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**PROBLEMS IN THE ORGANISATION OF THE TRANSPORT  
PROCESS ON THE INTERNATIONAL MARKET**

**Summary.** The transport process consists of many stages, where many interferences and problems may occur. It is important to identify these problems and find solutions to them, for example, using innovative tools supporting transport process management. A properly organised transport process allows the entire supply chain to function properly. For a transport process to be effective, it must be appropriately coordinated from planning, organising, implementing and controlling. In each of these phases, different types of problems may be encountered; therefore, the persons responsible for the various phases must monitor them closely. By reacting quickly, they can resolve any interference, so that the whole supply chain runs without major problems. The organisation of transport processes consists of several phases, which are an integral part of the whole process. Properly trained staff, knowledge of the transport market and the needs of the customer are essential for a company to function properly. Thanks to these three components, a company can offer services at the highest level. This work aims to develop a scheme of the transport process on the international market and also identify problems occurring in the organisation of transport processes. Some solutions to existing problems are also proposed.

**Keywords:** transport problem, international market, transportation rates, empty mileage

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## 1. INTRODUCTION

Road transport has a major role in the Transport, Shipping and Logistic (TSL) industry due to its well-developed infrastructure, delivering thousands of tonnes of goods to production and finished products to the contractor. Freight transport is involved in the entire production and distribution cycle, delivering goods for production as well as finished goods to the customer [1-4]. Each single transport order executed is, in fact, a complex process, consisting of many elements and stages [5, 6]. Different definitions of a transportation process can be found in the literature. The transport process is defined as a sequence of consecutive activities, constituting a certain whole, as a result of which goods will be delivered to the customer in the most efficient way. The following components can be distinguished in the transport process: movement, administrative, legal, financial, organisational and economic activities [7, 8]. In real conditions, the whole transport process depends on many people for documentation transfer, realisation of loading and unloading, driver's working time, and monitoring of the whole transport course. At subsequent stages, there are interferences and problems on which depends the quality and possibility of realisation of a particular order. Therefore, it is important to identify these interferences and propose solutions that will improve the quality of transport order execution [8]. This work aims to develop a scheme of the transport process and to identify problems occurring in the organisation of transport processes on the international market. Some solutions to existing problems are also proposed.

## 2. MATERIALS AND METHOD

Observation of the organisation of the transport process and identification of problems in the investigated company were made. The examined transport and forwarding company is a small company with a fleet of 20 trucks, based in Tychy, Silesia, southern Poland.

In the organisation of the transport process, various types of interference that negatively impact the company can be identified. A process map (scheme) was made in the investigated company. On the other hand, the identification of the most important problems that mostly influence the organisation of transport on the international market was made in the examined company. To emphasise and confirm the significance of the occurring problems in the organisation of transport on the international market, a questionnaire survey was conducted among the owners of transport companies, forwarders and professional drivers. An average data analysis was developed based on the number of indications from 50 survey questionnaires.

## 3. RESULTS

### 3.1. Organisation of transport process

In Figure 1, the transportation process from the moment of sending the request for offer, to the moment of payment for the service, occurring in reality in the transportation company is presented. The method is presented in a graphical form, providing answers to which processes are interrelated.

Every day, a transport company receives many enquiries in the mailbox about the possibility of realisation transport. To respond to the enquiry, the forwarder checks the transport possibilities and transportation rates.

The most critical stage is the flow of transport documents. After unloading, the driver sends the transport documents by post or by scan to an email. Nowadays, an increasing number of companies opt for a safer, faster way of receiving documents electronically. This makes it much easier for carriers and clients, as they do not have to wait to receive the original documents. By accepting the documents electronically, the payment period is significantly reduced and is thus, as many days as the agreed payment period.

