

Article citation info: Czerwińska, K., Pacana, A. Analysis of logistics customer service from the perspective of the distribution network of wooden products. *Transport & Logistics: the International Journal*, 2019; Volume 19, Issue 47, December 2019, ISSN 2406-1069

ANALYSIS OF LOGISTIC CUSTOMER SERVICE FROM THE PERSPECTIVE OF THE DISTRIBUTION NETWORK OF WOODEN PRODUCTS

Czerwińska Karolina¹, Pacana Andrzej²

¹*Rzeszow University of Technology, al. Powstancow Warszawy 12, 35-959 Rzeszów, Poland; orcid id: 0000-0003-2150-0963, tel, +48 17 743 25 34, e-mail: k.czerwinska@prz.edu.pl*

²*Rzeszow University of Technology, al. Powstancow Warszawy 12, 35-959 Rzeszów, Poland; orcid id: 0000-0003-1121-6352, tel, +48 17 865 13 90, e-mail: app@prz.edu.pl*

Abstract:

Measuring and monitoring the level of customer satisfaction is now an essential element in gaining competitive advantage on the market. In the services sector, meticulous quality assessment is not easy, as it is largely dependent on the personal feelings of customers. Subjectivity in the assessment of a service contributes to the fact that what is rated very highly by one buyer may be average or even negative for another buyer. Therefore, the main aim of the article was to measure the expectations of customers and the degree of their satisfaction with the services provided in the analyzed organization. In order to achieve this goal, the Customer Satisfaction Index (CSI) method was used, in which the survey questionnaire was the basic measurement tool. The aim of the article is also to present a proposal of segmentation of aspects affecting the level of customer satisfaction using a quality map and to indicate the areas that the organization should immediately improve in order to maintain a stable position on the market.

Key words:

logistics customer service, distribution network, customer satisfaction index (CSI), satisfaction

INTRODUCTION

Today, the market for goods and services is characterised by ever-increasing competition and progressive transformations in both the economic and technological spheres. The dynamic development of the market forces enterprises to take care of and improve customer relations [1]. Currently, not so much the conclusion of a transaction as building a lasting relationship with the buyer becomes the foundation of market activities of enterprises. The link should be based on mutual trust, reliability, loyalty and perhaps even friendship

between the customer, who is a committed business partner, and the company. The basis for such actions is a thorough understanding of the company's customers, and thus an understanding of the changing expectations, behaviors and attitudes of customers towards the company. Satisfied purchaser, associated with the company for many years, is the main determinant of the company's success on the market. Therefore, each client should be treated as an investment that will be a source of long-term benefits for the company. In order to achieve these goals, it is not so much necessary to gain new customers as to retain the existing ones and transform them into loyal ones. In such a situation, the pursuit of satisfaction of each client should play a priority role in each marketing-managed enterprise [2, 3, 4, 5, 6]. The customer's satisfaction with the purchase depends on the degree to which his expectations have been met. The general definition of satisfaction indicates pleasure or disappointment, which is the result of comparing the possibilities of a real product with the expectations of the customer [7, 8].

The increase in customer expectations in relation to the quality of service contributes to the introduction of modern solutions in the area of serviced supply chains [9]. The strategic attributes that make up the dimension of customer service logistics include: lead time, completeness, availability of products from stock, timeliness, reliability, flexibility of orders and convenience, including not only the attributes related to service personnel, but also documentation or the way of order transmission and product receipt. This understanding of the dimension of customer logistic service is influenced not only by organisations that have direct contact with the customer, but also by the whole structure of finished product flows, which may be distribution channels or complex networks [10, 11].

The article focuses on the importance of logistic elements of customer service, including the importance of marketing elements and their role in the final dimension of customer satisfaction. The aim of the article is to propose a methodology for evaluating and improving the process of order fulfilment in the distribution network, taking into account the diverse preferences of customers.

