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OPTIMISING INFORMATION TRANSFER FOR ENHANCED EFFICIENCY IN PARTIAL CARGO TRANSPORT

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Abstract

A popular area of logistics nowadays is partial cargo transportation. During the assembly of cargo, you need accurate information about the load, and to be able to assess the dimensions, weight and space. This determines the quality of the service provided for road transport partial loads, and a high level of customer confidence. The demand for freight is high, and so is the need to improve freight transport technology and the way information is transmitted, and to find the most appropriate and fastest solutions for transporting freight. Partial loads can be used to transport small loads, resulting in faster freight movement, time savings for the customer, and better quality results in terms of work. The objective of the quantitative approach was to identify gaps in information transfer in part load companies. Improved transfer of information would lead to better targeting and faster loading. Technological improvements in logistics relating to information transfer will facilitate the work of managers and improve the quality of the part load service. A specific request form, where the customer can specify the weight, size and width of the part loads, would avoid additional questions for managers.
KEY WORDS: information transfer, information transfer improvement, logistics, partial cargo transportation.

Anotacija

Šiandien populiari logistikos sritis yra dalinių krovinių gabenimas. Planuojant krovinio vežimą reikia tikslios informacijos apie dalinį krovinį, kad būtų galima įvertinti jo matmenis, svorį ir užimamą vietą. Tai lemia teikiamų dalinių krovinių vežimo kelių transportu paslaugų kokybę ir aukštą klientų pasitikėjimo lygį. Krovinių paklausa šiandien didžiulė, tad būtina tobulinti jų gabenimo technologijas ir informacijos perdavimo būdus, ieškoti tinkamiausių ir greičiausių krovinių gabenimo sprendimų. Daliniais kroviniais galima vežti nedidelius krovinius, taip jie gabenami greičiau, klientas sutaupo laiko ir pasiekia geresnių darbo rezultatų. Kiekybinio metodo tikslas – nustatyti informacijos perdavimo spragas dalinių krovinių bendrovėse. Pagerinus informacijos perdavimo situaciją būtų galima tiksliau parinkti krovinius ir greičiau juos pakrauti. Technologiniai logistikos patobulinimai, susiję su informacijos perdavimu, palengvins vadovų darbą ir pagerins dalinio krovinio aptarnavimo kokybę. Konkreti užklausos forma, kurioje užsakovas galėtų nurodyti dalinių krovinių svorį, dydį ir plotį, leistų išvengti papildomų klausimų vadovams.
PAGRINDINIAI ŽODŽIAI: informacijos perdavimas, informacijos perdavimo tobulinimas, logistika, dalinių krovinių gabenimas.
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Introduction

With the growing interest in delivery services, partial load delivery is emerging as a way to reduce costs and optimise parcel transport (Boysen et al., 2022). Logistics companies have faced several challenges in recent years, ranging from new regulations to changing customer needs and more. The increasingly globalised economy has increased the demand for logistics services to facilitate trade and provide a competitive advantage. As more companies join this evolving sector, it is becoming increasingly important to keep up with the trends and innovations that are shaping the future of logistics (Raut et al., 2018). As the logistics industry continues to evolve, relevant technologies are becoming more mature, systems are improving, and the requirements for the accuracy of logistics information transfer are becoming more demanding. Traditional logistics information transfer is mostly recorded manually, which is not only labour intensive and inefficient, but also cannot meet the current scale and smart development requirements of the logistics industry. The application of logistics enables greater efficiency in freight mobility, through the appropriate choice of modes, terminals, routes and schedules. The implicit objective of logistics is to provide goods, raw materials and commodities that meet the four main requirements of order, delivery, quality and cost performance (Hesse, Rodrigue, 2004).

For small quantities, the customer's focus is on quality, price and time savings. The logistics service provider aggregates small quantities of goods to make delivery cheaper and more efficient, and delivers them to shippers using different modes of transport (Song, 2021). In order to make the work as efficient as possible, and to enable companies to improve the transport of part loads, it is necessary to analyse the shortcomings of information transfer and current errors. Finding and applying simpler solutions will help to minimise errors in part load picking, and achieve more efficient results.