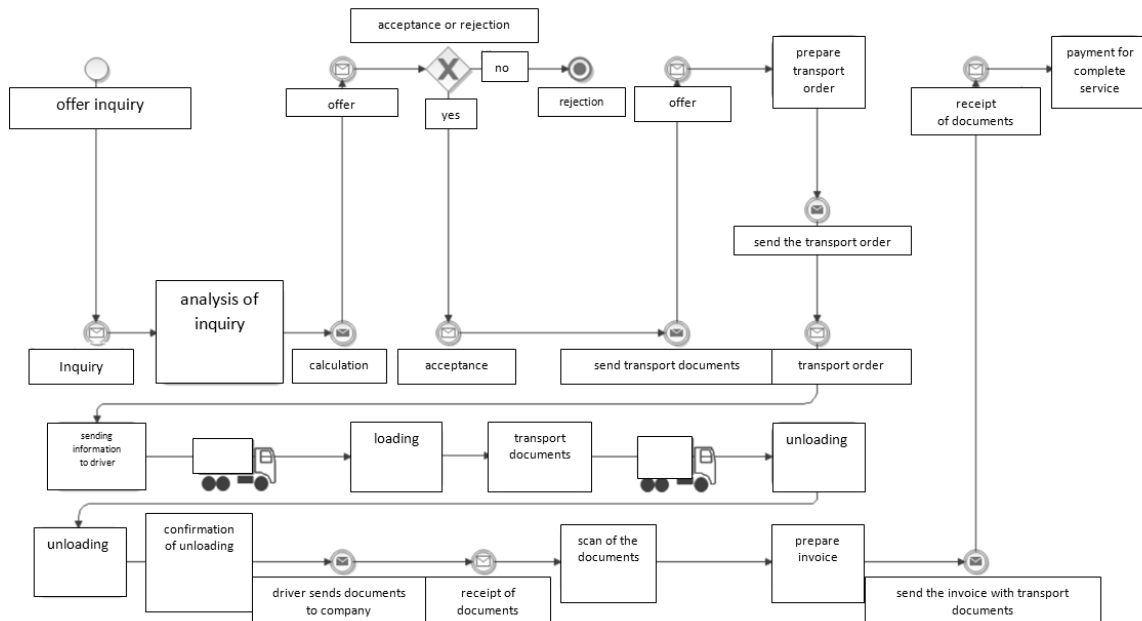


Fig. 1. Transport process (author's study)

### 3.2. Problems identification in the transport process

The following paragraphs describe the results of a survey of drivers, forwarders and transport company owners on the problems they experienced in the organisation of the transport process on the international market.

Figure 2 shows that most of the respondents work as freight forwarders in a transport company (70%), 20% of the answers were given by drivers, and only 10% by the owners of the transport companies.

Figure 3 depicts that most of the respondents (45%) work in small companies that employ up to 50 people. The smallest number of respondents (16%) work in large companies that employ over 250 people. Only 19% of respondents work in micro-enterprises, which employ up to 10 people, and in medium enterprises that employ up to 250 people, it is 20% of the total number of participants in the survey.

Figure 4 reveals that the highest number of sets of vehicles owned by the enterprise where the respondents work, is between 11-50 trucks (43%). The smallest value is between 51 and 100 sets of vehicles (16% of respondents).

Position held in transport company

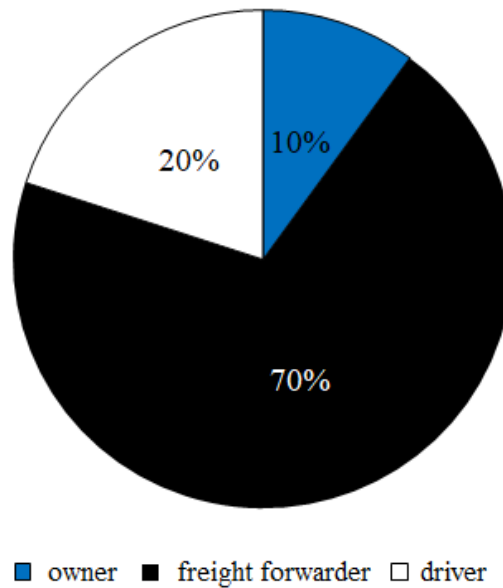


Fig. 2. Position held in transport company (author's study)

