

The field of efficiency of subject interaction in the transport sphere

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Abstract. A formal sign of the existence of the transport services market is the existence of trade relations in this area. The development potential of the services market directly depends on the effectiveness of regulation of trade in services. Over the past decades, trade in services in general (and transport in particular) has been regulated based on bilateral relations. The purpose of the article is to investigate the features of interaction of economic entities in the field of socially significant services on the example of public passenger transport within the modern business environment and to determine the field of their effective interaction. To achieve this goal, the article examines the essence and features of the business environment as an economic category, as well as the evolution of relations between the state and economic actors in the field of socially significant public passenger transport services. The article reveals the problems of building relationships between the authorities, business structures and society in the process of providing public passenger transport services related to the category of goods of a special nature – socially significant. The research is based on an interdisciplinary approach using methods of logical-structural, situational, and comparative analysis. The obtained results and recommendations can become the basis for decision-making by economic entities in the provision of transport services.

1 Introduction

The Russian system of public road passenger transport (PRPT), like any other socially oriented sector of the economy, is in a state of permanent changes taking place in the context of modern transformation processes. Not only are approaches to the provision of socially significant services changing, but significant institutional transformations in the industry are also taking place, which do not always have a positive impact on producers and consumers. In the context of a shortage of financial resources and a reduction in budget allocations aimed at the development of transport enterprises, their adaptation to constantly changing socio-economic conditions becomes more difficult. The number of long-term projects in the transport industry aimed at improving the quality of public services is decreasing. At the same time, the demand for individualization of satisfaction of needs is increasing, the level of economic activity is increasing, and the spatial mobility of the population is growing. The listed trends in the development of the transport industry actualize the problem of finding

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new ways and forms of providing socially significant services, enhancing their commercial component. This leads to the need for joint activities of government and business in the provision of socially significant PRPT services, since without the involvement of the private sector in the implementation of regular passenger transportation, it is impossible to achieve the most complete satisfaction of human needs in services and ensure high-quality and uninterrupted operation of public transport.

2 Literature review

Various researchers pay attention to the most important principle of the formation of the business environment - competition [1, 2]. Competition in the transport services market is the engine of innovation and business improvement, stimulating entrepreneurial activity and contributing to the growth in the number and quality of services provided. The idea of organizing the competitive development of the transport industry in modern conditions is again becoming relevant [3]. The statement of a few researchers about the comfort of the business environment for transport enterprises remains debatable. Some authors rightly draw attention to the complexity of the study of the business environment in relation to the sphere of socially significant services [4, 5]. Thus, the question of the comfort of competitive conditions, the socialization of the business environment and the search for effective ways of interaction between various economic entities in the transport industry remains open, which confirms the relevance of the research topic of this article.

3 Approaches and methods

The evolution of relations between the state and economic entities in the field of socially significant services of public passenger transport is considered by the author in two planes: “power-business”, the space of which narrows as the closeness of interaction between state and business structures grows closer and intensifies; in the “business-to-business” coordinates, which eventually form an area for the formation of an industrial alliance in this area, which subsequently determines the nature of relations with the state. Exploring the behavioral scenarios that have developed in the regional practice of public administration and management in the TVET system in the period from the 90s of the XX century to the present [6], the author identifies the main trends in the transformation processes that formed the basis for the evolution of interaction between government and business from private to the associated one on the basis of agreeing on the goals and motives of the activities of each of the participants.

4 Research results

Among all types of public transport in the Russian Federation, trips by road transport traditionally prevail, namely, by buses, which annually account for at least 59% of all passenger traffic. Even during the period of restrictions due to COVID-19 in 2019-2021. the population preferred bus transport, the share of which varied from 58 to 61%. Meanwhile, from the statistical data of Table 1, it is obvious that in the Russian Federation, interest in public transport is declining, which is due to an increase in the number of private cars among citizens.

