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# Criteria of quality requirements deciding on choice of the logistic operator from a perspective of his customer and the end recipient of goods

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### Abstract

The choice of the operator involves taking risks, especially when changing the way logistics is handled (e.g. from your own warehouse and distribution network to external – outsourced). The aim of the article is to present the most important factors that directly and indirectly influence purchasing decisions made by customers of logistics operators. In order to correctly determine the parameters of the selection of a logistics service provider in terms of quality, it is necessary to define quality requirements criteria that allow to meet specific KPIs (Key Performance Indicators) to measure the satisfaction of the final recipient of the goods. The main goal of the article is to answer the question of how to define criteria to be relevant to customer expectations and how they affect final purchasing decisions in the context of choosing the operator to provide logistics services. In order to illustrate the full picture of the studied environment, as well as to maximally facilitate and encourage respondents to participate in the study, surveys were used mainly in the form of Internet, mostly containing closed and several open questions. The research was based on three research groups: logistics operators, customers of logistics operators and final recipients of services of logistics operators. In the individual groups, the survey invited: 1) about 80 companies from European logistics operators; 2) approx. 150 companies from Central and Western Europe dealing in production and trade according to the classification of economic activity; 3) over 2,000 people who have declared to buy various goods with delivery to the address indicated.

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## 1. Introduction

The logistics industry in recent years has been struggling with operational problems that significantly affect the services provided. In addition to the potential increase in the prices of services rendered, the threat related to the effect of higher demand (oversupply) relative to available transport units is becoming more real. Accessibility should be understood as the possibility of performing the transport service, not only the availability of trucks. The number of undeveloped trucks is significant, but the availability of drivers who can perform the service is very limited (this applies to both category C, C + E and category B drivers - e.g. courier services). The situation is similar with warehouse workers, who are also lacking on the labor market. The consequence of constant (for several years)

problems of the logistics industry is the reduction of the price weight at the moment of making the purchase decision. However, the quality of services provided remains key.

Only a dozen or so years ago, trading enterprises carried out logistics processes independently, but over the years they began to use transport and storage services provided by intermediaries, instead of employing persons whose task was to implement these processes within the enterprise. In addition, based on previous analyzes of the costs associated with transport and storage, which clearly showed that using the services of an external company or broker is much cheaper for the company itself.

There is another additional element that plays a very important role - the quality of services provided by the logistics operator. The issue of quality has been an indicator for clients

who are in the process of making decisions, whether in connection with the purchase of products or services or establishing cooperation with partners. In addition, quality is an element that can be constantly improved (Dzhuguryan et al. 2020; Mesjasz-Lech, 2019). Quality is inextricably linked to the continuous development of the market, because along with its development not only new customer needs appear but also their requirements regarding the quality of products or services change, which means that almost all companies constantly carry out activities aimed at improving it.

The purpose of the article is to define the key criteria of quality requirements affecting the choice of the company providing logistics services from the point of view of logistics operators, their clients and final recipients. Each group evaluates the same activities in a different way. Assessment perspectives are also different. The results of the research presented in the article will be able to objectively assess what criteria are guided by two groups of respondents (customers of the logistics operator and the final recipients of goods delivered through them), when making choices of companies implementing the process of handling and delivery of purchased goods.

## 2. Literature review

Bearing in mind that almost every decision regarding production, purchase or sale depends largely on the quality of the product, it can be assumed that the issue of quality is still very actual and is the subject of many scientific considerations. The process of shaping the supply on the market depends on the two most important factors, with the first one being price, the other one being quality. The price ratio has remained the leading over the last dozen or so years, which is associated with the generally accepted aspiration in free market economies to constantly reduce the price level (Data Group Consulting, 2015). These types of activities are closely related to the phenomenon of striving to maximize profits from the activities of logistics operators during strong competition in terms of services offered, including activities involving the so-called cross-selling - offering related services for the same customer (e.g. transport and storage, freight forwarding and customs agency, etc.) (Ciesielski, 2005; Krzywda, 2019). Nowadays, there is no longer a situation where customers have a choice of two competing goods, instead, each product is divided into many competing product lines of varying quality. This means that a market that does not take quality into account automatically eliminates one of the key factors in the process of making economic decisions (Bowbrick, 2002). Therefore, quality turns out to be a parameter thanks to which it is possible to increase the competitive advantage while maintaining a set price level. Such action is only achievable by constantly striving for excellence within the quality of services or products manufactured (Fearne et al., 2001). Quality is not only the subject of theoretical scientific considerations. In addition to being defined as part of science for each discipline, it also accompanies man in his daily activities. For the purposes of economics, quality is defined by categorizing products or services, which allows determining the extent to which they meet

defined needs (Bowbrick, 2002). Marketing, in turn, determines the fulfillment of needs, albeit those that have been indicated by the final recipients of a product or service (Pietrasieński and Ślusarczyk, 2015). In marketing terms, quality is mainly seen as a tool to achieve competitive advantage on the market. Research results comparing the marketing strategies of British, American and Japanese companies operating in Great Britain showed significant weaknesses in the marketing efforts of the British and Americans. On the other hand, the Japanese were aware that the lack of increased spending on marketing activities or the implementation of more aggressive strategies will contribute to achieving a competitive advantage, but it is offering products of high quality as well as proper customer service and after-sales service can have a significant impact on strengthening the position on market (Wong et al., 2008). For the logistics approach, quality is a concept that somehow combines its definition in economic and marketing terms with the difference that in logistics quality consists of the process of defining the logistics service so that users (final recipients) have a sense of meeting their requirements and needs (Meidutė-Kavaliauskienė et al., 2014). Based on the above considerations, it can be concluded that quality is not only a set of values that define a product or service, but also the physical ability to meet customer expectations, even if they did not define them themselves (fulfillment of hidden, subconscious needs) (Estepon, 2019). Proper quality management, i.e. defining the mentioned customer needs, then shaping the service to meet them, can guarantee the generation of demand for the offered service.

