

WYBRANE PROBLEMY TRANSPORTU MIEJSKIEGO I PODMIEJSKIEGO

THE CHOSEN PROBLEMS OF URBAN AND SUBURBAN TRANSPORTATION

Obecnie państwo wykorzystuje usługi transportowe do rozwiązywania społecznych i regionalnych problemów związanych z przemieszczaniem ludzi i towarów. Żądania transportowe reprezentują ważną część stylu życia i są związane z rosnącą potrzebą komunikacji. Ze względu na fakt, że jedna z podstawowych potrzeb ludzkich jest potrzeba przemieszczania się koszty transportu publicznego są niezwykle istotne. W artykule zaprezentowano wybrane zagadnienia dotyczące struktury kosztów transportu osobowego w ostatnich latach na przykładzie Słowacji. Opisano także najważniejsze czynniki wpływające na jakość systemu transportu miejskiego i podmiejskiego.

Słowa kluczowe: transport, jakość, opłaty, polityka transportowa

Nowadays state uses transportation services to solve society and regional problems connected with people and goods translocation. Transport demands represent important part of life style and role of passenger transport in communication that should satisfy the arisen needs of human beings. One of the basic human needs is for sure a need of translocation and that is why public transport costs are so important. This article presents the chosen problems of costs' structure of passenger transport in Slovakia during last years. The most important factors influencing on urban and suburban transport system quality are also described.

Keywords: transport, quality, fares, transport policy

1. Introduction

A coordination of transport demands choosing some representative and decisive factors important for effective development of all types of passenger transportation. Creating necessary economical and legislative conditions to handle with transport service problems is essential support from state and municipality units. Prices in public passenger transport are regulated or connected with residents' mobility. Nowadays state uses transportation services to solve society and regional problems connected with people and goods translocation. The amount of funds spent on transportation services shows how state (or local government, municipality) is interested in preservation or development of transport system.

Residents' demands to satisfy their transportation needs increase when cultural, social, technical and economical level of life grows. Economical development in Slovakia and Poland after the year 1989 leads to situation, which requires the solution of new residents' transportation needs at the higher quality level. Transport demands represent important part of life style and role of passenger transport in communication that should satisfy the arisen needs of human beings.

One of the basic human needs is for sure a need of translocation. Public transport fulfills the basic

transportation needs for example: approaches to work, schools, offices, health services, social, sports or cultural centers. Satisfaction from the fulfillment of mentioned needs at the area of Slovak Republic and Poland is mostly realized by railway and suburban bus transport.

Equally important is goods transport, which is connected with diversification of industry. Cargo transport is the crucial factor in economical development and supports the economic activities. It is very important element of communication.

2. Importance and basic function of transport in national economic and society

Transport process is characterized by available offer. It is expressed by preparation, optimization and execution of transfer requirements. The process also represents an analogy to long term planning process in production enterprise, with an assurance of sufficient capacity in transports, means of transport, work forces and materials. Products in transport are always results of disposal and realistic part combination. Disposal part – planned set-up transport managing, means know – how in relations with effectual transport. Realistic part is own transfer from source to the destination place. In the transportation offer it is necessary to resolve even how to provide line transport or order transport.

Line transport requires submitting a perfectly structured offer (with internal relation concerning the directions of transport lines and timetables or schedules), which is necessary for a customers' needs planning in any point of the transportation net. Mentioned transfers have high fixed costs and therefore are only acceptable after sufficient demand findings. Interactions between frequency and supply activity are often described by characteristic of line transport because high frequency demands certain attractive timetable and backward influence to attracting additional customers.

Quality transportation offer (supply) consists of several factors:

- technology – technical means of transportation system reflects its performance, used technology has an influence on operation costs
- capacity and performance – affect quantity of transport products
- operational strategy – kind and way of technology use in providing of transportation service in relation with goals of carrier or operator
- institutional requests and restrictions – transport-operational strategy and price politic of operators are repeatedly subject of requests and restrictions raised by state bodies regulation
- customer needs – changes of these needs have the influence on the operators.

