| Greece | 11 | 13 | -15.4 | 2 | 0 | |
| Hungary | 75 | 123 | -39.0 | 7 | 0 | |
| Ireland | 332 | 84 | 295.2 | 1 | 0 | |
| Italy | 1,046 | 644 | 62.4 | 1,296 | 437 | 196.6 |
| Latvia | 2 | 0 | | 0 | 0 | |
| Luxembourg | 85 | 44 | 93 | 2 | 0 | |
| Netherlands | 1,280 | 978 | 30.9 | 4 | 0 | |
| Poland | 130 | 42 | 209.52 | 2 | 1 | 100.00 |
| Portugal | 213 | 253 | -15.8 | 4 | 9 | -55.6 |
| Romania | 54 | 23 | 134.8 | 8 | 0 | |
| Slovakia | 23 | 18 | 27.8 | 0 | 0 | |
| Slovenia | 41 | – | | | – | |
| Spain | 1,937 | 1,825 | 6.1 | 553 | 0 | |
| Sweden | 1,389 | 755 | 84.0 | 10 | 0 | |
| United Kingdom | 3,427 | 1,259 | 172.2 | | – | |
| EUROPEAN UNION | 26,107 | 21,242 | 22.9 | 4,577 | 1,762 | 159.8 |
| Norway | 2,016 | 1,774 | 13.6 | 0 | 0 | |
| Switzerland | 581 | 298 | 95.0 | 50 | 3 | 1,566.7 |
| EFTA | 2,597 | 2,072 | 25.3 | 50 | 3 | 1,566.7 |
| EU+EFTA | 28,704 | 23,314 | 23.1 | 4,627 | 1,765 | 162.2 |

Figure 3.4 – Statistics of sales of light commercial electric vehicles (LCV) for 2018-2019 in Europe [50]

Tesla remains the largest manufacturer of electric cars, which in 2018 sold 245,240 of these cars. The three leaders included the Chinese Beijing Electric Vehicle (BJEV) and BYD. 7 out of 10 companies heading the market represent China (fig. 3.5).

Electric cars are better for the environment than traditional gasoline cars, and this advantage will grow as coal is used less in energy production.

This was the conclusion of the Bloomberg study, which showed that last year, carbon dioxide emissions from electric vehicles were about 40% lower than those of ICE vehicles (fig. 3.6).

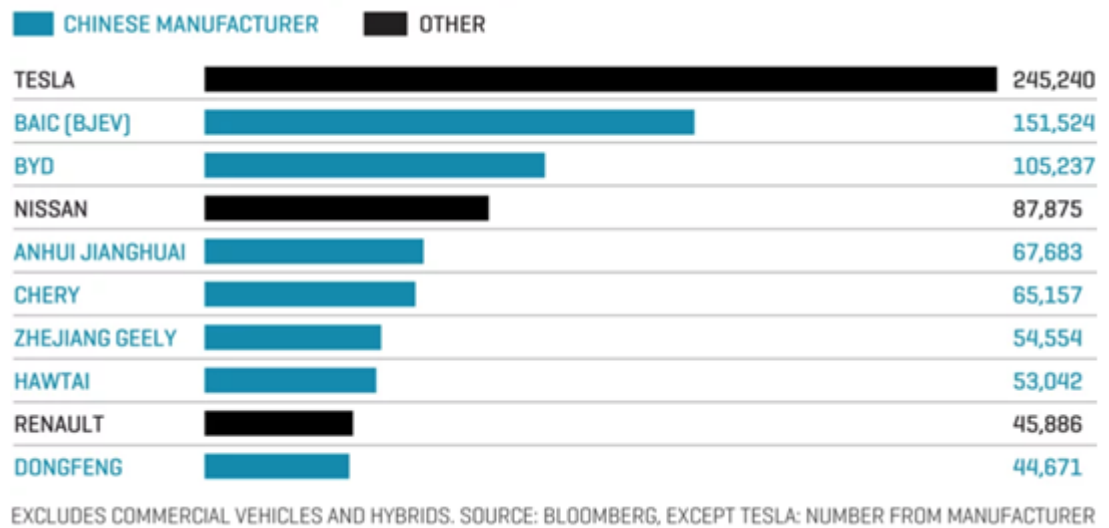


Figure 3.5 – Global pure-electric vehicle sales, 2018 [51]