The definition of quality in itself is defined as the quality of manufactured products, services, processed materials, objects, or intangible assets (such as patents or intellectual values). For a long time it has been the subject of researches and discussions, not only of researchers and engineers, but also of philosophers, representatives of the humanities, and finally people associated with design, technology or production. The perception of the essence of quality has changed along with economic evolution, which is a continuous phenomenon. And despite many definitions defining what it is, the fact that quality is a set of features of a given product or service that characterize it (Janakiraman et al., 2006).

Given the contemporary realities characterized by dynamically changing markets and economic environments, the increasingly frequent occurrence of global processes, it is the qualitative elements that make it possible to distinguish a given product or service from similar offered by many enterprises, often operating in the same industry or sector (Christopher, 2011). Therefore, there is a very strong link between quality and the production process itself, sales and elements generating operating and production costs. But it should be borne in mind that the recipients' preferences shape the success or failure of a given venture, decide whether a given product or service will be a desirable commodity. Because it is the tastes or needs of customers that allow you to decide whether a given offer can be accepted and this and not another product is purchased, and it does not meet expectations and then the sales process will not only be completed, but also may not to start (Estepon, 2019; Cierna and Sujova, 2020; Kwilinski and

Kuzior 2020). The decisions made by individual buyers can ultimately contribute to its further development, as well as may be destructive. This is due to the fact that modern enterprises operate on a market that is not only a very demanding market but is also a market of very high competitiveness. Thus, companies focus on improving the quality level of logistics services, paying special attention to quality management, which is understood as activities carried out to meet customer expectations and the quality requirements they set (PN-EN 14943:2006, 2006).

However, among many quality definitions, there is very rarely a definition of logistics service quality in the literature alone. There is a concept of transport service quality, which is a kind of foundation for its extension and full definition of the quality picture of all activities in the area of logistics. This quality of transport is described as: "a set of quality criteria and appropriate measures for which the service provider (entity declaring compliance) is responsible" (PN-EN 13816:2004, 2004). It can therefore be concluded that the transport service is a product - the result of creating synergies of active services that make up its final shape, and which are further enhanced by the marketing message prepared by the logistics operator (Grzelakowski, 2010). As a consequence, the value of the transported goods themselves has a significant impact on the value in use of logistics services that accompany the shipment along its entire path from the supplier to the final recipient, and which create a kind of value chain almost equal to the value of the good (Grzelakowski, 2014; Ulewicz et al. 2016).

Nowadays, characterized by, among others fast IT, engineering and automation development, the client often does not realize what options he is facing in the near future to make deliveries and orders more flexible (Kiełtyka, 2010). It should also mention the broadly defined methods of process quality management at logistics operators that affect the quality of the entire supply chain. The impact of this management has a direct impact on the final value of the good and the valuation of individual logistics services in the chain (Lee, 2005; Klimecka-Tatar and Ingaldi, 2020). The purchasing process is less and less reminiscent of a traditional model, in which the various stages followed: going to the store, finding the right product, watching it, choosing and making a purchase decision. Currently, the dominant model is: seeing the product, choosing and making a purchase decision, and then returning it in case it does not meet expectations. This model seems to be very beneficial for economics and the economy, especially since it is widely favored by the trend of buying more and more products. It is also worth remembering that having a given product, buyers very rarely decide to return it, thus driving the machine of subsequent orders. This is also associated with a change in the sales model itself. The classic model is being divided, which was divided into four main stages: arousing interest, customer classification, product presentation and closing sales, in favor of a new sales model. The new model also consists of four stages, but their individual meaning is different: awakening customer confidence, analysis of their needs, presentation of possibilities and solutions to problems as well as confirmation and closing of sales (Kletkiewicz,

2014). The "second sale" market is also developing dynamically, i.e. the marketing of products whose purchase was not entirely thought out. This segment includes, for example, "unwanted" gifts. Also here, both the seller and the buyer expect at least a similar level in logistics service as when shopping in a specialized online store.

The main indicators to which participants in the last element of the supply chain pay special attention are (Kempny, 2008):

- Delivery time
- Product availability
- Flexibility
- Frequency
- Punctuality
- Accuracy
- Delivery reliability

The above-mentioned aspects should be properly balanced depending on the market in which the sale is carried out, the product being offered, the specifics of customers and their shopping preferences, competition activities and finally the availability and diversity of the distribution system (Krauth et al., 2005). The parameters presented should be investigated and in the event of problems modified on an ongoing basis. They apply to both suppliers and the producers or distributors themselves to their customers. To measure quality in the context of the above factors, qualitative indicators are used, which D. Kempny (2001) includes:

- product availability,
- ability to change,
- service quality,
- perfection in order processing.