Every quality transport service, composing transportation offer, has to reflect specifics of transportation means. Transport quality is connected with other elements of circulation process as increasing of transfer speed, reliability, fares, corresponding to specific conditions and economical favors of operators, carriers and other additional services concerning common, fast and comfortable transport offer which meets the habitants necessities.

Transport performances are specific because of different transport service demands and express its quantifications and customers' needs. Characteristic of transport market is connected with the basic existing need of transport. Mass passenger transport is realized by the time schedules, where offer is provided sooner than the user is known. We can distinguish an original demand – expressing the need to travel and secondary demand. In the second case transport is only a mean to achieve certain goals. Transport demands are created from different economic reasons as fulfilling basic human needs, allocation of industry and economical – legislative state structure consequences, or from social reasons as leisure time spending. Transport demand can be also characterized by its own time and space dispersion. From space point of view it is very concentrated in urban agglomerations but on the

other hand (state land) is dispersed. From time point of view there is a wide difference between demands in peak traffic hours and saddle traffic hours. For precise estimation of demand it is necessary to analyze determining factors and concerning decisions of users and operators. Users decisions depend on offered service and other transport requirements. On the other side operators are concentrated to correct transport system functioning and related costs. Generally we can say that transport service demand is affected by its price, prices of other merchandises, level of incomes, rate of consumption disposition. Special factors are daintiness or preferences, which are changeable, hard connected with growth of living standard, technical improvements and quality of provided services.

Effective management of operation in transport companies demands accurate evaluation of factors influencing on the transport services demands. Modeling and measuring of these factors is executing through the elasticity indexes:

- Price elasticity of demand which express change of price invoking change of demand and it is represented by following formula:

$$E_p = \frac{Q_1 - Q_0}{Q_1 + Q_0} \cdot \frac{P_1 - P_0}{P_1 + P_0} \quad (1)$$

Q_1 – new demand by the new price, Q_0 – existing demand by the existing price, P_1 – new price, P_0 – existing price

Following the E_p values we talk about:

- elastic demand – $E_p > 1$ - it means that 1 % price increase will invoke more than 1 % demand decrease
- proportional demand – $E_p = 1$ - it means that price increase will invoke the same demand decrease
- no elastic demand – $E_p < 1$ - it means that demand decrease is lower than price grow
- Elasticity of service's level – because the changes in the level of provided services have higher effect to customer's reaction than the changes of fares. In railway transport and suburban bus transport the changes are relatively not sensitive for work, school, shopping journeys nevertheless the differences are also in journeys realized during the peaks and saddles.
- Cross demand elasticity (mean A to mean B) is a ration of proportional change of A mean's demand to the appropriate price change B mean and it's expressed by following formula:

$$E_k = \frac{Q_2^A - Q_1^A}{Q_2^A + Q_1^A} \cdot \frac{P_2^A - P_1^A}{P_2^A + P_1^A} \quad (2)$$

Q_2^A – A transport mean demand after the price change, Q_1^A – A transport mean demand before

the price change, P_2^B – price of B transport mean after the change, P_1^B – price of B transport mean before the change

- If $E_k > 0$ B transport mean is substitute of A transport mean,
- If $E_k < 0$ B transport mean is supplementary of A transport mean,
- If $E_k = 0$ there is no cross elasticity.

– Income elasticity, which measures the range of demand changes, related to the user or customer’s income changes. Income elasticity could have plus or minus value concerning the mean of transport. Following the income grow there are volume movements between each transportation means.

$$E_d = \frac{Q_1 - Q_2}{I_{p1} - I_{p2}} \cdot \frac{I_{p1} + I_{p2}}{Q_1 + Q_2} \quad (3)$$

Q_1, Q_2 – demand transport volume in base year,
 I_{p1}, I_{p2} – income for person in base year.

Transport demand changes are also influenced by: population changes, displacement of work forces, leisure time lengths, customers shopping trends. These factors are out of operators control and many of them are the reasons of dramatic changes. Unique kind is a social demand as prior estimated demand where the state is a customer with transportation services dedicated for certain social groups.

