CSI INDEX OF CUSTOMER´S SATISFACTION APPLIED IN THE AREA OF PUBLIC TRANSPORT

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Abstract

In Western countries, the new visions are applied in quality control for an integrated public transport system. Public transport puts the customer at the centre of our decision making in achieving customer satisfaction with provided service. Sustainable surveys are kept among customers. A lot of companies are collecting huge databases containing over 30,000 voices of customers, which demonstrates the current satisfaction levels across the public transport service. Customer satisfaction with a provided service is a difficult task. In this service, the quality criteria are not clearly defined, and it is therefore difficult to define customer satisfaction. The paper introduces a possibility of CSI index application in conditions of the Slovak Republic transport area.

Key words

quality, CSI, public transport, customer satisfaction, provided service, quality criteria, integrated public transport

INTRODUCTION

Practical experience of western companies indicates that customer satisfaction and retention are the key issues for organizations in today's competitive market. Customer satisfaction with a provided service is a difficult task. In this service, the quality criteria are not clearly defined, and it is therefore difficult to define customer satisfaction.

A lot of western companies pursue customer satisfaction by CSI calculation – Customer Satisfaction Index. It is possible to calculate this index for all the industry. For company, this brings a possibility to benchmark its own results. It is a common practice that companies publish results of their own survey and CSI calculation, and make operators accountable for decisions and continual improvement across the provided transport network.

As such, much research and revenue has been invested in developing the accurate ways of assessing consumer satisfaction at both the macro (national) and micro (organizational) levels, thus facilitating comparisons in performance both within and between industries (3).

In the field of public mass transport, there are a lot of different customers with various expectations and visions about quality of service. Each of the users of these services is able to define his/her own expectations, and the expectations of individual users could be considerably different.

In most cases we want:
- the vehicle to come to the stop in time,
- not to wait for a too long time for a vehicle,
- the time spent in vehicle to be corresponding to the time listed in timetable,
- the vehicle to be adequately clear and heated,
- the price paid for travel ticket to be adequate to the service level.

Two huge surveys are carried out twice a year to measure customer satisfaction levels across the public transport system provided by the western transport companies. These companies continue to survey customers each half-a-year period to help them drive improvements. The surveys are designed to measure the service attributes that customers value most.

This could be the first problem regarding the application of CSI in the Slovak Republic. The quality criteria for provided service in public transport were defined in the European Standard EN 13 816, but the new criteria that appeared in practice are not defined in this standard. A new survey that would define the actual customers' criteria for quality of public transport has not been carried out yet.

Another problem is associated with the current status of the public transport system integration in the Slovak Republic. Western companies use customer research to determine what drives customer satisfaction levels across the various modes integrated in one transport company.

MATERIALS AND METHODOLOGY OF EXPERIMENT

In foreign countries, the information about the attribute most valued by customers is used to design the questions in the surveys. The survey is focused on the top nine customer service priorities including timeliness, safety and security and comfort across the most often transport modes: train, bus, ferry, light rail and taxi.

It is important to set a scale to assess customer´s answers.

The foreign survey often uses a seven-point scale in order to differentiate levels of satisfaction as shown below. The top three ratings together are defined as "satisfied" and the bottom three ratings together are defined as "dissatisfied".

It means that customer is able to define his/her own criteria for this particular service quality. However, is s/he able to define the criteria of his/her own satisfaction, too? The market surveys or customers' views surveys show that the customer can define the level s/he demands like the basic level from which s/he evaluates the service like "qualitative". However, s/he is not able to clearly define from which level s/he will be "satisfied" with the service provided.

SCALE FOR SURVEY QUESTIONS ASSESSMENT   Table 1

Dissatisfied						Satisfied
1	2	3	4	5	6	7
Very Dissatisfied	Dissatisfied	Partly Dissatisfied	Neither Satisfied nor Dissatisfied	Partly Satisfied	Satisfied	Very Satisfied

Source: [2]

The above claim leads to the conclusion that the defined level of quality will bring "satisfied" customers. In the practice it means that when the bus comes to the bus-stop in time, it transports us in expected term and we pay a sum which we have known in advance, we evaluate this service as of a common quality and we will not feel any "satisfaction" level. But if some additional services (for example refreshments, news etc.) are offered during the travel, we will evaluate this service as of a high quality and we will feel a high satisfaction from using it. Of course, the matters like refreshments or news are not a current in our lines, but it does not mean that the achievement of customer satisfaction is absolutely impossible. It is often enough if the driver is good-tempered, considerate, non-smoking, respecting the traffic regulations, not vulgar and able to inform the passenger in time and correctly. Those criteria are simply to achieve, though not often achieved in practice.