In addition to the cited quality measures, it is also worth paying attention to the price-cost ratio in the context of the quality of logistics operators' activities. The value of the service, i.e. its final price, is also affected by expenditure in the form of funds for improving quality. The consequence of the lack of financial outlays as part of measures to improve quality is a significant deterioration in the results of the assessment of customers and final recipients of services. The level of quality in the operations of 3PL and 4PL operators can be paradoxically assessed through the prism of price, on the basis of choosing a more expensive solution as one that will have a higher level of quality. Based on higher financial outlays incurred in this respect. These expenditures - in terms of cost, can be divided into three groups (Steinbeck, 1998):

- compliance costs, including prevention costs (e.g. training, planning of potential problems), evaluation and control costs (e.g. audits, verification of the level of service performance, evaluation of suppliers)
- costs of non-compliance - costs of internal errors (deficiencies, re-inspection), costs of external errors (service, complaints), costs of exceeded requirements (unnecessary documentation, repeated analyzes)
- costs of lost benefits - deterioration of market reputation, loss of future customers.

People responsible for quality processes on the side of logistics operators, in addition to a perfect understanding of the

interdependence on the cost-quality-price line, are also characterized by excellent knowledge of customer needs. In most cases this results from a very individual approach to each client and preparation of offers on the basis of meeting specific needs presented by the client. The creation of purposeful companies with independent management structures in each country in which business is conducted gives an advantage in the form of almost perfect adjustment to the local market and the rules prevailing in a given country. Individuality but also the speed of decision making allows closer cooperation between the operator and the client. In addition, technical facilities enable the provision of services at the highest level of sophistication both in terms of logistics processes and IT processes to finally improve both in terms of the quality of services offered (Marcysiak et al., 2013; Kot et al., 2019; Grondys and Drago-lea, 2016).

### 3. Methodology

In order to verify the significance of quality in the context of the logistics activities of 3PL and 4PL operators, it was decided to conduct a survey addressed to three research groups: logistics operators, their clients and the final recipients of logistics operators' services. The structure of individual groups was as follows: 1) approx. 80 companies from European logistics operators, which in the classification of economic activities indicated: road transport of goods, storage and storage of goods, transshipment of goods, and other postal and courier activities. The selection was guided by both the portfolio of current customers, brand recognition as well as the achieved results in the scope of turnover and employment. 22 enterprises that completed the survey confirmed their participation in the survey; 2) approx. 150 companies from Central and Western Europe dealing in production and trade according to the business classification, and classified as small, medium and large enterprises whose representatives have initially confirmed the possibility of taking part in the survey. Representatives of 52 enterprises took part in the survey; 3) over 2,000 people who declared themselves in various previous studies as purchasing various goods with delivery to the address indicated and agreed to participate in other studies in the future. 414 respondents of different ages responded, differentiated in terms of place of residence and income achieved.

The research was carried out electronically from May to September 2017. Individual questionnaires differ from each other in the number of questions and the structure, which is tailored to each group individually.

The purpose of the first part of the research questionnaire (for logistics operators) was to identify the nature of the surveyed enterprises. It asked about the name of the company, capital structure, leading industry and dominant services, and the number of employees: in total and in areas related to the quality control of logistics processes and in individual departments, which also allowed determining the size of the entity.

The analysis of research questionnaire No. 2 makes it possible to obtain the basic characteristics of enterprises being customers of logistics operators. In addition to questions about the enterprise itself, it can be deduced from what criteria are

followed by companies when choosing a logistics operator, as well as how they evaluate cooperation and whether their perception of logistics operators is consistent with the image of the operator outlined by the respondents of the group of final recipients of operator services.

Research questionnaire No. 3 contains the largest number of questions - 38 and begins with a metric, the purpose of which was to characterize the final recipients of logistics services. Unlike the other two, this questionnaire was addressed to individual recipients and not to business entities. Apart from the identification data of the respondents, the remainder of this research questionnaire concerned areas related to:

- characteristics of the orders: their type, content of shipments, frequency of using services, reasons for placing orders,
- determining the quality level of logistics services rendered,
- the criteria and factors for choosing the undertaking that delivers the goods,
- the most frequently chosen operators / providers of logistics services,
- general and real level of satisfaction with the company's services,
- a general and real assessment of the level of customer service,
- customer complaints.

The third questionnaire - because of the (hypothetical) availability of respondents - was treated as requiring the greatest agility. In order to determine the minimum sample size in this case, the formula for the structure indicator was used, due to the scale used and the presumed measures to be used in the study (Szajt, 2014).

$$n = \frac{u^2 pq}{d^2} = \frac{1,96^2 * 0,25}{0,05^2} \approx 384 \quad (1)$$

A 5% significance level and an error of 0.05 were assumed, which allowed to determine the sample size at 384 units.

