

# Employees satisfaction – innovative approach

Stanisław Borkowski<sup>1</sup>

<sup>1</sup>Institute of Production Engineering, Faculty of Management, Czestochowa University of Technology, Armii Krajowej 19B, 42-201 Czestochowa, Poland, +48 34 3250 399, e-mail: bork@zim.pcz.pl

**Abstract.** The problem of assessing employee satisfaction is presented in this chapter. It contains suggestions of other, often innovative interpretations of factors. Evaluations of two main areas are also explored: the area of expectation and area of perception. These relationships are: correlation and significance of differentiation averages in pairs homonymous factors. This paper presents an innovative way of presenting the difference of average evaluations between areas - on the scale of assessments. Practical use of the three variants of the interpretation of satisfaction obtained significant difference in the number of factors that meet the conditions of satisfaction. A palette of graphical forms of results are presented to support findings.

**Key words** – Servqual, BOST, innovation, satisfaction index

## 1. Introduction

In the presentation of the results in this point attention has been drawn to the fact that the traditional approach to the results of the SERVQUAL questionnaire is based on calculating the difference between the assessment grade of the level of perception and the level of expectation (BUKOWSKA-PIESTRZYŃSKA A., NERKA M., 2009, CRININ J.JR., TAYLOR S.A., 1992, LISIECKA K., 2002, MARCINIAK B., 2000, NIERZWICKI W., RUDZIK A., 2003, NIEŻURAWSKI L., WITKOWSKA J., 2007). Afterwards, the obtained differences undergo grouping (COREJOVA BORKOWSKI S., 2006, PARASURAMAN A., ZEITHAML V.A., BERRY L.L., 1988, PIETROŃ-PYSZCZEK A., 2005, PRYŁOWSKA E., 2004, ROSAK J., BORKOWSKI S., 2005), calculating of mean values, multiplying by the group weight (ROSAK J., BORKOWSKI S., WSZENDYBYL E., 2006, ROSAK J., 2007, RUDAWSKA E., KIECKO R., 2000, SIDOR M., 2000, STOMA M., 2009, BORKOWSKI S., COREJOVA T., ROSAK J., 2010,) dividing by the num-

ber of factors in a group, the number of groups (BORKOWSKI S., ROSAK-SZYROCKA J., 2009, STOMA M., 2009, ZALEWSKI R., BORUCKI M., 2003). The basis for satisfaction assessment is, however, a sign of the difference, and not its level (COREJOVA BORKOWSKI S., 2004). In the study there has been proposed a different approach to the subject difference. A fragment of a new demonstration of the difference in the SERVQUAL method is shown in Fig. 1.

Fig. 1a presents a traditional approach which shows which factors bring satisfaction and which do not (on the basis of the distribution of the histogram in relation to the axis O). A similar presentation is included in Fig. 1 where axis O is placed vertically. The data in Fig. 1b is the same as in Fig. 1a but ordered from the highest value to the lowest one. They gain a series of factor importance with regard to the value and sign of the difference between the mean values from the area of perception and the area of expectation. A computer programme has made an analysis of the results easier for us.