1 CSI METHOD IN CUSTOMER SATISFACTION SURVEYS

The CSI (Customer Satisfaction Index) method is one of the most popular methods used to measure the quality of services [12, 13], while this method is also an excellent tool for creating marketing strategies of a company. The method enables to indicate the level of customer satisfaction and the degree of customer satisfaction in relation to specific features of a given product or service [14].

The classic model distinguishes between two phases: exploratory and diagnostic. The first phase is to identify the aspects that affect customer satisfaction or dissatisfaction with the services provided. In the next step, using a properly constructed questionnaire, surveys are carried out on a properly selected group of respondents. The CSI indicator is then calculated and converted into percentage values. The next stage consists in analysing the collected material, developing the so-called quality map and proposing improvement actions. It is recommended that the research should be conducted cyclically, which will significantly facilitate the measurement of the effects of the pro-quality measures introduced and help to identify problematic situations [15, 16].

The CSI method makes it possible to obtain answers to, among others, questions [17]:

- What does the customer expect from the products/services offered?
- Which of the expectations are most important for the customer?
- To what extent does the product/service meet customer expectations?
- Which product features should and should not be invested in?

The CSI indicator as a practical measuring tool has many advantages, such as [18, 19]:

- Low level of complication in using the method,
- Short time of filling in the questionnaire used,
- Identify customer preferences and expectations,
- Possibility to compare the results obtained for companies competing with each other,
- Possibility of cyclic measurements.

When using the CSI method, it should be noted that this method also has drawbacks. Particular attention should be paid to the interpretation of the index obtained, as a high value of a customer satisfaction index does not always indicate a higher revenue from the sale of a product or service. Additionally, using the CSI index it is recommended to ensure comparability of parameters and their weights [15].

The Customer Satisfaction Index allows to determine the satisfaction level by means of one number - expressed in nominal or percentage terms. The CSI expressed in percentage terms allows much easier analysis in relation to the classical nominal CSI score. In such a situation, the criteria in Table 1 may be used to interpret the results [14].

Tab. 1 Criteria for assessing the CSI expressed as a percentage

Number	Range of CSI values [%]	Evaluation of the indicator
1	0-40	the client was very unhappy
2	40-60	customer dissatisfied
3	60-75	average customer satisfaction
4	75-90	customer satisfied
5	90-100	customer very satisfied

Source: own elaboration based on: Zimon. D. , Raven. U. (2015). Using the CSI method to study customer service logistics on the example of a selected organization, Logistics, no. 3.

It should be noted, however, that the criteria contained therein are not universal. They are only a kind of a core, which should be modified according to the needs of a given company [13].

2 ANALYSIS OF RESULTS

The survey was conducted in August 2019 on a group of 40 people using the services of a company dealing with the distribution of wooden products (interior and exterior doors). The research tool was a questionnaire. The respondents, completing the questionnaire, presented their opinions in two areas: the first one indicated the degree of satisfaction with the service provided and the second one indicated the level of significance of a given characteristic. In the questionnaire, a five-stage Likert scale was used to evaluate individual factors, where 5 was the highest and 1 the lowest. Table 2 presents the results obtained in relation to the evaluation of particular factors and their importance in the analysed distribution network of wood products.

The formula (1) was used to calculate the average score for the criterion and the formula (2) was used to calculate the average weight (significance) of the aspect.

$$c_i = \frac{\sum_k c_k \cdot n_{ck}}{\sum_k n_{ck}} \quad (1)$$

$$w_i = \frac{\sum_k w_k \cdot n_{wk}}{\sum_k n_{wk}} \quad (2)$$

where: c_i – assessment of satisfaction with the i -th aspect (parameter),

c_k - value of the evaluation assigned on an appropriate scale to the questionnaire used in the questionnaire,

n_{ck} - number of indications given for a given evaluation value,

w_i - significance coefficient (weight) of the i -th aspect (parameter),

w_k - the value of the relevant weight as indicated in the relevant scale of the questionnaire reply,

n_{wk} - number of indications given for a given value of an appropriate weight.

