

RESEARCH ON THE DETERMINANTS OF SERVICE QUALITY IN THE TSL LOGISTICS SECTOR

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Purpose: The aim of the publication is to present the concept of the modified SERVPERF method for examining the quality of services and to verify whether this method is suitable for examining the quality of logistics services in the TSL sector (transport, forwarding, logistics).

Design/methodology/approach: Critical analysis of literature. Analysis of international literature from the main databases and Polish literature as well as the authors' own research related to the research topic. Empirical research conducted aimed at leaders of TSL sector enterprises in the Wielkopolska and Lubuskie voivodeships, as well as the world of science, especially students of management, quality management, logistics and transport. The research was conducted at the turn of 2023/2024. The research method was the SERVPERF method modified by the authors to study the quality of logistics services in the TSL sector, the tool was an electronic questionnaire.

Findings: The research results allowed us to determine the quality level of logistics services provided by leading TSL sector companies in the Wielkopolska and Lubuskie voivodeships using the modified SERVPERF research method and revealed areas that need to be improved in order to increase the quality of services provided and customer satisfaction.

Research limitations/implications: The presented research on service quality is not comprehensive due to the multi-faceted nature of the TSL sector. The presented results and formulated conclusions will provide important information for further modification of the SERVPERF research method and conducting proper research, so as to achieve objectivity and universality of the modified method in the study of service quality in the TSL sector.

Practical implications: The presented results are a valuable source showing the quality level of logistics services in individual areas of the TSL sector.

Originality/value: The results of the conceptual work provided a valuable modified research tool based on SERVPERF, and the research conducted using the modified method confirmed the usefulness of this method in examining the quality of TSL sector services.

Keywords: quality of services, criteria, determinants, logistics company, TSL sector

Category of the paper: literature review and own research.

1. Introduction

The TSL (Transport, Forwarding, Logistics) sector is a dynamically developing area of the European Union's economy. This growth is tied to the development of road infrastructure and the dynamic expansion of international trade, particularly e-commerce, which is a fundamental part of regional and global supply chains. The TSL sector in the European Union, especially in Poland, Germany, and France, plays a significant role in the modern European economy, serving as a foundation for its competitiveness. The growth of international trade, process automation, and increasing customer expectations are fundamental determinants of the growth in service quality, which is a condition for the modernity of the TSL sector in the European economy (Report Transport drogowy, 2023). Currently, there is a strong emphasis on the automation of TSL services, which allows for improved efficiency, increased delivery security, and, consequently, meets customer expectations regarding the quality of services provided. Innovative technologies, supported by information systems, enable the reduction of transportation costs by combining various modes of transport and optimally locating point infrastructure in the communication networks of European countries.

The purpose of logistics services is to provide services for enterprises and individuals that fulfill logistics functions. Due to the type of activities in the supply chain, logistics services are divided into:

- transport services - transporting goods in appropriate conditions for their natural, technical, and economic transportability,
- forwarding services - organizing the movement of goods on behalf of the client at the forwarder's own expense, excluding the transport itself,
- warehousing services - services related to inventory management in warehouses,
- additional services - including completing shipping documents, labeling, creating promotional sets, repackaging, and collecting payments (Damian, Górna, 2020; Fertsch, 2013; Fraś, 2004).

The TSL sector is one of the leading sectors of the Polish economy, which in 2023 generated 6% of Poland's GDP and is a leader among EU countries. Transport (including passenger transport), forwarding, and logistics remain one of the most important parts of the Polish economy. At the same time, Polish drivers transported 19% of goods on the internal EU market (Report Transport drogowy, 2023).

The most common type of transport is road transport, carried out primarily by trucks and delivery vehicles. Rail, inland waterway, sea, air, and pipeline transport can also be distinguished. Transportation services, which are part of the TSL sector, involve the transportation of goods or people. During the implementation of transport orders, particular emphasis is placed on on-time delivery and the ability to transport various types of cargo, from small packages to bulk goods.