Transport company size

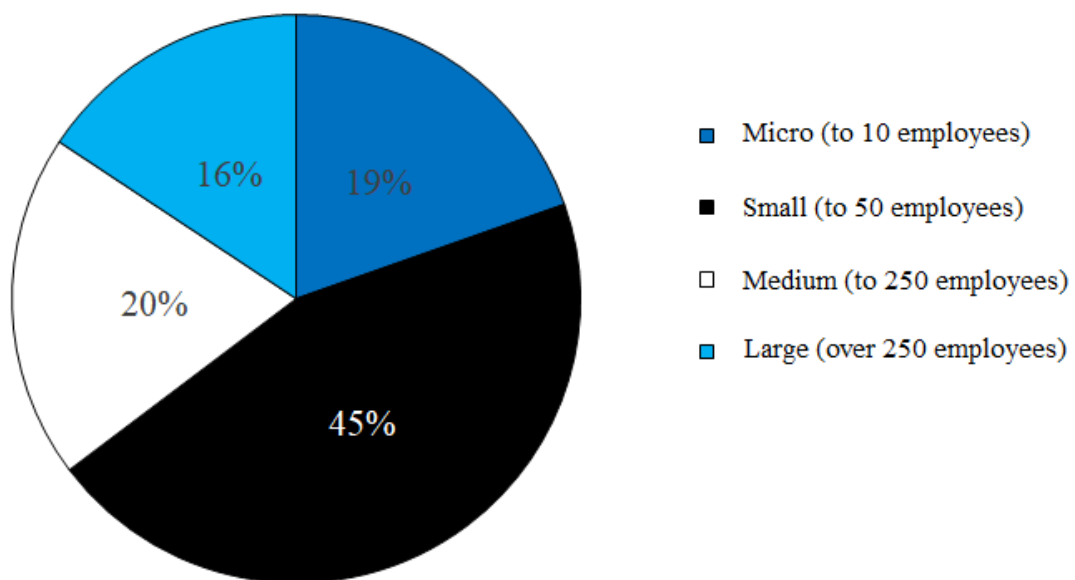


Fig. 3. Transport company size (author's study)

Number of trucks in the company's fleet

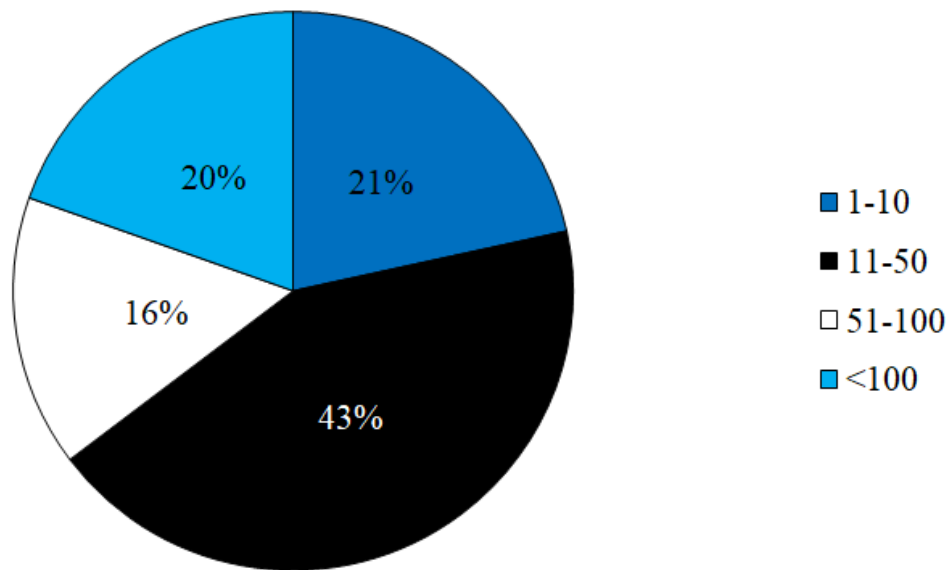


Fig. 4. Number of trucks in the company's fleet (author's study)

From the results presented (Figure 5), one can conclude that transport rates contribute mostly to the way a company operates, while road safety has the least influence. Different opinions may result, among others, from different working systems of a given company, for example, a signed contract for a fixed relationship, where the owner of the company does not have to worry about the payment term, because he has the same payment term in the contract for all transport orders and about empty runs as well, as loading/unloading takes place at the same company (at the same place).