### 4. Expression of Results

The analysis of research results began with determining the characteristics of individual research groups: research group No. 1 were logistics operators, research group No. 2 were customers of logistics operators, and research group No. 3 - recipients of services of logistics operators. Research group No. 1 was characterized based on: the capital structure, the leading industry, the most frequently rendered service and the total number of employees. Research group No. 2 was characterized based on: capital structure, the leading industry and the number of employees. Whereas research group no. 3 was characterized based on: sex, age, education, place of residence and province. Among logistics operators - 15 large enterprises, 5 medium enterprises and 2 small enterprises took part in the survey. The size of these enterprises was determined on the basis of the total number of employees. Almost half of the logistics operators (45%) indicated road transport of goods as the leading industry, while 27% of them said that logistics was their leading industry. However, the distribution of answers to

the question "What is your main activity / most sellable product / service?" Clearly shows that forwarding and transport are the services most often provided. Among the 22 surveyed companies, as many as 18 indicated forwarding and 17 - transport. The characteristics of research group No. 2 consists of 51 enterprises that are customers of logistics operators. Of the surveyed enterprises, 59% of them were large enterprises, 24% were small enterprises, 16% - medium-sized enterprises and 2% - micro enterprises (only 1 micro enterprise participated in the study). The answers also show that 55% of companies operate in the industrial processing industry and 31% operate in the wholesale and retail trade. Research group No. 3 was the most numerous group, because 414 people completed the survey questionnaires, 57% of them were men and 43% were women. The overwhelming majority (69%) were young people between 18 and 25 years old. The highest percentage of respondents (37%) were people with secondary education, 32% of respondents indicated incomplete higher education and 28% declared having higher education. The smallest group of respondents were people with vocational and basic education, respectively 2% and 1%. Given the respondents' place of residence, almost the same number live in the countryside (33%) and in a city with a population of 100,000. up to 500,000 residents. The conducted research shows that as much as 85% of respondents of the indicated research group use shopping and delivery services within the country, 14% use shopping and delivery services both within the country and abroad, and only 1% of respondents indicated that they use purchasing and delivery services abroad. In the case of the frequency of using services, purchases and delivery, more than half of the respondents in study group 3 (54%) stated that they fulfill orders with home delivery several times a year. The second place was taken by a group of respondents (38%), which indicated that they carried out these orders at least 1-2 times a month, and the third place was a group of people (7%) who answered "once a week". The remaining 1% of respondents indicated that or they do not fulfill this type of orders at all or order every day, or even several times a day. The development and dissemination of research questionnaires among selected groups of respondents allowed, at a later stage, to carry out a multidimensional analysis in order to obtain a full picture determining the quality level of logistics services provided, not only from the point of view of enterprises providing these services but also the recipients of these services - both business entities and individual recipients.

In the issue of identifying the main factors that customers are guided by when choosing a logistics operator, according to the latter, the factor in the form of the quality of services provided played the most important role (this was a multiple choice question). The second most important factor was the price of services (Fig. 1).

Later on, logistics operators indicated the company's brand and the range of services they offer. It is worth mentioning that the company's brand consists of, among others level of quality of services rendered and their price, so-called value for money. The range of services consists of the number and type of services rendered, so it can be assumed that underlining this

factor is due to the fact that more than half of the surveyed logistics operators provide storage, transport and forwarding services.

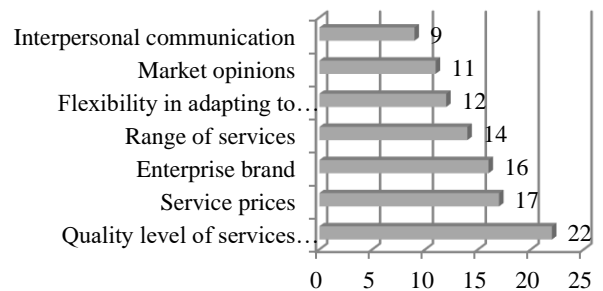


Fig. 1. The main factors determining the choice of logistic operator by customers (according to the logistics operator)

Among other selection factors, logistics operators included flexibility in adapting to needs, market opinions and interpersonal communication. The results obtained correspond fully with the results obtained among the customers of logistics operators. It can be said that almost full compliance was received. As can be seen from the figure below, the two main factors affecting the selection of a logistics operator are the prices of services and the level of quality of services rendered (Fig. 2). However, while logistics operators indicated as the first factor - the level of quality of services provided, their clients are first of all guided by the price of services and only then by the level of their quality (this was a multiple choice question).

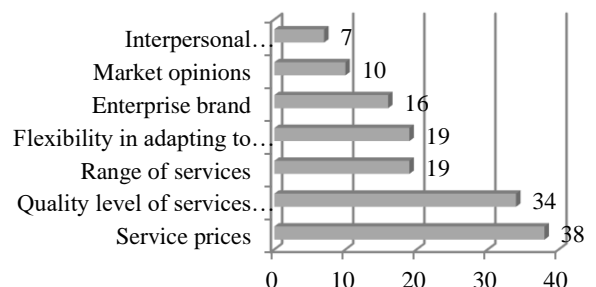
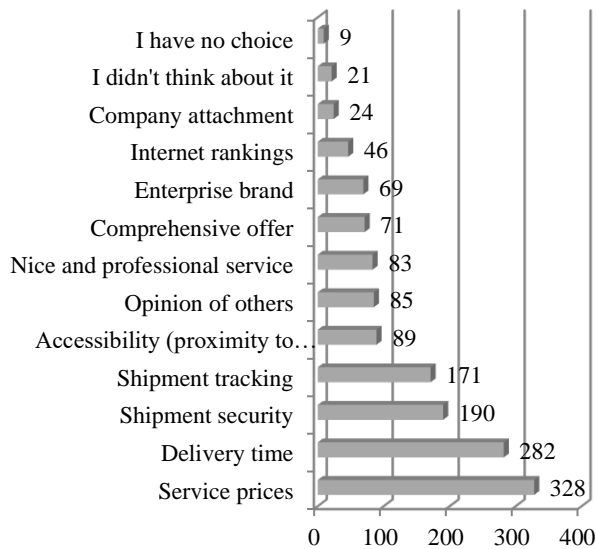