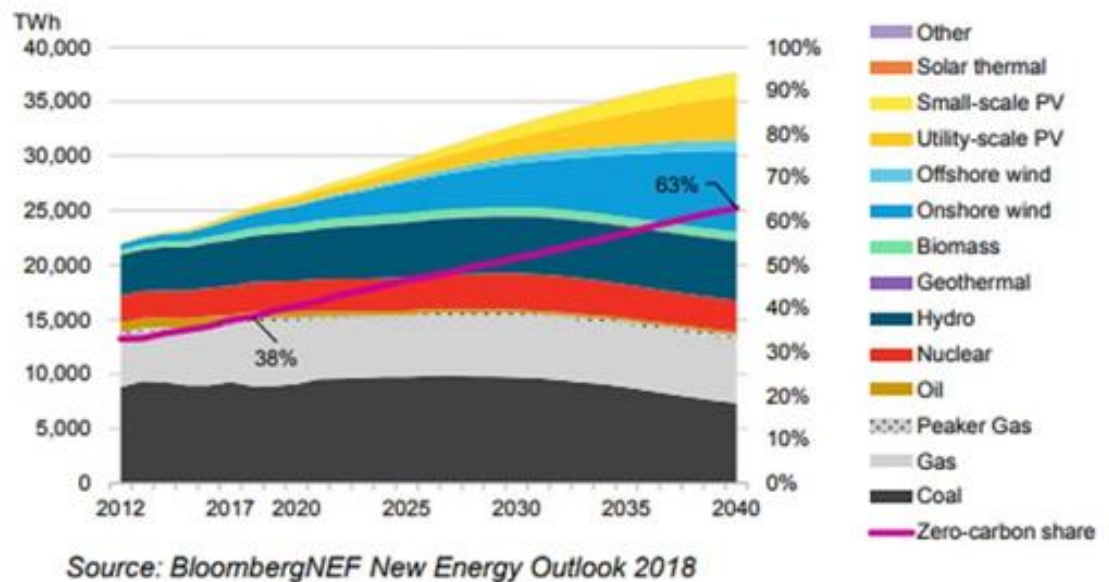


Figure 3.6 – Global production of electricity from various resources and an increase in the share of net electricity generation [37]

The report adds clarity to the debate that electric cars are still environmentally friendly, even if they consume energy from fossil fuels.

A BNEF study suggests that electric cars will become cleaner in the coming years, as utilities close coal-fired power plants and receive more energy from wind and solar farms, which are installed on a large scale in almost every region of the world except Southeast Asia (fig. 3.7).

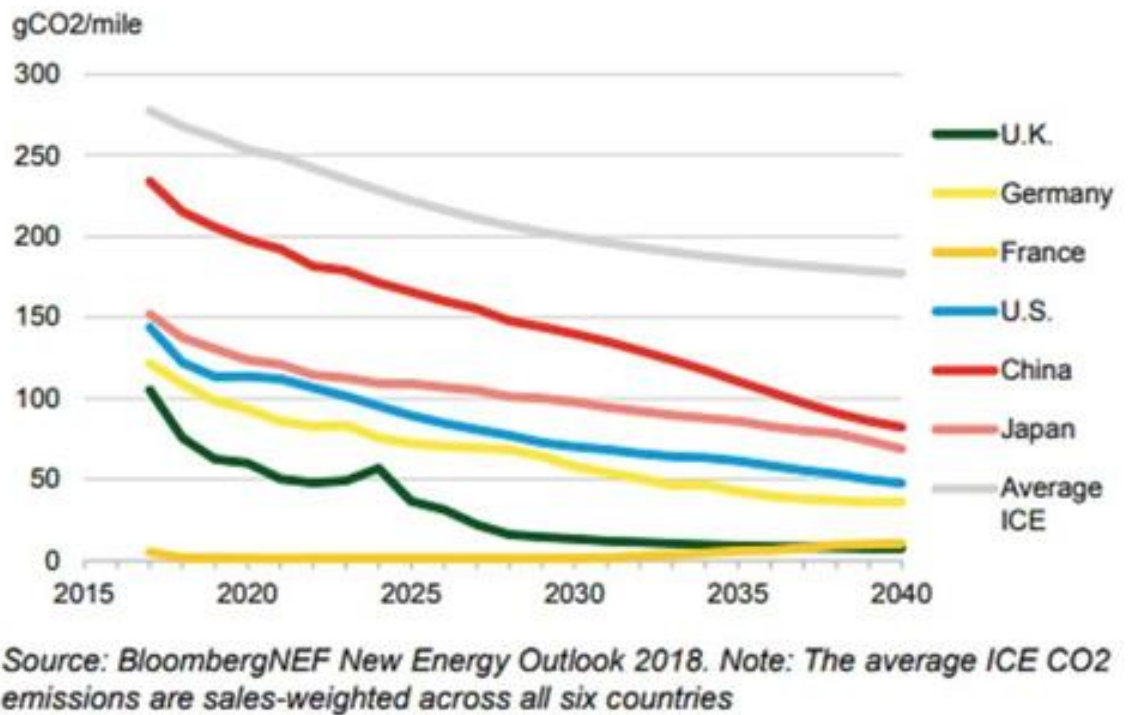


Figure 3.7 – Forecast for the reduction of environmental pollution when using electric vehicles [37]

Bloomberg analysts say that when a car with an internal combustion engine goes off the assembly line, its emissions per km are fixed forever, in the case of an electric car, they will decrease from year to year, as the electricity grid becomes cleaner.

According to the BNEF, the widespread adoption of renewable energy sources will cut average emissions by as much as 90% in the UK and more than a third in Japan by 2040.

BNEF predicts that the global share of zero-carbon electricity production will increase from 38% recorded last year to 63% by 2040. While improvements in ICE technology will reduce their emissions by about 1.9% per year by 2040, pollution from electric vehicles will drop from 3 to 10% annually. This is largely due to the rejection of hydrocarbons in the production of electricity, as well as to a reduction in its consumption.

However, the trend of intellectualization and digitalization of transport systems have some advantages and disadvantages (table 3.1).

Table 3.1 – Advantages and disadvantages of increasing use electric vehicles
[based on 49]

| № | Advantages | Disadvantages |
|---|--|---|
| 1 | 2 | 3 |
| 1 | Improving road safety | High initial cost of the car |
| 2 | Eliminate high-speed abuse, reduce stress and aggressive behavior on the roads | Reduction of state budget revenues due to reduction of payments from traffic violations |
| 3 | Less vehicle wear and, consequently, lower transportation costs | Rising unemployment as a result of job losses by drivers (if case of unmanned vehicles) |
| 4 | Save time by not having to drive a car | Possibility of hacker attacks on transport systems and vehicles |
| 5 | Reduction of emissions and noise levels | The problem of mass disposal of electric car batteries |

Thus, the transition from one technological mode to another is not without risks. In relation to unmanned vehicles, there are issues of information security and data protection. The social risks of intellectualization of transport systems include job cuts. That is, further implementation of innovative achievements in transport should take into account the issues of minimizing possible risks.

