POSSIBILITIES OF OPTIMALIZATION OF PUBLIC SOURCES SPENT ON TRANSPORT SERVICE

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Summary: The goal of this paper is to present the possibilities for optimalization of public financial sources for provision of public transport. This paper proposes to cancel financing of operations and public financial sources on financing of transport service. The transport service has to be depended on transportation flow in region.

Key words: transport, financing, risk, factor, region, public

INTRODUCTION

It is possible to follow two ways in optimalization of transport service. To start from existing, well organized transport systems from abroad or to apply quite new system of transport service starting from concrete conditions in SR.

1. POSSIBILITIES OF APPLICATION OF TRANSPORT SERVICE FROM ABROAD IN CONDITIONS OF SR

According to The Green Book of European Union – "For the new culture of urban mobility" (19), the aim in transport service assurance is to search the ways through which is possible to reach the better urban and suburban mobility what would be sustainable from the point of view of public sources. The European Union suggests an integrated approach in regional transport service assurance for this aim achievement.

There are existing systems for regional transport service assurance abroad that are able to keep passenger, it means there is not coming to the passengers number decreasing in the frame of this systems. There was not decreasing output defined in seat-kilometres in Belgium, France, Ireland, Italy, Luwembourg, Nederland and Great Britain in the bus transport in an area of European Union in 2000 – 2006 (see the Table 1) and it came to the most percentage output increasing in Belgium, where the bus transport output increased about 36.1 per cent.

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Table 1 - Transportation output in chosen countries in bus transport in milliard of seat - kilometres

Country	2000	2001	2002	2003	2004	2005	2006
Belgium	13.3	13.5	14.5	16.2	17	17.5	18.1
France	42.4	40.6	40.7	41.1	42.5	43.9	44.9
Ireland	6.1	6.3	6.4	6.5	6.6	6.7	6.9
Italy	93.6	95.6	97.1	98.3	99.8	101.2	102.7
Luxembourg	0.6	0.7	0.7	0.7	0.8	0.8	0.8
Nederland	11.3	11.4	10.8	11.3	11.6	11.8	12
Great Britain	47	47	47	47	48	49	50

Source: Authors´ processing on the base of (5) and (6)

In the case of railway transport the output increasing defined in seat-kilometres in 2000 – 2006 were reached in Belgium, Denmark, Spain, France, Ireland, Luxembourg and Great Britain, while the highest percentage of output increasing was in Belgium, on the level of 35.7 per cent.

Table 2 - Transportation output in chosen countries in railway transport in milliard of seat - kilometres

Country	2000	2001	2002	2003	2004	2005	2006
Belgium	7.7	8	8.3	8.3	8.7	9.2	9.6
Denmark	5.5	5.7	5.7	5.8	5.9	6	6.1
Spain	20.1	20.8	21.2	21.1	20.3	21.2	22.1
France	69.9	71.5	73.5	71.7	74.3	76.5	78.8
Ireland	1.4	1.5	1.6	1.6	1.6	1.8	1.9
Luxembourg	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Great Britain	38.4	39.4	39.9	41.2	42.6	44.4	47

Source: Authors´ processing on the base of (5) and (6)

The direct application of transport service assurance from countries of Western Europe with successfully functioned public mass transport systems in conditions of Slovak Republic is not exactly possible from the reason that there is substance of citizens centred in great cities with markedly lower ratio of citizens living in rural areas in countries with well functioned system of public mass transport. Transport service in these regions is assured by bearing clock railway transport to which is offered the bus transport like a supplementary feeder transport. It is possible to see for example in railway and bus transport output in France where the railway transport output in 2000 (78.8 milliard of seat-kilometres) is markedy higher in comparation with the output realised by bus transport (44.9 milliard of seat-kilometres).

There is 48.6 per cent of citizens living in rural places where substance of these places has got less than 500 citizens in Slovak Republic (10). It is very difficult to build up the railway transport like a bearing system with this distribution of citizens, mainly in Slovak Republic conditions where more of railway transport stops is situated out of operated communities. 2 An important fact for the bearing system of public mass transport selection in Slovak Republic is also the fact that more than 80 per cent of output is realised by bus transport. Mainly because of this reason we suggest to optimalize the transport service in Slovak Republic with a method what would be coming from exceptional conditions of Slowak republic.