Forwarding services provide the organizational backbone of the TSL sector. They primarily deal with planning the entire transportation process. They always seek the optimal solution, determining how goods, by what means of transport, when, and at what cost will be delivered to the customer. The main goal in the forwarding process is always to find the most efficient possible solution for delivering goods (Rynek logistyczny, 2024). In addition, forwarding also involves preparing the necessary documentation (bills of lading or CMR documentation (consignment note in international trade), providing insurance and customs clearance.

Logistics services are a complementary area of activity in the TSL sector. The functions, scope of activities, and responsibility of logistics operators are much broader than those of a classically understood forwarder or carrier. Transport logistics, in addition to transport and forwarding activities, guarantees, for example, terminal services. These include warehousing, assembly, and value-added activities - labeling, packaging, creating promotional sets, or carrying out necessary repairs. In addition, TSL companies, as part of logistics processes, can manage customers' resources, manage the flow of goods, and provide broadly understood consulting (Christopher, 2016; Fertsch, 2013). Some companies within the TSL sector also offer cross-docking, a method of distributing goods in the supply chain without the need for warehousing. This reduces order fulfillment time and the goods reach the customer much faster.

Currently, the largest customer of the TSL sector in Poland is companies engaged in retail and wholesale trade. In addition, industrial sectors - food, electronics, and automotive - are also very important. The so-called full truckload services, which involve transporting the entire load from one point to another, dominate. In this aspect, the Polish TSL sector differs from the European one, where contract logistics based on carrying out operations within a warehouse area prevails." Entities operating in the TSL sector aim to, among other things:

- ensure the highest possible efficiency of services provided,
- guarantee customer satisfaction,
- operate in accordance with environmental protection,
- adapt to market changes,
- ensure safety (Bowersox, Closs, Cooper, 2019; Pfohl, 2020).

Many factors have contributed to the development of the TSL sector in Poland, including:

- intensification of international trade, especially e-commerce,
- favorable location on the European map,
- access to a highly qualified workforce,
- development of transport infrastructure, both point and linear,
- mass consumption,
- ongoing globalization,
- increasing networking of the economy,
- automation and robotization of warehouse processes (Christopher, 2016; Fertsch, 2013; Report Transport drogowy, 2023).

Enterprises on the domestic TSL market are very diverse. Among enterprises, one can point to small companies offering niche services aimed at specific customers, as well as huge corporations with a wide range of activities, both in terms of available solutions and the scope of orders carried out.

In 2023, there were approximately 127,000 enterprises in Poland engaged in the road transport of goods. This accounted for about 7% of all registered enterprises. Generally, these are individual economic activities, but the fastest development is observed among medium and large enterprises (Report Transport drogowy, 2023). In 2021, in Poland, the largest revenues from the TSL sector were recorded by companies such as the Raben Group, DPD Polska Capital Group, DSV Group, DB Schenker, and ROHLIG SUUS Logistic S.A., which are also present on the Wielkopolska market (Report Transport drogowy, 2023; Rynek logistyczny, 2024).

The aim of this work is to present a modified version of the SERVPERF method for assessing the quality of logistics services in the TSL sector, to popularize this method, and consequently to conduct further research aimed at its improvement.

2. Quality of services in the TSL sector logistics

The quality of services provided is no longer a distinguishing feature in the modern global market, but is becoming an element of competitive struggle. Maintaining a competitive position in the logistics services market therefore requires a continuous drive to improve customer service quality and other processes that contribute to the customer's perceived quality (Fraś, 2014; 2013). The customer plays a particularly important role in shaping the quality of services in the TSL sector. The customer's active participation in the service delivery process means that the final outcome of the cooperation depends to a large extent on their skills, knowledge and motivation. In order to ensure the quality of the services offered, companies must not only provide services to customers, but also have appropriate knowledge about them. The starting point for determining the level of customer satisfaction with the purchased service, not only in logistics, is the measurement of perceived service quality, which results from customer expectations and what is actually offered. More about the assessment of service quality in the next part of the work.