3.2 Recommendations for «Continental Logistics» company

The Minister of Infrastructure of Ukraine outlined the main vectors of cooperation with European partners. Among them are the following [36]:

1. IT technology. Ukraine seriously considering the digital direction, because the digital infrastructure is not just a startup, it is a big job. In the last few years, the ministry of infrastructure has been a leader in introducing e-tickets, creating an e-carrier office and new e-services.

2. Electric cars. Another area is environmentally friendly and environmentally friendly transport – electric cars.

Initiative of ministry of infrastructure to reduce taxes on the import of electric cars has been felt, and Ukraine has become one of the countries in the world where the market for electric cars is growing the fastest. Ukrainians are mentally ready to learn innovations and love this type of transport. This is the policy of the ministry, supported by the people's deputies and the government. We believe that the rapid development of charging, construction and production of electric cars, batteries, chargers – this is the future that should be in our country.

3. Cybersecurity. Serious attention should be paid to cybersecurity. Ukraine, together with the EU and the US, is developing a cybersecurity center for Ukraine's digital space.

This is very important, because you can create the best electronic solutions, but if they are not protected, they can be instantly destroyed by both an external aggressor and ordinary hackers.

According to these vectors we can recommend for «Continental Logistics» company to start the transition to the use of electric cars for the organization of freight transportation.

First of all we need to analyze possible models of electric cars, compare them with existing fleet and calculate possible effect from changing (or adding) electric cars to the company's fleet.

Of course, in order to improve long-distance freight transport, it would be advisable to consider buying one of the best representatives of this type, namely Tesla Semi truck. Tesla is entering the commercial trucking market by showcasing its first electric tractor, which has already received many pre-orders from well-known retailers and logistics companies [26].

The demonstration of the Tesla Semi truck became one of the most interesting events of 2017 and caused a heated discussion about the capabilities of the electric tractor, its operational benefits and economic benefits.

Tesla Semi is a full-fledged truck for commercial transportation of goods within the city or over long distances. The electric truck is designed entirely from scratch, has its own platform and layout of key transmission elements.

The Tesla Semi electric tractor is powered by four independent engines located on the rear axles, which provide insane torque and acceleration from 0 to 100 kilometers per hour at full load in just 20 seconds. If there is no load, Tesla Semi accelerates to a hundred in just 5 seconds (table 3.1).

Table 3.1 – Technical characteristics of Tesla Semi [26]

| No | Indicators | Characteristics |
|----|---|---|
| 1 | 2 | 3 |
| 1 | Engines | 4 independent engines on the rear axles |
| 2 | Energy use | less than 2 kWh per 1.6 kilometers |
| 3 | Acceleration from 0 to 100 km (without cargo) | 5 seconds |
| 4 | Acceleration from 0 to 100 km (with load) | 20 seconds |
| 5 | Power reserve (EPA) | 483 km / 804 km |
| 6 | Fast charging at “Megachargers” stations | 30 minutes for a range of 640 km |
| 7 | Coefficient of aerodynamic drag | 0,36 |
| 8 | Expected base price (483 km) | \$ 150 000 |
| 9 | Expected base price (804 km) | \$ 180 000 |
| 10 | Price of the "Founders Series" version | \$ 200 000 |
| 11 | The cost of the reservation | \$ 20 000 |

During the presentation, it was announced that the Tesla Semi battery pack will be presented in two configurations designed for a range of 483 and 804 kilometers, respectively. The data are calculated for the full load of the car, which is 36 tons. Energy consumption by the truck will be less than 2 kWh per 1.6 kilometers.

Tesla Semi charging is one of the most important specifications of the truck. Supercharger stations are expected to receive the expected capacity upgrade to charge the Tesla Semi. There was also talk of the emergence of Megacharger – solar-powered charging stations whose capacity is 10 times higher than the current performance of Tesla charging stations and will restore 640 kilometers of power reserve in just 30 minutes.

The design of the truck is absolutely unique and characteristic only for this electric car. It is characterized by sloping shapes that have virtually no right angles. Such stylistic features provide the lowest resistance coefficient for trucks of 0.36. The

Tesla Semi has a giant cab, with a huge windshield that gives the driver maximum visibility (fig. 3.8).



Figure 3.8 – Appearance of Tesla Semi [26]

Inside, the Tesla Semi has one seat located in the center of the cab, which also allows drivers to provide an unprecedented view. The seat is surrounded by two touch screens, reminiscent of those equipped with the third Tesla model. The huge Tesla Semi windshield is made using the latest technology, which makes it extremely strong and virtually invulnerable.

Tesla Semi has received an improved autopilot, which guarantees safety by having automatic stop functions, in case of collision or in case of strange driver behavior. The truck has a low center of gravity, so it is protected from overturning the body even at high speeds.

If you compare Tesla Semi with diesel trucks of similar or similar capabilities, owning an electric car will provide significant fuel savings, as energy costs will be halved. In total, the expected cost of the car will be \$ 150,000 for the base modification with a range of 483 km and \$ 180,000 for the model with an 800-kilometer range. You can order a car with a prepayment of 20 thousand dollars.

