Post-transaction Phase of Logistics Customer Service in the Management of Companies Providing Transport Services

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Abstract:

Purpose: *The research problem of this article is to identify the elements of the post-transaction phase of logistics customer service in companies providing transport services with reference to the size of these entities, as well as examining the impact of selected post-transaction elements of logistics customer service on the faultlessness of the services of the surveyed companies.*

Design/Methodology/Approach: *The questionnaire research made it possible to identify the elements of the post-transaction phase of logistics customer service practiced in the entities, with particular emphasis on the methods of after sales communication. The statistical analysis aimed to achieve the objective of this paper consisted in revealing the relation of post-transaction phase elements and size of the entities. This relationship was indicated by determining the correlation and testing statistical significance. The impact of selected post-transaction elements of logistics customer service on the measure of faultlessness of services of the surveyed companies was also tested, using multiple discriminant analysis.*

Findings: *On the basement on the fragmentary survey results it should be assessed that they are identifiable in the current operations of entities, although their scope is significantly limited.*

Practical Implications: *The research results can be used by managers of transport enterprises to create their logistics customer service strategy.*

Originality/Value: *It is an original research study combining a market research based on questionnaire and multiple discriminant analysis with interesting managerial conclusions.*

Keywords: *Logistics customer service, management, transport enterprise.*

JEL Classifications: *R4, R5.*

Paper type: *Research article.*

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1. Introduction

After-sales service in business management (Lachiewicz and Nogalski, 2010) has become an attribute of products, services and customer support. Currently, it is considered an integral part of the overall strategy of business entities (Gierszewska and Romanowska, 2017), as well as one of the priority expectations of customers and element in the end of the sale process. Its availability is correlated with guarantees that go far beyond the manufacturer's standard assurances regarding the failure-free period of product use.

Customer service is understood as a number of elements supporting the basic material product or basic service, while the customer, when making a choice, will take into account the overall offer and its value (Boksberger and Melsen, 2011). From the buyer's point of view, logistics customer service is a set of activities and standards. Particularly noteworthy are those elements of the customer service program that have an impact not only on gaining a competitive advantage, but above all on gaining a loyal customer who will be permanently associated with the company (Chen *et al*., 2009). Therefore, the service of buyers is not limited to the transaction phase, but also includes a very important post-transaction phase.

The purpose of this article is to identify the elements of the post-transaction phase of logistics customer service in companies providing transport services with reference to the size of these entities, as well as to examine the impact of selected post-transaction elements of logistics customer service on the faultlessness of the services of the surveyed companies.

2. Theoretical Background

The post-transaction phase in customer service is of interest to many areas of knowledge in the science of management. Historically, over the years this phase has been one of the most neglected areas of the transaction process in managerial practice (Mesjasz-Lech, 2015). Recently, it has gained in importance and is the subject of theoretical considerations and practical solutions mainly in the sphere of distribution (Czubała, 2001), marketing (Kotler and Keller, 2012), marketing logistics (Christopher and Peck, 2012; Erokhina *et al*., 2018) and logistics (Ciesielski, 2006; Florez-Lopez and Ramon-Jeronimo, 2012; Panayides, 2007). Both in literature and in economic practice, there is a tendency to integrate them and to treat the post-sale phase of a product or service much more broadly than in relation to traditional marketing only.

The division into the pre-transaction, transaction and post-transaction phases undoubtedly dominates within the division of the transaction process most often quoted in the literature (Kempny, 2001). They all refer to a properly conducted customer service process, maintaining a high level of this service and ultimately obtaining customer satisfaction (Cook, 2002). It is one of the proposals to systematize

the area of customer service, including, among others, the identification of elements of this service within individual phases and their measurement.

For enterprises identifying a logistics system (Khalyn, 2018; Nowicka - Skowron, 2000), as part of logistics customer service, it is most often proposed to refer the post-transaction phase to such service elements that will allow for the extension of contact with customers after the transaction is completed. From the customer's perspective, they are supposed to protect their interests by ensuring the correct use of products (Price and Harrison, 2013). From the perspective of representatives of business entities, as part of the post-transaction phase, the service elements allow for the assessment of the usefulness of a product or service, provide valuable information about customer preferences, their expectations, and help encourage the customer to make further purchases. For elements of the post-transaction phase, inter alia, Ballou (1992), Coyle *et al*. (2003), Kempny (2001), Rutkowski (2005) include:

- warranty service - the basic element in the operation of service, related to the obligation to replace or repair the delivered defective goods using the distribution channel which was used in the first delivery,
- product tracking - it is particularly important for industries where defective products must be immediately withdrawn from the market, as they pose a threat to the life or health of the buyers,
- complaints and returns - efficient handling of complaints and returns is an effective way to retain the customer, therefore the development of a system of claims collection and handling of plays an important role,
- replacement of defective products - especially in the case of durable goods, has a decisive impact on maintaining existing group of customers and acquiring new ones.

