

Rozdział 10/ Chapter 10

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MEASUREMENT OF CUSTOMER SATISFACTION WITH THE EXAMPLE OF THE ENTERPRISE X

Abstract: Technological advances are driving modifications in customer expectations. In the second half of the 20th century, the focus started to be shifted more towards customer satisfaction from the standpoint of the benefits offered to the organization. Nowadays, with the development of market economy and increasing competitiveness of enterprises, customer satisfaction is in the foreground of manufacturing and providing services. Development of adequate relations with customers leads to the achievement of maximal profits whereas satisfied customers are becoming more attached to products and services of the enterprise. Enterprise awareness of the fact that customer satisfaction represents a measure of the organization's success is also important. Therefore, the aim of this study was to examine customer satisfaction in the enterprise X. A questionnaire was designed to achieve this aim, whereas its interpretation was based on the indices from the area of calculation of synthetic methods of quality management.

Keywords: customer satisfaction, quality, questionnaire

10.1. Introduction

Customer satisfaction has a direct effect on customer loyalty towards the enterprise and its products and services. The increase in satisfaction is reflected directly by higher loyalty. Many corporations establish departments devoted only to management of customer relationships, termed CRM (customer relationship management) departments, whereas this idea has become one of the key components of strategic management in many organizations. However, there is no unequivocal definition of satisfaction in the related literature. However, some attempts to explain this phenomenon have been made. It has been related to such terms as

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content, pleasure, meeting expectations or happiness. If a person feels dissatisfaction, they are disappointed and unfulfilled (KACZMARCZYK S. 2007).

Several decades ago, the effect of customer satisfaction on profits in the enterprise was approached as unmeasurable. It was thought that the market share is the most important factor that impacts on financial standing of enterprises. However, it was observed that smaller enterprises were sometimes characterized by higher turnovers since they built the system of trust among their customers. Nowadays, it is more often possible to demonstrate that there is a relationship between satisfaction from products or services and enterprise incomes. Therefore, it is easily to find a direct effect of customer satisfaction on profits (HILL N., ALEXANDER J. 2003).

Therefore, customer satisfaction is one of the key components of the PN-EN ISO 9001:2009 standard. Its aim is to ensure understanding and meeting the customer needs by the organization and employees working in the organization, thus meeting the expectations concerning the products or services offered by the enterprise. As specified by the standard, management through continual improvement impacts on customer satisfaction. Organizations have opportunities to meet all the requirements concerning products and services by examination of current and future customer expectations.

One of the principles of the efficient quality management system is customer orientation. The standard requires that organizations should understand their needs since they have opportunities to survive in the market. Each organization should analyse their products from the customer's point of view (KOWALCZYK J. 2012). The standard assumes that the enterprise is obliged to plan and implement monitoring, measurement and analysis, which are necessary for continual improvement in efficiency of the quality management system which should be regularly improved based on quality policy, quality goals, data analysis, results of audits, corrective and preventive measures and periodical review of management. The section 8.2.1 of the standard, which includes the

measurements, analyses and improvements, directly pertains to customer satisfaction. Monitoring of customer satisfaction is considered to be the component which impacts on functioning of quality management system in the organization. According to the standard, the methods should be defined to collect and use information about customer satisfaction in the management process. The standard does not stipulate the methods used to acquire data on customer satisfaction but it only suggests how this can be achieved (PN-EN ISO 9001:2009)

In quality management systems, customer satisfaction measurement can be used in two ways (LEWANDOWSKI M. 2010):

- as implementation of the requirements of the standard,
- as implementation of the requirements of the standard.

Continual improvement process, which impacts of the achievement of measurable benefits should be adopted by each organization as a strategic goal. For the enterprise, this can be (URBANEK G. 2004):

- opportunity to identify the characteristics that are the most important to the customer, and to put emphasis on the aspects which are most desired by customers and which customers are willing to pay for,
- opportunity to define market position with respect to other enterprises,
- ability to detect potential facilitations that impact on quality of products through analysis of customer opinions.