The timely transfer and receipt of information is essential for all actors in the transport chain. Efficient and rapid information exchange ensures smooth and expeditious transport.

Research question: Multiple loads can be transported in the same vehicle at the same time, provided that the total weight and volume of the loads does not exceed the capacity of the vehicle. Each origin and destination must be visited exactly once (Wolfinger, Salazar-González, 2020). In companies, improved information transfer would avoid problems in loading goods on to the lorry. With the growing interest in delivery services, partial loads are emerging as a way to reduce costs and optimise parcel transport (Boysen et al., 2022). Improving information

transfer would help to target operations, load goods faster, and avoid financial losses.

Problem question: How to improve the transfer of partial load information?

Aim of the study: To identify ways to improve the transfer of partial load information.

Research methodology: Analysis of scientific literature, quantitative research (survey), and descriptive statistics analysis, were chosen for this research. They were chosen as the most appropriate way to analyse the data collected, and to find out the consequences of the current problem. Once the data has been collected and analysed, the final picture shows what can be improved.

Results: The quantitative study confirms that improving the communication of information is essential to providing quality services to customers. The most common problem encountered by transport companies is inaccurate information from the customer about partial loads, which subsequently affects delivery times. Managers believe that creating a form with all the necessary information about the load would save them time.

Originality/value of the research. The problems of transferring information about partial loads are rarely described in academic literature. The study reveals problems and areas for improvement in the information transfer of a company involved in the transport of part loads. Addressing them would improve the quality of parcel delivery services. The information improvement options can be suggested to other part load companies facing the same information transfer problems. The study is relevant to the constantly evolving logistics industry and the ways in which information is transmitted.

1. Methods

A quantitative study was chosen to identify opportunities for improving the transfer of partial load information. Quantitative research is appropriate when the aim is to establish the essential characteristics of an object, the causal relations of phenomena, and factors in their functioning. It is also used to study large groups and aims to reflect the opinion of the population, and the data from quantitative research have a numerical meaning (Creswell, 2009).

A survey questionnaire was chosen in order to draw conclusions about the behaviour of the whole population from a small proportion of the population (Creswell, 2009). The scope of the research: 64 managers from 11 companies express their opinions about the problems of information transfer, and ways of improving it, in the case of order picking and part load transport. The main criterion for the selection of the sample was that employees of the companies, which have been

involved in partial freight transport for more than five years, should have a clear connection with the problem studied. The survey was conducted between 1 February and 1 April 2022.

2. Literature review

The importance of logistics information transfer

Today's transport professionals need more modern communication tools than a telephone and fax to process and transmit a wide range of information, and to communicate successfully. In communication, people exchange information, gather facts, and transfer knowledge, orders, tasks and requests. Communication and interaction are more effective the faster the message reaches the addressee, the more visually the information is presented, and the greater the possibilities for responding to events (Pečeliūnaitė, 2012). There is a great and urgent need for access to information in modern society. Information is an aid to decision making for decision makers. Information creates new information (Sahu et al., 2020).

Information is a key element in the successful functioning of a delivery system. Information as a management object is transformed into information flow in the transport chain (Meidutė et al., 2012).

The very notion of information transfer means that the knowledge accumulated by one individual becomes information only when it is transferred to another. The accumulation of information becomes meaningful when it can be transferred to someone else (Batarlienė, Jarašiūnienė, 2020).

In today's world, the growth of telecommunications and information technology, as well as increasing competition and complexity in production and logistics, have increased the importance of communication in organisations, large and small, regardless of their type and nature (Chatti, Majeed, 2022). Batarlienė (2011) argues that information sharing is not perceived as a means, but as a process, which brings together all the constituent elements, and points towards a common goal.

In terms of the importance of information sharing, there are two main functions of organisational communication:

- Supporting the organisation's goals, vision, mission and strategy;
- Meeting the needs of information users.

In addition, Harrison, Van Hoek and Skipworth (2018) explain that improving a logistics information system starts from the needs of customers, by learning about their interests, taking into account the company's capabilities that should be improved. Improving the technology in logistics relating to the transfer of information facilitates the work of managers, and improves the quality of parcel services.

