The Research of the Quality of Passenger Transport Services on a Selected Regional Route

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A shrinking market of regional passenger transport results in the fact that transport companies providing services on these routes are forced to fiercely compete with one another for their customers. As a result not only economic reasons become essential but the quality of services provided as well. Following an increased number of research on customers' preferences a question arises: what kind of knowledge should the analysts possess while preparing information referring to the measurements carried out. The authors, using the example of a selected regional route prove that the conclusions referring to the quality of services provided should be complemented by a deepened analysis of objective factors connected with the characteristics of a selected route. Only then the managerial decisions which are made will be based on comprehensive market information.

1. INTRODUCTION

Since the beginning of 1980s a steady decrease in the number of passengers on regional routes has been observed[1]. It results from numerous demand factors such as demographic conditions, customers' preferences as well as social and cultural conditionings. First of all the requirements of passengers increase as far as the quality of services provided is concerned. Being aware of their consumers' rights and of the market situation, customers expect higher level of transport services.

Therefore, the tools which allow to examine passengers' preferences have become more and more popular. The surveys are especially important for managers of transport companies, as basing on them it is possible to determine the direction of expected changes, creating the development strategy as well as eliminating any existing difficulties or limitations. Parallel a question arises: what competencies should a person carrying out such survey possess in order to achieve the expected results.

This paper attempts to define, on the example of the research carried out by the authors, the scope of knowledge an analyst should possess in order to properly interpret the results achieved during the research on the quality of passenger transport services.

2. THE QUALITY OF TRANSPORT SERVICES

The concept of quality has been defined in literature in many different ways. In many texts one can even find deliberations on the development of the concept of quality[2]. Similar situation refers to defining quality of transport services. While analyzing scientific works and researches which deal with the issue of quality in transport one can notice that all the quoted

[1] T. Dyr, *Uwarunkowania zmian popytu na rynku regionalnych przewozów pasażerskich*, Transport Miejski i Regionalny 03/2006, s. 10-17

[2] Inter alia A. Tabor, A. Zając, M. Rączka, *Zarządzanie jakością*, Tom 1, *Jakość i systemy zapewnienia jakości*, Politechnika Krakowska, Kraków 1999

definitions reflect the way authors of the works understand quality of transport services[3].

One of the most detailed definitions was formulated by B. Walczak, who described the quality of a transport service as 'a degree to which it satisfies users' needs during the whole transport process. Such a degree refers to exploitation as well as technical and economic aspects connected with the route, the means of transport, the time and the object being transported[4]'.

A review of the international literature on public transport quality reveals that normally the quality of each of the service variables is related to the importance that each individual places on them[5].

Other studies mention the relationship between quality, the degree of user satisfaction and the cost of the service[6] and introducing policies which favour a particular service standard[7].

In practice, quality monitoring and benchmarking are two management methods, one addressing the objective, means and results, and the other, comparing the improvement of an undertaken action, respectively. Both methods are greatly acknowledged in the field of public transportation, as tools to identify passenger priorities and needs, to measure passenger satisfaction, to assess service parameters and to indicate measures of improvement[8]. Furthermore, passenger satisfaction is related to the perceived discrepancy between actual and ideal levels of service. Therefore, both perceptions and expectations of service are being measured, regardless of the management method[9].

In case of both of these methods it is crucial to choose appropriate parameters and features listed for the evaluation of the quality of a given transport service. While analyzing elaborations referring to Polish research on the quality of transport services one can state that the recurring features of passenger transport which are examined include[10]:

- availability,
- time of journey,
- punctuality,
- regularity,
- rhythmicity,
- frequency,
- reliability,
- safety on journey,
- comfort.

[3] W. Starowicz, *Jakość przewozów w miejskim transporcie zbiorowym*, PK publishing house, Kraków 2007

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Among the examined features also the following ones are mentioned[11]:

- direct connections;
- information available inside vehicles and at bus stops;
- conditions inside vehicles;
- waiting conditions at bus stops.

In the worldwide literature referring to these issues, the following criteria of service quality are also mentioned[12]:

- cleanliness;
- passenger information (which is a feature meaning more than just information inside vehicles or at bus stops);
- servicing (personnel behaviour, easiness of ticket purchasing, speed, ticket purchasing facilities)

The above presented set of features, monitored while examining the quality of passenger transport services, does not provide a complete measurement list. These are the features which constantly reappear in various elaborations referring to this topic. It must be noticed however how interdisciplinary measurement that it. The examined features refer to logistics, economic, social, personal and other aspects.

According to the authors, due to a wide scope of possibilities, even at the stage of preparing a measurement tool, the people who define its range, need to have extensive knowledge not only in the above mentioned fields, but they must also be familiar with characteristics of the examined services and the information needs of the company which commissioned the measurement.