How should we try to achieve the defined level of customer's satisfaction?

Customer satisfaction index is also called the voice of the customer. A number of national policies and approaches to the calculation of the index have been developed.

Simplified approach can be used individually for each transporter that has an interest in assessing the quality of their product - transport services.

With the aim of quantification of customers' needs or expectations regarding the level of performance with provided service (with the target of constant improvement), it is possible to use so-called Customer Satisfaction Index – CSI. It is necessary to define what we understand the term of "the quality".

The CSI model consists of a number of latent factors, each of which is operationalised by multiple indicators. Customer satisfaction can be defined as an overall evaluation of a firm's post-purchase performance or utilization of a service. It is at the core of the CSI framework and is encased within a system of cause and effect running from the antecedents of overall customer satisfaction - expectations, image, perceived quality and value – to the consequences of overall customer satisfaction – customer loyalty and customer complaints. The obvious strength of this approach is that it moves beyond the immediate consumption experience and facilitates the study of the causes and consequences of consumer satisfaction. In fact, the primary objective of this structural approach is to explain customer loyalty (3). An example of criteria quality evaluation is shown in Table 2.

According to (3), it is necessary to differentiate situations listed in Table 2 for the customer satisfaction index definition.

Table 2 shows that the agreement with provided service ensures only an evaluation in level of "standard quality", while satisfaction is achieved only "above the average quality".

From the results listed below it is clear an enterprise cannot examine the customer satisfaction index if it does not have a functional quality management and certain marketing position to highlight the need for customer testimonials. Market analysis and customer feedback survey are necessary, but, in the case of passenger transport, the availability of relevant information is complicated.

A QUALITY UNDERSTANDING AS THE BASE FOR THE CSI DEFINITION
ACCORDING TO (3)   Table 2

Feeling	Situation	Evaluation of quality
Satisfaction	A purchase has saved my life.	Above average quality
	A purchase has improved the living conditions.	
	A purchase has caused an unexpected satisfaction.	
	A purchase was realised by the base of excellent advice.	
	A course purchase was better than has been expected.	
Agreement	A purchase was realised in very pleasant conditions thanks welcome.	Standard quality
	A purchase was realised thanks the professionals what know their products.	
	A purchase was realised according the expectations.	
Dis-appointment	A purchase was realised in unpleasant conditions.	Poor quality
	The condition of a purchase was impractical.	
	It has had no sense to bother to come because of a purchase.	
	Purchases will retaliate at a given price.	
	A course purchase was worse than has been expected.	
Dis-satisfaction	A product does not work like it has been expected.	Problem
	A product negatively influences standard life cycle of customer.	
	A purchase has strong and unexpected negative financial results.	
	A result of the purchase is to reduce the standard of living.	
	A purchase introduces a physical risk.	

The next section deals with the procedure to calculate the CSI index applicable for the road transport sector.

The procedure to find the customer satisfaction index in the mass transport can be divided into several logical steps:

1. To better know the views of customers

   This step is a thorough market analysis. As already mentioned, in the field of passenger transport, it is a more complex role. Records and databases are missing. Although it is possible to seek the views of customers in terms of the survey of the expected quality of service provided, but subsequent survey of their satisfaction is virtually impossible in our conditions.

2. Identify the services that customers have an interest in and in which we identify customer satisfaction index

   This step should be incorporated as a part of marketing policy in the company. Of course, it is possible to determine the CSI for all services provided, but in terms of efficiency, it is appropriate to focus first on major products.

3. Define the characteristic features of service quality

Based on the survey of customer views, it is therefore necessary to specify the characteristics of services which are regarded as components (criteria) of quality of service provided, including characteristics of the staff and, if necessary, properties to characterize the company image.