Adequate, correct and optimised information management leads to market opportunities. Ensuring the correct flow and timing of information is crucial for many logistics companies. It is an element that allows a company to increase its competitiveness on the market (Hołubowicz, Samp, 2011).

Methods of transmitting information for partial loads

'In order to manage the available information as efficiently as possible, it is necessary to choose the right tools to manage the information flow' (Meidutė, 2012, 47). Once the right tools have been chosen, it is important to obtain the most accurate data on the weight and space of the partial load to accommodate the customer's goods, as well as the goods of the other ordered companies. The truck must be able to carry all the goods ordered, and must not exceed the permitted load. Prior to the arrival of the ordered vehicle, the load must be properly prepared, as this determines the time and cost of the shipment (the amount of handling work and the utilisation of the vehicle (Shibasaki et al., 2021).

According to Batarlienė (2011), information transfer can be the interaction of people, computer equipment, telecommunications and software products, in the collection, processing, storage and presentation of information in a specific subject area, in textual, digital, visual or audio form to customers. There are many means of transfer, but it is necessary to choose the one that is the quickest and most convenient for employees to work, for customers to be satisfied and for the logistics chain itself to be managed.

In parcel shipping, the dynamic development of mobile devices such as smartphones, tablets or specialised equipment for reading, writing and transmitting economic process workflow data allows access to the right information at the right time from almost anywhere in the world (Malesa, 2017).

Processing information gives it new content: quality. This cannot be achieved if

- The available information is of low quality and does not improve after processing;
- Inappropriate processing methods are used;
- There is insufficient motivation of information processing staff.

Organisations should be as modern and inventive as possible, because technology is changing rapidly and they need to keep up. New and viable alternatives must be found to access and transmit this information more quickly, and to find ways of outperforming the competition. Effective planning, decision-making and control depend on the effective management of information through information systems. As application packages have been developed for individual business areas, a company should move beyond internal information processing to an inte-

grated information processing system covering all areas of transport (Batarliene, 2011).

Official Eurostat statistics (see Fig. 1) show that there is still a significant demand for the road transport of part loads. Compared to 2017, the productivity of vehicles with a payload of between 9.6 and 15.5 tonnes in the EU showed a significant increase in 2020 (+49.0%), which continued in 2021 with a growth of 18.7% (see Fig. 1). It can be assumed that the global outbreak of the Covid-19 pandemic may have had an impact. In contrast, the transport productivity of vehicles with a payload of 25.6 to 30.5 tonnes decreased by 23.1% in 2020 compared to 2017. The downward trend continued in 2021 (-3.2%).