The importance of the possessed additional knowledge, at the stage of interpreting the achieved results, will be proved on the example of research carried out by the authors and commissioned the Marshall's Office of the Lower Silesia Region.

3. THE SURVEY ON CUSTOMERS' SATISFACTION WITH THE QUALITY OF SERVICES OFFERED BY CARRIERS.

From August until October 2010 the authors made the research referring to customers' satisfaction with the quality of services on a selected regional route. The route being examined connects two cities in the Lower Silesia – Wrocław and the city X[13]. The distance between the two location does not exceed 60 km. The route runs across three districts and there are about 25 stops while going one way. 9 carriers received the licence to provide passenger transport services on the route and that includes 4 carriers from FORMER PKS group and 5 private companies.

As a research method they used direct interviews with passengers. Interviews were carried out basing on a questionnaire which included, apart from general questions, 12 questions referring to the evaluation of the quality of transport services provided by carriers on a selected route. The survey on customers' satisfaction included the following parameters:

- frequency,
- punctuality,
- capacity of vehicles,
- comfort of journey,
- regularity,
- certainty of having a journey,
- personal safety of travellers,
- access to information for passengers,
- possibility of choosing services of various carriers,
- possibility of direct connection,
- convenient changes,
- access to public transport.

Passengers evaluated each parameter in 5-point trading scale, where 1 meant a very good grade and 5 – a very bad one.

1233 people participated in the research, 683 women and 550 men. The people came from towns and cities which were at the beginning of the route (Wrocław and City X), but also from other districts

[11] Z. Bryniarska, W. Starowicz, *Wyniki badań systemów publicznego transportu zbiorowego w wybranych miastach,* Wydawnictwo PiT, Kraków 2010

[12] E. Nathanail, *Measuring the quality of service for passengers on the hellenic railways*, Transportation Research PartA 42, 2008, pp. 48-66

[13] Badania prowadzone na zlecenie Urzędu Marszałkowskiego Województwa Dolnośląskiego uniemożliwiają wskazanie dokładnej charakterystyki badanej trasy

which are situated along the tested route. While observing the age of respondents one could notice that the biggest group of passengers (58%) consisted of pupils and students, aged 18 up to 25. The second biggest group were people at working age (up to 60 years old) who were commuters.

The analysis of the received answers was summed up and presented in Figures 1 and 2.

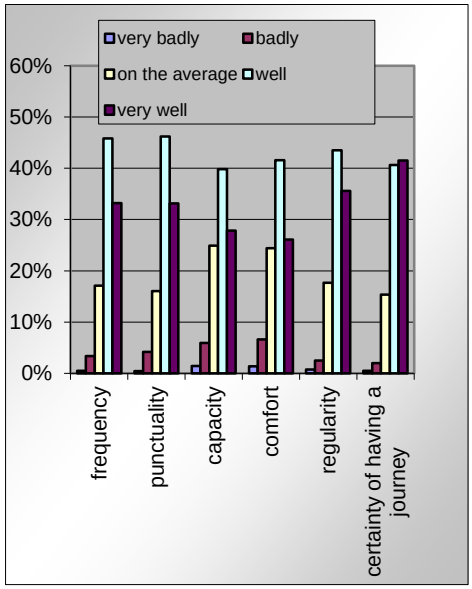

Figure 1. The results of polls among passengers on the tested route.
Source: own research

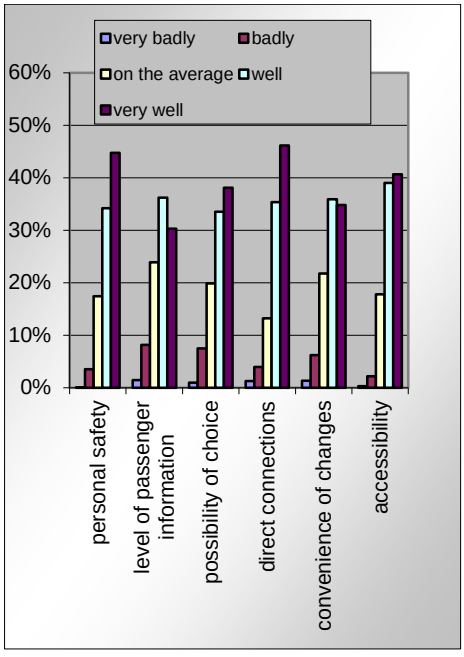

Figure 2. The results of polls among passengers on the tested route.
Source: own research

As it can be read from the above graphs, the evaluation of the quality of transport services on the route Wroclaw – City X was really high. The majority of respondents gave good and very good grades to the criteria in question. People who gave negative opinions were at minority. If the company which commissioned the research will receive such results of polls and will not deeply analyze the route, they may make a decision to keep the *status quo*, as a solution beneficial for passengers.

