PRODUCTION ENGINEERING ARCHIVES

Overview of the main methods of service quality analysis

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Article history	Abstract
	Everyone, every day or almost every day, uses various type of services, without being even aware of it. They could have been both intangible and material services. Customers want to receive services of the highest quality, and service providers are looking for solutions to meet their requirements. They can analyze the quality of their services to indicate the strengths and weaknesses of these services to know what needs to be improved and what can be omitted. In the literature on the quality engineering, many methods that can be used in such a situation are described. In most cases, these methods are based on the differences between customers' expectations for the service and the perception of the service which they received. In case of most of these method, there is a need of information from customers about research service, which means that they are involved in this process. In the paper five methods of quality service analysis, which are the most often used by service enterprises, were briefly characterizes to help readers to choose the most accurate one for them.

1. Introduction

Regardless of age, education, place of residence, work performed, salary or health, everyone uses various types of services. Some of them are chosen every day, other only from time to time. They are present in human life at every step of life.

The service can be defined as a useful immaterial product, which is produced by human labour (activity) in the production process, by affecting the structure of a specific object (human or material object) in order to satisfy human needs (DASZKOWSKA, M. 1998). While Gilmore defined the service as an activity, process and execution. According to him services can also be defined more broadly as an economic activity generating added value and providing benefits to customers (individual or organizations). Most products today include a certain element of the service because it is very rare to provide clear product or clear service (GILMORE, A. 2003).

According to Łańcucki service quality can be defined as the ability to continuously satisfy the needs and expectations of external and internal customers, including technical, functional elements (ŁAŃCUCKI, J. 2001, MARTIN W.B. 2006). It is a customer who should decide on the features of the service he plans to buy. Nowotarska-Romaniak understands the service quality as a level in which a particular service satisfies the set requirements along with the purpose for which it was intended (NOWOTARSKA-ROMANIAK, B. 2008).

The service quality and its analysis is much more complex problem than the products quality. Examining the product quality we have tangible evidence of the level of quality. We can examine their dimensions, weight, the chemical, physical and mechanical properties, colour, smell, taste etc.

For services such evidence does not exist due to its immateriality and impermanence. Therefore, in this case, the research is based on the customer feedback. The characteristics of the services that are important to customers and to how the customers perceive these characteristics in the received service should be considered. Such evaluation depends, inter alia, on: objective and subjective factors, level of the requirements set by a customer, the reference point or mood of the customer (STOMA, M. 2012, KLIMECKA-TATAR, D. 2013, KLIMECKA-TATAR, D. 2017, KARDAS, E. 2016). So some tools which are used to evaluate the service quality were created.

In the available literature, individual methods of service quality analysis are described in detail, and many practical studies on this topic can be found. What's more, it should be remembered that in addition to their scientific applications, they also have industrial application. Many service providers actually use these methods to evaluate their services.

The purpose of this paper was to a short summary of the most frequently used methods of service quality analysis. This is a theoretical study that can give readers an indication of which method to use and in which case. Moreover, it can be shown that there are many possibilities to conduct such a research.

2. Servqual

One of the most used tool of the service quality analysis is the Servqual method (Service Quality). It is used by many different type of enterprises and was created by Berry, Parasuraman and Zeithaml (RUDAWSKA, E., KIECKO, R. 2000, DASZKOWSKA M. 1998, INGALDI M., JURSOVA S. 2013). To continually improve, the standard is needed that allows for comparison with it in order to assess the extent to which the excellence objective is achieved. Such a model is Servqual questionnaire assuming the highest attainable standard of the service (absolute performance standard) (KARASZEWSKI, R. 2001, GORANCZEWSKI, B., PUCIATO, D. 2011).

The Servqual method uses a multi scale, by means of which it is possible to measure the service quality from the point of view of customer, to get many hints associated with the directions of the quality improvement. It treats quality as the difference between customer expectations and actual perceptions of the service (PAHRAHSURAHMUN, A., ET AL. 1985, CHMIELEWSKI, D. 2008, KADŁUBEK, M. 2011, MAZUR, M., BORKOWSKI, S. 2009, CIELEBAN, A., KNOP, K 2009).