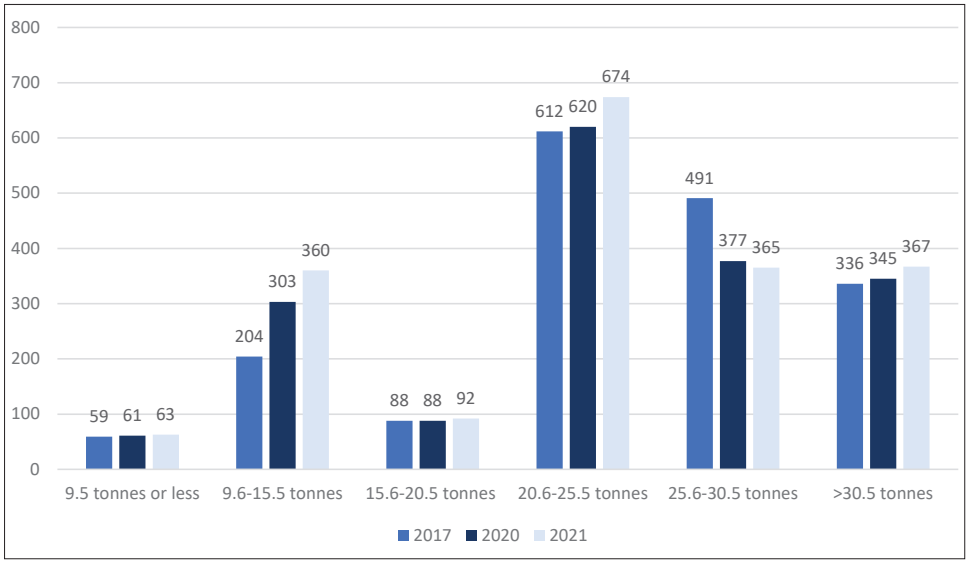

Figure 1. Road freight transport by carrying capacity, EU, 2017, 2020 and 2021 (million tonne-kilometres)

Source: Eurostat Official Statistics Portal. (2021). *Road freight transport by vehicle characteristics.* Available from: <https://ec.europa.eu/eurostat/statistics- explained/index.php?title=Road_freight_transport_by_vehicle_characteristics#Road_freight_transport_by_ma ximum_permissible_laden_weight_of_vehicle>.

In a logistics company, if the information system does not work, the manager cannot provide the customer with important information about the current situation, where his cargo is, and when it will be delivered, which is why the functioning of systems is so important for the company.

Freight is in high demand, so it is necessary to improve freight transport technologies and information transfer methods, and to find the most appropriate and fastest solutions for moving freight. Partial loads can be used to transport small

loads, resulting in faster freight movement, time savings for customers, and better quality results in terms of work.

2. Research results and data analysis

Partial loads are a very important process in logistics, and the information received and transmitted is expected to be as accurate as possible. The flow of information between participants in the transport chain ensures communication and increases transport efficiency. Partial loads can be prepared and transported more quickly if the customer provides accurate information on dimensions and weight. This saves time for managers and warehouse staff. In order to find out what employees think and to make suggestions for improving the information, it is important to find out what information is most frequently received, and to what extent it is relevant.

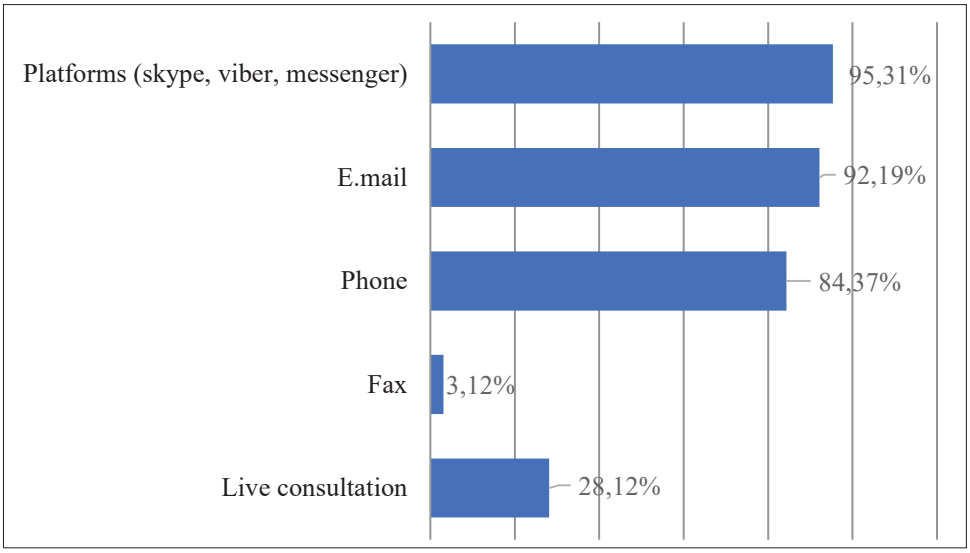

Figure 2. Means of receiving/transmitting information

Source: Compiled by the authors, based on survey data

Looking at the main means used by employees to receive/transmit information (see Fig. 2), the main means used by employees are communication platforms (95.31%), e-mail (92.19%), and telephone (84.37%). With the rapid development of information technology, employees are opting for online communication. Mobile phones or computers can be used to send messages via Skype, viber or email

and the internet to anywhere in the world. These communication platforms are an inexpensive way to communicate.