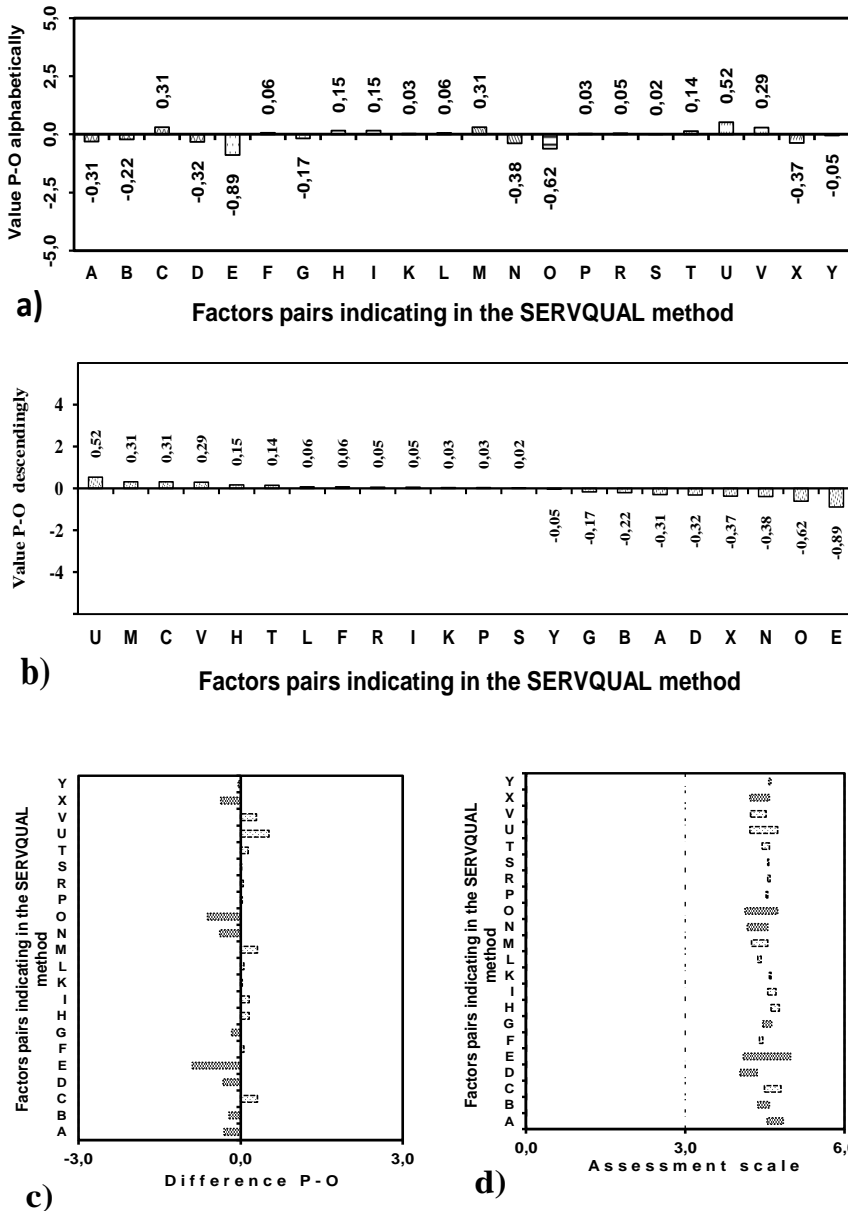


Fig. 1. Forms of P – O difference presentation: a) traditional, b) alphabetical arrangement, c) vertical system, d) on evaluation scale – innovative interpretation.

Source: own study.

Fig. 1d is an interesting innovative form of graphic presentation of the analysed difference. The difference is placed on the grading scale. This way we gain additional information about the level of the mean grades from both areas. The type of completion of the histogram informs us about the sign of the difference. By analysing the character of the obtained difference we can claim that it takes into account the relations between two factors of the same name and presents a fragment of dependency that occurs in the analysed

object. A traditional depiction of the satisfaction assessment consists in the juxtaposing of two series of the mean values and comparing them in pairs of the same name (the same name, two assessment grades because there are two areas). The sign of the difference between the two means of the same name shows achieved satisfaction or lack of it. However, the problem may be analysed using a holistic approach (100%). Each of the 22 factors of the SERVQUAL method describes part of the entirety. Therefore, the results may be referred to the entirety both in the area of expectation and the area of perception. Let us calculate percentage shares of the mean grade of each factor importance (for both areas).

The further procedure is similar to the one in a traditional version. We calculate the difference between the percentage shares of the means for the areas of perception and expectation. This improved way of interpretation will be called a percentage variant.

## 2. New measures of satisfaction in the improved SERVQUAL method

In the improved SERVQUAL method of result interpretation there is also an index variant which requires introduction. For the internal purposes of the company, such as monitoring the improvement of service quality, personnel monitoring or calculating the amount of bonuses, it is good to set a value that shows a general level of customer satisfaction (HILL N., ALEKSANDER J. 2003). That value is called „index of satisfaction”. Numerical scales are used for calculating the means. The simplest way of calculating the index of satisfaction is averaging out all the results that the quality of the company’s activity has gained. That method has one disadvantage: it does not allow taking into account the fact that some aspects of the company’s activity are more important than

others for customers and their most important requirements have a bigger influence on the satisfaction assessment than those less important for them. The index of satisfaction cannot disregard that issue – it has to be shaped to a greater extent by the attributes whose importance has the highest assessment grades. In other words, it must be a weighed average of the satisfaction assessment. That average may be calculated in two stages.