10.2. Study Aim and Methodology

The main goal of this study was to examine customer satisfaction in the enterprise X. The enterprise is the company which manufactures backhoe loaders, mobile machines for the mining industry or mobile transportation vehicles. Its products can be found in many countries all over the world, starting from South America through to Scandinavian countries. Since its establishment, the enterprise has been located in the Lower Silesia Voivodeship in Poland. At initial stages of its development, the enterprise manufactured roadrollers and next, in 1963, it started

to manufacture first wheeled backhoe loader. In the early years of operation, the enterprise's activities were mainly based on manufacturing of general purpose loaders. The development of the range of products was started from manufacturing of loaders that were used in the mining industry and tipper trucks. The major breakthrough in the products of the enterprise X was observed in the early nineties of the 20th century, when universal mini-loaders, backhoe loaders, side forklifts and special-purpose machines were developed. The characteristics that distinguish the products of the enterprise compared to the competitors include high reliability, low maintenance costs and easiness of operation. The enterprise has a certificate of the external entities: certificate of the use of quality management system and meeting the requirements of the PN-EN ISO 9001:2009. Furthermore, the enterprise is one of few businesses in Poland that meets welding procedure specification of WPQR. The board of managers has always attempted to do their best to control facilitations in organization, reduce costs of functioning, create transparent principles for remuneration and incentive programs for employees, improve information flow, reduce loss involved in complaints and inconsistencies at the stage of verification of requirements, which facilitates the process of identification and solving problems. This allows for the definition of competencies and responsibility and obtaining even greater competitive advantage.

A questionnaire was developed to achieve the research goal. It represents one of the sources of obtaining information about perception of the enterprise and individual products. The questionnaire was used to perform the measurement using the following methods:

- Direct measurement methods (HILL N., ALEXANDER J. 2003):
 - personal interview, conducted in the headquarters of the respondents and directly during the visits of customers in the enterprise X. The benefits of the methods include improved understanding of the respondent, support with the visual resources and ability to ask extended questions. Apart from the advantages, the methods also has some drawbacks, such

as costs of interviews in the industrial area, which require adequate training of interviewers, planning and control.

- Indirect measurement methods (HILL N., ALEXANDER J. 2003):
 - indirect questionnaire: in the case of the present study, the questionnaires were mainly delivered as an e-mail to be responded. Benefits of this method include low costs of examinations, preventing from regular mistakes made by the interviewers and opportunities for answering at convenient time. Among the disadvantages of the methods are long waiting for the response, lack of opportunities for extending the questionnaire and the questionnaire items and a non-representative sample,
 - telephone interview - in the case of the enterprise discussed, it represented a major part of the examinations. The questions were based on the items of the previously designed questionnaire. Its basic benefits include the quick response, relatively low cost, opportunities to answer to the doubts of the respondent and total control of the sample, without barriers to the geographical distance. There are also several drawbacks of the method, such as a short time of the interview, lack of possibility of asking more complex questions, and requirement of maintaining a high level of interest and concentration of the respondent.

The items contained in the questionnaire ensured collecting interesting information from the survey. It can be categorized according to the following division:

- classification (concerning the respondent),
- content-related (connected directly with the subject of the study).

The questionnaire designed for the purposes of this study used only the content-related questions, since all the customers were well known by the Enterprise X's employees. The basic type of items in the questionnaire is closed-end questions, i.e. those which gave several options to the re-

spondents in order to facilitate further statistical analysis (MAZUREK-ŁOPACIŃSKA K.1999). The questionnaire is composed of 5 questions.

The choice of the sample for examinations is one of the tasks required for customer satisfaction measurements. It is critical that the sample should be representative because the goal of the most of examinations is to characterize all the customers, whereas the sample is only the means of characterization of the population (KACZMARCZYK S. 2007).

It was assumed during the design of the examinations that the most important customers can be isolated. The core customers allow for the achievement of the measurable results of the survey since this offers the opportunities for detailed and individual involvement (HILL N., ALEXANDER J. 2003). The Pareto method was used to choose adequate group of customers and the decisive factor was the level of turnover per year concerning the specific customer. This tool allows for some hierarchization. The method was developed in the 20th century by an Italian researcher Vilfredo Pareto. It assumes that 70-80% outcomes are determined by 20-30% causes and can be used universally (HAMROL A., MANTURA W. 2002). Using this method for the survey, 20% customers who supplied 80% of incomes to the Enterprise X were chosen.

The enterprises policy assumes that the survey is conducted each year in the beginning of January. The survey concerned the people at managerial positions who had direct contacts with the respondents. They included:

- QMS Representative of the board of managers,
- Marketing Director,
- technologists and project leaders.

10.3. Study Results

Further analysis of the results of the survey was based on the method from the area of synthetic calculation of the quality measures. The used of scoring of criteria states has been frequently used as it is characterized by simplicity. However, the final outcomes can be interpreted in various ways. Therefore, in order to make the scale of relative states uniform, the

universal method, termed formalized scoring, was used. The method assumes the use of an interpretation pattern of relative states, with five relative degrees contained in the pattern. It can be used to evaluate total state, mainly criteria which cannot be measured by assigning points according to the previously specified gradation. It can be used in two forms:

- Ordinary formalized scoring - when the evaluator uses his or her discretion to evaluate the states of criteria by assigning a number of points,
- Conditional formalized scoring - when discretion in assigning points to the specific criterion is limited to the minimum level and depends on the specified conditions.