Once the customers have identified which elements of customer service are relevant to them, the company can begin building an elements' measurement system. They should be developed for all transaction phases, therefore also for the post-transaction phase. The entity staff should control them on an ongoing basis and report the results of the controls to their superiors. The results should be analyzed and verified, taking into account the final increase in the level of customer service as part of the services provided or in the sale of products (Skowronek and Sarjusz-Wolski, 2012).

Bearing in mind the very large impact of the post-transaction phase elements on important service areas, manufacturing and service companies should be inclined to pay more attention to them as part of their business activities (Perez *et al*., 2007; Tseng and Hung, 2013; Zhou and Pritchard, 2009). Too unresponsive and sluggish approach to this problem may result in numerous errors, such as poor market recognition, overlooking customer profitability, incorrect definition of customer service policy, economically extortionate expenses on customer service, one-sided perception of customer service policy as a source of increased sales, and many others.

3. Research Objectives, Methodology and Data

In order to achieve the aim of this article, in the first stage, part of the results of a larger survey was used. The survey was conducted among representatives of enterprises that provide transport services (Rydzkowski, 2011). These entities are situated in Poland, but the range of their services indicated in the survey was most often international (Wojewódzka-Król and Rolbiecki, 2013). The research sample covered 147 business entities, with enterprises employing 250 or more employees and their annual turnover exceeding EUR 50 million - 2% of the research sample, enterprises employing an annual average in at least one of the last two financial years from 50 to 249 employees and achieving an annual turnover - 5.5% of the research sample, with an annual average of 10 to 49 employees in at least one of the last two financial years and with an annual turnover not exceeding the equivalent of EUR 10 million -16.5% of the research sample, while entities employing an annual average in at least in one of the last two financial years up to 9 employees and with an annual turnover not exceeding the equivalent of EUR 2 million - 76% of the research sample.

In response to the questionnaire form, representatives of enterprises could choose more than one of the options mentioned. Therefore, the values of individual shares were determined in relation to all the answers provided. On the basis of the obtained responses, elements of the post-transaction phase of logistics customer service were identified, practiced in entities, with particular emphasis on the methods of communication between enterprises and their buyers after the transaction. In the next stage of the research, the results of the survey concerning the identified elements of the post-transaction phase of logistics customer service were compared to the size of business entities. This relationship was indicated by determining the correlation and testing statistical significance (Triola, 2012). The influence of selected post-transaction elements of logistics customer service on the faultlessness of services provided by the surveyed companies was also examined. For this purpose, multiple dyscryminant analysis (STATISTICA Help, 2020) was used. The calculations were performed using the STATISTICA 10.0 package.

4. Research Results

4.1 Post-transaction Elements of Logistics Customer Service

The prolongation and tightening of the company's contact with customers, ensuring the correct use of products, and in many cases protection of their interests, implemented the appropriate elements of the customer's logistics service. These were the elements of the post-transaction phase of logistics customer service undertaken by enterprises, which were partly related to the questionnaire. Among the four elements after the transaction, the largest number of respondents, as 118 (40.8%), indicated that complaints and claims from their customers were considered. A similar size group of entrepreneurs, as 94 entities (32.6%), declared offering guarantees for transport services. Out of the surveyed sample of 147 enterprises, only 38 (13.1%) provided

their customers alternative services, and service monitoring was offered by 11 entities (3.8%). Also 28 entities (9.7%) admitted the lack of elements extending and strengthening the relationship between the company and its customers. On the basis of such a distribution of the obtained research results, it can be concluded that most of the surveyed entities have little awareness of the importance or do not notice any benefits in shaping the relationship between the enterprise and the customer and the perception of the enterprise and its offer through the implementation of the components of the post-transaction phase. The distribution of the share of post-transaction element sof logistics customer service carried out by the surveyed enterprises is shown in Figure 1.