Tab. 2 Average weights and ratings for individual factors and their average significance

Average score for criterion c_i (satisfaction)	RESULTS										Average weight of w_i (meaning)	
	Satisfaction					Customer service dimension	Meaning					
	the client was very unhappy	customer dissatisfied	average customer satisfaction	customer satisfied	customer very satisfied		very small	small	average	big		very big
4.025	0	7	3	12	18	Speed of order fulfillment	0	0	0	5	35	4.375
4.325	0	0	8	11	21	Timeliness	0	0	0	4	36	4.900
3.700	1	1	10	25	3	Certainty	0	0	0	8	32	4.800
3.900	2	0	7	22	9	Completeness	0	0	0	11	29	4.725
4.00	0	1	14	9	16	Availability of stock product	0	0	10	17	13	4.075
4.075	0	0	10	17	13	Flexibility	4	5	5	13	13	3.650
4.175	0	0	3	27	10	Contact with the supplier	0	10	12	10	8	3.400
3.325	1	6	15	15	3	Cost of the service	0	0	1	5	34	4.825
4.775	0	0	1	7	32	Forms of payment	3	3	7	18	9	3.675
3.525	3	8	7	14	9	Handling of complaints and complaints	2	6	28	3	2	3.000

Note: own elaboration based on: Zimon. D., Raven. U. (2015). Using the CSI method to study customer service logistics on the example of a selected organization, Logistics, no. 3.

According to the survey (Table 2), the respondents gave the most favourable assessment of the possibility of using various forms of payment - the result is at the level of 4,775. The lowest score was given for the area related to the cost of service provision, where the value is 3,325, which may result from the fact that the analysed organization charges a fee for each kilometre driven and has designated zones with a specified distance from the location of the main warehouse after exceeding which the value of the rate per kilometre increases. In addition, the organization does not offer any additional discounts for regular customers, which may also reduce the assessment of the cost of the service.

Analysing the level of significance, it turns out that the most important for respondents are: timeliness (4.900), cost of service (4.825) and certainty of correct order execution (4.800). Only in the fourth place did the respondents consider the completeness of the order to be important (4.725). Contact with the supplier (3.400) and handling complaints and complaints (3.000) were rated as the least significant.

The next step was to calculate the value of the relative weight for each indicator. Formula (3) and (4) were used to calculate these values.

$$w_{iw} = \frac{w_i}{\sum_{i=1}^N w_i} \quad (3)$$

$$CSI = \sum_{i=1}^N w_{iw} \cdot c_i \quad (4)$$

where: w_{iw} - relative weight of the criterion,

w_i - significance coefficient (weight) of the i -th aspect (parameter),

CSI - value of the customer satisfaction index,

c_i - assessment of satisfaction with the i -th aspect (parameter).

In addition, in order to better interpret the resulting CSI, its maximum value was calculated and then converted into a percentage. This was done using formulae (5) and (6):

$$CSI_{max} = \sum_{i=1}^N w_i \cdot c_{imax} \quad (5)$$

$$CSI_{\%} = \frac{CSI}{CSI_{max}} \cdot 100\% \quad (6)$$

where: CSI_{max} - maximum value of the customer satisfaction index,

w_i - significance coefficient (weight) of the i -th aspect (parameter),

c_{imax} - maximum assessment of satisfaction with the i -th aspect (parameter),

$CSI_{\%}$ - customer satisfaction index (expressed as a percentage),

CSI - value of the customer satisfaction index,

The calculation of CSI , CSI_{max} and $CSI_{\%}$ indices for a selected distribution network of wooden products is presented in Table 3.