Table 3 - Urban population ration from total number of population in selected countries

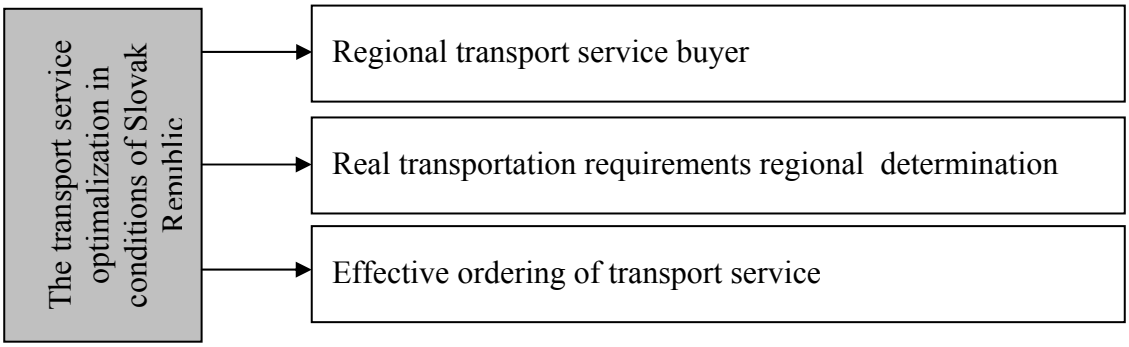
Country	Ratio (per cent)	Country	Ratio (per cent)
Belgium	***97.3***	Bulgary	69.6
Luxembourg	***91.5***	Switzerland	67.7
Great Britain	***89.5***	Finland	67.3
Nederland	***89.4***	***Italy***	***67***
Germany	87.5	Poland	65.6
Denmark	***85.3***	Austria	64.7
Sweden	83.3	Portugal	64.4
Russia	77.7	Hungary	64
Spain	***77.6***	Greece	60.1
France	***75.6***	Slovak Republic	57.4
Norway	75.5	Romania	56.2
Czech Republic	74.7	Slovenia	50.4

Source: Authors´ processing on the base of (10)

2. THE TRANSPORT SERVICE OPTIMALIZATION DESIGN IN CONDITIONS OF SLOVAK REPUBLIC

It is necessary at first to change the philosophy of sources from public resources providing in optimalization of transport service with a respect of public resources effective investing and with a respect of transportation supply for passenger preservation. The necessary resources for documented loss financing should not come from transporters demands, but from population transportation requirements. Individual steps of implementation of transport service output ordering principles that are coming from transportation requirement of population are displayed in the figure 1.

[2] for example the railway station Bytča is situated 3 kilometres from the district town Bytča, the railway stop Horná Štubňa is situated out of town with marked vertical height.



Source: Authors

Fig. 1 - The transport service optimalization progress in conditions of Slovak Republic

2.1 Regional transport service buyer

The basic principle of transport service functionality that comes from upper listed analyses is consisting in outcoming of decision processes in relation to transport service ensurance from one region centre for all modes of interested public passenger transport. The regional transport service output buyer has to order the output of all transport modes so that there will not come to creation of parallel lines with aiming on the demand of individual lines and trains knotting in the frame of region.

In conditions of Slovak Republic there seems to be the best regional output buyer the autonomous region what today orders the output of suburban bus transport because this office operated in a region and there is an assumption that employees of autonomous region will better know those area. According the Transport policy of Slovak Republic by the year 2015 (11) there is executed an assumption of creation of one ordering centre of the transport service output in region through the responsibility for regional railway transport transferring to the level of autonomous region.

The resulting aim is to reach that the autonomous regions will be responsible for planning, organization and financing in the sphere of suburban bus transport, passenger transport in regional railways and passenger transport in the frame of autonomous region.

The main assumption for passengers´mass transport integration in region, what is considered in regions of Slovak Republic, is the creation of one centre for transport service ordering (13).

2.2 Real transportation requirements regional determination

To be able to dispose of public sources effectively the output buyer has to order the regional transport service by a way where would all demands of passengers on transport at schools, in work, in employ, in courts and in ambulance facilities be served. It is possible to recognize the real transportation requirements by two ways:

- By the traffic-sociological survey[3] – what´s basic meaning is to find out the following datas from a concrete date:
  - About a number of travels of each asked person during the day with clarification of source and target of travel,
  - about a time of realization of transportation during the day and about used transportation vehicle type,
  - about a satisfaction of the asked person with the public mass passenger transport.

