QUALITY OF PUBLIC TRANSPORT SERVICES IN URBAN AREA OF ORADEA

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Intensification of public transport in urban areas due to increased mobility at regional and national levels, discrepancies among urban areas with same population and lack of statistical data related to performance and quality of public transport services are the main determinants of this paper. A separation line must be drawn between quality of services and performance indicators of public transport system. Service quality is a multi subjective outcome of an array of intangible variables. Service quality can be approached from four directions: consumer point of view, vehicle performance (including the human operator), specialized company in passenger transport, and the Government (local Councils). Availability, comfort and convenience are the two main indicators that must be evaluated by citizens as being with high grades for a good quality of urban transport services. The instrument used to gather data is the preference survey.

Keywords: service quality, performance indicators, availability, comfort, subjective outcome

L80, P46, R40

Introduction

Due to the intangible characteristics of services, defining service quality becomes an essential issue for some European countries. Quality appears as an abstract dimension, it leads to quality evaluation with specific approaches and instruments. The preference survey and the SERVQUAL method are used to gather data and evaluate quality.

The differences among public transport systems in European cities, evaluated from the point of view of number of vehicle in use and system lengths, are the starting point of this research. We consider three urban areas with approximately same number of citizens: Oradea (232.000, including metropolitan part), Graz (248.000) and Debrecen (246.000).

Oradea has a tram system on five routes; total length 37,14km double way, the mean length of a route being 7,14km. Bus network is made up by 9 routes with a total length of 54,53km. The urban transportation park includes 75 trams and 64 buses.

Grazer Stadwerke Verkehrsbetriebe AG operates 25 routes for buses, with 136 vehicles, 61 trams, and since 2005 the bus network uses bio diesel.

DKV Zrt.(Debrecen Kozlekedesi Zrt) is the main company responsible for the urban transport and encompasses a network of 1 tram line, 5 lines for cable buses, and 51 regular bus routes. The transportation company, member of an international holding, operates[300] 21 trams, 30 cable buses, and 168 buses, on a network of 174,6km.

Data registered by the National Statistic Office of Romania shows worrying facts regarding the number of passenger transported at national and international level, and the preference for different transportation types.

Between January and September 2009 transportation decreased in subway transportation with 13%, a raise of 11,3% electric wire buses sector, decrease of 0,8% trams and 7,4% buses are noticed.

[300] * * * Debrecen M. J. Város Önkormányzata*, Decrecen varosi fenttarthato városi közlekedési – fejlesztési terve,Tanulmányterv, p.31-32,*
http://portal.debrecen.hu/upload/File/Egyeb/dmjvKozlekedesfejlesztesiTerve_2.pdf

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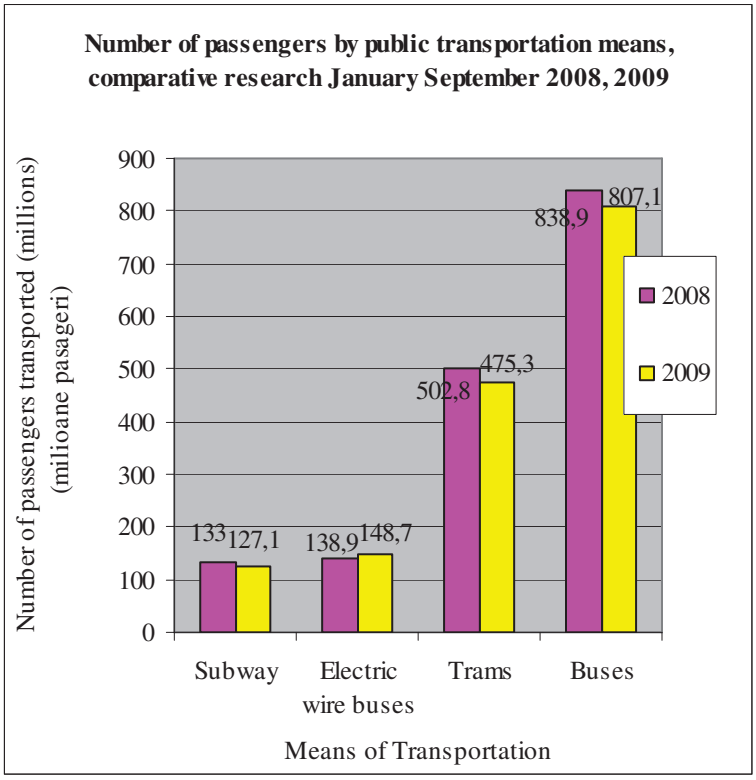

Figure 1 Number of passengers transported in public services, January-September 2008 and comparable with the same period in 2009

Since 1990, the number of passengers- intercity and international transport- decreased from 780666 thousands to 191127 thousands in 2002. 2003 and 2004 are years with stagnation somewhere between 216327 thousands and 216524 thousands passengers transported. 2005 is year of growth, 2006 an year when this number decreases, and goes up again in 2007, 2008 to reach the level of 296953 thousands passengers annually transported[301].