From all society point of view public mass transport has a character of public service maintaining satisfaction of transport needs of inhabitants. Because of mentioned reason public transport is in Slovakia, Poland and all around the world supported in different ways and on different levels of public administration. Amount of funds invested into the public transportation usually expresses the rate of state support to its preservation or development. The increase of the rate of state support has an influence on individual motoring. Public transport, by its main characteristic does not belong to basic right of citizens but it fulfills many of their rights coherent to the mobility (right to work, education, health care, etc.).

Providing basic inhabitants’ transportation needs should respond the following order: appropriate public administration, special agreement with services provided in the public interest and appropriate legislation

(Railway Act, Road Transport Act – in Slovakia). Mentioned agreement obliges operator to provide services, which shouldn’t be fulfilled from economical reasons. Customer (state or public administration offices) is obliged to cover the loss from operation of these no effective drives. Eligible loss is an assumed difference between calculated economically legitimated costs of operator for providing services in the public interest, including appropriate profit and sales revenue from regulated fares and other operator’s incomes relating to the performance of services in the public interest. Agreement with services provided in the public interest is signed after the next year state budget approval. There is a determined amount of eligible loss, which cannot be exceeded in the Act about state budget for certain year. Agreement with services provided in the public interest puts on the operators three duties: transportation duty, operation duty and fare duty.

Financing of public mass passenger transport is a problem, which is not successfully solved in Slovak Republic. After the 1st of January 2005 some other changes in the financing have been established, for example suburban bus transport is fully in authority of regional municipalities: the financing of services provided in the public interest, also in the area of fares and discounts determination. Urban public transport on the base of fiscal decentralization is also in the competence of city/town municipalities. After the 1st of January 2005 passenger rail transport has been separated from rail cargo transport but in the area of financing nothing has changed – still is fully financed thought the state budget. Some changes have been executed very quickly without quantification of impacts, preparation of regional municipalities and possibilities of agreements about services provided in the public interest for year 2005.

It is necessary to realize that Slovak Republic and Poland have major part of habitants living outside cities and therefore there is a great importance of suburban bus transport, concerning with low density of railway network. There are some proposals of regional municipalities, which solve misery of funds for the cover of loss from providing services in the public interest, by the raising their prices, or fares and cutting the possible discounts rates. Tab. 1 is pointing the non-regularity of mentioned actions, by showing

Tab. 1 Numbers of passengers in thousands in the period of 1995 – 2001

Tab. 1. Liczba pasażerów w tysiącach w latach 1995 – 2001

Transported passengers	1995	1996	1997	1998	1999	2000	2001
In bus transport	722 510	699 758	667 427	656 230	621 576	604 249	566 445
In the train transport	89 471	76 015	71 489	70 008	69 431	66 806	63 473
In the public city transport	515 593	542 389	527 662	509 862	485 472	404 539	373 269

the drop of numbers of passengers in the suburban bus and train transport.

3. Development of fare prices in regular public mass passenger transport

Maximum fare price for transport in railway transport and suburban bus transport is regulated by state. Tariffs in the public mass passenger transport have been fundamentally changed during the last 10 years. Growth of fare rates from the 1995 till the 2001 is visible at the fig. 1.

There have been many changes in the fare rates in the railway transport since 1989 and those changes are synchronized with changes in bus fare rates.

The difference between the average fare rates in bus and railway transport was approximately constant, with one exception in the 2000 when the difference was only 0.03 SKK per person per km.

4. Development of discounts on fare prices in public passenger transport

Social role of transport has not been dramatically changed even after the year 1989. Even though the fact that SADs (governments enterprises operating

bus transport around the Slovakia) in 1993 decreased tariff discounts, they still remained the most important component of state social politics, mainly in the form of workers prepaid and time tickets. The estimation of discount range from the position of Ministry of Finance of Slovak Republic (MF SR) is the same in SAD enterprises and also ŽSR (Slovak Railways). The inputs of no regulated prices have caused poor economical situation.