In the case of formalized scoring, gradation may vary. However, it should be remembered that a specific number of points should correspond to each state on a scale used to evaluate the relative states. The number of points scored may vary, but assigning points with high values leads to the decline of efficiency of activities without increasing the accuracy (KOLMAN R. 1992).

The most frequently used scoring in formalized scoring is the scale of 1 to 5 points, which are interpreted as:

- 5 points - very beneficial state
- 4 points - beneficial state
- 3 points - medium state
- 2 points - unfavourable state
- 1 points - very unfavourable state

Using this gradation, the formula for calculation of the level of customer satisfaction is:

$$H = G + K - C \quad (1)$$

where:

$$G = P/8n \quad (2)$$

whereas:

$$P = (9a + 7b + 4c + 2d + e - n) \quad (3)$$

where:

n - number of criteria analysed,

a – number of assigned 5-point scores,
b – number of assigned 4-point scores,
c – number of assigned 3-point scores,
d – number of assigned 2-point scores,
e – number of assigned 1-point scores.

The following condition should be met in the previous formula:

$$a + b + c + d + e = n \quad (4)$$

Value of the correction term K is calculated from the following formula:

$$K = (c + 5d + 10e)/200n \quad (5)$$

In the main formula, constant value C is also considered and adopts the following values:

C = 0,05 for normal conditions

C = 0,1 for strict conditions

The following procedure is used for formalized scoring:

- quality criteria should be first used,
- scoring should be performed for criteria states,
- G and K indices should be computed,
- the requirements for C index should be determined,
- H index should be computed,
- the result should be interpreted using a universal unit scale of relative states.

10.4. Comparison of the study results

The results obtained from the survey conducted among 20% of core customers were processed according to the previously mentioned formalized scoring method in order to define the level of quality for individual criteria. The examinations concern the years 2013-2016 (Tables 10.1-8).

The following criteria were used to analyse the state of customer satisfaction:

- timeliness of services and products,
- quality of services and products,
- cooperation with employees who accept orders,

- our activities connected with advertising.

Timeliness of services and products

Analysis of the state of customer satisfaction for the criterion "Timeliness of services and products" is presented in Table 10.1.

Table 1.1. Timeliness of services and products

	number of scores			
	2013	2014	2015	2016
5 - no objections	11	9	11	13
4- minor objections	3	6	8	2
3- major objections	1	2	1	1
2- serious objections	0	0	0	1
1- critical objections	0	0	0	0

Source: author's own elaboration based on the data derived from the Enterprise X

After calculations according to the method of formalized scoring and assuming the normal requirements, the obtained scores are as follows (Table 1.2.):

Table 10.2. Timeliness of services and products - results

2013	2014	2015	2016
92%	85%	87%	89%

Source: author's own elaboration based on the data derived from the Enterprise X

Quality of services and products

Analysis of the state of customer satisfaction for the criterion "Quality of services and products" is presented in Table 10.3.

Table 10.3. Quality of services and products

	number of scores			
	2013	2014	2015	2016
5 - no objections	11	11	15	11
4- minor objections	3	4	4	5
3- major objections	1	2	1	1
2- serious objections	0	0	0	0
1- critical objections	0	0	0	0

Source: author's own elaboration based on the data derived from the Enterprise X

After calculations according to the method of formalized scoring and assuming the normal requirements, the obtained scores are as follows (Table 10.4):

Table 10.4. Quality of services and products - results

2013	2014	2015	2016
92%	89%	92%	89%

Source: author's own elaboration based on the data derived from the Enterprise X

Cooperation with employees who accept orders

Analysis of the state of customer satisfaction for the criterion "Cooperation with employees who accept orders" is presented in Table 10.5.

Table 10.5. Cooperation with employees who accept orders

	number of scores			
	2013	2014	2015	2016
5 - no objections	13	12	18	13
4- minor objections	2	4	2	4
3- major objections	0	1	1	0
2- serious objections	0	0	0	0
1- critical objections	0	0	0	0

Source: author's own elaboration based on the data derived from the Enterprise X

After calculations according to the method of formalized scoring and assuming the normal requirements, the obtained scores are as follows (Table 10.6):

Table 10.6. Cooperation with employees who accept orders - results

2013	2014	2015	2016
97%	89%	97%	94%

Source: author's own elaboration based on the data derived from the Enterprise X

Our activities connected with advertising

Analysis of the state of customer satisfaction for the criterion "Our activities connected with advertising" is presented in Table 10.7.