If the serial version of the Tesla Semi gets all the stated technical characteristics and has the proper service infrastructure, then given the available information about

the capabilities of the truck, it will undoubtedly be a real challenge to the existing freight industry, significantly changing their cost and logistics.

But, for «Continental Logistics» company it will be better to start from small trucks (minivan) for short distance, for example, within cities transportations.

The demand for the transport of goods within cities is rising and with that the number of vans driving around. This has adverse effects on air quality, noise, safety, and liveability in the city. LEFVs (Light Electric Freight Vehicles) offer a potential solution for this. There is already a lot of enthusiasm for the LEFVs and several companies have started offering these vehicles [13].

Still, many companies are hesitating to start and experiment. New knowledge is needed for logistics concepts for the application of LEFVs. A research paper from Amsterdam and Rotterdam Universities of Applied Sciences shows the outcomes of eight case studies about what is needed to successfully deploy LEFVs for city logistics.

The practical research has shown that city logistics with LEFVs requires good locations for hubs in the distribution network, robust processes, cooperation between customers, logistics service providers and suppliers, good insight into the costs involved, modern ICT, and good organization.

LEFVs lend themselves to logistical flows with five main characteristics [13]:

- time-critical shipments;
- those with small numbers of shipments per trip;
- short distances between stops;
- those in busy areas where the speed of cars is relatively low;
- areas with strict vehicle restrictions or privileges for LEFVs.

At the moment, the vast majority of freight deliveries in urban environments are made by conventional petrol and diesel vehicles. Yet as the EU seeks to transition towards low and ultimately emission free transport, alternatives are needed. That is where FREVUE (Freight Electric Vehicles in Urban Europe) comes in [15].

An EU-funded project, FREVUE set out to discover if and how fully electric vehicles are viable alternatives to conventional diesel ones. Ten urban logistics

operators tested over 80 electric vehicles in eight of Europe's largest cities, ranging from small car-derived vans to 18-tonne trucks. With various cities and operators involved in the project, testing took place in a variety of climates, policy environments, and urban landscapes.

The technology proved mature and robust enough for electric vans and trucks to be included in commercial vehicles fleets in urban operation. The multi-stop and low speed urban environment suits these vehicles very well. Small electric vans, for example, reach peak energy efficiency between 30 – 35km/h, a typical speed range in urban traffic. However, this drops at higher speeds.

The environmental benefits of electric vehicles are obvious. There are zero tailpipe emissions means that no nitrogen oxides (NOx) and particulate matter (PM) are produced. They are incredibly detrimental to health, and diesel exhaust emissions contain them in abundance.

FREVUE research partners calculated the impact that the wider electric freight vehicle deployment would have in London. Even if "only" 10% of the fleet were electrified by 2021, NOx emissions could be decreased by 402,000 tonnes, PM emissions by 3.8 tonnes, and local CO2 emissions by 284,000 tonnes [15].

This would amount to a €1 billion annual reduction in health and abatement costs (this is cost of reducing 'environmental negatives', for example, pollution). Electrifying freight fleets therefore will make a significant public health contribution and will require lower costs to comply with legal air quality obligations.

Other benefits include quieter engines, which leads to less noise pollution both for drivers and people within urban environments. Using electric vehicles for urban logistics will also increase electric vehicle uptake and could prompt the introduction of new concepts and business models.

While the associated environmental benefits and general technical suitability of electric freight vehicles are clear, they remain more expensive than their diesel vehicles. Through operational cost savings and financial and fiscal incentives, a positive business case can be made for smaller models. For trucks it is harder, however; limited supply – influenced by low demand – means prices are still high.

To tackle this, FREVUE launched its Declaration of Intent to illustrate market demand. As more and bigger suppliers enter the market and battery prices fall over time, the business case for larger vehicles should improve. Constraints also exist concerning charging: related infrastructure would likely necessitate significant development and investment in many locations.

Many of the industry partners who trailed electric freight vehicles have decided to expand this part of their fleet further. For instance, UPS have now electrified nearly a third of their central London fleet, whilst Heineken run a 19-tonne truck in Rotterdam, alongside one 12-tonne and seven 13-tonne trucks in Amsterdam [15].

FREVUE has shown that electric freight vehicles work for inner city logistics operations. With their associated environmental benefits and an improving business case, the amount of them quietly delivering goods will increase.

The analysis of the market revealed a small number of electric minivans, which would be suitable for freight, namely the following:

- Nissan e-NV-200van;
- Renault KANGOO Z.E. Express;
- Citroen Berlingo Electric.

Consider them in more detail.

Nissan e-NV-200van (fig. 3.9).



Figure 3.9 – Nissan e-NV-200van

This electric car was developed on the basis of the NV 200 models and Leaf belongs to the class of minivans. The manufacturer sought to release something more universal, which will include the best from cars that have already gained popularity. Nissan NV200 is assembled at a factory in Spain and this is truly European quality.

Renault KANGOO Z.E. Express (fig. 3.10).



Figure 3.10 – Renault KANGOO Z.E. Express

Thanks to our new Z.E. 33 new KANGOO Z.E. will cover up to 200 km in real conditions without charging the battery and increasing the size.

Citroen Berlingo Electric (fig. 3.11).

The electric Citroen Berlingo does not differ in high power: under the hood, an electric motor of 49 kW (67 hp) is installed at 4,000-9,200 rpm; but it pleases with a torque of 200 Nm, which is available immediately (0-1 500 rpm). A 22.5 kWh lithium-ion battery is installed under the bottom of the electric car. The declared useful volume of the luggage compartment on the passport is 3.3 cubic meters (excluding "reserve"); carrying capacity – almost 700 kg.