Principal changes in the discount providing occurred in 1995 when after the MF SR regulation approval № 05/1995 workers discounts were canceled in bus transport. This fact hardly affected social group of traveling employees. After the change workers prepaid and time tickets in compare with the line tickets had 20-30 % discount (before 63.4 %). Next MF decreased the students discounts form 62.5% to 50%, which made traveling 20% more expensive for this social group.

Transportation regulation and tariff of ŽSR Inc. uses only half fare but differently from bus transport offers many commercial discounts, not providing and unknown in bus transportation.

It is obviously possible to realize that social discounts provided by state. But nowadays they

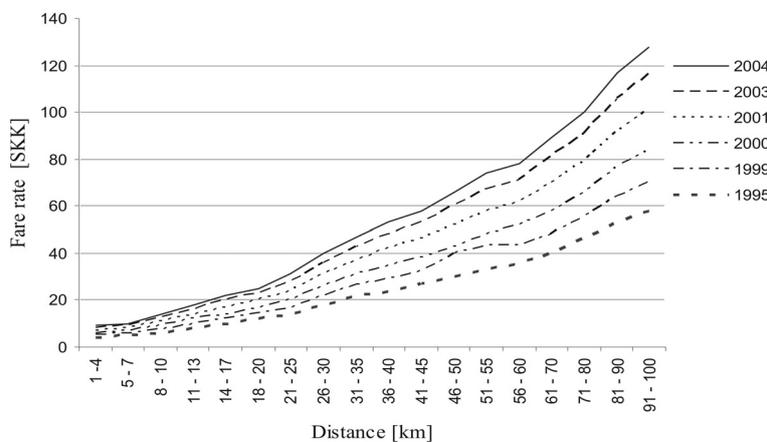


Fig. 1. Development of fare rates in regular public bus and railway transport

Rys. 1. Wzrost opłaty za przewozy pasażerskie w samochodowym i kolejowym transporcie

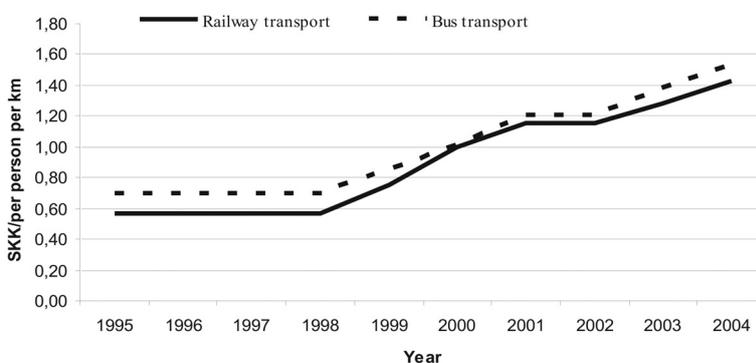


Fig. 2. The difference between the average fare rates in bus and railway transport

Rys. 2. Różnica pomiędzy przeciętnymi opłatami w transporcie autobusowym i kolejowym

permanently push down and are replaced by commercial (customer) discounts, which are the part of promotion actions of public mass passenger transport enterprises.

5. Conclusion

Railway and bus transport should cooperate and take into account the individual motorist – their main competitor. It is very strong competitor so railway and bus transport have to create effective and integrated system, which should duplicate main traffic flows of passengers. For example transport could be performed by means of transport with higher capacity during the peak hours (railway transport in cooperation with

bus transport). On the other hand the areas with low traffic flows should be (mainly from economical point of view) served only by bus transport. In every case it is necessary to minimize railway and bus transport paralleling and to maximize their joining.

There are some necessary, relevant and true economic, performance and environmental information about each mean of transport with clear strategy in the area of transport policy important for the decision-making. It is essential to fund and support regional bus and rail public mass passenger transport from level of regions municipalities with customer – passengers' satisfaction goal. Generally in the decision process the passenger is often forgotten.

6. References

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