Data regarding quality and performance indicators of public transportation services are vaguely determined and practically inexistent.

Theoretic approach, explanation of terms

Among services rendered to population the public transportation services are taking a very important role. The public transportation of passengers is a type of transportation operation which is realized with the help of urban transport vehicles, including subway, within the administrative and geographic area of an urban territory, without crossing its borders. In developed countries this type of transport includes the services realized by school buses.

It is absolutely necessary to correlate expectations of citizens of an urban area with perceptions regarding services. The outcome is necessary to evaluate the quality of service.

Dictionaries define quality as a characteristic, dimension, and the goal of this paper is to find a definition formula for quality of public transport services. Few questions rise: When the public transport services are acceptable qualitatively? When the public transport services determine unhappy citizens? When the public transport has a superior quality?

In the case of services, subjectivity is a variable which could be economically interpreted as utility. Thus an U.S.A. study reveals (75%-80% of respondents) the mean distance that

[301] * * *, *Romanian Statistical Yearbook*, National Institute of Statistics, Time Series 1990 – 2008, Chapter 17.13, Passenger Transport by Mode of Transport

passengers are willing to walk from the starting point of the journey to the first available public transportation pick up point (400m), corresponding to 5 minutes walking time.
A good is valuable or has utility component in different conditions than has to other people. Utility of a service encompasses abstract factors like: security, tangibles, assurance, empathy, sensibility. On the other hand, quality is the outcome of needs, former experiences, and "world of the mouth". The two sides necessary for the definition of quality, expectations and perceptions, and the differences between them lead to a satisfied, unsatisfied or unhappy customer.
Assurance of good quality become the output of collaboration between public forces like Local Councils, Ministries, Government, and specialized public transportation companies, when they are invited to implement and improve the image of services rendered to citizens, in an urban area. The public welfare and the maximization of revenues for transport services are put in the balance. It is necessary to underline that a separation line must be drawn between different terms like: quality or service level and the evaluation of performances of a public transport system.
The performance of a public transport system can be measured qualitatively. It also can be measured in absolute values and usually refers to a particular aspect of the transport (cylindrical capacity for vehicles used). The service quality can be approached only from the consumer point of view.
Measuring service is an evaluation from the quantitative point of view of the consumer (effectiveness).
Service levels are evaluated usually with "A" to "F" (quantitative evaluation) for particular passengers' perceptions. Quality of the public transport services reflects the performance of the same services.
Performance indicators of a public transport system could be: availability, service monitoring, influences on community, travel times, safety and security, construction and maintenance of vehicles, economic impact, transport capacity (number of passengers).
Measuring service quality is a procedure to be considered from the point of view of: public service consumers, the vehicle (and the driver), the private company which administrates public transport services, and the community.
Availability can be measured as spatial availability (for example: network coverage), temporal availability, information availability and capacity availability.
Comfort and convenience are the outcome of conjoint action of variables likes: travel time, hours of service, reliability, waiting time, safety and security, passenger load-available free spaces in the vehicle, vehicle's cleanliness, the cost of transportation, and number of transits to reach final destination, comparative evaluation among other means of transportation.
An American study reveals (75%-80% of respondents) that the mean distance that passengers of public transportation are willing to walk from the start point of their journey to the first available public transportation picks up point is 400m, corresponding to 5 minutes walking time.
It is appreciated that 1 minute waiting time for public transport services is more important than 1 minute of time in the transportation vehicle[302].There are cleanliness standards in San Francisco and New York .Thus inspections are undertaken to observe the accomplishments of standards in the public transportation system. Cleanliness is evaluated on the scale ranging from 1(very clean) to 7(dirty).

Methodology

The proposed instrument to gather data are the preference survey and the method to evaluate quality is SERVQUAL.