Perception is an opinion about something that is evaluated and changes depending on the customer, because each customer has different beliefs about certain services that play a significant role in determining their satisfaction. Customers' satisfaction depends on customers' perception and expectations regarding the service quality. In most cases, customers' perception is subjective, but provides useful data to enterprises how to develop marketing strategies. Customers' perception and customers' satisfaction are closely interrelated, because if the perceived service approaches the expectations of customers, this leads to their satisfaction (REICHHELD, F.F. 1996, MBISE, E.R., TUNINGA, R.S.J. 2016, ULEWICZ, R. 2014).

The research of the quality with the use of the Servqual method starts with the selection of an appropriate set of determinants of service quality. On the basis of separate criteria a questionnaire composed of 3 parts is created. 1st and 2nd parts consist of 18-24 similar number of statements: 1st part includes the statements connected with expectation of the customer on the service (O); 2nd part includes the statements connected with evaluations of the service provider (P). All statements are divided in 5 groups of attributes for example: service material infrastructure, service reliability, service speed, competence, empathy.

Forming expectations about various features of the service and evaluations of the fulfilments (experiences) of those expectations are conducted on the basis of the scale from 1 to 7 where 1 – means that customer totally disagrees with the statement, and 7 – is that customer totally agrees with it.

3rd part of the survey concerns the identification of a key customer attributes. Every customer has 100 points available to distribute among the various groups of attributes at its discretion, pointing the group of the most importance for him. This part of the questionnaire helps to identify what is the most important for the customer when choosing a service provider (BORKOWSKI, S. 2012, WOLNIAK, R., SKOTNICA-ZASADZIEŃ, B. 2009, CIAVOLINO, E., CALCAGNI, A. 2015).

The most important factor of the Servqual method is following (PAHRAHSURAHMUN, A., ET AL. 1985, CHMIELEWSKI, D. 2008):

$$S=P-O \qquad (1)$$

If this factor is positive, it mean that customers are satisfied with the research service.

The Servqual method is universal, so it can be used to assess the quality of all types of services. The use of this method often allows enterprises to improve quality, increase customers' satisfaction and thus increase competitiveness.

However, it should be remembered that the Servqual method also has its weak points. Above all, while assessing the expectations and perceptions of the service, customers often evaluate the received service lower. They also tend to raise their expectations, often these expectations are too high which from the very beginning means low satisfaction.

3. Servperf

The Servperf method (Service Performance) is less known, however, an interesting method of the service quality analysis. It was created as a contrast proposal to the Servqual method. Too high evaluation of customers' expectation is the most often mentioned weak point of Servqual, as described before. From the very beginning, they may be negatively oriented to the service by defining their expectations, but also assess their expectations in an excessive manner. Therefore, due to doubts regarding the legitimacy of customers' expectation, the Servperf method was created (KROK, E. 2011, MAHMOUD, A.B., KHALIFA, B. 2015).

It was created by Cronin and Taylor, who found out that we cannot examine customer expectations, because the expectations belong to the ambiguous and variable category. They can change very easily. The Servperf method, unlike the method Servqual, examines only the level of quality of the received and realized service (perception), and compares it to the ideal services, i.e. full scale of rating (CRONIN J.J., TAYLOR, S.A. 1994, ANAND, S.V., SELVARAJ, M. 2013).

This method gets rid of the subjectivity, because the customer does not specify in advance its often unreasonable expectations about the service. The general formula of the method is very easy, which from a practical point of view makes it easier to apply. The service quality is compared to customer perception (KUCIŃSKA, A. 2007, KUCIŃSKA, A., KOŁOSOWSKI, M. 2009). This method is therefore easier to use and less time-consuming compared to the Servqual method (GILMORE, A. 2003).

Evaluation and measurement of the quality service in the Servperf method is based on determinants derived from the Servqual method. Measurement of the service quality is made with for example a seven semantic rating scale (Likert scale), where the lowest level of the scale is: weak, and the best: excellent – so similar like in the Servqual method.

The result can therefore be shown in the form of a compliance indicator. So the better service quality examined by this method is, the closer the individual scores to the maximum value is (GARCZARCZYK, J. 2000, INGALDI, M. 2015).

Methodologically, the Servperf method is a significant improvement over the Servqual method. It is primarily more effective in reducing the number of data by over 50%, but also empirically turned out to be better than the Servqual scale, because it is able to explain the greater difference in the overall service quality measured by a single scale (BABAKUS, E., BOLLER, G.W. 1992, BOULDING, W., ET AL. 1993). Another important benefit is also filling surveys by customers in relation to the previous method. The survey is more than half shorter and thus probability that customers agree to take part in the research higher.