The degree to which a service meets the needs and expectations of customers is one of the ways of defining the quality of services in logistics, referring to the definitions of quality contained in the ISO 9000 series standards. The quality of services in the TSL sector is a concept that is difficult to define unequivocally due to its complexity. Defining the quality of logistics services using a single, universal definition is a difficult or rather impossible task. Many factors influence the definition of the quality of a logistics service, including:

- consideration of different aspects of the service product - on the way of defining,

- the quality of services is influenced by its type, resulting from the choice of attributes that characterize the quality of specific service products,
- the role of customers in the process of assessing the quality of services and how they perceive the service;
- the possibility of applying the proposed definition in management (Report Transport drogowy, 2023; Fraś, 2013; 2015). Service quality in the TSL sector can be defined in terms of many factors, such as:
 - reliability and timeliness of deliveries,
 - safety of goods transported,
 - flexibility in adapting to changing market conditions,
 - service costs in relation to their value,
 - customer service and transparency of the order fulfillment process (Biesok, 2013; Damian, Górna, 2020; Gulc, 2020; Mydlarz, 2018).

The above determinants and others contribute to the overall perception of service quality by customers.

According to the American Society for Quality, quality is defined as "the sum of the characteristics of a product and service that determine a product's ability to satisfy stated or implied needs (Mydlarz, 2018; Urbaniak, 2014).

The Council of Logistics Management defines logistics quality as the service provider's fulfillment of customer requirements and expectations, related to such characteristics as: ease of obtaining necessary information, timeliness and reliability of deliveries, comprehensive order fulfillment, timely after-sales service, accurate and timely obtaining and transmission of information within and outside the enterprise to support planning, and others (Bowersox, Closs, Cooper, 2019; Chiu, Lin, 2004; Christopher, 2016; Gulc, 2020).

As a result of scientific research on service quality, numerous methods and models have been developed to study it. The most well-known include: the Parasuraman, Zeithaml, and Berry model (the gap model), the Grönroos model, the Gummesson model, Moore's quality improvement model, the model of perceived and expected quality by Nash, and others (Bielawa, 2011; Fraś, 2014; Urbaniak, 2014; Wolniak, Skotnicka-Zasadzień, 2008; 2009).

The development of models describing the understanding of service quality has led to the development of methods for assessing this quality. In the field of management, the most popular methods for assessing service quality include SERVQUAL (Service Quality), the Importance-Performance analysis by Martilla and James, the Critical Incident Technique (CIT), and SERVPERF (Service Performance) (Bielawa, 2011; Fraś, 2015, 2013; Wolniak, Skotnicka-Zasadzień, 2008).

It is worth mentioning that in the literature, examples of modifications of the SERVQUAL method can be found for various service sectors through the development of new instruments for measuring service quality. Among the examples of modifications are the E-QUAL method

– online tourism services, the ECOSERV method – ecotourism, and others (Biesok, 2013; Blikle, 2019; Fraś, 2013).

In the early 1990s, two researchers, J. Joseph Cronin and Steven A. Taylor, criticized the SERVQUAL method. They argued that the suggested Parasuraman study of the relationship between expected and experienced quality by customers and, on this basis, indicating which quality elements are not sufficiently developed, is a good understanding of quality in terms of the direction of the assessment. Like Parasuraman, they assumed that this assessment belongs to the service purchaser.

However, Cronin and Taylor stated that comparing experienced quality to expected quality and examining both using similar questionnaires is a mistake. They presented a simplified version of the SERVQUAL method as the SERVPERF method, which they based on a survey of only experienced quality and comparing it to expected quality, which in their opinion is "perfect quality" (Urbaniak, 2014; Wolniak, Skotnicka-Zasadzień, 2008). They assumed that checking customer expectations is not necessary, as it is known that they will always desire the highest quality. They measured service quality based on the quality experienced by customers and referred the results to perfect quality. In this way, the study became simpler to apply and less time-consuming in practice compared to the SERVQUAL method.