  The advantage of traffic-socialogical survey is the fact, that the output buyer obtains the datas about transportation also by another transport mode like the public mass passenger transport (for example the individual transport) and also about the satisfaction of passengers with the regional transport service.

  The disadvantage of survey is the fact that transportation routing of passengers is available in one day and that in the frame of whole country is possible to work with limited specimen of habitants only.
- By the information about number and structure of transported people from electronic cashes of transporters obtaining.

Considering that in Slovak Republic in the frame of suburban bus transport is each transportation document registered in electronic cash, it is possible on the base of these datas for any time period to compile the transportation flows between any two stops. From the information from electronic cashes of bus transport are important and available the following information[4] for the buyer:

- a number of transportation document,
- a date and time of transportation document edition
- a number of passengers for which is the document valid,
- a number of line and link for what was the transportation document edited,
- a type and price of transportation document,
- an entrance stop,
- an exit stop.

Equally it is possible to find out for any period the transportation flows of railway transport since each transport document is registered in frame of the complex passengers care system that is operated in frame of railway transport in Slovak Republic. It is possible to find out by each transportation document of railway transport[5]:

- a number of transportation document,
- a number of entrance station,

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[3] The traffic-sociological survey was realized in frame of solution of project MDPT SR/PRODOS-01/2006 The regional plan of transport service elaboration – pilot study, Association PRODOS, July 2007

[4] on the basis of information provided by the transporter „SAD Žilina, a.s.“

[5] on the base of information provided by ZSSK Slovensko, a. s.

- a number of exit station,
- a date and time of the transportation document sale,
- a number of passengers for which is the transportation document valid,
- a type and price of transportation document.

By the count of transportation flows of railway and bus transport the output buyer gets the real transportation flows of passengers in region from each stop[6] to each another stop, to which is necessary to objectify the transport service[7].

3. EFFECTIVE ORDERING OF TRANSPORT SERVICE

The buyer is required to dispose with public sources by the transport service ordering effectively. It means that by the transportation requirements ensurance the buyer must account of the fact that the funds in relation to realized outputs would be economic acceptable for buyer. If we follow the valid legislation[8], then the showed loss for realized output of bus and railway transport transportation service is defined like a difference of economic price of realized outputs and takings reached by transportation ensurance.

Comparing the economic price expressed in km output unit in case of suburban bus transport and region railway transport is possible to state that the costs of railway transport are markedly higher comparing to the costs of bus transport. In each region are the economic conditions of transporters different that is why we will next analyze the economic conditions of transporters in Žilina´s autonomous region by the verification of this argument. The economic price of bus transporter was in 2008 on the level of 1.012 € per km[9], in regional railway transport it reached in the same year in Žilina´s region a level of 9.387 € per km including the fee for transport communication[10]. Considering that the suburban bus transport is in Žilina´s autonomous region exempt from the motor vehicle tax[11], which returns should serve for the road infrastructure restoration, for the objective assessment of transport service

[6] The stop does not mean a stop differently for bus and railway transport, but in optimalization of transport service the stop means an attraction circuit from where could be the transportation realized by bus or railway transporter when output ordering. The walking distance between bus and railway transport stops is under 1.5 kms.

[7] A practical aplication of the transportation flows counting is possible to get for example in MDPT SR/PRODOS-01/2006 Transport service regional plan elaboration – pilot study, Association PRODOS, July 2007 or Žilina´s autonomous region transport service plan project, Association PRODOS, December 2008

[8] Law Nr.164/1996 of Collection of laws, about routes and Law Nr. 168/1996 of Collection of laws, about road transport

[9] The economic price contracted between Žilina´s autonomous region and transporter SAD Žilina, a.s. in Contract about outputs in public interest in suburban bus transport in Žilina´s autonomou region in 2008

[10] Authors´ calculation on the base of Contract about outputs in public interest by operation of passenger transport on railwaysin 2008 - 2010

[11] Under General Binding Regulation of Žilina´s autonomou region Nr. 10/2007 about motor vehicles taxation

effectivity we will next come out from the economic price of railway transport without transport communication fee that is on the level 7.663 € per km in 2008[12].