4. Importance/Performance analysis (IPA)

Taking into consideration limited resources of the enterprise, it is important for management of the enterprise to identify and understand, what are the priorities of customers that can affect the improvement of various quality attributes of the offered services. If the customer is not satisfied with certain features of the service that are important to him, this is a problem for the enterprise. If he is dissatisfied with a feature that is not important to him, then for the enterprise it is not urgent to solve the problem. Perhaps this is an element that can be even omitted.

Therefore, it is important to analyze the features of services in this respect in order to set priorities for quality improvement activities. The most important for the enterprise should be those features of services that are important to customers, but they cause their dissatisfaction. On the other hand, features that customers consider to be unimportant and for which the level of satisfaction is high could temporarily be ignored if resources are limited (GUGLIELMETTI MUGION, R. 2010, EIPA, 2006).

In case of the Servqual method it is possible only if customers are satisfied or not, with information about level of this satisfaction. To received such data it is better to use other method, which unfortunately is often skipped by the scientists, e.g. Importance/Performance analysis (IPA), or importance/implementation method. This method is designed to determine the validity of the characteristics of the service and their evaluation by customers. Martilla and James, who were authors of this method, designed a measurement of the expectation and the significance of factors, variables affecting the quality of services, from the point of view of the purchasers (MARTILLA, J.A., JAMES, J.C. 1977). IPA has been widely used in different service industries with good results (WONG, M.S., ET AL. 2011).

Customers respond to two types of scaled questions, make a double evaluation of the same dimensions of the service quality (which are the evaluation criteria from the point of view of the customers) - once because of their importance in the process of service delivery and second time, in terms of the level of implementation of these dimensions; which means that the first group of questions concerns the importance of each feature of offers in customers' selection decisions (expectation according to Servqual method), while the second group refers to the same features, but in relation to one specific offer of a service provider (perception according to Servqual method). So partly the Importance/ Performance analysis coincides with the Servqual method.

The results obtained with this analysis are summarized in the form of Importance/Performance map with two evaluations of parameters mentioned earlier. The closer to the diagonal of the map the point is located, the more its performance is correlated with the needs of customers.

The two dimensional IPA model is divided into four quadrants with performance on the x-axis and importance on the y-axis. Model of the Importance/Performance map was presented in Figure 1.

	Performance	
Importance	Quadrant I (High Importance/ Low Performance)	Quadrant II (High Importance/ High Performance)
	Quadrant III (Low Importance/ Low Performance)	Quadrant IV (Low Importance/ High Performance)

Fig 1. Importance/Performance map (MARTILLA, J.A., JAMES, J.C. 1977)

Quadrant I is labelled as "Concentrate Here". Attributes that fall into this quadrant represent key areas that need to be improved with top priority. Quadrant I is called "the area of urgent needs". It is very important that the provider will focus special attention on them.

Quadrant II is labelled as "Keep up good work". It is also sometimes called "the area of reasonable property of needs". All attributes that fall into this quadrant are the strengths and pillars of the organisations, and they should be the pride of the organisations. Quadrant II does not require from the service provider any serious action, only those necessary to maintain the current level of services.

Quadrant III is labelled as "Low Priority". Thus, any of the attributes that fall into this quadrant are not important and pose no threat to the organisations. If there are free recourses, then the enterprise can consider to improve them.

Quadrant IV is labelled as "Possible Overkill". It is often called "the area of quality excess". It denotes attributes that are overly emphasized by the organisations; therefore, organisations should reflect on these attributes, instead of continuing to focus in this quadrant, they should allocate more resources to deal with attributes that reside in quadrant I (WONG, M.S., ET AL. 2011).

To improve the quality of different service feature, the enterprise should primarily focus on those that fall in quarter I. Customers indicate that these features are very important to them, but at the same time their level of satisfaction measured for these attributes is low (DZIEDZIC, E. 2015). The research of what customers think about their expectations for service and the actual features is justified, because it can improve the actual service and increase customer satisfaction, therefore profits. Thanks to IPA, enterprises can get information on how to deal with a given service feature, whether it should be improved, or perhaps it is not so necessary.

However, it should be mentioned that in the literature it is possible to find different variations, which differ significantly importance of features improvement, e.g. the one developed by Abalo J., Varela J., Manzano V. (2007). This is a proposal of an alternative IPA map, where all features over diagonal require improvement and concentration.