In summary, the quality of services in logistics is a very important and current issue. Taking into account the requirements and needs of customers, also in the sphere of services, and striving for their continuous improvement is becoming more and more often a norm and standard that must be met in order to effectively compete in the current economic conditions (Panasiuk, Dobska, Urban, 2016; Urbaniak, 2014; Wolniak, Skotnicka-Zasadzień, 2009).

3. Methodology of qualitative research of services in logistics

There are methods in the literature for assessing the quality of services in various types of sectoral activities, including the TSL sector (freight forwarding, courier, warehousing, etc.). Such methods include SERVQUAL and SERVPERF (Coulthard, 2004, Fraś, 2014, 2015; Wolniak, Skotnicka-Zasadzień, 2009). In both methods, the definition of additional universal criteria and their determinants for assessing the level of service quality in logistics is a very complex, multi-threaded undertaking that requires a longer period of time, as it covers three different but coherent areas of activity, which is the TSL sector. For the purposes of the research, a methodology of the research process was developed, presented in Figure 1.

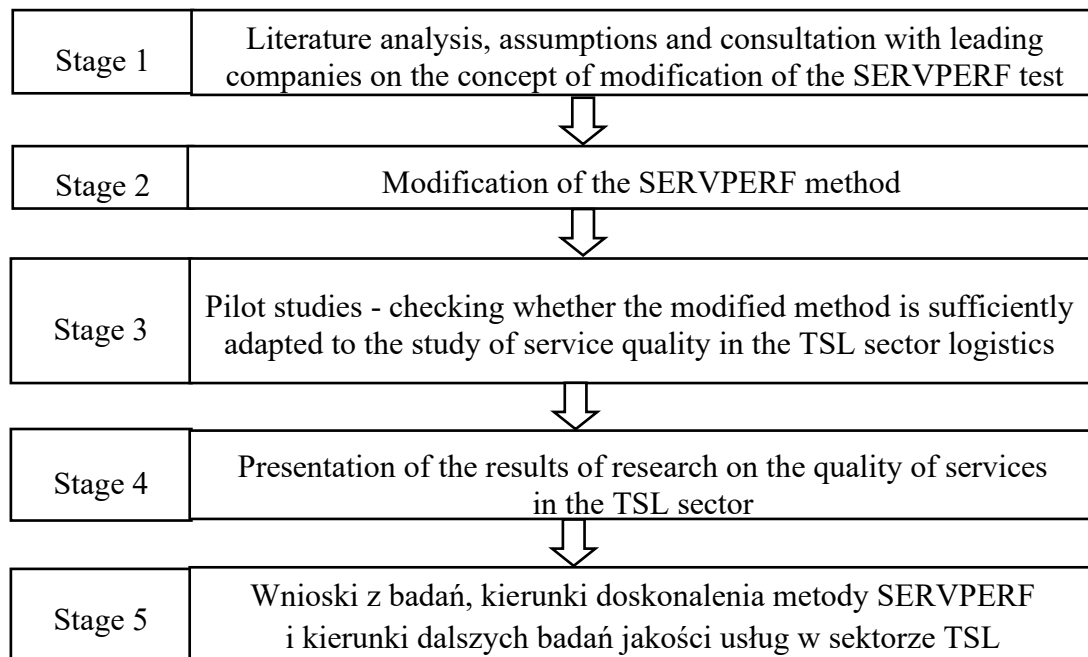


Figure 1. Methodology of the research tool construction process and measurement of logistics service quality using the modified SERVPERF method.

Source: own study.

Based on a review of the literature, own reflections, ISO 900 quality system procedures, ISO 28000 supply chain security management system and consultations with the operational management of the purposefully selected logistics companies, the authors developed a modification of the SERVPERF method with a new criterion of "cooperation (cooperation/ coopetition)" and its 4 determinants for assessing the quality of logistics services in the TS sector. According to the authors, the developed method will allow for comprehensive qualitative research in 3 areas of the TSL sector, showing areas of low quality that will require improvement or refinement. The SERVPERF method itself will be improved. The modified SERVPERF method is presented in Table 1.