**Stage 1: Calculating index weights** – to calculate index weights one should use importance grades. In order to calculate weights it is necessary to add all importance grades. Then, one should express each factor as a percentage of the whole. Table 1 shows an example of calculating index weights.

In the presented Table 1 it can be noticed that the first column of the data contains the means of importance grades obtained in a fictional examination of a supermarket. In order to calculate index weights it is necessary to add all the importance grades. In this particular example their sum is 68,6. Next, each factor has to be expressed as a percentage of the whole. To calculate index weights for the factor „personnel’s appearance” 7,3 has to be divided by 68,6, and the quotient multiplied by 100. The index weight, in that case, amounts to 10,64%.

Table 1. Calculation of index weights

|  | Evaluation validity | Weight indicator (%) |
|--|---------------------|----------------------|
| Location                                 | 9,4                 | 13,7                 |
| Assortment of goods                      | 9,2                 | 13,41                |
| Price levels                             | 9,1                 | 13,27                |
| Quality of goods                         | 8,9                 | 12,97                |
| The time needed to finalize the purchase | 8,5                 | 12,39                |
| The polite and attentive staff           | 8,3                 | 12,10                |
| Parking                                  | 7,9                 | 11,52                |
| Appearance of staff                      | 7,3                 | 10,64                |
| Weighted average                         | 68,6                | 100                  |

Source: (HILL N., ALEKSANDER J. 2003)

**Stage 2: Calculating the satisfaction index** – at this stage each satisfaction grade is multiplied by its relevant index weight. A general weighed average is calculated by adding all the weighed grades. Table 1.3 shows an example of calculating a satisfaction index. The first column of the data in Table 1.3 contains av-

erage satisfaction grades, the second one – index weights calculated in Table 2.

Table 2. Calculating the satisfaction index

|  | Satisfaction evaluation | Weight indicator (%) | Weighted evaluation indicator |
|--|-------------------------|----------------------|-------------------------------|
| Location                                 | 9,2                     | 13,7                 | 1,26                          |
| Assortment of goods                      | 7,9                     | 13,41                | 1,06                          |
| Price levels                             | 8,8                     | 13,27                | 1,17                          |
| Quality of goods                         | 9,1                     | 12,97                | 1,18                          |
| The time needed to finalize the purchase | 7,4                     | 12,39                | 0,92                          |
| The polite and attentive staff           | 7,7                     | 12,10                | 0,93                          |
| Parking                                  | 8,6                     | 11,52                | 0,99                          |
| Appearance of staff                      | 8,5                     | 10,64                | 0,90                          |
| Weighted average                         |                         |                      | 8,41                          |
| satisfaction rate                        |                         |                      | <b>84,1%</b>                  |

Source: (HILL N., ALEKSANDER J. 2003)

In order to calculate a satisfaction index for the factor „personnel’s appearance”, a satisfaction grade of 8,5 should be multiplied by index weight whose value is 10,64%, which gives a weighed index grade of 0,9. A general weighed index average is calculated by adding all the weighed grades. In this particular example their sum is 8,41, so a weighed index average of satisfaction for the supermarket is 8,41 out of 10. Since it is customary to convert this result into percentage, then the index of satisfaction is 84,1%. Thus, an exemplary supermarket satisfies its customers in 84%.

In relation to the data of the SERVQUAL method the procedure is the following:

- we calculate percentages of the mean grades of importance for the area of expectation,
- we multiply the obtained percentages by the mean grade of the same name from the area of perception,
- we add the obtained products,
- we refer the obtained sum to number 6 because it is the maximal assessment value on the suggested scale. We simply calculate what percentage is the sum of products in relation to 6.