Additional problems mentioned by respondents in the organisation of the transport process are listed in Table 1.

Tab. 1

Additional problems in the organisation of the transport process

Company size	Problems
<b>Owners</b>	
Micro	IT systems (old, lack) lack of parking spaces
Small	lack of sufficient, safe and secure parking areas
Medium	lack of sufficient, safe and secure parking areas
<b>Freight forwarders</b>	
Micro	lack of sufficient, safe and secure parking areas
Small	unreasonable retention of trucks loading/unloading places lack of sufficient, safe and secure parking areas
Medium	lack of sufficient, safe and secure parking areas

Large	lack of sufficient, safe and secure parking areas lack of drivers
<b>Drivers</b>	
Micro	lack of parking spacer
Small	lack of parking spacer unreasonable retention of trucks loading/unloading places low salary
Medium	lack of parking spacer theft of foods
Large	lack of parking spacer

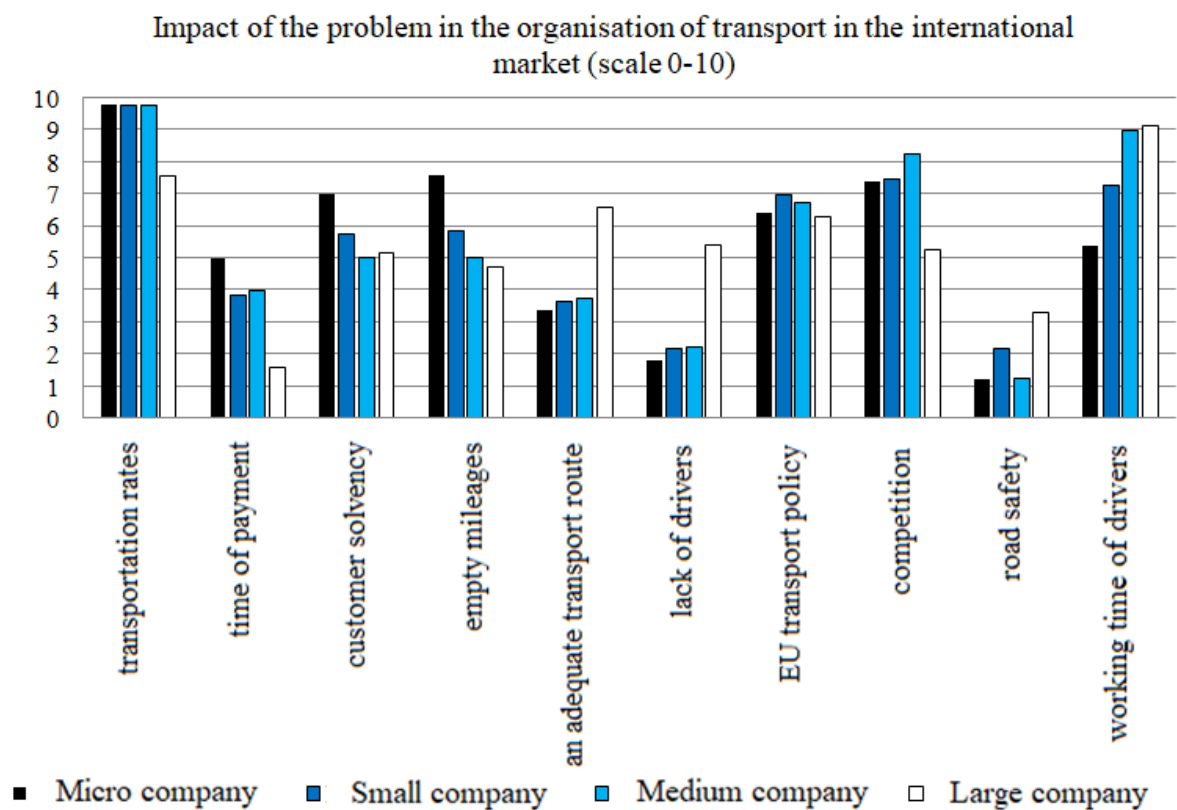


Fig. 5. Impact of the problem on the organisation of transport on the international market (scale 0-10) (author's study)

Different types of interferences, which negatively affects the company, can be identified in the organisation of the transport process.