The IPA map has also other modifications, an example of which is the SWOT analysis (URBANIAK, A.M. 2013). The model technique is a way of examining factors that affect the quality of the offer perceived by customers when confronted with competing offers. The classic Importance-Performance analysis is a proposition of the method of measuring factors which influence the service quality, perceived by customers compared to the offers of competition (RADKOWSKI, K. 2005).

4. Critical Incident Technique

The Critical Incident Technique (CIT) is one of the most popular methods of service quality analysis. The studies of Sir Francis Galton are said to have laid the foundation for the Critical Incident Technique, but it is the work of Colonel John C. Flanagan, that resulted in the present form of CIT (KROK, E. 2011, FLAGAN, J.C. 1954). CIT can be defined as a set of procedures for collecting direct information about human behaviour that have critical significance and meet methodically defined criteria but also that facilitates problem solving and the development of broad psychological principles (http://www.apa.org/psycinfo/special/cit-article.pdf).

The method introduces an important term - a critical incident. The incident itself, also called an event in literature, can be defined as observable human action that is sufficient enough to draw conclusions (BITNER, M.J., ET AL. 1990).

The critical incident is an interaction between a customer and a service enterprise's employee who is particularly satisfactory or unsatisfactory. The level of satisfaction, like in case of other methods, is the difference between the perceived features of the service and the expectations of the recipient. If the features of a given service do not meet expectations, the service buyer is dissatisfied, but if the product features exceed expectations, the buyer is willing to renew the purchase of the service. High satisfaction favours the formation of strong, emotional relationships (OTTO, J. 2004).

In CIT, for an incident to be considered critical, it must meet 4 conditions (KUJAWIŃSKI, J. 2000, BORKOWSKI, S., WSZENDYBYŁ-SKULSKA, E. 2007): occurrence of interaction between a given customer and employee; from the point of view of the recipient, the event should have a strong positive impact (very satisfied) or negative (very unsatisfied); being a separate case; a detailed representation of the fact so that the person who interviews could reflect on it.

The basis of CIT is the collection of events by means of a direct interview with persons using a given service and analyzing these relations in order to arrange them in an appropriate scheme, which allows to detect problems and their causes. Respondents are asked about specific events that happened in the past, events that they were particularly satisfied with or dissatisfied with (BITNER, M.J., ET AL. 1990). So

they are asked to describe with all details critical events that occurred during the service provision process, i.e. situations that have a particular impact on the perception of a given service and those that significantly deviate from the average. The assessment of these events by the customer, based on his subjective feelings, serves to identify situations that are typical of the negative and positive feelings of the customers, as well as to determine the frequency of their occurrence (KUJAWIŃSKI, J. 2000, JUBENVILLE, T., CAIRNS, S. 2016). All responses should be described in detail and, in addition, recorded, which greatly facilitates subsequent analysis (CZUBAŁA, A., ET AL. 2006, WOLNOWSKA, A., ET AL. 2009).

The results obtained from the conducted research are mainly used for the design of services that would be the most adequate to the customers' expectations. So CIT is one of the best and the most appropriate tools to identify the sources of customer satisfaction and dissatisfaction with the offered services and the process of their provision (RADKOWSKI, K. 2005, CZAJKOWSKA, A., ULEWICZ, R. 2006).

Between disadvantages of CIT it should be mentioned time consuming of the research. It is much longer than in the case of the previous three methods, both at the time of data collection and analysis. It is also more difficult to analyze the results due to the wide range of information obtained from customers.

5. Mystery Shopper

The easiest and the shortest method of service quality analysis is Mystery Shopper or Mystery Customer. The main purpose of this method is to analyze the quality of services by qualified observers at points of sale or customer service.

The methodology was established already in the 1940s in the United States with the purpose for the banking industry, but became popular in 1970. To Poland it came along with foreign service enterprises. Currently in Poland over 25% of entities conducting research on the service quality provided use this method (MAISON, D., NOGA-BOGOMILSKI, A. 2007).

Research with the use of the Mystery Shopper is addressed to practically every type of commercial and service enterprises in which the enterprise's staff contacts the customer, either individual or institutional. This method is particularly used by enterprises operating in networks, for example franchise. It is possible to control the homogeneity of compliance with standards in all facilities, which allows for the implementation of a consistent policy of the enterprise in the field of sales and brand image (KIRKPATRICK, D. 2001).