Tab. 3 Determination of the CSI

No	Aspect	Average score for criterion c_i (satisfaction)	Average weight of w_i (meaning)	Relative weight w_{iw}	CSI	CSI_{max}
1	Speed of order fulfillment	4.025	4.375	0.106	0.427	0.530
2	Timeliness	4.325	4.900	0.118	0.510	0.590
3	Certainty	3.700	4.800	0.116	0.429	0.580
4	Completeness	3.900	4.725	0.114	0.445	0.570
5	Availability of stock product	4.00	4.075	0.098	0.392	0.490
6	Flexibility	4.075	3.650	0.088	0.359	0.440
7	Contact with the supplier	4.175	3.400	0.082	0.342	0.410
8	Cost of the service	3.325	4.825	0.116	0.386	0.580
9	Forms of payment	4.775	3.675	0.089	0.425	0.445
10	Handling of complaints and complaints	3.525	3.000	0.072	0.254	0.360
		Σ	41.425	-	CSI	CSI_{max}
					3.968	5
					CSI % - 79.36 %	

The customer satisfaction index at the level of 79.36% was obtained, which can be regarded as a relatively good result, as the expectations of the customers of the selected wood products distribution network are met at a satisfactory level. However, when interpreting the obtained result, one should pay attention to the competition, the environment of the organization and its individual specificity. In order to ensure the loyalty and loyalty of existing customers, the company should constantly improve the quality of its services.

3 VISUALIZATION OF THE RESULTS - PREPARATION OF A QUALITY MAP

In the further part of the analysis, the collected material is depicted on the so-called quality map. This graphical technique is designed to present the results of the assessment of individual factors influencing customer satisfaction. When constructing a quality map, it should be remembered that the horizontal axis raises issues that are important to the customer and the vertical axis raises satisfaction levels [20].

The first stage of developing a quality map consisted in determining the points of map division (division into four areas). The numbers of the average weights (W_{sr}) of all aspects (according to formula (7) and (8)) were determined. This resulted in a division point on the meaning axis. The second axis and the split point on the satisfaction axis were then determined using the previously calculated CSI value for all aspects. The results obtained are presented in Table 4.

$$w_{sr} = \frac{\sum_{i=1}^N w_i}{N} \quad (7)$$

$$w_{sr} = \frac{\sum_{i=1}^N c_i}{N} \quad (8)$$

where: w_{sr} - average value of the coefficient,

w_i - significance coefficient (weight) of the i -th aspect (parameter),

c_i - assessment of satisfaction with the i -th aspect (parameter),

N - number of aspects examined.

Tab. 4 Determination of quality map division points for the analyzed sitting distribution of wooden products

Lp	Aspect	Waga czynnika w_i	Ocena czynnika c_i
1	Speed of order fulfillment	4.375	4.025
2	Timeliness	4.900	4.325
3	Certainty	4.800	3.700
4	Completeness	4.725	3.900
5	Availability of stock product	4.075	4.00
6	Flexibility	3.650	4.075
7	Contact with the supplier	3.400	4.175
8	Cost of the service	4.825	3.325
9	Forms of payment	3.675	4.775
10	Handling of complaints and complaints	3.000	3.525
	Average (W_{sr})	4.142	3.982

On the basis of the results obtained in Table 4, a quality map was drawn up and divided into four parts. The distribution points in this case are: 4.142 on the priority axis and 3.982 on the satisfaction axis. A graphical representation of the results is shown in Figure 1.