Fig. 2. The main factors determining the choice of logistic operator by customers (according to customers of the logistic operator)

In turn, the factor in the form of a range of services obtained a slightly higher rating, so it can be concluded that the more services a logistics operator offers, the more likely it will be selected by customers. The logistics operator's flexibility factor in adapting to the client's needs was equally highly rated. On the other hand, the brand of the enterprise was placed much lower, than the indications of logistics operators. The last two factors include customers' market opinions and interpersonal communication. It can therefore be concluded that the brand and market opinions are not the main determinants of customer choice regarding the logistics operator. First of all, he is

guided by the price of services rendered and the level of their quality.

On the other hand, among the final recipients the main criteria taken into account when choosing the enterprise delivering goods is again the price of the service (Fig. 3). Thus, the results obtained among all research groups clearly indicate that it is the price of the service that is constantly the main factor in the selection of both the logistics operator by customers and final recipients (this was a multiple choice question).



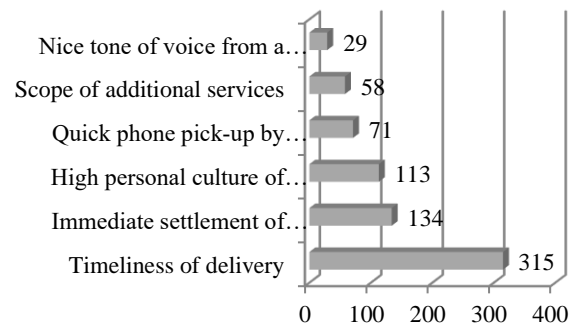
**Fig. 3.** The main factors determining the choice of enterprise delivering goods to the final recipient

In the following places there are factors in the form of the time of delivery, its security and traceability. It can therefore be assumed that the sooner a shipment is delivered, the better. But for the final recipients, the security of the package is as important as it is possible to check where it is located at a certain time. On the other hand, factors in the form of the company's brand, internet rankings or attachment to the enterprise were rated quite low. Similarly to logistic operators' clients, final recipients are not guided by the brand of the company, which is in contrast to the opinion of logistic operators who indicated the brand of the company as the third factor influencing the choice of a given company. Also, final recipients are not guided by online rankings, which may be synonymous with market opinions about the company. The research results also clearly show that the final recipient is not a loyal customer, because the factor in the form of attachment to the company is one of the less significant factors when choosing a company delivering goods.

Among the additional, subjective factors affecting the choice of the enterprise delivering the shipment by the final recipients, the most important factor was the timeliness of delivery (multiple choice question). Timeliness in this case is understood as delivery of the parcel in the time in which it was specified when placing the order, e.g. on the third day or a specific day of the month. This is not about the speed of delivery,

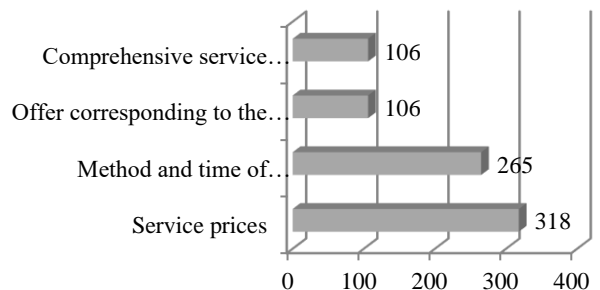
but about matching and meeting the deadline previously agreed with the final recipient (Fig. 4).

The other, less important factors are the immediate settlement of matters reported by customers, i.e. generally speaking the level of customer service. The fact of high personal culture by persons delivering goods is also important. However, the least important factor is the nice tone of the customer service employee.



**Fig. 4.** Additional subjective factors determining the choice of the enterprise delivering goods to the final recipient

The above results are additionally confirmed by the fact that when using the services of a company performing deliveries, 77% of respondents pay attention to the price of the service (Fig. 5).



**Fig. 5.** The main factors that draw the customer's attention when using the services of a delivery company

Later, there was a factor in the form and time of service provision, 64% of respondents pay attention to this. 26% of respondents pay attention to a specific offer and the whole package of services. These results clearly emphasize that it is the price that still plays the most important role when choosing a specific company, and only the second place is followed by the method and time of delivery. It can therefore be assumed that final recipients are willing to wait longer but pay less (it was a multiple choice question).

The high frequency of determining the "method and time of performance of the service" may be due to the fact that 74% of respondents indicated that they never had to deal with a situation when the company delivering the goods left the parcel at a different address without informing them first. But a fairly large group (25%) indicated that this happened several times,

while 1% of respondents indicated that this is a widespread event. It is worth adding that 63% of respondents will be happy to leave the parcel in a different place, but after prior telephone contact. For companies, this is a signal that customers allow changes in the delivery process but require prior notice. But quite a lot of people (27%) gave a negative answer, indicating that the shipment should be delivered to the address indicated in the order. The least numerous group includes people who allow this possibility, even without prior telephone contact (8%) and people who are simply indifferent (2%). In the event that the final recipients asked for the phone number of the person delivering the goods to be provided, 66% of them obtained this number without any problems. There may be a situation where the final recipient will want to inform the courier about a change of delivery address. Almost 18% of respondents faced the refusal to provide a telephone number, and 15% of respondents were redirected to the office instead of a telephone number, where they could leave a message for the person delivering the package.