Figure 1. *Post-transaction elements of logistics customer service*
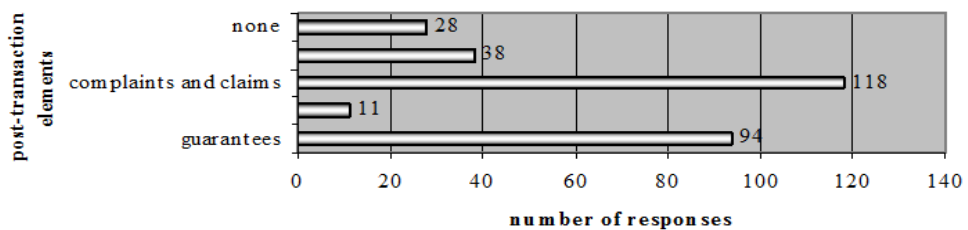
Source: Own elaboration.

Another problem of logistics customer service, raised in the questionnaire, were the methods of communication between enterprises and their buyers after the transaction, i.e. orders for services offered by the surveyed entities. Among the five variants of possible answers, the most popular ones were: a direct conversation with a customer and a telephone conversation, recorded as appropriate in all 147 surveyed enterprises (43.6% each). Among the classic methods of communication with the customer, also the agency of fax was mentioned, the use of which was indicated in the form by significantly fewer respondents, i.e. 33 (9.8%). The smallest shares were in IT solutions: post-transaction contact via e-mail was offered to their customers by 8 entities (2.4%), and via the Internet - by 2 entities (0.6%). The distribution of responses obtained from the surveyed entrepreneurs to the question about the methods of communication with customers after the transaction is presented in Figure 2.

Figure 2. *Methods of communication with customers after the transaction*
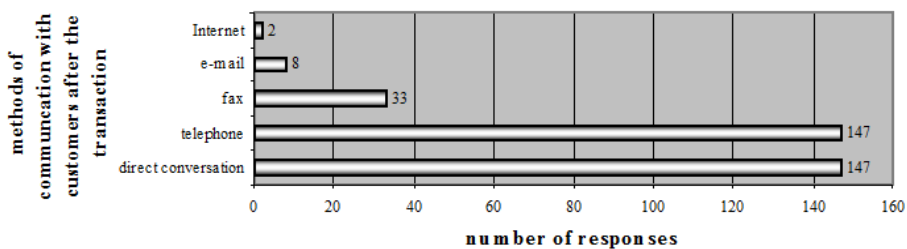
Source: Own elaboration.

4.2 Relationship between the Type of Post-transaction Activities and the Size

The answers of the respondents presented in Table 1 confirmed the existence of a statistically significant relationship between the type of post-transaction activities carried out by enterprises and their size ($\chi^2 = 23.30$). This relationship is explicit and amounts to 0.305. It is inconsidearbly observable that larger enterprises usually provided a full range of post-transaction services. On the other hand, smaller enterprises focused rather on basic activities resulting from commercial law and consumer arrangements. It is all the more worrying that as many as 10% of enterprises do not include post-transaction services in their activities. According to the theory and practice of enterprise management, a properly served customer submitting a complaint affects the company's benefit with greater force than a standard-served customer in the course of the routine service provision process.

Table 1. *Post-transaction elements of logistics customer service provided by the surveyed companies depending on their size*

Which of the following post-transaction elements are implemented by the enterprise?	Size of enterprise			
	micro	small	medium	large
guarantees	63	21	8	2
service monitoring	0	1	7	3
complaints and claims	84	23	8	3
replacement services	11	17	7	3
none	26	2	0	0

Source: *Own elaboration.*

Another problem of logistics customer service, mentioned in the questionnaire, were the methods of communication between enterprises and their buyers after the stage of placing orders for services offered by the surveyed entities. The data presented in Table 2 showed that there is a strong correlation between the size of enterprises and the way of communication with the customer, at the level of 0.439. In the case of large enterprises, the use of the full range of communication possibilities was observed. Many leading companies on the transport services market started building telecommunications and IT systems several years ago, when there were no satisfactory solutions for managing the transport fleet and forwarding on the Polish market that would meet the requirements of customers in the broad sense of the word. Due to the lack of appropriate solutions already existing on the domestic software market, some companies decided to write the application from scratch. Medium-sized enterprises specialize in more traditional contacts - direct conversation, telephone, fax, less often e-mail.

On the other hand, small and micro-enterprises are usually limited to telephone and personal contacts. Taking into account the possibility of contacts with customers and cooperators using modern information and telecommunications technologies, it is surprising that such opportunities are omitted, especially by enterprises from the micro group. Only some of them undertook the search for solutions based on internally developed applications, most often on the basis of an Excel spreadsheet. Both the

lower and lower costs and the universality of IT technologies should mobilize the decision makers of these companies to change their strategy in the field of communication with the market, also in the post-transaction phase of logistics customer service.