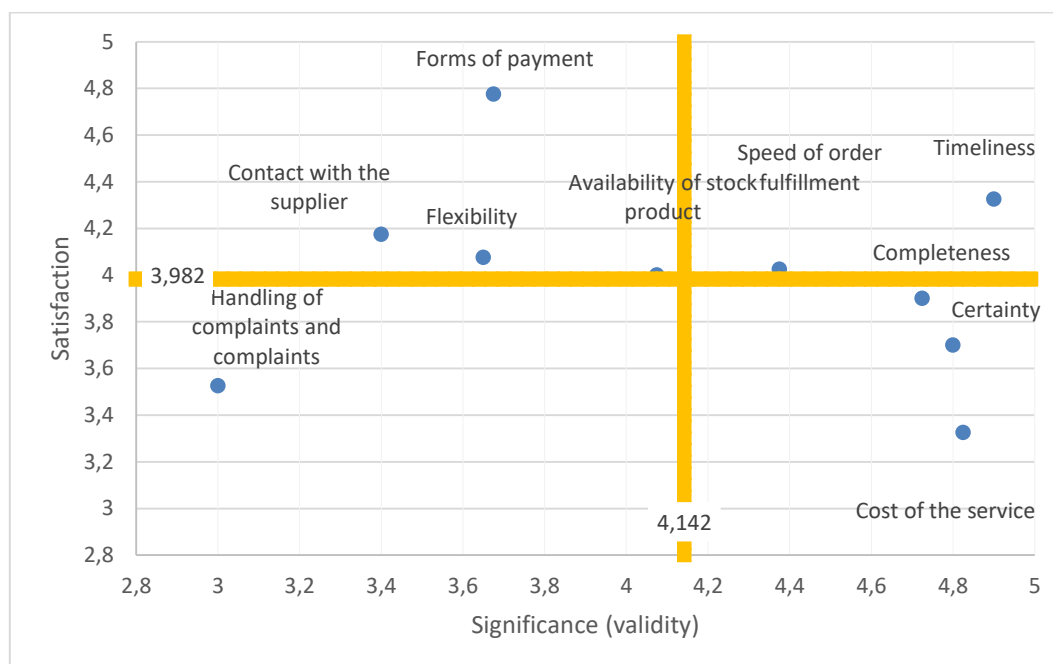


Fig.1 Map of the quality for the analysed distribution network of wooden materials
Source: own study

Analyzing the results, one can say that.:

- To the areas to which the organization should pay special attention and strengthen them should be: the cost of the service, customer confidence in the correctness of the contract and the complexity of the delivery of a consistent quantity of products with the order with their equipment in the necessary for the assembly of the product,
- The area that should be maintained includes the timeliness of service delivery, while the speed of order delivery is on the borderline, which indicates the need to improve this aspect in the near future,
- The areas that are of little importance to the respondents included: payment methods, contact with the supplier, delivery flexibility and availability of the product from stock. Despite the fact that the indicated aspects are not the most important for the respondents, they were very highly rated - satisfactory level,
- One of the areas that should be improved in the future is the handling of complaints and complaints.

5 CONCLUSIONS

Striving to achieve the highest possible customer satisfaction should be one of the overarching objectives of any market-oriented organisation. In practice, however, it is difficult to reach its maximum level and unfortunately there is never any 100% customer satisfaction. Improvement of the customer service process is not only a complex process, but also a long-term and systematic one. Customer preferences can be variable, so it is important to monitor them and design the customer service system in such a way that it is possible to adapt the organization to market changes.

The methodology for diagnosing the level of customer satisfaction presented in the study is oriented towards a cyclical analysis of customer requirements and preferences, as well as a diagnosis of processes in the organization. The results obtained indicated a high level of customer satisfaction with the services provided, reaching 79.36%. However, functioning on a dynamically changing market, organizations that want to maintain a leading position are forced to constantly improve their services and logistic customer service. Based on this assumption, the improvement of the flexibility index in the analysed organization requires immediate improvement of the areas related to the costs of service delivery, strengthening of the customers' confidence in the correctness of order delivery and comprehensiveness, i. e. delivery of a consistent number of products with the order together with their equipment necessary for the assembly of the product.

The presented method of assessing customer satisfaction using the CSI method is a useful tool for diagnosing areas requiring improvement within the scope of manufactured products and provided services, which can be applied in any enterprise. The information collected during the customer satisfaction analysis is the basis for the selection of a strategy that will allow for continuous improvement of service activities and order relations with customers, which in turn will contribute to the growth of financial results and strengthen the position on the market.