Let's compare the main technical characteristics of these models and their prices (table 3.2).



Figure 3.11 – Citroen Berlingo Electric

Table 3.2 – Technical characteristics and prices of electric cargo vans [3, 16, 19]

| № | Model | Nissan e-NV-200van | Renault KANGOO Z.E. Express | Citroen Berlingo Electric |
|---|------------------------|--------------------|-----------------------------|---------------------------|
| 1 | 2 | 3 | 4 | 5 |
| 1 | Price | 986000 | 967400 | 650400 |
| 2 | Engine power | 80 Kw | 44 Kw | 49 Kw |
| 3 | Power reserve | up to 175 km | up to 200 km | up to 170 km |
| 4 | Total luggage capacity | 4,2 m ³ | 3,5 m ³ | 3,3-4,1 m ³ |

As a result, Citroen Berlingo Electric does its job well: daily urban transportation of small freights with minimal operating costs. And against competitors, it has several advantages: in comparison with Renault Kangoo ZE – this is a fast charge CHAdEMO; compared to the Nissan e-NV200, these are official deliveries and many spare parts. And, of course, it's much cheaper. In the meantime, Citroen Berlingo Electric clearly shows the further development of electric mobility in Ukraine: electric vans come after electric cars.

The 2nd generation Citroen Berlingo Electric (Electrique) electric car has incorporated a number of cardinal improvements relative to its predecessors and competitors in the market.

Firstly, the electric car Citroen Berlingo Electric (Electrique) offers 2 types of charging: slow, night - from a conventional outlet; fast format “80% battery in 30 minutes” – from a specially charging station.

Secondly, the Citroen Berlingo Electric is available in several body lengths: a maximum length of 4.63 m and a cargo compartment of 4.1 cubic meters. However, note: the larger the body size - the greater its weight, which leads to worse acceleration.

The third thing you should pay attention to at Citroen Berlingo Electric (Electrique) is the unique Extenso cab: a 2-seater passenger seat; the central part folds and turns into a table; the outer part folds for the transport of long goods; 3 people can go in the cabin (driver plus 2 passengers). Such a cabin Extenso - a real "3-seater pearl" in the class of such compact vans. In addition, the Citroen Berlingo Electric (Electrique) cabin can please the original dashboard (indicators of energy consumption and battery charge), as well as the "ECO" mode for the interior heater.

Finally, a few words about the power plant: the Citroen Berlingo Electric (Electrique) electric van is equipped with a 67-horsepower (49 kW, 200 Nm) motor and a Li-Ion battery (30 kWh), which is installed in the bottom.

So we propose for «Continental Logistics» company to buy Citroen Berlingo Electric for the organization of freight transportation for short distance or within cities transportations.

3.3 Calculation of the effect of the proposed measures

Thus, the most promising environmentally friendly vehicle today is the electric car. And this is not surprising, because its high environmental friendliness combined with high payback create all the conditions for mass use and displacement of gasoline cars. For «Continental Logistics» company we have chosen electric minivan Citroen Berlingo Electric. It is interesting, that in Ukraine, Nova Poshta became the first express delivery company to start testing an electric car.

Let's evaluate the prospects of electrification of the company's fleet by analytical method. For clarity, we will assess the cost of 1 km an electric car in comparison with a gasoline car.

For comparative analysis, let's take similar cars in terms of technical parameters, Citroen Berlingo Electric, which at the time of purchase cost about 650 thousand UAH and Citroen Berlingo of the same year (462 000 UAH). For calculations, take the distance of a daily trip of 100 km.

Provided that the car will travel 100 km during the day, the payback period of the car will be determined by the formula:

$$T_o = \frac{Ca}{E} / 365, \quad (3.1)$$

where T_o – payback period of the car, years; Ca – this is the price of the car for which we determine the payback period, UAH; E – savings from the use of energy sources, UAH; 365 – the number of days in the year.

The calculation data for clarity are shown in table. 3.3.

Table 3.3 – Comparing the economic characteristics of electric and gasoline car

| № | Indicators | Citroen Berlingo Electric | Citroen Berlingo |
|---|-----------------------------|----------------------------|-------------------|
| 1 | 2 | 3 | 4 |
| 1 | The price of the car, UAH | 650400 | 462000 |
| 2 | Fuel consumption per 100 km | 22,5 kW * hour | 8,4 liter |
| 3 | The unit cost of energy | 1,7 UAH / kW | 30,44 UAH / liter |
| 4 | Fare 100 km, UAH | 22,5*1,7 = 38,25 | 8,4*31,44=264,1 |
| 5 | The cost of 1 km, UAH | 0,3825 | 2,641 |
| 6 | Savings per 100 km, UAH | 264,1-38,25 = 225,85 | – |
| 7 | Savings per 1 km, UAH | 225,85/100 = 2,26 | – |
| 8 | Payback period, years | (650400/225,85)/365 = 7,89 | – |

Thus, the payback period of the electric car Citroen Berlingo Electric compared to a gasoline car is 7,89 years. As we can see, the fuel costs of an electric car are less than that of a gasoline more than 15 times, which is an unconditional advantage for a

company that provides express delivery services. Regarding the visit to service stations, because in electric cars there are much fewer moving components than in cars with internal combustion engines, respectively, fewer parts wear out and the need to visit the service station is eliminated. In addition, such consumables as consumables for electric vehicles are not available.