On the base of cost of suburban bus transport and regional railway transport expressed in defined unit is clear that from the point of view of effective spending of public sources is necessary to order the railway transport outputs in those passenger transportation flows what are above certain range. To set this range is possible on the base of average receipts per seat-kilometre. When we come out from Price Areas of autonomous regions and Yield of Railway Transport Regulation Office[13], we could set the average individual transport modes average receipts in 2008 on the level of 0.028 € per seat-kilometre in case of bus transport and 0.026 € per seat-kilometre in case of railway transport[14]. The average necessary passengers' number that covers the economic price of transportation is possible to calculate from a relation:

$$\text{necessary passengers´ number} = \frac{\text{costs per 1 km}}{\text{returns per 1 seat - kilometre}}$$

On the base of listed relation by the comparison of costs we can calculate following effectivity of transport service operation:

- The suburban bus transport will be possible to operate without the support from public sources, if there is transported at least 36 passengers in average in whole line length,
- the regional railway transport will be possible to operate without the support from public sources, if there is transported at least 296 passengers in average in whole train line length.

If we come from listed assumptions it will be possible to state, that when the funds from public sources have to by spend effective and there is existing demand for transportation more than 296 people in defined time periods (for example 15 minutes) in transportation route, there is effective from the position of buyer (for example the autonomous region) to order the regional railway transport for example from the reason of road infrastructure loading relief. In the practice first of all it would be about segments with high passengers´mobility.

It is not effective from the position of buyer to order the railway transport in average demand for example 40 passengers. In this transportation would the autonomous region participate with compensation from public sources on railway transport operation, while the

[12] Authors´ calculation on the base of Contract about outputs in public interest by operation of passenger transport on railwaysin 2008 - 2010

[13] see Price Areas of competent autonomous regions for regular bus transport (for example Price Areas of Žilina´s autonomous region Nr. 8/2008) and Yield of Railway Transport Regulation Office Nr. 545/2008 of Collection of laws

[14] Authors´calculation from Price Areas on the base of method introduced in MDPT SR/PRODOS-01/2006 Transport service regional plan elaboration – pilot study, Association PRODOS, July 2007

bus transport could create the profit (passengers will be transported comfortly because the bus capacity is 45 sitting passengers).

Generally in present conditions in Slovak republic is valid that when the demand in regional railway transport in specific train is decreasing under 296 passengers, the outputs should ensure the bus transporters that are able to ensure the transportation without a public sources requirement also in the case when the average number of passengers in line is not decreasing under 36 passengers.

On the base of listed fact it is necessary to ensure a rule that by transport output ordering the transportation flows with low number of passengers will be not ensured by railway transport that shows markedly higher costs in comparison with bus transport. On the other hand where is existing the average transportation flow in whole transportation line (for example 350 passengers in interval of 15 minutes), is the railway line also profiting and when the stops in line will be meeting passengers´ demand, then is necessary to prefer this train line to more bus lines.

4. CONCLUSION

Presently in Slovak Republic persists the strong decreasing of passengers´mass transport output what causes the transport service financing from public sources problems. With a decreasing of passengers are decreasing also the receipts for transportation what is necessary to cover from public sources in form of documented loss to the transporters which realize the uncharged output also by passengers´ decreasing. It is important to introduce a reality that in spite of problem with funds there is still not optimalized the regional transport service output ordering that is not ordered from one source. The transport service is ordered from the Ministry of Transport, Posts and Telecommunications of Slovak Republic in frame of railway transport and from the autonomous regions in frame of suburban bus transport. The first condition of public sources expenditure optimalization is the ordering of outputs from one place what presently seems to be advantageous to order from a position of autonomous region.

In the case of transport service ordering from one point it is next necessary to deal with a way of outputs ordering. The transporters financing does not lead to effective way of transport service ensurance. The buyer´s interest is to provide quality transportation for passengers in region, therefore is necessary to come out from the transportation flows demands by outputs in public interest input. After the knowledge of public mass passengers´transport demand volume it is possible to order the transport service output. High transportation flows should be realized by regional railway transport, transportation flows with a demand under 296 passengers should be ensured by suburban bus transport. In the case of railway and also the bus transport should the output buyer require the defined level of

quality not only in relation to time-table compliance, but also in relation to facilities, age and vehicle cleanness.

Present state of transport service marked by insufficient funds without transport service optimalization can cause a strong limitation of regional transport service because a level and quality of service is depending on finances that flow into transport organizations. The funds for mass passenger transport development are possible to obtain only from receipts and from public sources. If the present financial flow will be not sufficient and the mass passenger transport will not be optimalized, it would be necessary in the frame of transport service to solve the funds obtaining by a level and quality of services decreasing or by a fare increasing. But both possibilities leads to transported people number decreasing what causes a rebound of demands on funds from public sources in the next time period.

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