This way we obtain one number which is the third measure of satisfaction. There arises a question whether partial indexes could not be calculated. After the analysis of the problem and the first failures the answer is YES. It is sufficient to divide the product of

the percentage share (the area of expectation) and the mean (the area of perception) by a maximal grade of the scale (6), multiply it by the number of factors (22) and express it in percentage, that is multiplied by 100. The correctness of reasoning is confirmed by the fact: the mean of partial satisfaction indexes is identical with the partial satisfaction index (WSC), they may assume their value up to 100%. What is the minimal value, it is difficult to say at present. As a measure of satisfaction it is already possible to assume the level of  $WSC = 51\%$ . The following scale of satisfaction is suggested on the basis of WSC:

- 31 < WSC < 45 – moderate lack of satisfaction,**
- 46 < WSC < 50 – boundary lack of satisfaction,**
- 51 < WSC < 55 – boundary satisfaction,**
- 56 < WSC < 70 – moderate satisfaction ,**
- 71 < WSC < 85 – medium satisfaction,**
- 86 < WSC < 100 – full satisfaction.**

### 3. Assessment of employees satisfaction according to various criteria

It is difficult to obtain information from this graphic form about the level of mean grades of the factors in

both areas. Therefore, an innovative form of graphic presentation of the subtraction result  $P - O$  on the grading scale has been proposed. From the description of the axis we obtain approximate information about the value of the mean grades. We learn about satisfaction or its lack of from the applied histogram.

In relation to the research results one should state that:

- Satisfaction has been achieved for only two out of 22 pairs of factors (marked M and U).
- The biggest gap has occurred for pairs of factors marked E, then A and L.
- The first observation can be easily noticed in Fig. 2.6b as the histograms for the pairs of factors marked M and U are completed with different graphics as compared with the others.
- From Fig. 2 we obtain the information that the lowest mean grade has been achieved by factor (L) in the area of expectation, the highest – in the area of perception by factor (E).
- It can be said that the form of presentation of the subtraction result  $P - O$  on the grading scale emphasises the relation of the level of mean grades in the areas of the SERVQUAL method.

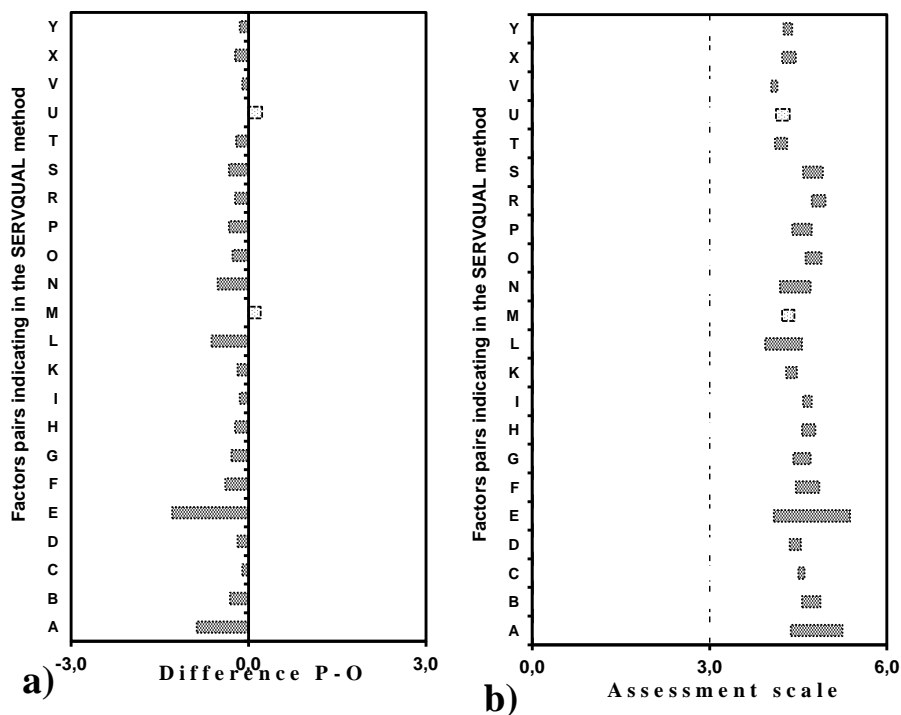


Fig. 2. Graphic presentation of the results in the SERVQUAL method ( $P - O$ ): a) traditional, b) at the scale of evaluations

■  $P - O < 0$     □  $P - O > 0$

Source: own study

The three listed variants of satisfaction assessment based on the SERVQUAL method have been presented in Fig. 2.