For a transport system to work efficiently, communication between many people with different roles must be fast and effective. An analysis of the results of the survey, shown in Fig. 3, shows that the vast majority of transport managers agree that the timing of information transfer is an important aspect in the transport of less-than-truckload (LTL) freight. Timely information allows for quick reactions to changing conditions and timely decisions, to ensure a high-quality and efficient operation.

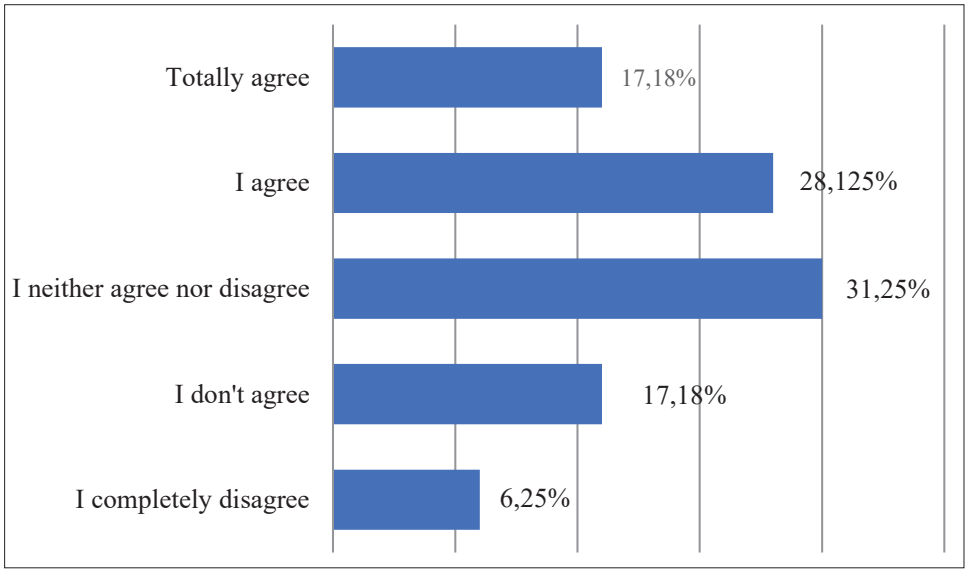

Figure 3. Time transfer of information flow

Source: Compiled by the authors, based on survey data

Information quality is measured in terms of accuracy, timeliness, completeness, relevance, and whether it is easily understood by staff, so accuracy is important for information quality. In the case of partial loads, priority should be given to the transfer of information, as having relevant and accurate information available to everyone in the chain reduces the potential for problems and errors. Inaccuracy in the dimensions of a load can lead to additional losses for the company, and more time is spent on resolving problems. The majority of the participants in the study (see Fig. 4) claim that they receive inaccurate information from customers, and need to make additional adjustments to the partial load data.