Of all logistics operators, the overwhelming majority (77%) confirmed the implementation of specific standards in terms of the quality of services rendered. Only a few of them (18%) indicated the lack of implemented quality standards, but showed willingness to introduce them, and only one enterprise indicated both the lack of implemented quality standards but also indicated no need to introduce them. The implementation of standards regarding the quality of services may have been dictated by the fact that almost all of the surveyed companies (except one) indicated that the clients they work with require specific standards for their service. On the one hand, based on the results obtained, it can be concluded that these standards were introduced in response to specific requirements on the part of clients, but on the other hand, the fact that almost all surveyed enterprises have these standards does not necessarily result from the fact that their clients have specific requirements for their service, but may be due to the current realities and operating conditions of modern enterprises in the markets. Because at present, having such standards is not one of the distinguishing features of the company among the others operating on the market, and their introduction does not necessarily depend on the company's customers having specific requirements. One can only assume that it is one company that indicated the answer "I do not know", it can also be an enterprise that showed no need to introduce certain standards. Considering the fact that currently having standards is not any factor that distinguishes an enterprise on the market, it can be assumed that the correct definition of key parameters of quality management of logistics processes does not translate into an increase in the number of customers and final recipients of services of logistics operators. Because the introduction of appropriate standards is usually preceded by the need to meet certain criteria of quality requirements for services rendered, which usually take the form of additional features such as timeliness, security or flexibility in the implementation of the contract. On the one hand, they are taken into account when choosing a particular enterprise, but they are not the main factor, as the price is still there.

## 5. Results and discussion

The conducted research and statistical analyses confirmed that the evolution of logistics operators' awareness of the quality expectations regarding logistics processes set by service recipients, strengthens their market position and enables building lasting relationships with customers. The fact confirming this hypothesis is the results obtained, which clearly emphasize that the market position of the logistics operator is positively affected by changes made in the following areas (Table 1):

**Table 1.** Identification of changes introduced in specific areas

Areas of change	The scope of introduced changes
Logistics operator warehouse	Quality of equipment and fittings Personnel selection and work organization
Quality of the logistics operator's means of transport	Maintenance of cleanliness Quality of the packages labeling Company branding Vehicle age Meeting EURO combustion standards
Quality of work of drivers / suppliers of the logistics operator	Courtesy / willingness to help, cooperation Level of knowledge / competence Appearance and outfit
Quality of work of other employees of the logistics operator	-
Quality marketing of logistic operator's consumables	Color and form of consumables (paper / cartons / tapes / labels)
Quality of marketing, related to other areas, logistics operator	Dostępność informacji/opinii o przedsiębiorstwie Strona www oraz web marketing (portale społecznościowe itp.) Sponsoring innych imprez
Prices of logistics operator services	Willingness to grant discounts QUALITY-PRICE ratio Payment terms Prices for additional services
Market credibility of the logistics operator	Financial credibility Company's seniority in the market
Overall quality of logistics operator services	Compliance with timeliness Fulfillment of obligations Flexibility in case of problems

Only in the case of improving the quality of the work of other employees of the logistics operator, it can be assumed that the introduction of any changes will not affect the market position of the logistics operator in any way.

Referring to the results contained in Table 2, it is worth remembering that the actions taken by logistics operators not always to increase the level of customer satisfaction with their services will cause that this level will actually increase.

**Table 2.** List of achieved effects depending on the change of individual factors

Change of factor	Positive effect	Negative effect
- Shipment security - Package tracking option - Company attachment	Higher level of satisfaction with the services of enterprises delivering goods and the criteria used by recipients when choosing the enterprise delivering goods	
- Internet rankings		Lower level of satisfaction with the services of the enterprise delivering the goods and the criteria used by the recipients when choosing the enterprise delivering the goods
- Price of services - Timeliness of delivery - Ability to track shipment via a website	Increasing the level of satisfaction with the services of the enterprise supplying the goods and additional subjective factors	
- A nice tone of voice from a customer service representative		Reducing the level of satisfaction with the services of enterprises supplying goods and additional subjective factors
- Delivery time - Shipment security - Comprehensiveness of the offer	Increasing the level of satisfaction with the timeliness of parcel delivery by a logistics operator	
- Order submission form - Matching pickup / delivery dates	Increasing the level of satisfaction with the services of the enterprise delivering goods and factors worth improving	
- Service delivery time - Prices for services - Timeliness of delivery		Reduction in the level of satisfaction with the services of enterprises supplying goods and factors worth improving
- Order submission form - Matching pickup / delivery dates	Improving the overall quality assessment of the delivery service itself and factors worth improving	

- Service delivery time - Timeliness of delivery - Competence of the employee performing the delivery		Deterioration of the overall quality assessment of the service itself and the factors worth improving
- Service delivery time - Prices for services - Complaint handling method - Timeliness of delivery - Employees' personal culture		Deterioration of satisfaction rating from a comprehensive offer of goods delivery services and factors worth improving
- Complaint handling method		Deterioration of the quality assessment and availability of information on logistics services rendered and factors worth improving

As the table above shows, a change in factors such as internet rankings, a nice tone of voice of a customer service employee, time of service completion, prices of services, timeliness of delivery, competence of the employee performing the delivery, way of dealing with complaints or personal culture of employees cause specific negative effects, e.g. in the form of reducing the level of satisfaction with the services of enterprises or lowering the quality assessment related to the availability of information on services rendered.