There is no one way how to conduct the research. The realization is chosen precisely to the needs and expectations of the person who orders the research. What is certain that projects of this type should be carried out periodically and monitoring changes occurring over time (SNARSKI, P. 2012).

The Mystery Shopper checks the functioning of customer service standards in an enterprises, e.g. how to speak with customers. The research consists in going to a given service provider, in order to use the service and describe the course of this visit in a properly prepared questionnaire. In particular, the following elements are evaluated: place of service

provision, presentation of products, customer service and mechanisms for building customer loyalty. The research enterprise receives a report with point results, depending on the absence or occurrence of specific situations.

The Mystery Shopper is obliged to follow a specific instruction. Typically, the order presents a scenario of customer behaviour, a specific situation, according to which the visit is to take place. Such a research often helps to check how staff deal with problematic situations, such as contact with a conflict customer, impossibility of response to questions, guarantees, complaints, etc. The Mystery Shopper passes special training to meet all research enterprise's standards to know what elements should be evaluated.

Both active and passive observation refers to the auditor's direct activation of special situations in order to analyze the behaviour of the service provider's staff. Often, the task of the interviewer is to provoke an employee and assess his resourcefulness. Research is also conducted based on the observation of the processes taking place next to the interviewer without his direct participation.

The Mystery Shopper should be an open, contact person who will be able to record as many elements as possible in the memory and at the same time talk freely with the employees of the controlled facility. Such a person on place of the control must behave very discreetly and at the same time in natural way, because then the information gathered will be reliable. It also happens that some research enterprise ask the Mystery Shopper to record meetings in order to be able to check accumulated information and determine the degree of neutrality (KOWALIK, K., MAZUR, M. 2016).

The questionnaire, which after the visit in the research object is filled by the Mystery Shopper, should include such information as: compliance of arrangement of the place, availability of employees, contact with the employee, reaction speed of employees, their interest in the customer, staff appearance, empathy, actions in accordance with the customer's order, attitudes towards the customer or the preservation of procedures (MEDER, M. 2005, MAZUREK-ŁOPACIŃSKA, K. 2008).

The Mystery Shopper method differs greatly from previous methods. First of all, the data for the assessment are collected by one customer who gets a specific order regarding his „requirements". It is often subject to the evaluator's subjectivity. But the speed of the research is much easier and less time-consuming.

6. Summary

The quality of services, like the quality of products, is an important element of business management. It determines whether the customers will buy services from a certain enterprise or rather they will go to the competition. Therefore, it is so important that enterprises analyze this sphere of their activity.

The worst problem is the selection of the appropriate method. This method should provide as much information as possible about the quality of services offered by the enterprise so that the examined problem can be truly reflected. On the other hand, such a method can often involve a large number of employees, customers, creates a large amount of data for analysis.

A very important element of the service quality assessment is the customer's presence. It is a customer who provides information about the actual service, not as in the case of the product, the enterprise, using quality control, can determine the quality level of this product. Unfortunately, customers do not always want to participate in such a research. Often such a research is too long, too complicated, it contains difficult terms, customers do not have time. Therefore, it would be good if the chosen method was not very difficult or time-consuming for the customer, while giving as much information as possible. Appropriate selection of the method may also affect the information that the enterprise can obtain, and thus effectively manage the quality of the offered services.

In the paper five most frequently used methods of service quality analysis were presented, to suggest to the service providers and young researches the choice of a method suitable for them. The author hopes that although partly dispelled all doubts and explained the sense of operation of each of these methods.

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服务质量分析的主要方法概述

關鍵詞	摘要
SERVQUAL Servperf IPA CIT 神秘购物者	每个人每天或几乎每天都会使用各种类型的服务，甚至没有意识到这一点。他们本来可以是无形的物质服务。客户希望获得最高质量的服务，而服务提供商正在寻找满足其要求的解决方案。他们可以分析服务质量，以指出这些服务的优缺点，以了解需要改进的内容以及可以省略的内容。在关于质量工程的文献中，描述了在这种情况下可以使用的许多方法。在大多数情况下，这些方法基于客户对服务的期望和他们所接受的服务的看法之间的差异。在大多数这些方法的情况下，需要来自客户的关于研究服务的信息，这意味着他们参与了这个过程。在这篇论文中，服务企业最常使用的五种服务质量分析方法，简要描述了帮助读者为他们选择最准确服务的方法。