But, of course, total saving will be bigger, because we can save (or reduce) costs for the following: maintenance, consumables, transmission, spark plugs and so on.

That's why we need to calculate NPV of the Citroen Berlingo Electric car purchase project. For calculations we will make some assumptions and the forecasts presented in table 3.3.

Table 3.4 – Calculation of total costs and savings

| № | Indicators | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|----------------------------------|--------|--------|--------|--------|--------|--------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1 | Car mileage in 1 day, km | 100 | 130 | 170 | 220 | 270 | 330 |
| 2 | Car mileage per year, km | 36500 | 47450 | 62050 | 80300 | 98550 | 120450 |
| 3 | Operating costs, UAH | 13961 | 18150 | 23734 | 30715 | 37695 | 46072 |
| 4 | Additional costs, UAH | 12000 | 12000 | 12000 | 12000 | 12000 | 12000 |
| 5 | Total expenses for the year, UAH | 25961 | 30150 | 35734 | 42715 | 49695 | 58072 |
| 6 | Fuel savings, UAH | 82435 | 107166 | 140140 | 181358 | 222575 | 272036 |
| 7 | Savings on additional costs, UAH | 43800 | 56940 | 74460 | 96360 | 118260 | 144540 |
| 8 | Total savings for the year, UAH | 126235 | 164106 | 214600 | 277718 | 340835 | 416576 |

Operating costs were calculated as the cost of 1 km (table 3.3, line №5) multiplied by the car mileage per year (table 3.4, line №2).

Additional costs were taken approximately as the cost of car maintenance during the year.

As a result, the total cost per year is equal to the sum of operating costs and additional costs.

Fuel savings were calculated as the Savings per 1 km (table 3.3, line №7) multiplied by the mileage of the car per year (table 3.4, line №2).

Savings on additional costs were calculated as the cost of maintenance of a gasoline car for every 10,000 km.

As a result, the total annual savings are equal to the amount of fuel savings and additional cost savings.

Now we can calculate NPV of the project for two discount rates: 12% and 15% (table 3.5).

Table 3.5 – Calculation of NPV project to purchase a Citroen Berlingo Electric

| № | Indicators | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|----|--|---------|--------|--------|--------|--------|--------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1 | Project year number | 0 | 1 | 2 | 3 | 4 | 5 |
| 2 | Estimated costs (including purchase), UAH | 676361 | 30150 | 35734 | 42715 | 49695 | 58072 |
| 3 | Projected savings (additional income), UAH | 126235 | 164106 | 214600 | 277718 | 340835 | 416576 |
| 4 | Net profit, UAH | -550126 | 133956 | 178866 | 235003 | 291140 | 358504 |
| 5 | Discount rate at a rate of 12% | 1,000 | 0,893 | 0,797 | 0,712 | 0,636 | 0,567 |
| 6 | Estimated costs at a discount rate of 12%, UAH | 676361 | 26919 | 28487 | 30404 | 31582 | 32952 |
| 7 | Estimated savings at a discount rate of 12%, UAH | 126235 | 146523 | 171078 | 197674 | 216607 | 236377 |
| 8 | Net profit at a discount rate of 12%, UAH | -550126 | 119604 | 142591 | 167270 | 185025 | 203425 |
| 9 | NPV project at a rate of 12% = 267788 | | | | | | |
| 10 | Discount rate at a rate of 15% | 1,000 | 0,870 | 0,756 | 0,658 | 0,572 | 0,497 |
| 11 | Estimated costs at a discount rate of 15%, UAH | 676361 | 26217 | 27020 | 28086 | 28413 | 28872 |
| 12 | Estimated savings at a discount rate of 15%, UAH | 126235 | 142701 | 162268 | 182604 | 194874 | 207112 |
| 13 | Net profit at a discount rate of 15%, UAH | -550126 | 116484 | 135248 | 154518 | 166460 | 178240 |
| 14 | NPV project at a rate of 15% = 200824 | | | | | | |

So, we can see that the NPV of our project is positive for both discount rates.

To find the payback period of the project, we will present these calculations in the form of graphs (fig. 3.12, 3.13).