The names of the 5 basic criteria of the SERVPERF method and its 26 determinants have been modified, adapting them to the specificity of the TSL sector. An open question was included at the end of the research questionnaire with the possibility of entering other criteria and determinants by the respondents of the surveyed companies. The method developed in this way was used to conduct pilot studies to check the usefulness of the method for examining the quality of logistics services in the surveyed enterprises. Traditionally, a 5-point Likert scale was used, where 1 meant "very weak influence" and 5 - "very strong influence" of determinants on the quality of services. Respondents were asked to answer the following question: to what extent do the criteria listed below and their determinants affect the quality of logistics services in your enterprises (see the method questionnaire, as further set out in Table 1).

The authors undertook this type of research because there is no literature on the subject that would define a common, universal and up-to-date tool for assessing the quality of TSL sector

services, tailored to the challenges and ongoing economic processes of the 21st century. Qualitative research was conducted among enterprises providing transport-forwarding-logistics services. The authors will continue work to optimize and improve the research tool, as well as conduct further research on the quality of services in the TSL sector in enterprises of the Wielkopolska and Lubuskie Voivodeships.

4. The quality level of TSL sector services - pilot research results

The research conducted by the authors using the modified SERVPERF research tool was aimed at the preliminary evaluation of the research tool, expanded with a new criterion and its determinants (Fraś, 2013; Gulc, 2020; Wolniak, Skotnicka-Zasadzień, 2009). The proper research was conducted in 2023. The study was a static study, not aimed at assessing the dynamics of the growth of service quality in a specific period of time, but only at generating, with the help of respondents, currently occurring phenomena regarding the level of service quality in the TSL sector, i.e. determining the level of service quality, or finding additional criteria and their determinants, common to the three areas of the TSL sector. Pilot studies confirmed the usefulness of the modified method, and the obtained results turned out to be very promising, showing the overall level of service quality in the TSL sector at 4.18 on a 5-point Likert scale. conducted with the SERVPERF tool.

In addition to the measurement of the quality of logistics services, the modified research tool allowed us to obtain, in an open question, a lot of valuable information and tips on the direction of modification of the research method, as well as areas of improving the quality of services in TSL sector enterprises, which will be taken into account in the authors' further research.

Thanks to the collection of the results of the pilot study conducted among customers of selected TSL sector enterprises in the Wielkopolska and Lubuskie Voivodeships, it was possible to detect the so-called gaps, by examining 30 determinants. These gaps are nothing more than quality levels, particularly important for the final assessment of the quality of services. They indicate areas that require improvement, as well as the extent to which the change should be introduced. By calculating the arithmetic mean of the ratings of all respondents and comparing them to the ideal situation (i.e. the maximum point value marked in the study as 5). The data obtained allow us to immediately see how large the discrepancy is in each case between the expectations of customers of services in the TSL sector and the level of quality of a given element of the service they received, expressed by a specific determinant of a given criterion. The results of the average values of the criteria from the 120 questionnaires are presented in the form of a column chart in Figure 2, and the average values of the determinants of each criterion in tabular form are presented in Table 1, Part B.