In terms of the form of organization of activities in public passenger transport in the regions of Russia, joint-stock companies and limited liability companies prevail, services are also provided by individual entrepreneurs. Attracting legal entities and entrepreneurs to the market is carried out based on standard competitive procedures and contracts, which contain

the conditions for admission and mandatory requirements for potential carriers [7]. A kind of "rules of the game", established by the authorities for the right to obtain a certificate for transportation on one or several routes, are often formulated unilaterally, and must be strictly followed by businesses. In this regard, the specificity of passenger transport services actualizes the formulation of the research problem - the compliance of business targets with the needs and expectations of the state and society in the process of providing services. In addition, the modern relationship between government and business structures is based on two facts: the transfer by the state to business of part of the authority in solving socially significant problems; transformation of the long-term business function - from profit maximization to stable operation and development [8]. In this regard, of scientific interest is the process of forming a mechanism for effective interaction between economic entities based on mutual interest, the basic tools of which are trust and the degree of inclusion of society in cooperation as an active and equal participant in it.

Table 1. Statistical indicators for public passenger transport services in the Russian Federation

Indicators	2012	2014	2016	2018	2019	2020	2021
Passenger transportation by public transport, million people	12766	11554	11296	10912	10637	7695	8054
Share of passengers carried by buses, %	59.8	59.1	60.6	60.2	59.7	61.6	58.7
Number of own cars per 1000 population, units.	257.5	283.3	294.0	309.1	315.4	321.0	327.6

Compiled according to rosstat.gov.ru

The tool that allows to identify the degree of interest of the participants, and, as a result, the success of potential interaction, is the proposed model "the field of effectiveness of subject interaction" [9], based on the hypothesis of the presence of factors that are priority and have a direct impact on the effectiveness of interaction.

The authors of the article have compiled a list of 14 factors (f) that are significant for building effective cooperation between the state, business, and society in the process of providing passenger transport services. These include: f1 - regulatory framework; f2 - optimization of the regional budget; f3 - work experience in the field of passenger transport services; f4 - the number of won lots in the framework of procurement; f5 - the presence of a digital center for interaction between the parties; f6 - subsidizing; f7 - fiscal incentives; f8 - cost-effective tariff policy; f9 - mutual responsibility of the parties; f10 - traffic schedule and route network; f11 - rolling stock; f12 - the number of concluded contracts; f13 - number of carriers; f14 - quality control. Based on the use of the method of expert assessments, the ordering of factors in each of the groups of experts - representatives of the authorities, business, and society of the group of experts was carried out, the core of dominated and non-dominated elements was singled out [10, p. 640-642]. So, among the experts from among the representatives of the authorities, it is f4 (the number of lots won in the framework of procurement), f1 (the legal framework), f2 (optimization of the regional budget funds) and f9 (mutual responsibility of the parties) that prevail over all other factors (the factors are indicated in descending order of their dominance). Business experts identified factors f7 (fiscal incentives), f9 (mutual responsibility of the parties), f5 (availability of a digital center for interaction between the parties), f6 (subsidies) and f8 (cost-effective tariff policy). The population (experts - society) built the following priority for the factors of effective interaction: f14 (quality control), f13 (number of carriers), f10 (timetable and route network), f11 (rolling stock), f1 (regulatory framework). The ordering of the factors according to their significance for different groups of respondents makes it possible to identify the coincidence or discrepancy between the opinions of experts regarding the dominant factors. Thus, factor f9 is significant for society and business at the same time. For society and the state - factor

fl. However, the main element of any economic research is not only the identification of economic variables, but also the construction of their relationships. Therefore, to further study the nature and degree of interaction between economic entities, it is necessary to compare the obtained dominants for each factor under study, thereby forming areas of agreement or disagreement between the interests of various expert groups in interaction.

Thus, the model "Field of effectiveness of subject interaction" (hereinafter - the Field) is built based on a comparison in the X-Y coordinate system of dominants identified as a result of processing the data of expert assessments of various groups of respondents. Thus, the X-axis represents the number of dominants of the studied factor (factors) according to the expert group No. 1, the Y-axis is the number of dominants according to similar factors of the expert group No. 2 (Figure 1).

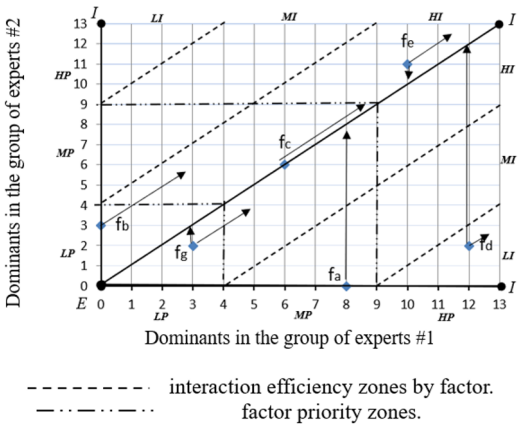


Fig. 1. Model "Field of effectiveness of subjective interaction"