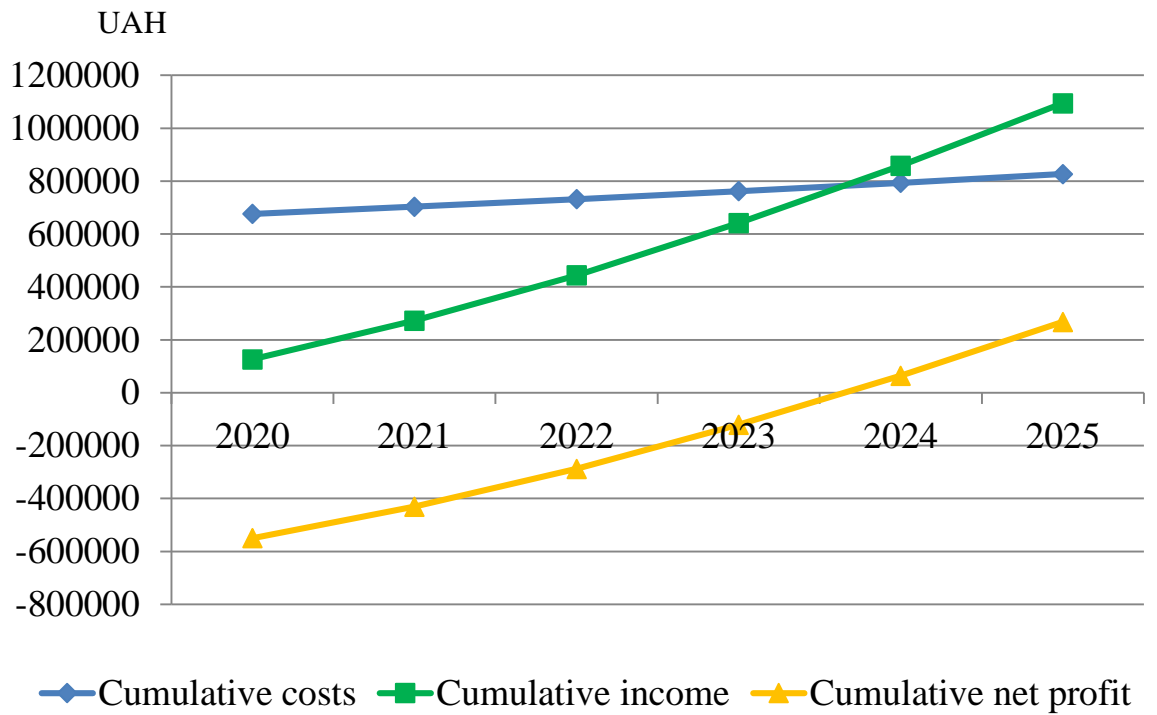


Figure 3.12 – Finding the payback period of the project at a rate of 12%

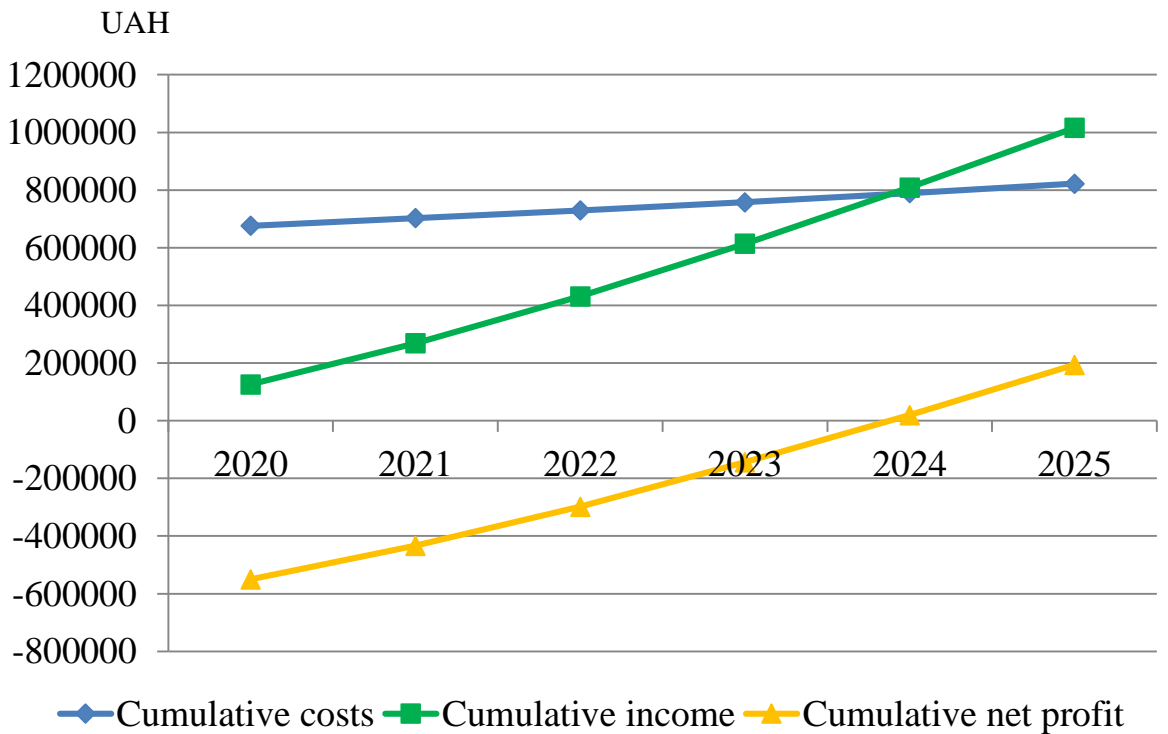


Figure 3.13 – Finding the payback period of the project at a rate of 15%

Based on the figures, we can say that the payback period of the project at a discount rate of 12% is 3,6 years. The payback period of the project at a discount rate of 15% is 3,9 years. That is, we can see that with such a more detailed calculation, the payback period of the project is significantly reduced.

Therefore, our project is cost-effective and can be recommended for implementation in the «Continental Logistics» company's activities.

Of course, along with stimulating sales of electric cars, it is necessary to develop the infrastructure for their service. A sufficient number of charging stations must be provided for the mass introduction of electric vehicles. But regarding electric cars for freight transportations, it should be noted that the spread of these trends in Ukraine will cause significant economic benefits for transport companies.

3.4 Chapter 3 summary

The third chapter dealt with the main directions for improving the organization of freight transportation.

So, as we can see, all ways for improving the organization of freight transportation by logistics companies include using information technologies. But also we can use new technologies of vehicle production.

The Minister of Infrastructure of Ukraine outlined the main vectors of improving the freight transportation:

1. IT technology.
2. Electric cars.
3. Cybersecurity.

According to these vectors we recommended for «Continental Logistics» company to start the transition to the use of electric cars for the organization of freight transportation.