4. CHARACTERISTICS OF THE TESTED ROUTE

In order to understand the results achieved during polls, and predominantly in order to properly evaluate these results, some additional knowledge is indispensable, which includes:

- structure of transport companies serving the examined route;
- relationships and behaviours among carriers;
- characteristics of transports provided along the examined route
- demographic structure of passengers;
- economic aspects of provided services.

The route which has been the subject of the research connects two cities in the Lower Silesia province - Wrocław and City X[14]. The distance between the two does not exceed 60 km. The route runs across three districts and there are about 25 stops one way. 9 companies have been authorized to provide passenger transport services on this route, 4 companies that belong to the former PKS group and 5 private ones. It must be noted that one of the former PKS carriers serves this route as a part of a longer-distance rides which connect Wroclaw with other cities.

On the base of the research carried out it has been found out that there are three companies which dominated serving this route – they serve a total of 80% of all transports. Among the three companies one belongs to the former PKS group and the remaining two are private

[14] Research carried out by the order of the Marshall's Office make it impossible to provide exact characteristics of the tested route.

companies. It is also important that private carriers perform 75% of all transports while the remaining 25% belongs to the carriers from the former PKS group. It can therefore be stated that although the route is served nearly in proportion by private carriers (5 companies) and those from the former PKS group (4 companies), still if the frequency is taken into consideration, private companies dominate.

Among passengers using transport companies there are mainly pupils of high schools and commuters. Such a structure of customers influences the number of transports and the carriers' timetables as well. Most transports on that route are performed on weekdays (from Monday to Friday) and at weekends (Saturday-Sunday) their number is drastically limited.

Table 1. The total number of transports performed on a route Wrocław – City X on weekdays.

	5.00a.m.–9.00a.m.	9.00a.m. – 1.00p.m.	1.00p.m – 6.00p.m.	6.00p.m. – 10.00p.m.
Wrocław - City X	80	135	130	90
City X - Wrocław	135	115	115	80

Source: Own study

Table 2. The Total number of transports performed on a route Wrocław – City X at weekends.

	5.00a.m.–9.00 a.m.	9.00a.m.–1.00p.m.	1.00p.m.–6.00p.m.	6.00p.m – 10.00p.m.
Wrocław - City X	16	20	21	25
City X - Wrocław	24	16	28	17

Source: Own study

In Table 1 one can clearly observe an increased number of morning rides from City X towards Wrocław which is connected with the beginning of working hours and classes of passengers who come from outside of Wrocław agglomeration. Consequently, in the afternoons the traffic in opposite directions increases.

While analyzing timetables one can easily observe that activity of private companies is the highest during peak hours. Between 6.30 a.m. and 8.30 a.m. on weekdays departures of buses (of various carriers) can be observed every 5 minutes from the initial station. The same goes for return route in the afternoons.

It is interesting that in case of weekend transports most rides belonged to carriers from the former PKS group. It probably results from the fact that the number of people using public transport on these days is much lower than on weekdays.

A big number of companies that provide public transport services means that fierce competition can be observed among various companies on the tested route. Most of competitive initiatives, especially among private companies, refer to lowering prices and to conscious speeding or delaying rides, in order to repossess some part of passengers from other carriers.

The research revealed the following:

- because the selected route is served by 9 carriers, **the possibility to choose between different carriers is really high,** as well as **the certainty of having a journey;**
- **accessibility to public transport** on the selected route is so high that passengers give up less favourable and less comfortable forms of transport (little interest in rail transport due to necessity to change, selecting direct connections by people who start their journey at first stop and finish at the final station);
- because of numerous stops along the route **the possibility of direct connection** is really high;
- **frequency** of buses on the selected route is at some times higher than that of public transport (up to 10 departures during 1 hour);

Therefore a positive evaluation, especially as far as frequency, certainty of having a journey and regularity are concerned resulted from high supply of offered services, which is higher than demand. The excess of supply was clearly visible during the whole time the research was carried out. One of the signs was e.g. the level of using up the space in vehicles serving the tested route.

Table 3. The average using up the space of vehicles on the tested route in both transport directions.

average % of using up the space of vehicles	Time periods			
direction	5a.m. – 9 a.m.	9a.m. – 1p.m.	1p.m. – 6p.m.	6p.m. – 10 p.m.
Wrocław – City X	31%	32%	**54%**	**51%**
City X – Wrocław	**41%**	**44%**	37%	30%

Source: own research

As it can be seen in Table 3, too high total number of transports performed by all carriers results in the fact that the use of the space in most cases does not go above 50%. From the point of view of the carrier the situation is highly disadvantageous. But from the point of view of passengers such conditions add up to the quality of transport. High frequent means that if one carrier fails to provide timely service, chances are that another one will appear shortly. As a result passengers positively evaluate the criterion of certainty of having a journey. However, from the point of view of carriers, such a situation is not only disadvantageous but even dangerous. The level of vehicles fulfilment, even during peak hours, is at the edge of profitability of the service provided. As a result, a part of carriers belonging to the former PKS group who have higher costs reconsider the validity of certain rides.