Within the Field, one can identify:

- direct effective interaction at an angle of 45° (effective interaction - EI). All points belonging to EI (for example, f_c) indicate the coincidence of the opinions of the interviewed experts in group No. 1 and group No. 2 on this factor, and, consequently, the complete agreement of their interests in interaction on f_c .
- direct inefficient interaction (II), on the contrary, reflect the maximum possible differences in the opinions of the respondents of groups No. 1 and No. 2 regarding one or another factor (for example, f_b and f_a). This fact indicates a complete mismatch of opinions and interests of experts.

In the zones between EI and II there are determinants that tend to the status of factors reflecting the agreement of expert opinions (for example, f_e , f_g). Accordingly, the perimeter of the Field shown in Figure 1 is horizontally divided into segments, named by the authors as:

- area of high priority (high priority - HP);
- area of moderate priority (moderate priority - MP);
- area of low priority (low priority - LP).

Vertical segments of the Field reflect the level of efficiency of interaction between expert groups. So, on the basis of the obtained dominants for each factor, a series of points is built, visualizing the opinions of expert groups #1 and #2. Thus, the point f_d indicates the predominance of the priority of the factor d in expert group #1 and, conversely, the lag in group #2. Such a discrepancy between the opinions of the experts of groups #1 and #2 is expressed in the model by a significant deviation of the point f_d relative to the line of effective

interaction EI. The point f_e on is as close as possible to EI, indicating a high efficiency in the interaction by the factor f_e . Accordingly, the perimeter of the Field is vertically divided into zones designated by the authors as:

- low efficiency interaction – LI;
- moderate efficiency interaction – MI;
- high efficiency interaction – HI.

Thus, the model "The field of effectiveness of subject interaction" is a space built on the basis of a phased study of the factors of interaction between two or more subjects: identifying the dominant factors for each group of subjects, determining the effectiveness of the interaction of subjects for each factor.

The model is unified and can be used in the analysis of the effectiveness of the interaction of any number of business entities. Meanwhile, the "Field of effectiveness of subject interaction", as a result of the study, has its own shortcomings and assumptions, named by the authors as contradictions in the effectiveness of subject interaction, namely:

- striving for the line of effective interaction, it is impossible to predict the change in the position of the factor in each of the groups of experts without conducting a second survey of experts;
- the priority of factors may change in the long term, depending on the transformation of the target settings for the functioning of economic entities;
- the boundaries of the interaction efficiency zones vertically and horizontally depend on the number of studied factors - their even or odd number, according to the law of normal distribution.

We use the obtained conclusions to form the "Field of the effectiveness of subject interaction" according to the identified 14 factors using the example of the Field in the "power-business" coordinates (Figure 2).

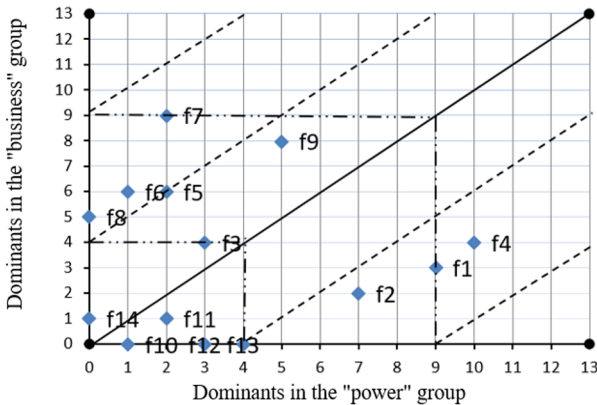


Fig. 2. The field of effectiveness of subjective interaction "power-business"

Figure 2 shows a comparison of the dominants of the studied 14 factors by the expert groups' "power" and "business", thereby forming the field of interaction of these economic entities. The factors located in this field are studied by the author according to two criteria:

To confirm the contradictions in the effectiveness of subjective interaction, it should be noted that in Figure 1, factor f_7 refers to the "business" group of experts that is significant for the group of experts (9 dominants). However, the experts of the "power" group noted the factor f_7 with only two dominants. In this regard, f_7 falls into the area of low priority factors, characterized by a high mismatch of the interests of the subjects, and as a result, a moderate effectiveness of interaction. And vice versa, factor f_{11} , which both groups of experts referred

to as insignificant factors, is a factor around a high level of interaction in terms of the level of interaction efficiency. In a similar way, the dominants were compared for other groups of experts - "government-society", "business-society". As a result of the calculations, summary data was obtained regarding the effectiveness / inefficiency of the interaction for each of the 14 factors, determining the level of interest of the participants in the interaction (Table 2).