The analysis of the market revealed a small number of electric minivans, which would be suitable for freight, namely the following:

- Nissan e-NV-200van;
- Renault KANGOO Z.E. Express;
- Citroen Berlingo Electric.

As a result, Citroen Berlingo Electric is much better for daily urban transportation of small freights with minimal operating costs.

Against competitors, it has several advantages:

- in comparison with Renault Kangoo ZE – this is a fast charge CHAdeMO;
- compared to the Nissan e-NV200, these are official deliveries and many spare parts;
- and, of course, it's much cheaper.

So we proposed for «Continental Logistics» company to buy Citroen Berlingo Electric for the organization of freight transportation for short distance or within cities transportations.

We calculated NPV of the project for two discount rates: 12% and 15%. And we saw that the NPV of our project is positive for both discount rates.

Therefore, our project is cost-effective and can be recommended for implementation in the «Continental Logistics» company's activities.

CONCLUSIONS AND RECOMMENDATIONS

The first chapter dealt with the theoretical principles of organization of freight transportation.

We have noticed that freight transportation is the physical process of transporting commodities and merchandise goods and cargo. Transportation takes a crucial part in the logistics operation.

Many companies now outsource all or part of their supply chain to logistics specialists when it's not a core business. For logistics providers, the value proposition rests on three key pillars: optimizing logistics costs for customers, shortening the length of the order completion cycle and reducing the number of fixed assets.

Organization of transportation is a very responsible process, in which every little thing needs to be taken into account. Indeed, not only the security and safety of the transported goods depends on this, but also the observance of the terms of the order. In general, the stages of the organization of cargo transportation include: preparation for loading and transportation; vehicle selection; determination of the need to use additional mechanisms for loading / unloading; development of a route; development of a cargo safety plan.

The two principles state that transportation management decisions should aim to maximize size of load & distance of shipment in order to obtain cost benefits, taking care of customers' requirements & satisfaction.

The second chapter dealt with the analysis of the company «Continental Logistics» activities at the Ukrainian freight market.

«Continental Logistics» is a reliable transport company with a fleet specializing in the transportation of goods in the B2B segment throughout Ukraine, Europe and the CIS. «Continental Logistics» transports all types of cargo by road.

Services provided by the company «Continental Logistics» are include:

- international transportation;
- domestic transportation;

- organization of movements in Ukraine, Europe and CIS;
- rent of special equipment;

Positive dynamics in company's activity is explained by the fact that from the very beginning of its activity, the company has established itself as a reliable partner. One of the priorities of the company is to ensure a high level of quality services. This allowed the company to conquer its niche among many other companies in the transport market of Ukraine.

After conducted analysis we can say that «Continental Logistics» company is profitable. The profit that the company received can be further invested in development.

The third chapter dealt with the main directions for improving the organization of freight transportation.

For improving the organization of freight transportation by logistics companies need to use newly information technologies. There are five main areas of application of information technologies in freight transportation:

1. Freight visibility.
2. Asset management.
3. Efficiency.
4. Freight information exchange.
5. Regulatory compliance.

So, as we can see, all these ways for improving the organization of freight transportation by logistics companies include using information technologies. But also we can use new technologies of vehicle production.

Vehicles generate about a quarter of total greenhouse gas emissions and are their largest source. That is why today the production and use of "green transport" – any type of transport with low negative impact on the environment – is actively developing. In recent years, transportation has become more energy efficient, but road transport is still dependent on oil and petroleum products for 96% of its needs. But trends are changing quite rapidly. Today, the electric car market has significant growth potential.

In practice, transport should use less energy, which should be cleaner, better exploit modern infrastructure and reduce its negative impact on the environment and key natural objects such as water, land and ecosystems. Based on this, the transition to electric cars is becoming widespread, as evidenced by the growth of sales of hybrid cars and electric cars in the world.

The Minister of Infrastructure of Ukraine outlined the main vectors of improving the freight transportation:

1. IT technology.
2. Electric cars.
3. Cybersecurity.

According to these vectors we recommended for «Continental Logistics» company to start the transition to the use of electric cars for the organization of freight transportation.

First of all we analyzed possible models of electric cars, compare them with existing fleet and calculate possible effect from changing (or adding) electric cars to the company's fleet.

The analysis of the market revealed a small number of electric minivans, which would be suitable for freight, namely the following:

- Nissan e-NV-200van;
- Renault KANGOO Z.E. Express;
- Citroen Berlingo Electric.

As a result, Citroen Berlingo Electric is much better for daily urban transportation of small freights with minimal operating costs.

Against competitors, it has several advantages:

- in comparison with Renault Kangoo ZE – this is a fast charge CHAdeMO;
- compared to the Nissan e-NV200, these are official deliveries and many spare parts;
- and, of course, it's much cheaper.

In the meantime, Citroen Berlingo Electric clearly shows the further development of electric mobility in Ukraine: electric vans come after electric cars.

So we proposed for «Continental Logistics» company to buy Citroen Berlingo Electric for the organization of freight transportation for short distance or within cities transportations.

We calculated NPV of the project for two discount rates: 12% and 15%. And we saw that the NPV of our project is positive for both discount rates.

Based on the figures, we can say that the payback period of the project at a discount rate of 12% is 3,6 years. The payback period of the project at a discount rate of 15% is 3,9 years.

Therefore, our project is cost-effective and can be recommended for implementation in the «Continental Logistics» company's activities.

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