4. Identify the actual level of defined criteria of quality services

5. Identify elements and links in the existing quality management system, which will be used to resolve the customer satisfaction index

6. Quantify the views of customers to solve the index as follows:

$$CSI = \sum_{i=1}^{n} CSI_i * w_i ,$$ [1]

where:

CSI - Customer Satisfaction Index,
CSI_i - individual Customer Satisfaction Index for a defined concrete service,
w_i - weight (importance) of a particular service.

7. Determine the separate indices of customer satisfaction for specific services.

$$CSI_i = \sum_{j=1}^{n} CSI_j * w_j ,$$ [2]

where:

CSI_j- partial Customer Satisfaction Index for the -j property of considered services,
w_j - weight (importance) of the –j property (quality criteria) of considered services.

Partial indices are defined like the relative perceived values of the properties and expected performance that customer needs, and often cannot precisely determine them.

We can define:

- for positive traits:

$$CSI_j = perceived / expected,$$ [3]

- for negative traits:

$$CSI_j = expected / perceived.$$ [4]

To use the customer satisfaction index, it is necessary to know the views of customers on their importance.

A variety of scales are used, for example: grading, scoring, evaluation with percentage. We recommend using a scale which allows expressing also a pleasant surprise, while expected value may not be in the middle of the scale (1).

Using the customer satisfaction index is aimed at the gradual improvement by reducing the difference between expectations and perceptions of product characteristics.

Example of calculating the index of customer satisfaction is shown in Fig. 1.

HOW WELL DOES YOUR COMPANY DO FOR CUSTOMERS ON A 1 -10 SCALE.
(Ranking of the eight criteria, and their possible weighting, will differ by business type.)

Enter Each Customer's Name -->	John at ABC	Sue at .com	Dick at OTW	Gina at XYZ	George at OMG	Bobbie at FAI	TOTAL SCORES
KEY CRITERIA:							
1 - On-time Delivery	10	9	10	10	9	10	58
2 - Works 100%	9	10	9	9	10	10	57
3 - Great Experience	9	9	10	9	9	9	55
4 - Easy Find/Buy	10	10	9	10	10	10	59
5 - Psychic/Validation	9	9	10	9	10	9	56
6 - Options / Choices	9	8	9	9	9	8	52
7 - Easy Support	9	9	9	9	10	9	55
8 - Price / Value	8	6	7	8	7	7	43
TOTAL SCORES =	73	70	73	73	74	72	9.1 CSI

NSTRUCTIONS:
1 - With your management team, decide what eight items, in order, are the most important to your customers.
2 - Change the row labels to correspond with the important aspects for YOUR customers!
3 - Ask your customers to score you on each aspect for the last time you provided them products or services.
4 - Enter the scores in the light green boxes above for your weighted average CSI (customer satisfaction Index).
5 - Do this customer survey at least once a quarter, then track your CSI's on a Trailing 4-Quarter Chart - see below!
6 - Most importantly, get your Management Team to review the surveys frequently and DO SOMETHING to be better!

Fig. 1 An example of CSI calculation

Source: (3)

ACHIEVED RESULTS

If we want to determine the CSI index at the area of public transport, we should carry out a huge survey of customer´s voice. On the basis of our own survey, the criteria of quality in public transport most valued by customers – passengers in the Slovak Republic are:

- price – travelling by individual means of transport is expensive than travelling via public transport. The choice of individual means of transport depends on increasing living standard. In the Slovak Republic, inclination to the individual transport is increasing because of increasing transport need and the increasing transport prices;
- timeliness – passengers use the public transport because of the need of commuting to schools and work, and consider the public transport as time-reliable;
- safety – according to the statistics, travelling by public transport is the safest means of transport in the Slovak Republic;
- comfort – most passengers claim that they choose the public transport for the possibility of relaxing, dozing and movie watching. Some of the passengers use the time spent in vehicle for working on PCs, tablets, mobile phones etc.

In our survey, we used a scale of 5 points (Table 3):

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SCALE FOR REALISED SURVEY

Table 3

Dissatisfied				**Satisfied**
1	**2**	**3**	**4**	**5**
Very Dissatisfied	Dissatisfied	Neither Satisfied nor Dissatisfied	Satisfied	Very Satisfied

The results of survey are listed in Table 4.