Table 10.7. Our activities connected with advertising

	number of scores			
	2013	2014	2015	2016
5 - no objections	11	7	9	7
4- minor objections	4	6	3	6
3- major objections	0	0	0	0
2- serious objections	0	0	0	0
1- critical objections	0	0	0	0

Source: author's own elaboration based on the data derived from the Enterprise X

After calculations according to the method of formalized scoring and assuming the normal requirements, the obtained scores are as follows (Table 10.8):

Table 10.8. Our activities connected with advertising - results

2013	2014	2015	2016
93%	88%	94%	88%

Source: author's own elaboration based on the data derived from the Enterprise X

10.6. Conclusions

The data presented in Fig. 10.1 lead to the conclusions that the levels of customer satisfaction for the previously presented areas of criteria in individual years show similar tendencies.

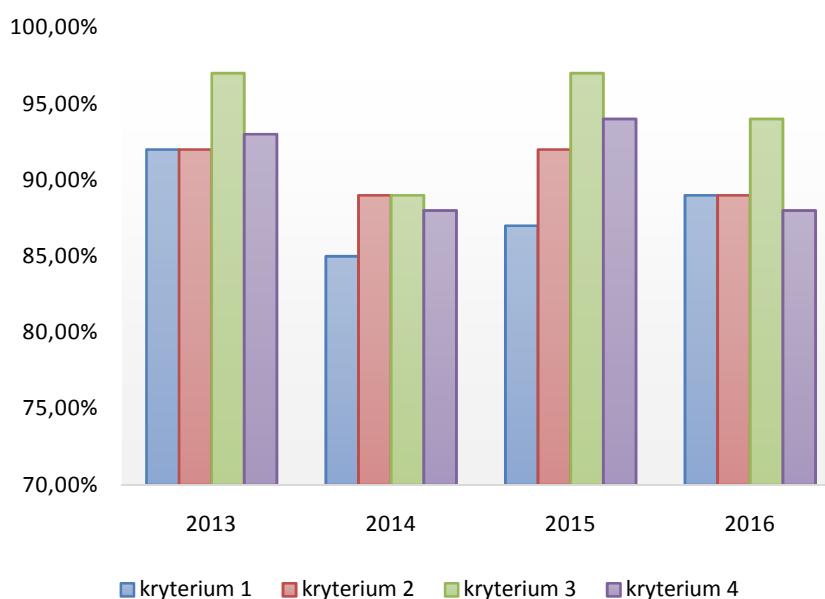


Fig. 10.1. Results of the analysis for all criteria in 2013-2016

Source: author's own elaboration based on the data derived from the Enterprise X

kryterium 1 - timeliness of services and products,

kryterium 2 - quality of services and products,

kryterium 3 - cooperation with employees who accept orders,

kryterium 4 - our activities connected with advertising.

The example of the year 2013 leads to the conclusion that the levels of customer satisfaction in all criteria ranged from 92% to 97%, whereas in 2014 a decline in the levels of satisfaction was observed in each area measured, from 85% to 89%. A year later, the degree of satisfaction for each criterion increased, whereas in the case of timeliness, it rose only

insignificantly. It was equal to other criteria only in 2016, when all of them adopted the values between 88% and 94%.

It is also noticeable that over the four recent years, the level of customer satisfaction for the criterion concerning cooperation with people accepting orders was high. The lowest satisfaction was felt by contractors in the case of timeliness of product deliveries and providing services. The cause of the dissatisfaction with timeliness of the services should be identified. It may result from several causes. A decline in timeliness of supplies of parts for the manufactured machines has been observed recently in the Enterprise X. This is most likely to translate into the delays in supplying products to customers. In order to prevent from similar situations in the future, the Enterprises X should consider the change in core suppliers or order subassemblies needed for manufacturing final product earlier. Another activity that can affect the improvement in timeliness is setting the deadlines for suppliers to customers with greater time reserve. Planning can be supported by the use of the Gantt chart, which can be employed to observe the delays in order processing.

The survey provides the organization with knowledge about the areas to be improved. It is important that in the next step, the results can be adequately used and the employees at all stages should be aware of the identified level of satisfaction. After collecting the results from questionnaires, corrective actions are aimed at elimination of the causes in the areas where customers demonstrated incomplete level of satisfaction so that this situation can be improved in the future.

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