Table 2. *Methods of communication with customers in the post-transaction phase implemented by the surveyed companies depending on their size*

What communication methods are offered to customers?	Size of enterprise			
	micro	small	medium	large
direct conversation	112	24	8	3
telephone	112	24	8	3
fax	3	20	7	3
e-mail	0	1	4	3
Internet	0	0	0	2

Source: Own elaboration.

4.3 Post-transaction Elements and after Sales Communication

Using the multiple dyscryminant analysis, the influence of the selected, most important post-transaction elements of logistics customer service and the selected most important ways of communicating with customers, adopted as explanatory variables, was indicated on the dependent variable, which is the measure of the faultlessness of the services of the surveyed transport companies. The features of this function are shown in the following Tables 3-7:

Table 3. *Summary of the characteristics of variables as part of the discriminant function analysis for the dependent variable, i.e., the faultlessness of the services of the surveyed transport companies*

Explanatory variable	Wilks' Lambda	Part. Wilks	Elim.F (4,21)	p level	Toler.	1-Toler. (R-square)
guarantees	0,6632	0,8975	16,2667	0,0000	0,8764	0,1236
service monitoring	0,6567	0,9064	14,7232	0,0000	0,9754	0,0246
complaints and claims	0,6300	0,9448	8,3310	0,0003	0,8473	0,1527
replacement services	0,6249	0,9526	7,0949	0,0010	0,9052	0,0948
direct conversation	0,6231	0,9552	6,6783	0,0015	0,9394	0,0606
telephone	0,6163	0,9658	5,0506	0,0070	0,9329	0,0671
fax	0,6127	0,9715	4,1784	0,0163	0,8021	0,1979

Source: Own study with the use of STATISTICA 10.0 package.

The summary of the discriminant function analysis presented in Table 3 according to the assessment of the dependent variable, ie the faultlessness of the services of the surveyed transport companies, indicates high values of the Wilks lambda test = 0.5952; F = 12.058; p <0.0000. Each of the seven explanatory variables included in this model slightly enhances its discriminant value. At the same time, the determined value of F for each of the explanatory variables is high, which confirms their serious contribution to the discrimination of evaluation groups. The range of the tolerance

values included in the interval [0.8021: 0.9754] indicates a significant level of new information, which is represented by the successive variables in the model. These results show the unquestionable essence and balanced importance of the selected input variables for this model.

Table 4. *List of the values of standardized and raw coefficients within the discriminant functions for the dependent variable, i.e. the faultlessness of the services of the surveyed transport companies*

Explanatory variable	Standarized values for:		Raw values for:	
	1-st function	2-nd function	1-st function	2-nd function
guarantees	-0,5836	-0,1868	-0,5168	-0,1654
service monitoring	-0,4061	0,6155	-0,3888	0,5893
complaints and claims	-0,4299	-0,1874	-0,3538	-0,1542
replacement services	0,3608	-0,2902	0,1949	-0,1568
direct conversation	0,3432	0,2800	0,2280	0,1860
telephone	-0,2809	-0,3106	-0,2414	-0,2669
fax	-0,1433	-0,5135	-0,1415	-0,5072
Constant	-	-	-1,3707	-0,5452
Eigenvalue	0,4972	0,1221	0,4972	0,1221
Accumulated proportion	0,8029	1,0000	0,8029	1,0000

Source: Own study with the use of STATISTICA 10.0 package.

According to the results of calculations of the compilation of the values of standardized and raw coefficients within the discriminant functions for the dependent variable, i.e., the faultlessness of the services of the surveyed transport companies, presented in Table 4, it should be considered that the most important for the discrimination of the dependent variable, i.e. the faultlessness of the services of the surveyed transport companies, is the explanatory variable regarding the warranty. At the same time, it should be assessed that its difference to the following variables is not significant. In this comparison, there is one variable that stands out in terms of strength, although it is also statistically significant, namely the fax communication variable. Taking into account the entire list of the values of standardized and raw coefficients for both functions, the first function, which presents a much larger eigenvalue, is selected for further consideration.