To weigh the importance of criteria, we used the scale shown in Table 5.

SURVEY RESULTS

Table 4

Valued criteria	Customer´s evaluation – August 2014			Weight of quality criteria
	Passenger 1	**Passenger 2**	**Passenger 3**	
Price	3	3	3	3
Timeliness	3	3	3	4
Safety	4	4	5	3
Comfort	2	2	2	2
Valued criteria	**Customer´s evaluation – September 2014**			**Weight of quality criteria**
	Passenger 1	**Passenger 2**	**Passenger 3**	
Price	3	4	4	3
Timeliness	2	2	2	4
Safety	4	5	4	3
Comfort	2	2	1	2
Valued criteria	**Customer´s evaluation – October 2014**			**Weight of quality criteria**
	Passenger 1	**Passenger 2**	**Passenger 3**	
Price	3	3	4	3
Timeliness	2	3	2	4
Safety	4	3	4	3
Comfort	2	3	1	2
Valued criteria	**Customer´s evaluation – November 2014**			**Weight of quality criteria**
	Passenger 1	**Passenger 2**	**Passenger 3**	
Price	3	3	4	3
Timeliness	2	3	2	4
Safety	4	5	5	3
Comfort	2	2	1	2

We used the formula [2] for calculating customer satisfaction with price of transportation in September 2014. The results of calculation are listed in Table 6.

SCALE FOR CRITERIA WEIGHTING   Table 5

Unimportant   **Important**

1	2	3	4	5
Very Unimportant	Unimportant	Neither Important nor Unimportant	Important	Very Important

CSI CALCULATION   Table 6

| Quality criteria/ Time period	**August 2014**	Weighing	**September 2014**	Weighing
Price	3.000	9	3.667	11
Timeliness	3.000	12	2.000	8
Safety	4.333	13	4.333	13
Comfort	2.000	4	1.667	3.333333
CSI total points		**38**		**35.33333**
	October 2014	Weighing	**November 2014**	Weighing
Price	3.333	10	3.333	10
Timeliness	2.333	9.333333	3.000	12
Safety	3.667	11	4.667	14
Comfort	2.000	4	1.667	3.333333
CSI total points		**34.33333**		**39.33333**

DISCUSSION

In the period of August – November 2014, the total points for CSI calculation were from 34.33 to 39.33 points of customer satisfaction. When we realise the fact that it is possible to obtain 45 points maximum for "price", 60 points for "timeliness", 45 points for "safety" and 30 points for "comfort" every month, we will be able to calculate relative CSI index for every month as the CSI total points in relation to 180 total possible points. The resulting CSI index is graphically illustrated in Figure 2.

We found the highest dissatisfaction with the provided service in public passenger transport in October 2014.

This decrease in customer evaluation was possibly caused by higher frequency of road accidents caused by morning fogs and adverse weather.

It is necessary to state that the method of CSI calculation was applied in a very small group of people (three people). To obtain serious information, it needs a great survey to be implemented for a longer time.