The need to assess the quality of logistics services is highlighted by J. Fraś in his publication, who concludes that it is the issue of customer satisfaction with the services that logistics operators provide has a significant impact on the competitive position of the 3PL and 4PL operators and referring to the results of their research, states that testing the quality of services provided should be cyclical so that they can be realistically used as part of improving the company's development strategy (Fraś, 2014).

International authors indicate the quality of logistics services as the backbone of the strategy of building a competitive advantage for companies of logistics operators, or suggest that the quality of logistics services is a key goal perceived by the customer when choosing a logistics operator company (Xu, 2008). Referring to similar, conducted tests, one can notice a large synergy in the results obtained. Authors such as J. Figura and B. Kos also point out that the quality of logistics processes is one of the key factors when choosing a logistics operator. The results obtained in the course of research of these authors also clearly define the importance of proactive action to meet the needs and possible claims of the client at the appropriate level. It should also be noted that the analysis results are similar in the context of cooperation between the operator and the client, where the sentence of the latter should be key in defining the quality level to be presented by the operator, and not vice versa (Figura and Kos, 2010).



In addition to national publications, also international publications dealing in very similar topics indicate similar research results. Author Harlin Suzana Jaafar in the summary of his work indicates that quality plays a key role in increasing customer satisfaction, while the quality of relationships has a significant impact on customer loyalty and potential decisions to change operators (Jaafar, 2006).

Similarly, H. Alemu clearly emphasizes the relationship between the quality of logistics services and customer satisfaction, but noting that the degree of dependence varies depending on the relationship's intimacy. In addition, it specifies that the highest correlation is obtained between timeliness and customer satisfaction; then the ordering procedure, the quality of the information, the accuracy of the order, the condition of the ordered product and the quality of contact with the operator's staff, while the weakest correlation occurs between handling discrepancies in the order and customer satisfaction (Alemu, 2016). Authors such as John T. Mentzer, Daniel J. Flint, G. Tomas and M. Hult also point to the added value of expanding the portfolio of their services by logistics operators, which translates into an increase in customer attachment, which will not look for other solutions at the competition (Mentzer et al., 2001).

As part of efforts to improve the quality of logistics processes, the authors indicate the importance of communication between the client and the logistics operator. The conclusions of the authors in the collective work: "Logistics service quality: a new way to loyalty" indicate that logistics operators should invest in the development of communication to improve information flow management both internally and in the entire supply chain in which they participate. This is because, better information management is a key factor in improving customer satisfaction. This in turn has an impact on customer satisfaction and loyalty to the company. Secondly, companies that want to improve the quality of customer service must pay particular attention to streamlining the ordering process, facilitating and complying with the delivery terms agreed with the customer. Finally, the role of the personnel contacting the client is important. Therefore, companies should provide employees with the training and resources necessary to ensure a high level of customer service (Saura et al., 2008). The authors of the publication "Developing a logistics service quality scale" also pay attention to the LSQ - Logistic Service Quality and SERVQUAL - Service Quality ratios. According to the authors mentioned, it is necessary to study the above-mentioned indicators at the level of the logistics operator to examine the trend of customer behaviour towards factors such as, for example, changes in persons responsible for operational cooperation with the customer (Mentzer et al., 1999). The importance of testing the quality of logistics services is also highlighted by I.T. Adebayo, which clearly defines the very large impact of the quality of services offered by logistics operators on the level of customer satisfaction with the entire order (Adebayo, 2017). Similarly, the importance of logistics operator quality testing is pointed out by T. Gajewska and E. Grigoroudis, who noticed in their publication that the most important factors affecting the assessment of a logistics operator by his client and final recipient are the indicators with the

highest ratings achieved, as they create a positive image of cooperation and thanks to them negative aspects are ignored (Gajewska and Grigoroudis, 2015). Thus, referring to authors such as M. Kozerska, H. Brdulak, J. Dyczkowska, it should be remembered that the quality of services offered by logistics operators for their clients and final recipients is a very important element in shaping the company's brand, which is confirmed by the results of research (Kozerska, 2010; Brdulak, 2009; Dyczkowska, 2011). In the era of shopping mostly via the Internet with delivery, the quality of logistics services is particularly important in the context of the future development of the e-commerce industry. Solutions tailored to the individual needs of customers in terms of supply logistics will become more important, so that logistics operators, in addition to meeting the expectations of their customers and final recipients of delivered goods, will have to constantly strive to increase the level of quality of services, as pointed out by I. Mărunțel, in his "The particularities of logistics related to e-commerce" publication (Mărunțel, 2008).

Such results of analyses carried out as part of similar studies in countries other than Poland show that the relationship between the quality of logistics services offered and customer satisfaction and long-term customer retention are key to success for the 3PL and 4PL operators. In conclusion, it can be assumed that actions to improve quality are never simple and easy to implement. They are accompanied by a number of elements that can affect their final effect.