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[302] * * * Transit Cooperative Research Program, sponsored by The Federal Transit Administration, *Transit Capacity and Quality of Service Manual-2nd Edition*, Part 3-Quality of Service, Chapter 3 Quality of Service Factors, p.3-20, http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp100/part%203.pdf

Before applying surveys to consumers, a brainstorming session is hold to determine the most important dimension for consumers when evaluating public transportation services: availability and tangibility.
The survey consists of nineteen questions which describe the consumer of public transportation services in Oradea. Seven questions give details related to social and economical status of the consumer regarding: age, sex, occupation, studies, status, neighborhood in which lives in, and incomes. There are thirteen questions which are giving details related to: transportation type known by the consumers, the most frequently used transportation type, factors that are determinants of poor satisfaction of consumers (availability and price of tickets, delays, travel time, frequency, network coverage, hours of service, interior aspect cleanliness and odors, general appearance of the interior of the vehicle, maintenance of vehicles and stop points, technical aptitudes for vehicles and stop points, general look and behavior of personnel). Each factor reveals an abstract general quality of the service like availability or tangibility. Information regarding frequency, other means of transportation, scope of transportation, significant delays encountered and means of transportation that generated delays, availability of time schedule (as information availability) and interest for ecological type transportation methods as a sustainability matter are gathered. Respondents are invited to add their suggestions regarding improvement of actual urban transportation network.
Final data shows relations between social and economical status and urban transportation quality abstract dimensions.
The SERVQUAL method comes to complete the survey through evaluating quantitatively abstract dimensions of transport services.
This method uses 22 statements related to the five dimensions[303] of any service: reliability, responsiveness, assurance, empathy, tangibility. Statements are applied to consumers before and after the service. Each statement must be evaluated on a seven point scale from "strongly agree" (grade 7) to "strongly disagree" (grade 1). A score is calculated for each pair of statements. If the score is high it means that service delivers a poor quality component. If score is low or zero, quality of service is not affected.
SERVQUAL is a comprising method which evaluates all gaps in quality of services. It appears as a subjective outcome of service delivered.
Parasuraman, Zeithaml, and Malhotra propose a third century instrument to measure data related to quality of services. Data about the service is gathered on the Internet and the instrument is called E-S-QUAL[304].
The present research is evaluating quality of service as a resultant between expected and delivered quality of service, from the consumer point of view.

Findings
The most important component of public transportation services in Oradea appears to be safety and security during travel.

[303] James A. Fitzsimmons, Mona J. Fitzsimmons, *Service Management for Competitive Advantage*, 1994, Mc Graw-Hill, p.183-185 in A.Parasuraman, V.A. Zeithaml, and L.L.Berry, *SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality*, Journal of Retailing, vol.64, no.1, spring 1988, p. 12-40
[304] Parasuraman, A., Valarie A. Zeithaml, and Arvind Malhotra. 2005. E-S-QUAL a multiple-item scale for assessing electronic service quality. Journal of Service Research 7: 213–233 in Erikkson Lars, Friman Margareta, Norman Ann – Catrin, *Electronic Service Quality: Public Transport Information on the Internet, http://www.nctr.usf.edu/jpt/pdf/JPT%2010-3%20Eriksson.pdf*

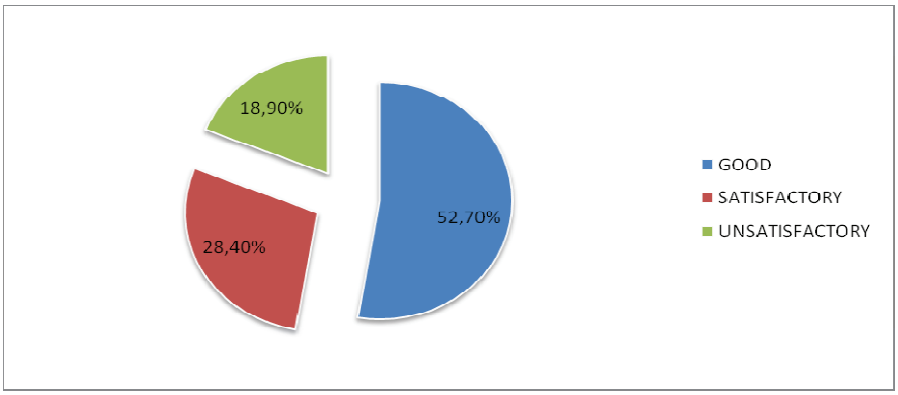

Figure 2 Resident general appreciation of the quality of public transportation in Oradea

Evaluated on a scale ranging from 1 to 5, from not important to major importance, the score of most important characteristic is 4,33. Cleanliness of stop points, convenience of time schedule seems to be equally important for respondents. Equipment and technical support, and appearance and language of employees-tangibles- received a lower score (figure 3).