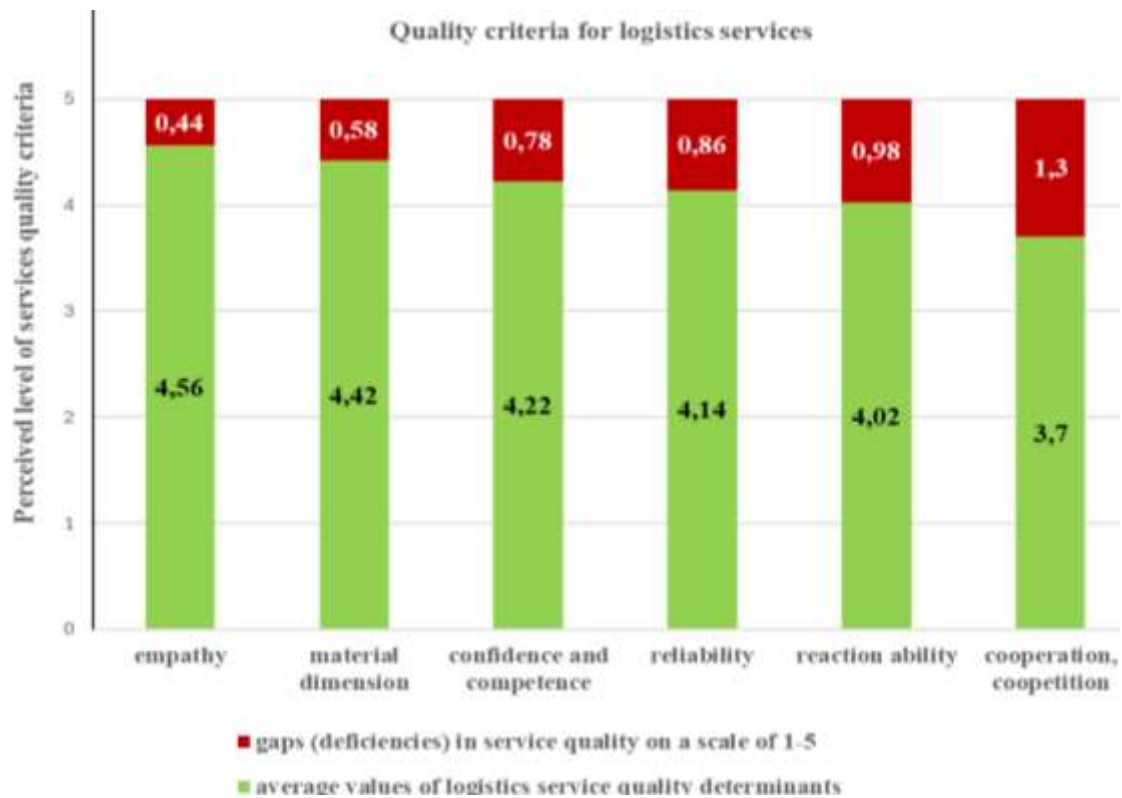


Figure 2. Average value of TSL sector logistics service quality criteria according to the customer as determined by the modified SERVPERF TSL method.

Source: own study.

Analysing the values of the individual criteria, the criterion of empathy had the highest score, with an average value of 4.56, and the criterion of cooperation, newly introduced into the SERVPERF method, had the lowest score, with an average value of 3.70 on a 5-point scale. The other criterion values fell between the two: the responsiveness criterion had a value of 4.02, the reliability criterion had a value of 4.14, the assurance criterion had a value of 4.22 and the material dimension criterion had a value of 4.42. The average of the service quality criteria is 4.18. Analysing the results of the study of determinants of service quality, in the scope of the criterion of cooperation, below the value of 4.0, the following were evaluated: mutual confidence in partners, the level of risk and certainty of cooperation of partners, openness, honesty and good communication in cooperation, in the scope of the criterion of reliability, below the value of 4.0, service costs were evaluated, in the scope of the criterion of certainty, below the value of 4.0, reliability and standardisation of work, and in the scope of the criterion of responsiveness, below the value of 4.0, reaction to reported problems and disruptions in service performance, flexibility in the approach to the customer and time of reimbursement. In these areas of the TSL sector's activities, remedial or improvement work should be started as a matter of priority, preceded by an in-depth analysis of the reasons that influenced the lower ratings by customers.

Table 1.*Modified SERVPERF survey questionnaire and pilot results of the TSL sector*