The following most important problems were identified during the organisation of the transport process:

*Transportation rates*

It often occurs that the proposed rate per 1 km loaded is too low to realise the transport order at a high level. However, there is the risk of contacting another company with a lower rate for the same service if the rate proposed by the carrier is too high.

*Delays due to waiting for loading/unloading*

Transport orders have routes where the unloading place is many kilometres away from the next popular loading places. In such a situation, it is necessary to increase the freight rate, including vehicle drive to the next place of loading. However, in many cases, this results in a rejection by the customer.

*Non-payment for freight or delayed payment for completed service*

The payment term agreed upon in the terms of service is calculated from the date of receipt of all transport documents and invoice. The driver is scheduled to carry out orders on the road for about 3 weeks. After this period of time, it is possible to receive the documents from the fulfilment of orders by the driver and the specific vehicle. Waiting for the documents to flow and for the driver to return to the base extends the payment period by several days.

*Working time of drivers*

Often, the limitation in the implementation of transport is the working time of drivers and the applicable standards and legislation. On 15 July 2020, Regulation (EC) No. 561/2006 and (EU) 165/2014 were amended regarding, among other things, the guarantee of the return of the driver by the company, every maximum of four weeks to the driver's place of residence or the company's registered office. The driver should take a regular weekly rest of 45 hours after a maximum of 6 daily driving periods. This period may be shortened, no more than twice in two weeks in a row to 24 hours, provided the next rest is regular and compensation is received for the two previous shortened rests. A regular rest must be taken at the driver's place of residence or business. A driver may not take a regular rest of 45 hours in a cockpit. The employer must provide the employee with an overnight stay outside the cabin. In addition, the new regulation allows extending the driving time by a maximum of 2 hours when returning to the depot, but the driver must document the reason for the extended driving time on the tachograph printout. After an extension of driving time, the driver must take at least nine hours of daily rest and compensation for the extended driving time [9, 10].

**3.3. Problem solutions in the organisation of the transport process**

To be able to improve the organisation of the transport process in the international carriage of goods, the company should, among other things:

- 1) Implement a vehicle monitoring system,
- 2) Optimise transport routes,
- 3) Verify potential customers,
- 4) Vindicate clients who are in delay with payments,
- 5) Negotiate transport rates to waiting time for loading and unloading.

1) *Monitoring system of vehicles*

In the logistics market, many companies offer vehicle monitoring system. The main function of this system is its ability to monitor a vehicle around the clock in real-time. However, most systems offered by various companies have additional services which, for example, prevent

the stealing of goods, by the driver requesting help by pressing a button and sending information about an accident. Many other companies offer similar systems. It is worth considering and consulting other specialists (forwarders, logisticians, planners) who have daily contact with the presented systems to choose the most suitable one for a company.

## 2) *Optimisation of the transport route*

Empty mileage is a problem for most transport companies. It is rare for unloading and loading to take place at or near the same warehouse. However, there are tools to minimise empty mileage. Such tools are the freight exchanges. The main freight exchanges in the TSL sector are :

- TimoCom,
- Trans.eu,
- Teleroute.

Table 2 below compares freight exchange.

Tab. 2

Freight Exchange [12-14]

	<b>TimoCom</b>	<b>Trans.eu</b>	<b>Teleroute</b>
Founding year	1997	2004	1987
Number of daily offers on the Exchange	About 550000	About 150000	About 20000
Offered directions	Germany, Italy, Austria, Czech Republic, Slovakia, Netherlands, Belgium, Spain, France, Portugal, United Kingdom, Switzerland, Denmark, Norway, Lithuania	Mainly loads within the country or departures from the country. However, there are also offers for Germany, Italy, Belgium, Holland, Spain	Mainly France, Belgium, Netherlands, Luxembourg
Free trial period	1 month	1 month	free software demo
Cost of Rusing	The cost depends on the needs of the company, the number of forwarders using the exchange	100 euro	The cost depends on the needs of the company, the number of forwarders using the exchange
Additional services	Debt collection, Tenders, Warehouse search engine,	Debt collection, The possibility of connecting GPS to Trans.eu and making	Debt collection, Travel cost calculator,