Table 2. Distribution of factors by areas of subjective interaction

Factors / Zones	Subject interaction		
	Power-Business	Power-Society	Business-Society
Full agreement			
f3 - experience in the field of passenger transport services	LP-HI	LP-HI	LP-HI
Partial agreement			
f1 - regulatory framework	MP-MI	MP-MI	MP-HI
f2 - optimization of regional budget funds	MP-MI	MP-MI	LP-HI
f5 - the presence of a digital center for interaction between the parties	MP-MI	LP-HI	MP-MI
f6 - subsidizing	MP-MI	LP-HI	MP-MI
f8 - cost-effective tariff policy	MP-MI	LP-HI	MP-MI
f9 - mutual responsibility of the parties	MP-HI	MP-MI	MP-MI
f10 - traffic schedule and route network	LP-HI	MP-MI	MP-MI
f11 - rolling stock	LP-HI	MP-MI	MP-MI
f12 - number of concluded contracts	LP-MI	LP-HI	LP-MI
f14 - quality control	LP-HI	HP-LI	HP-LI
f13 - number of carriers	LP-MI	MP-MI	MP-MI
Lack of agreement			
f4 - the number of lots won in the procurement	MP-MI	HP-MI	LP-HI
f7 - fiscal incentives	MP-MI	LP-HI	MP-LI

In addition, the author's model resulted in conclusions regarding the prospects for building effective subjective interaction. Thus, it has been proved that according to the f3 factor (experience in the field of passenger transport services), the authorities, business and society have achieved the effectiveness of subject interaction, however, at a low level of its priority (LP) for business entities. In the dialogue between the authorities, business and society, mutual understanding was reached regarding the need for an effective regulatory framework, optimization of regional budget funds (2 factors out of 14). Further government measures to improve the efficiency of interaction should be aimed at strengthening the mutual responsibility of the parties, increasing the number of contracts concluded, carriers, as well as the number of lots won in the framework of procurement. Business in its relations with the government and society has found a compromise on the need to create a digital center for interaction between the parties, develop a subsidy system, apply a cost-effective tariff policy, and increase the number of contracts concluded (4 factors out of 14). Business expects steps from the government and society to bring their interests closer together in terms of an effective regulatory framework, mutual responsibility of the parties, and fiscal benefits. The Company fully supports the government and business on the need for mutual responsibility of the parties and the expansion of the route network, traffic schedule, reproduction of rolling stock, increased quality control of transportation, and an increase in the number of carriers (5 factors out of 14). From here follows the most coordinated position "power-society", "business-society" and the least coordinated - "power-business".

5 Conclusion

Thus, in each perimeter of subjective interaction, one can identify:

- consistency of interests or their mismatch on various elements (factors) of the interaction environment;
- points of contact or problem points for convergence of interests within the framework of tripartite interaction: government, business, society.

As a result, it is necessary to increase the importance of certain factors for economic entities - to move along the line of absolute equality, as well as move closer to the line of absolute equality, especially in terms of factors designated by one subject as a priority, and by another subject - not yet recognized. The model proposed by the authors allows not only to determine the factors, formulate conclusions regarding the problems and prospects for building effective subject interaction between government, business and society in the territory of presence, but also develops the transport economy in terms of finding modern mechanisms for assessing the interests of economic entities in order to jointly solve socially significant problems of the territory, namely, the provision of public passenger transport services.

The identified factors serve as the basis for building effective interaction, which will allow: business to achieve an atypical for a given economic actor in socially significant areas of activity, not only a social effect that goes beyond the plane of traditional socially responsible behavior, but also an economic one - in the form of stability and long-term development, innovation and investments required by transport; to the state - in the conditions of a lack of budgetary funding, it is effective to solve the problem of accessibility and provision of the population with public passenger transport services while simultaneously developing an entrepreneurial initiative. Thus, there is a mutual dependence and consistency of interests of the participants in the interaction due to the division of not only responsibilities and risks, but also resources and income.

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