Criteria and determinants of service quality of the SERVPERF method - Part A							Part B				
To what extent do the determinants listed below influence the quality of services ?							Average values				
Please place an X in the appropriate place on each line *					1	2	3	4	5	**	***
MATERIAL DIMENSION											
1.	the location and condition of the company's facilities									4,53	4,42
2.	modern equipment and its state									4,38	
3.	modern transport and forwarding systems									4,61	
4.	efficient data communication systems									4,49	
5.	diversified distribution channels									4,31	
6.	appearance of staff and information material									4,22	
COOPERATION, COOPETITION											
7.	brand, modernity and a positive corporate image									4,28	3,70
8.	mutual confidence in the partners									3,61	
9.	level of risk and communication in cooperation between partners									3,36	
10.	openness, honesty and good communication in cooperation									3,54	
RELIABILITY											
11.	timeliness and efficiency of service provision									4,03	4,14
12.	the conformity and completeness of the service provision									4,32	
13.	clear procedures, documents and standards for service provision									4,21	
14.	safety guarantees									4,17	
15.	cost of service									3,97	
CONFIDENCE AND COMPETENCE											
16.	knowledge and qualifications of staff									4,58	4,22
17.	kompetenz, confidence in service delivery									4,36	
18.	inspiring confidence in clients									4,04	
19.	reliability and standardisation of work									3,91	
REACTION ABILITY											
20.	service delivery conditions, completeness									4,53	4,02
21.	response time and service delivery time									4,21	
22.	response to reported problems and service disruptions									3,87	
23.	monitoring, handling complaints									4,02	
24.	flexibility in the approach to the customer (returns)									3,91	
25.	recovery time									3,59	
EMPATHY											
26.	individual customer approach, professional advice									4,46	4,56
27.	meeting customer requirements is a priority									4,48	
28.	inspiring trust and understanding of customer needs									4,55	
29.	convenient service hours and the necessary information									4,62	
30.	kindness and courtesy in customer relations									4,67	
OTHER (open question)											
	Please provide other criteria and their determinants										

* Please use a 5-point scale, where 1 means a very weak impact and 5 a very strong impact on service quality

** Average values of determinants, *** Average values of criteria.

Source: Own study based on research.

Finally, it is necessary to refer to the open question posed to the survey respondents. The respondents indicated the advisability of separating the cooperation criterion and creating two independent criteria, i.e. cooperation and coopetition, pointing to coopetition as a new phenomenon in services in the TSL sector. Thus, the possibility of misjudging this criterion by respondents who may not be fully familiar with the entire mechanism of this contemporary phenomenon in the TSL sector.

5. Conclusions and summary

The study of quality in the TSL sector is an ongoing process that requires a comprehensive approach. With appropriate assessments by means of criteria and their determinants, weaknesses can be identified, corrective actions can be implemented to improve service quality and to increase the competitiveness of companies.

In their study, the authors applied modified quality assessment criteria, taking into account the specifics of the TSL sector. The most important criteria for customers were found to be cooperation/ cooptition, responsiveness, reliability and assurance and the least important were the material dimension and empathy (in the study, customers rated these criteria highly). The research showed that, considering all criteria, the quality of services in the TSL sector is above a good rating, i.e. the quality of services in the sector is good, and the research yielded inspiring directions for further research. This direction is the criterion of cooptition, i.e. companies enter into cooperative relationships while competing with each other.

In conclusion, it should be noted that the SERVPERF method developed by J. J. Cronin and S. A. Taylor, in contrast to the SERVQUAL method, does not make reference to the customer's expectations, relying only on the customer's experience of evaluating a particular service. Its positive features include the clarity and ease with which the survey can be carried out and the possibility, in a short time, to collect the results and draw conclusions. The SERVPERF method makes it possible to answer which quality elements are at or close to the expectations of logistics service customers.

The main disadvantage of both methods, i.e. SERVQUAL and SERVPERF, is the reliance on the subjective perceptions of customers, who often do not have the appropriate qualifications and experience to assess the level of service quality in the TSL sector. On the other hand, however, from an economic perspective, a high evaluation of the quality of services in the TSL sector given by a customer, usually translates positively into company revenue, so paying attention to the perception of service quality by potential customers of the TSL sector, is highly justified.

The authors conclude that in order to carry out a comprehensive study covering all areas of the TSL sector in a short period of time, in anticipation of adequate allowing to take immediate corrective measures, the modified SERVPERF method can be fully used to assess the quality of logistics services. However, for a more in-depth analysis of the phenomena, it should be complemented by research carried out using other methods, e.g. by applying the CSI (Castomer Satisfaction Index) method.

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