	Possibility to connect GPS to Timocom and provide vehicle tracking to customers, Travel cost calculator, Transport barometer	the vehicle tracking available to customers, Quick Pay - quick payment for transport, commission of 1.99% from the freight	Sending SMS with loading/unloading addresses to drivers
Termination conditions	3 months	1 month	3 months

Comparing these 3 freight exchanges with each other exposed some discrepancies. The most important difference is the destinations offered in the freight exchange. Of the three freight exchanges, TimoCom seems to be the best solution as it offers the most freight per day. However, buying at least two freight exchanges for a better exploration of choices should be considered. With the free trial, companies can test the practical differences between TimoCom and Trans.eu. The manner of contact with potential customers is also a difference between these exchanges. To enquire about offers in TimoCom's and Teleroute's exchange, customers have to send an email or make a phone call. TimoCom has a business messenger, which, however, is usually not used by companies, whereas Trans.eu has a business messenger as the main form of contact and this makes it much easier to discuss offers. To optimise the transport route, the company may additionally use maps dedicated to trucks, which show, among others:

- height, tonnage, width restrictions,
- driving prohibitions,
- real-time roadway incidents,
- transport costs.

Such a map can be, for example, HOGS maps or the Scania Fleet Management System [11, 15]. With the ability to calculate transport costs, the company can save up several hundred euros per route, and avoid additional kilometres that a vehicle can travel without proper directions to the place of loading/unloading, for example, when it is limited by tonnage bans.

### 3) Verification of potential customers

To minimise the problem of insolvent contractors, companies should verify potential customers. It is very important to check how long the company has been operating in the transport market. There are quite a few methods to verify a potential customer, among others, through:

- Central Register and Information on Economic Activity (CEIDG) - a database of sole proprietor companies. Here, one can check tax number, edit the entry, whether the company was suspended or is active,
- KRS - online database - a register where the civil law relationships between partners can be checked,
- National Debtors Register - a paid register where the current debts and the history of receivables of a given company can be assessed,

- European Commission VIES - tax numbers of contractors from the entire European Union can be confirmed on this platform.

The freight and vehicle exchanges, TimoCom and Trans.eu, both have the option for customers to leave their reviews. This is a tool to verify customers.

#### 4) *Debt collection*

Quite a few companies on the market offer debt collection services. It is worth making a contract with one of them. These companies first try to resolve the matter by sending a letter about an unpaid invoice. However, when the counterparty does not respond to this letter, then they take the matter to court. Debt collection companies have legal advisers in their teams who prepare the official letter to the court and handle the case further.

#### 5) *Negotiate transport rates in terms of waiting time for loading and unloading.*

Most contractors in the contract of a carriage include a stop on loading/unloading up to 24 hours for free. When negotiating rates, it is worth negotiating the terms of parking a car as well. In the terms of order or contract, one may find the following clause: 100 euros payable for a stopover 5 h to 10 h, over 10 h to 24 h - payable 200 euros.

## 4. CONCLUSION

The analysis made it possible to characterise the interferences occurring in the company. The distortions that were presented affect many transportation companies with varying probability and scale of potential impact. The interferences observed include transportation rates, empty mileage, payment terms for contractors and financial terms. To eliminate these distortions, it was suggested to introduce innovative IT tools such as the GPS telematics system that allows detecting the location of a truck per time, helps the forwarder to manage the fleet and the drivers, and special maps that assist the company in reducing the costs of tolls, save the drivers time in reaching their destination by being able to check occurring restrictions on the roads. Several methods were further proposed for the verification of a potential contractor, as well as the agreement with a debt collection company in terms of non-payment for the transport service by a customer. All abovementioned work to reduce additional costs incurred by the company, increase work efficiency, as well as reduce the occurrence of risks in the future.

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