However, the calculation of CSI provides a possibility of benchmarking for the companies providing similar service in one area.
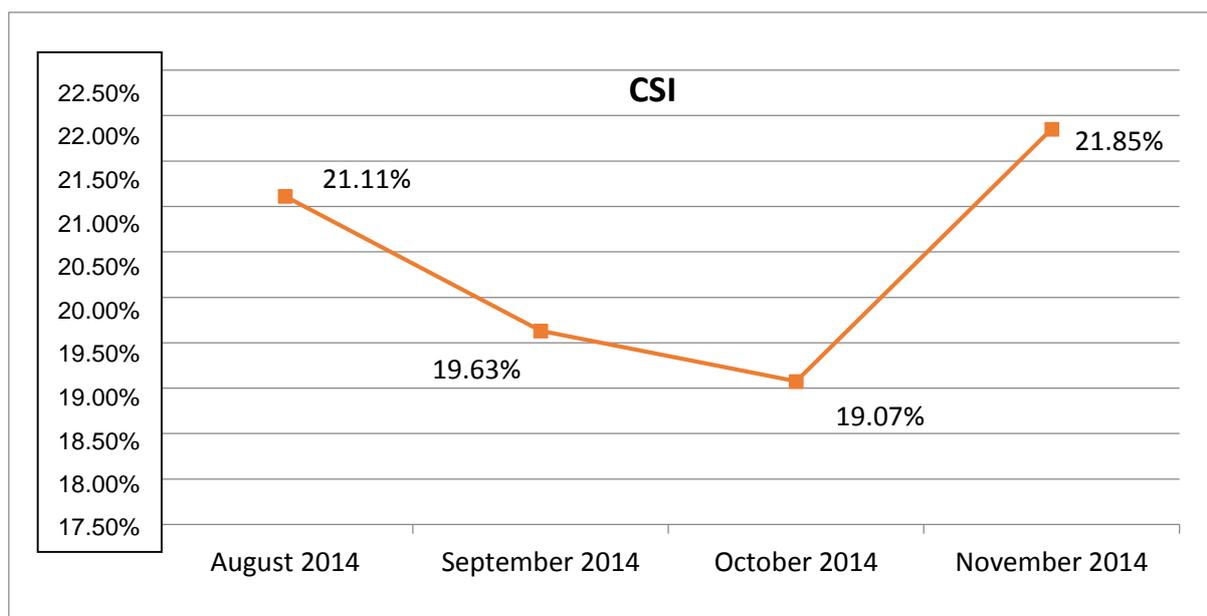
Fig. 2 CSI 2014 calculation in passenger transport

CONCLUSION

In foreign countries, the following modifications for measuring the customer satisfaction have been developed:

- ESCI – The European Customer Satisfaction Index – for measuring the customer satisfaction on the European level and
- ASCI – The American Customer satisfaction Index – for the American level.

ASCI value for transport and storage (reported together) now stands at 73.3. The European approach is presented as a result of calculating the index of customer satisfaction for passenger transport number of 7.63.

In most of the Slovak transport enterprises, there is no systematic approach to explore the attitudes, complaints or compliments of the passengers. The complaints are individually solved like a necessary activity, which obliges directly Consumer Protection Act, but registration or recognition of praise with their causes completely absents. As an example, Dopravný podnik mesta Žilina, a. s. can be mentioned: they develop a database of complaints, but do not record compliments or awards. The database of complaints comprises the following headings:

- Auditor and the procedure for inspection.
- Tickets, their use and claims, a finance deduction, if necessary, malfunctioning machines.
- Driver behaviour towards passengers, conflict solution.
- Complaints about the inaccuracy of exit stops.

In addition to financial indices, Customer Satisfaction Index is one of the most comprehensive results of effort of quality professionals. No using of this index in management it proves the formality of quality management. Its essence is to quantify the views of customers of products and services provided for the purpose of improvement in five main groups:

- Better understanding of the customers,
- Greater enforcement of customer expectations in the specifications,
- Better products and services realization,
- Better visibility and less hype,
- Growing sense of customers for the products and services (1).

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This index can be successfully used in the field of improving the quality of public passenger transport. Described progress makes it possible to quantify and determine the level that the transporter should achieve in future.

To implement CSI method, the transport company should keep talking with customers about their wants and needs, be accountable for further performance and drive a better public transport system for all customers.

The paper introduces a possibility for CSI calculation in company and also in all the country. On the basis of carried research, we are able to claim that customer satisfaction with services provided in passengers transport is on very low level.

References:

1. Available on the Internet: http://www.aqi.tnuni.sk/fileadmin/dokumenty/ Nastroje_a_metody/Index%20spokojnosti%20zakaznikov.pdf
2. Available on the Internet: http://www.ceotools.com/software/476039.pdf
3. Available on the Internet: http://dugi-doc.udg.edu/bitstream/10256/278/1/n4.pdf
4. Available on the Internet: http://www.eoq.org
5. Available on the Internet: http://www.nmmanagement.com/userdata/Image/MediaMartel/ Business_Express_Satisfying_customers_SJ_short_version.pdf
6. Available on the Iinternet: http://www.theacsi.org/
7. Available on the Internet: http://www.transport.nsw.gov.au/sites/default/ files/b2b/publications/customer-satisfaction-index-2014.pdf

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