## 5. Summary and conclusion

The primary data were compiled based on Excel spreadsheets and statistical programs, which enabled, among others determining the size of enterprises, identifying the leading branch of activity or the structure of recipients of logistics services. In addition, the programs enabled the creation of a database that is a set of variables, which in the further stages of the study was the basis for statistical calculations. Information was received in the form of answers on a dichotomous and ordinal scale, and in a few cases interval. Therefore, adequate methods were used in the statistical analysis - mainly characteristic of qualitative and ranked data. Due to survey results determined on the ordinal and nominal scale, it was not possible to use the Pearson correlation coefficient. The coefficient Phi-Yulea for typically qualitative data was used, and for ordinal data the Gamma correlation coefficient. Usually, sequence correlation coefficients are used - the most popular is the Spearman coefficient, while due to the size of the sample and the possibility of frequent repetition of bonded pairs, the mentioned measure was used. The methods used allowed not only to determine the coefficients sought but also to test their significance, as if automatically. The publication presents the results of research on the analysis of the main factors determining the selection of a logistics operator from the perspectives of: 1) the logistics operator itself, 2) the logistics operator's client, 3) the final recipient of the logistics operator's services. In addition, a filter was imposed on the results in terms of additional factors determining the choice of the company that delivers the goods, and the main factors to which the

final recipient draws attention by making a possible selection of the company delivering the shipment. Identification of changes introduced in specific areas of the logistics operator's quality of activity was carried out to finally demonstrate the effects of changes in individual factors on the choices made by customers and final recipients of services of logistics operators. Thanks to the analyses carried out, it is possible to determine the basic criteria that logistics operators'; companies can use to define the areas of quality of their activities, thanks to which they will become the first choice company for their contractors. The results of the analyses presented in the publication are based on actual assessments made by customers of logistics operators and final recipients of shipments collected in the form of survey data, as well as theoretical (literature) verification in the context of defining quality criteria for the activities of logistics operators. The conclusions of the study on the correlation between factors affecting the market position of a logistics operator and the actions that the operator may take are elements of assessing the quality of means of transport of the logistics operator. Among all six, as many as five of them showed a positive correlation: maintaining cleanliness, quality of marking, company branding, vehicle age and compliance with EURO combustion standards. At the same time, it is worth noting that four of them are elements easily perceived by customers, and the fifth in the form of meeting EURO combustion standards may indicate high ecological awareness of customers and their attention to environmental issues. There is also a strong, positive correlation between the elements of price assessment of the logistics operator's services and its market position, such as: willingness to grant discounts, quality-price ratio, payment terms and prices of additional services. Equally strongly affect the operator's market position elements of driver / supplier quality assessment, three out of four have been identified as significant. However, taking into account the impact of the quality assessment elements of other employees on the market position of the logistics operator - research results indicate the lack of any correlation. In the case of elements of warehouse quality assessment, only in two cases a positive correlation was demonstrated: quality of equipment and devices as well as the selection of personnel and organization of work.

The conducted literature studies and empirical research have shown that an appropriate level of customer service plays and will play a very important role in the company's pursuit of success. Success, which for the logistics operator is a large number of customers, which in turn translates into an increase in market share, increase in revenues and profits as well as strengthening the competitive advantage of the company. Therefore, customers of logistics operators should be the main reference point of their operation, together with the conviction that satisfying their needs is the most important goal of the business. Despite the constantly occurring changes affecting the global economy or national economies, the fact that for logistics operators it is the customer that is the central reference point will most likely remain unchanged. Therefore, in modern market economies, adequate customer service is one of the main elements in relation to which logistics operators should constantly strive to meet the highest quality standards.

It is worth remembering that meeting the requirements of their customers by the operators of logistics services 3PL and 4PL does not guarantee meeting the expectations of final recipients of these services. It can be assumed that the correct definition of the key parameters of quality management of logistics processes does not translate directly into an increase in the number of customers and final recipients of services of logistics operators, because the introduction of appropriate standards is usually preceded by the need to meet certain criteria of quality requirements for services rendered, which usually take the form of additional features such as timeliness, security or flexibility in order processing. On the one hand, they are taken into account when choosing a particular enterprise, but they are not the main factor, as the price is still there.

It is necessary to present achieved results. Please, provide what was done during the study and what research results have been obtained. Respond to the results of other researchers. Show the possibility of practical application, determine the future research direction.

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## 从客户和最终收货人的角度决定物流操作员选择的质量要求标准

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### 關鍵詞

物流运营商的运营质量  
物流质量  
物流流程的质量管理  
质量对采购决策的影响  
物流质量标准

### 摘要

选择运营商会涉及冒险，尤其是在改变物流方式时（例如，从您自己的仓库和分销网络到外部外包）。本文的目的是介绍直接或间接影响物流运营商客户的购买决策的最重要因素。为了根据质量正确地确定选择物流服务提供商的参数，有必要定义质量要求标准，以使其能够满足特定的 KPI（关键绩效指标），以衡量最终接收方的满意度。货物的。本文的主要目的是回答以下问题：如何定义与客户期望相关的标准，以及在选择运营商提供物流服务的背景下，这些标准如何影响最终的购买决策。为了说明所研究环境的全貌，并最大程度地促进和鼓励受访者参加研究，调查主要以互联网形式使用，主要包含封闭的问题和几个开放的问题。该研究基于三个研究组：物流经营者，物流经营者的客户和物流经营者服务的最终接受者。在个人小组中，调查邀请：1）来自欧洲物流运营商的约 80 家公司； 2）约。根据经济活动的分类，来自中欧和西欧的 150 家公司从事生产和贸易； 3）超过 2,000 人已声明要购买各种商品并交付到指定的地址。

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