From the research carried out it can be seen that the lowest grades (but still positive) were given to the criteria of passenger information and comfort of journey. While analyzing the structure of carriers serving most of the rides on the examined route, it is easy to define the reason of such a result. Access to important information referring to times of journeys and their costs at different information desks is mainly provided by big transport companies from the former PKS group. Parameters of services provided by private carriers, especially the small ones, can be learnt by means of direct contact with drivers only. As it has been mentioned above private carriers serve 75% of the rides on the route, hence the problem of accessibility to passenger information appears, which is crucial for passengers.

Low comfort of journey results mainly from the fact that regional routes are usually served by older vehicles, with limited equipment.

However passengers' claims referring also to convenient connection should be noted. As a result of high frequency of rides provided by all carriers altogether, the convenient connections at each stop should be really high and should predominantly depend on the frequency of rides in desired directions. It must be noted that transport connections on the tested route intersect with as many as four other regional routes, still the researches on individual timetables showed that there are no time correlations on intersecting sections. Hence, lower evaluation of this parameter by the participants in polls.

An interesting phenomenon is the result of the punctuality parameter. In polls carried out among passengers this parameter received really high grades – nearly 80% of the respondents evaluated punctuality as high or very high. However, some additional research carried out by the authors revealed that although most departures were according to timetables, the arrivals were mainly late. The results of the research on deflections for selected rides are presented in Tables 4 and 5. It must be pointed out that departures / arrivals ahead of schedule were given positive values, while rides which started behind the schedule – the negative ones.

Table 4. Deflections from timetables – departures.

Departures from the initial stations	more than 10 minutes ahead	10 – 0 minutes ahead	0	0 – 10 minutes behind	more than 10 minutes behind
Wrocław-City X	0%	8%	70%	19%	3%
City X - Wrocław	2%	7%	64%	19%	8%

Source: own research

Table 5. Deflections from timetables – arrivals.

Arrival at destination	more than 10 minutes ahead	10 – 0 minutes ahead	0	0 – 10 minutes behind	more than 10 minutes behind
Wrocław-City X	2%	20%	3 %	41%	34%
City X - Wrocław	2%	22%	8 %	44%	24%

Source: own research

The objective measurement of the timeliness of services differs from the subjective results achieved from passengers. It could result from the fact that in case of regional routes, where the time of journey does not usually exceed 1 hour, a deflection of 10 minutes is considered acceptable and does not decrease the evaluation of the provided transport service. However, from the logistics point of view, such high percentage of delayed rides should be evaluated negatively and should undergo a constant process of improvement.

5. SUMMARY

The research carried out referring to the selected regional route proved that the level of customers' satisfaction with services provided by carriers is high. It is very much connected with the fact that there are as many as 9 carriers authorized to providing transport services on the route in question.

Fierce competition has started to focus mainly on lowering ticket prices, not on rising the quality of provided services. As a result of such operations big transport companies whose break-even point is much higher than that of smaller carriers started to reconsider profitability of some rides. Maintaining the so-far *status quo,* basing only on results of measurements of passengers' preferences might results to a negative situation for both carriers and passengers. The existing surplus of supply over demand would result in a situation where big carriers would limit the number of performed rides, especially at off-peak hours. As a result passengers would perceive the quality level as lower because at given tomes and at weekends they would be offered fewer transport possibilities.

On the basis of the example presented in this paper it must be concluded, that broad general knowledge on the market and on the examined route provides great advantages for analysts preparing final conclusions from the measurements carried out. Lack of knowledge referring to the carried research may result in wrong final conclusions, which in turn will result in wrong managerial decisions. A complex character of the passenger transport sector analysis means that while carrying out research one cannot possibly limit oneself to one tool only (e.g. polls among passengers). It is necessary to combine a number of research tools which enable drawing conclusions which takes into consideration various market aspects. Therefore, clear and precise requirements towards the team carrying out any quality research are indispensable. Such a team must consist of people who possess interdisciplinary knowledge in areas of economy, logistics and market research, but will also have experience which will allow them to acquire all additional information which influence the global analysis and evaluation of the examined transport services. Only such a team of people will be able to perform a multi-criteria analysis which will evaluate the actual level of provided transport services.

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