References

- [1] Bujak. A., Szot. W., 2009, „Logistyczna obsługa klienta we współczesnej gospodarce“ [w:] Funkcjonowanie systemów logistycznych, Tom II, (red.) Jaworski. J., Mytlewski. A., Prace Naukowe Wyższej Szkoły Bankowej w Gdańsku, Gdańsk.
- [2] Rudawska, E., 2005, „Lojalność klientów“, PWE, Warszawa.
- [3] Skowron, Ł., 2010, „Modele ścieżkowe jako przykładowe metody badania satysfakcji i lojalności klientów“, Zeszyty Naukowe Uniwersytetu Szczecińskiego Ekonomiczne Problemy Usług, nr 54. Szczecin, s. 495-496.
- [4] Dziadkowiec, J., 2011, „Badanie jakości usług świadczonych przez restauracje metodą ankietową i metodą mystery shopping“, Zeszyty Naukowe Uniwersytetu Szczecińskiego, nr 694, Szczecin 2011, s. 33-44.
- [5] Frankowska, E., 2011, „Badanie stopnia zadowolenia klientów z jakości usług“, Zeszyty Naukowe SGSP, Wydawnictwo SGSP, nr 41, Warszawa, s. 203-217.
- [6] Hill. N., Alexander, J., 2003, „Pomiar satysfakcji lojalności klientów“, Oficyna Ekonomiczna, Kraków.
- [7] Kotler. P., 2005, „Marketing“, Rebis, Warszawa.
- [8] Kempny. D., 2001, „Logistyczna obsługa klienta“, PWE, Warszawa.
- [9] Schulz. M., 2011, „Wpływ satysfakcji na lojalność klienta na rynku B2B“ [w:] Marketing przyszłości. Trendy. Strategie. Instrumenty. Zachowania konsumentów – trendy i kierunki zmian, red. Rosa. G., Smalec. A., Ostrowska. I., Uniwersytet Szczeciński, Szczecin, s. 107-116.
- [10] Dyczkowska, J., 2015, „Zarządzanie logistyczną obsługą klienta“, Zeszyty Naukowe Uniwersytetu Szczecińskiego. Problemy Zarządzania, Finansów i Marketingu, nr 41, Szczecin, s. 447 - 458.

- [11] Bitkowska. A., 2009, „Zarządzanie procesami biznesowymi w przedsiębiorstwie“, Vizja Press & IT, Warszawa.
- [12] Zimon. D., Kruk. U., 2015, „Wykorzystanie metody CSI do badania logistycznej obsługi klienta na przykładzie wybranej organizacji“, Logistyka, nr 3.
- [13] Wolniak. R., Skotnicka-Zasadzień. B., 2008, „Wybrane metody badania satysfakcji klienta i oceny dostawców w organizacjach“, Wydawnictwo Politechniki Śląskiej, Gliwice.
- [14] Pacana. A., Zimon. D., Zimon. G., 2018, „Wybrane metody zarządzania logistycznego“, Oficyna Wydawnicza Politechniki Rzeszowskiej, Rzeszów.
- [15] Snarski. P., 2012, „Metody pomiaru satysfakcji klientów bankowych wykorzystywanych do analizy konkurencyjności banków“, Ekonomia i Zarządzanie, t. 4, nr 2.
- [16] Kramarz. M., 2014, „Elementy logistycznej obsługi klienta w sieciach dystrybucji“, Difin, Warszawa.
- [17] Pacana, Andrzej; Radon-Cholewa, Anna; Pacana, Jacek; et al., 2015, „The study of stickiness of packaging film by Shainin method“, Przemysl Chemiczny, Volume: 94, Issue: 8, Pages: 1334-1336.
- [18] Hall. H., 2013, „Zastosowanie metody NPS I CSI w badaniach poziomu satysfakcji i lojalności studentów“, Modern Management Review, nr 3, s. 51–61.
- [19] Hys. K., 2009, „Servqual a practical method for measurement of quality“ [in:] Dytczak M. (red.) Multi-aspect cooperation the European Union and China, Studia i Monografie, Oficyna Wydawnicza Politechniki Opolskiej, z, 249, Opole.
- [20] Hamrol. A., 2017, „Zarządzanie i inżynieria jakości“. Wydawnictwo Naukowe PWN, Warszawa.