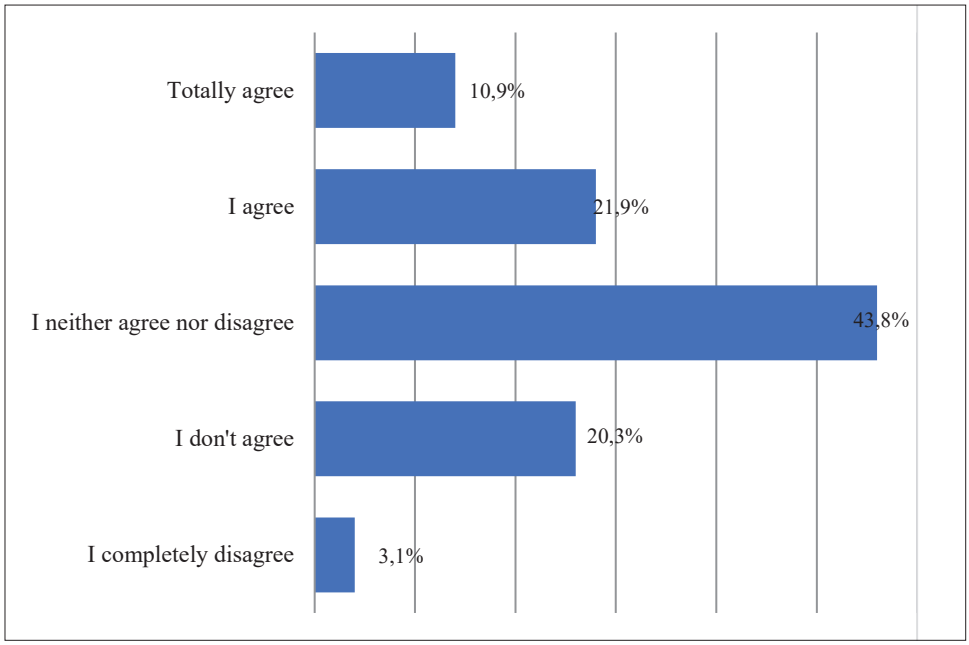

Figure 4. Accuracy of information flow

Source: Compiled by the authors, based on survey data

In order to identify opportunities for improving the flow of information (see Fig. 5), it can be said that the majority of respondents believe that the transfer and collection of information could be improved by having dedicated, in-house developed, load enquiry forms, which would fill in all the existing information on the load, and pass it on to fulfilment.

The analysis of the questionnaire survey data and its summary leads us to the conclusion that the participants in the study face problems with the transfer of information. Whatever the means of communication used, the most common problem encountered is inaccurate and untimely information from the customer or the hauler about a partial load, which leads to delays in the order's fulfilment or to uncollected loads. Managers believe that, by creating a specific enquiry form with all the necessary information about the shipment, they would save time, avoid having to consult the customer again, and ensure that the consignee receives their shipment on time. They also believe that direct contact with the consignor would help to resolve problems and inaccuracies in the cargo information more quickly.

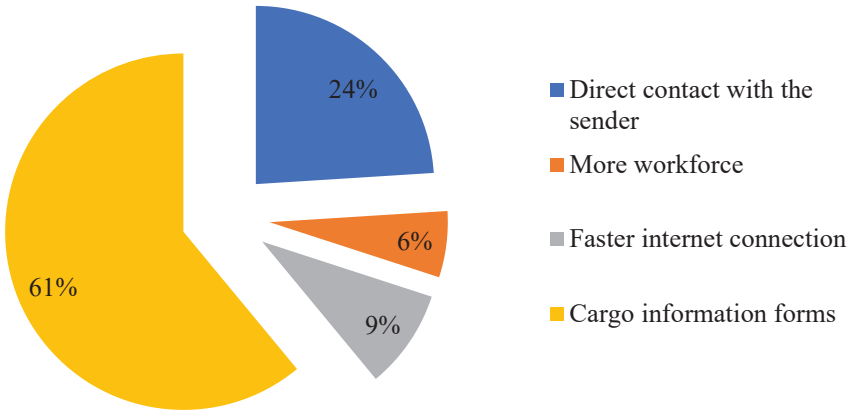

Figure 5. Opportunities to improve information flow

Source: Compiled by the authors, based on survey data

Conclusions

1. We can transport small loads in partial loads, which speeds up the movement of goods, saves the customer time, and improves the quality of the work. In today's world, the growth of telecommunications, information technology, increasing competition and the complexity of production and logistics, have increased the importance of communication in large and small organisations, regardless of their type and nature. Adequate, correct and optimised information management determines marketability. Ensuring the right flow and timing of information is crucial for many logistics companies.
2. Based on the quantitative study, it can be concluded that there are problems in the transfer of information in companies transporting part loads, such as the untimely and inaccurate transfer of information. Technological improvements in logistics relating to information transfer will facilitate the work of managers and improve the quality of the part load service. A specific request form, where the customer could specify the weight, size and width of the part loads, would avoid additional questions for managers. It would speed up and facilitate the work of managers in completing freight transport, and would also avoid the need for staff to spend time finding out information about the cargo. Direct contact with the shipper would also help to resolve the problem, making information available more quickly.

Conflict of interest

The authors declare that there is no conflict of interest.

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