Visually we can observe big disproportions in the number of factors meeting the conditions of satisfaction. For a differential variant there are only two factors, for a percentage variant – 14 factors. One factor has achieved the level of balance, in an indicator variant – all the factors have. By studying the description of the axis X in the analysed figures we can state that:

- The factor *convenience of time limits* (U) gives employees the biggest satisfaction in two variants – differential and percentage.
- In the case of the factor that does not meet the conditions of satisfaction we can observe that it is the factor *keeping promises* (E). It also appears in the

last place of the description of the X axis in two variants.

The innovative interpretation of the grades of the SERVQUAL method does not give, either the possibility of assessment of the degree of achieving satisfaction (similarly to the traditional one).

This gap is completed by the indicator factor of satisfaction assessment (Fig. 3c). The factors taking extreme places on the X axis (Fig. 3a and Fig. 3b), have significantly moved in the case of the indicator variant. The factor *convenience of time limits* (U) taking the first place moved by 19 positions in the decreasing direction of the factor, whereas the factor *keeping promises* (E) went up by 16 positions.

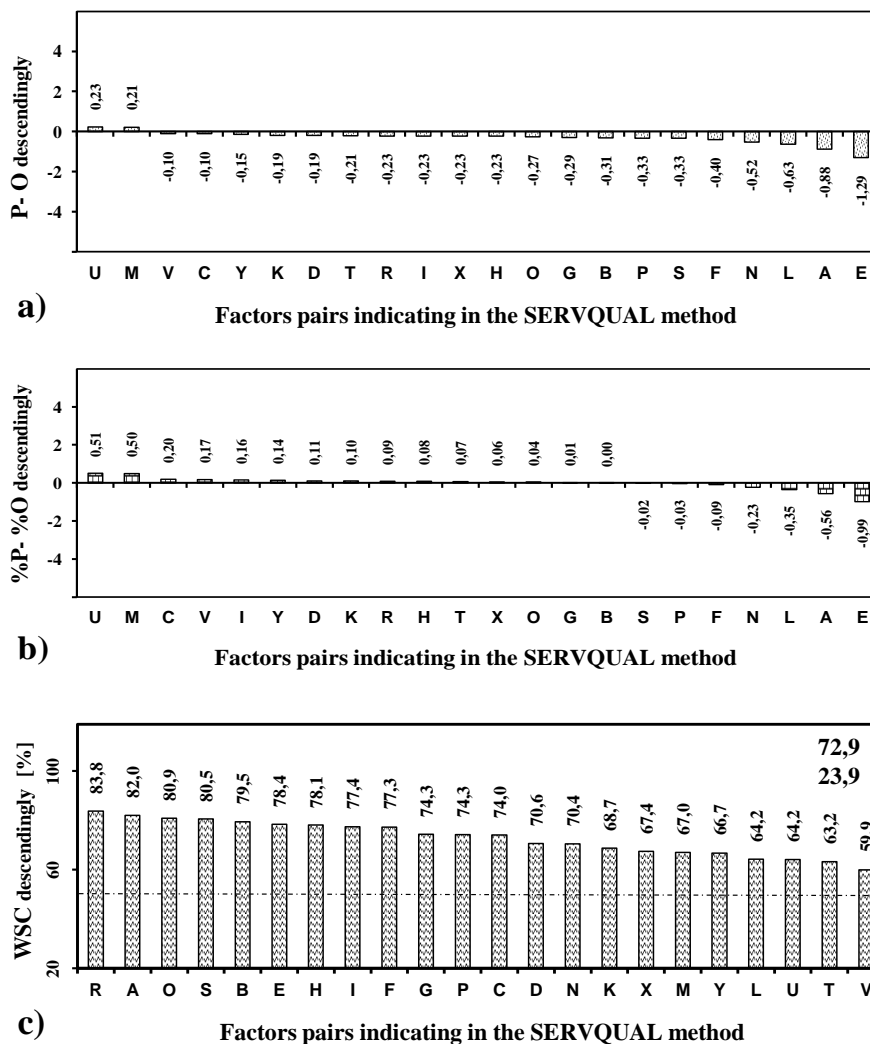


Fig. 3. Results' combination of SERVQUAL method in decreasing series: a) P – O difference, b) difference of percentage share, c) satisfaction indicators.