Table 5. *Summary of the results of the significance test of discriminant variables for the dependent variable, i.e. the faultlessness of services provided by the surveyed transport companies*

	Eigenvalue	Canonical R	Wilks' Lambda	chi-square	df	p level
0	0,4972	0,5763	0,5952	149,4135	14	0,0000
1	0,1221	0,3299	0,8912	33,1760	6	0,0000

Source: Own study with the use of STATISTICA 10.0 package.

In the next stage of the research, a test of the significance of discriminant variables was performed for the dependent variable, i.e. the faultlessness of the services of the

surveyed transport companies. The test results are summarized in Table 5. They confirm the high significance of both functions with the advantage of utility in the area of the first function.

Table 6. *Comparison of the values of the correlation coefficients of the input variables with the discriminant variables for the dependent variable, i.e. the faultlessness of the services of the surveyed transport companies*

Explanatory variable	1-st function	2-nd function
guarantees	-0,6308	0,0126
service monitoring	-0,3553	0,6433
complaints and claims	-0,3852	-0,4434
replacement services	0,4333	-0,3334
direct conversation	0,4126	0,1363
telephone	-0,0679	-0,2225
fax	-0,0345	-0,6217

Source: Own study with the use of STATISTICA 10.0 package.

According to the comparison of the values of the correlation coefficients of the input variables with the discriminant variables for the dependent variable, i.e., the faultlessness of the services of the surveyed transport companies from Table 6, it can be concluded that the dependent variable, i.e. the faultlessness of the services of the surveyed transport companies, relates mainly to the discriminatory properties of the input variable concerning guarantees in 1 model, and then to provide replacement services and communication through face-to-face conversation. In the second approach, however, the monitoring of services and communication via fax would be considered. Therefore, these results show a different form of each of the functions mentioned.

Table 7. *Correctness matrix of the classification of entities to be assessed for the dependent variable, i.e. faultlessness of services provided by the surveyed transport companies*

	Percent	G I:I	G II:II	G III:III
G I:I	40,0000	8	12	0
G II:II	86,8932	5	179	22
G III:III	41,1765	1	39	28
Total	73,1293	14	230	50

Source: Own study with the use of STATISTICA 10.0 package.

According to the results of the validity matrix of the classification of entities to be assessed for the dependent variable, i.e., the faultlessness of the services of the surveyed transport enterprises, presented in Table 7, approximately 73.1% of economic entities were properly classified in relation to the known assessment results. The best result was obtained for entities assessed as weak, and it amounted to 86.89%.

At the same time, it should be acknowledged that this is not a high result, and the number of attempts taken exceeds 405 positively influencing the overall assessment of the function. With regard to the total accuracy in relation to weak and very weak economic entities identified as negative, they constitute over 90%. The analyzed model can be considered optimistic because it is very likely to hit a negative rating. It is recognized that in the event of a positive assessment, a significant overestimation should be assumed. Probably, multiple repetitions of the research and increasing the size of the research sample would allow for a better adjustment of the discriminant function.

5. Conclusion

Based on the fragmentary survey results relating to the elements of the post-transaction phase of logistics customer service in the surveyed transport companies, it should be assessed that they are identifiable in the current operations of entities, although their scope is significantly limited. The respondents appreciated the prolongation and tightening of contacts between enterprises and customers mainly by taking into account complaints and claims from their customers and offering guarantees for transport services. The lack of elements extending and strengthening the bond between the enterprise and its customers was admitted by relatively few sample entities, i.e. 10% of the total. Larger enterprises usually provided a full range of post-trade services. On the other hand, smaller enterprises focused rather on basic activities resulting from commercial law and consumer arrangements.

In the area of communication with recipients, it was found that companies leading in terms of the application of logistics solutions dominate in the field of electronic forms of communication with their customers. Taking into account the results of the conducted research, it should be stated that only about 3% use such solutions. With regard to all the surveyed entities, significant imperfections in the solutions in the sphere of information flow systems were found, and only a small part of enterprises show a tendency to use more advanced forms of communication with buyers. However, direct and telephone contact dominates.

The use of the discriminant function allowed for the assessment of the impact of the selected, most important post-transaction elements of logistics customer service and the selected most important ways of communication with customers, adopted as explanatory variables, on the dependent variable, which was the measure of faultlessness of services provided by the surveyed transport companies. The obtained results of the analysis indicated that the explanatory variable concerning the warranty in the first model, and then for the provision of substitute services and communication through direct conversation, has the greatest importance for the discrimination of the explained variable, i.e. the faultlessness of the services of the surveyed transport companies. In the second approach, however, the monitoring of services and communication via fax may be considered.

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