Figure 3 Most important components of the public transportation service(Mean values are considered for classification)

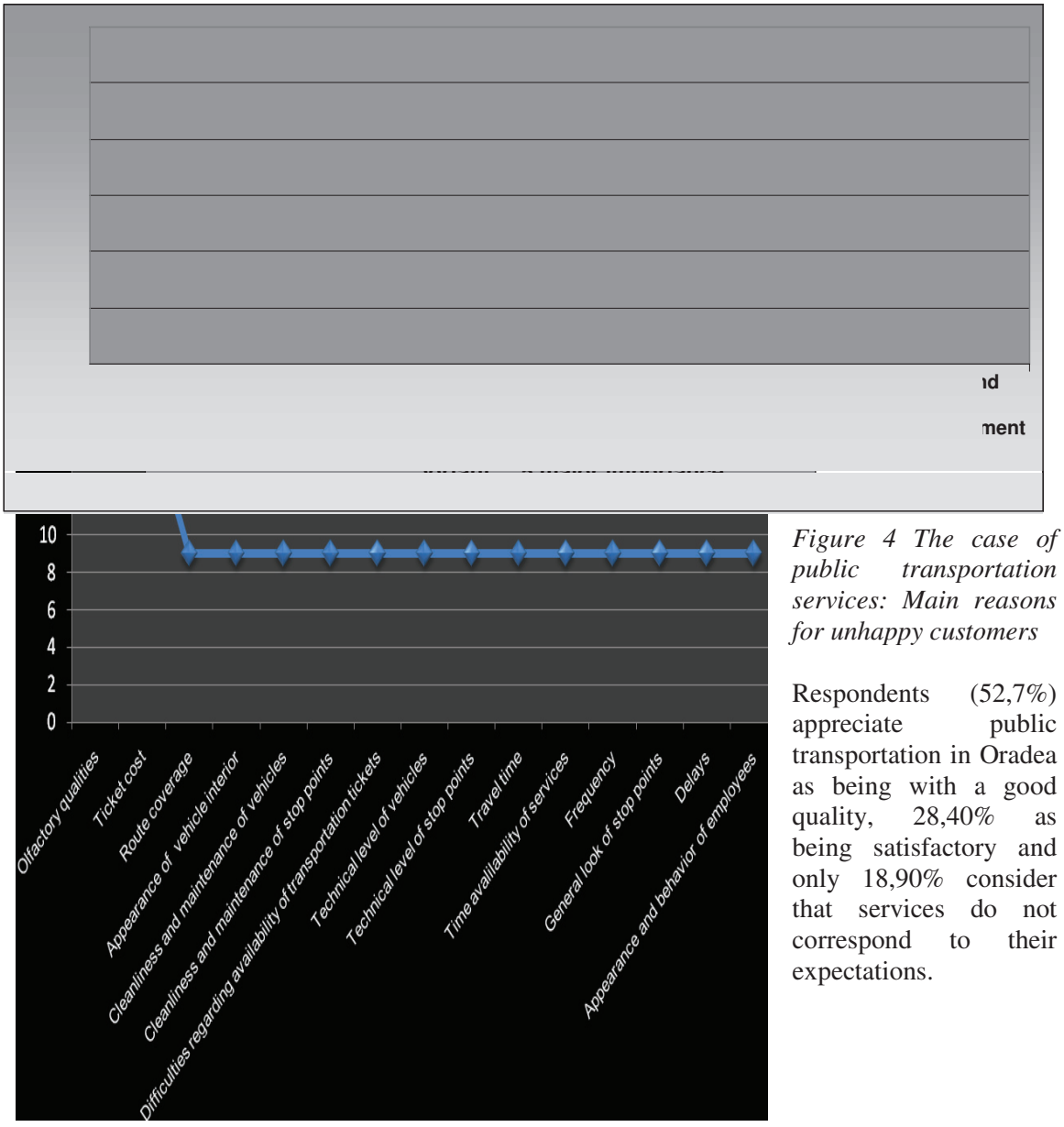

Figure 4 The case of public transportation services: Main reasons for unhappy customers

Respondents (52,7%) appreciate public transportation in Oradea as being with a good quality, 28,40% as being satisfactory and only 18,90% consider that services do not correspond to their expectations.

A major number of people consider olfactory qualities and ticket cost, factors with major importance to qualify public transportation services as being good. It is important to underline that these two factors are among the most important in a fifteen components list (figure 4).
SERVQUAL application reveals details about characteristics which do reflect a poor quality of public transportation services. Olfactory qualities and cleanliness of vehicles and stop points received the highest scores. That means that quality is affected negatively because of these characteristics. Transportation companies or local councils should focus their resources to reduce the score for these characteristics. SERVQUAL should be applied again in approximately six months to re-evaluate components of quality of transportation services.

Conclusions

Recommendations regarding improvement of stop points and transportation vehicles would be: more tickets' sale points; equipment and technical base maintenance; cleanliness of vehicles.
SERVQUAL can be used for evaluation and improvement of public services in any sector..
It is recommended to monitor delivered quality of services. It is important that a specialized structure should accomplish these functions. For this purpose, in most cases[305] the monitoring unity is the company specialized in public transportation.
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