Source: own study

## 4. Summary

We can write the series in which there appear factors of the SERVQUAL method that meet the conditions of satisfaction according to different criteria.

Differential criterion

$$U > M > O \quad (1)$$

Percentage criterion

$$U > M > C > V > I > Y > D > K > R > H > T > X > O > G > B > O \quad (2)$$

Indication criterion

$$R > A > O > S > B > E > H > I > F > G > P > C > D > N > K > X > M > Y > L > U > T > V > 51\% \quad (3)$$

The basic objective of the work has been achieved. A different number of factors have been obtained in the series of factors giving employees satisfaction. With a traditional approach (differential criterion) we only have two factors: *convenience of time limits* (U) – empathy group and *help* (M) – reacting group.

By carrying out an analysis of the equation factors (2) we can state that in the case of materiality group there occur 3 factors, *reliability* – 3, *reacting* and *certainty* – 2 for each of them, and *empathy* – all 5 factors. Taking that fact into account we can build inequality

$$NF (100\%) > NB (75\%) > NC (60\%) > ND (50\%); NE (50\%) \quad (4)$$

## 5. References

1. BORKOWSKI S., COREJOVA T., 2004. *Management problems solving instruments*. The Higher School of Management and Marketing Publishing. Sosnowiec. Polish.
2. BORKOWSKI S., COREJOVA T., ROSAK J. 2010: *Determinanty jakości usług medycznych / Determinants of Medical Services' Quality*, Wyd.Unikat 2 Katowice.
3. BURKOWSKA-PIESTRZYŃSKA A., NERKA M. 2009. *The excellence gaps identification in the nonprofit organizations customers service (on the library example)*. Problems of Quality. Warsaw. Polish.
4. COREJOVA T., BORKOWSKI S. 2006. *Quality Management of Services*. Ed.by Corejova T., Stanisław

- Borkowski, Published by EDIS Publ.comp.,Univ.of Žilina, Žilina.
5. CRONIN J. JR., TAYLOR S. A. 1992. *Measuring Service Quality: A Reexamination and Extension*. Journal of Marketing . 56.
6. HILL N., ALEXANDER J. 2003. *The customer satisfaction and loyalty measuring*. Economics Publishing House. Kraków. Polish.
7. NIERZWICKI W., RUDZIK A. 2003. *The educational services measuring by Servqual method*. The Adult Continuing Education. No 2. Polish.
8. PARASURAMAN A., ZEITHAML V.A., BERRY L.L. 1988. *Servqual: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality*. Journal of Retailing. 64.
9. PRYŁOWSKA E. 2004. *The evaluation of the students' expectations level in terms of the education quality by using SERVQUAL method*. [in:] Student as the important link of the education quality. Podlaska Academy Publishing. Siedlce. Polish.
10. ROSAK J., BORKOWSKI S., WSZENDYBYŁ E. 2006. *Chapter 1. The Servqual Method and It's Meaning in the Estimation of the Quality of the Stationary Medical Treatment*. Published by EDIS Publ. comp., Univ. of Žilina [in:] Quality Management of Services. Corejova T., Borkowski S., Žilina. pp.10-15.
11. RUDAWSKA E., KIECKO R. 2000. *Servqual – the service quality analysis method and its practical application*. Warsaw. Marketing and marketplace. No 5. Polish.
12. SIDOR M. 2000. *Quality assessment by Servqual method*. Warsaw. Marketing and Marketplace. No 11. Polish.
13. STOMA M. 2009. *The service quality analysis by Servqual method – more advantages or disadvantages*. Problems of Quality. No 10. Warsaw. Polish.