Quality of transport services for passenger transportation of a tourist city

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Abstract. In the article, to analyze the factors affecting the quality of transport services for the transportation of passengers, we used an analysis of the degree of satisfaction of the requests of served citizens. This method is a social method suitable for determining qualitative parameters. The article presents the results of a survey of residents of the tourist city of Sochi, who used transport services for the transportation of passengers. The survey was conducted in January 2020 in the city of Sochi. Questionnaires were distributed through social networks, selecting users by geographic location. A total of 217 people took part in the survey. A question was added to the questionnaire to verify the experience of using transport services in the city. The questionnaire consisted of 20 questions. Analysis of the results of the research allowed us to identify the main problems of transport services for passenger transportation of a tourist city and highlight the factors that are significant for passengers.

1. Introduction
A well-developed transport system is very important for the development of tourism.

Tourism is a market that sells sensations, impressions, and memories. Part of any journey is a transport and transportation system. Therefore, the quality of transport services can be considered as part of the trip and, accordingly, as part of the quality of tourism in the territory. But quality is a relative concept, it is commensurate with competitors, with the expectation of management entities, and of course with the expectation of the consumer. Therefore, this article focuses on consumer expectations. Time is changing culture, changing technologies, creating new trends and standards, and contemporaries are changing consumer expectations. The purpose of this research is to find out the modern expectations of passengers from transportation services, and highlight the main factors that are important for passengers.

This paper is organized as follows. In section 2, we provide an overview of the related literature. In section 3, we describe the methodology used for performing the survey. The results of the survey are detailed in section 4. Finally, in section 5, the key findings are summarized and some directions for future research are suggested.

2. Prior research
The development of questions to the questionnaire and criteria for assessment was determined on the basis of the research of publications and regulatory documents.

The quality of transport services has been researched many times. So in 2017, the authors of the article investigated the impact of the quality of transport services on passenger demand for suburban bus transport. The demand for transport services is determined simultaneously by several factors, the
influence of these factors is different, and the influence of individual demand factors varies depending on the groups of passengers who are in demand for bus services. The paper proposed a methodology for measuring and assessing the impact of the quality of transport services on the demand of passengers of suburban bus transport. (Berežný et al., 2017).

The opinion of railway passengers is also taken into account and in particular the attitude to technological innovations. Technologies create opportunities for fast and accurate information, individualization of services, passenger training, and for the impressions of passengers, which is important for the tourism industry. However, there is not enough information about which innovations and services travelers prefer. This joint analytic research was based on a “best-worst” preference scale to evaluate how passengers evaluate the various features of the system that are offered to improve passenger service in the UK. The results showed that passengers praised automatic compensation for delayed or canceled flights. (Oliveira et al., 2019).

А Large research and survey of passengers of buses was carried out in the cities of Abashiri and Hokkaido. Data was collected on the number of passengers on three bus routes. Data was collected by counting passengers getting in and out of buses at each stop. A survey was also conducted in February, June, and September of each year of the research period. Data showing the number of customers that get on, get off the bus, or drive past each bus stop are analyzed in Microsoft Excel. (Ueda et al., 2019).

An article was also studied on the desire of passengers to a sustainable public transport system in the Kerian and Perak districts. In the article, the authors note transport as the basis for the mobility of various types of economic activity, and as an important factor in the development of the economy. The authors also note an increase in the number of trips by public transport. The purpose of the research was to analyze the desire of passengers and the prospects for sustainable development of public transport. Also in the work, the authors used the method of interviewing passengers and data from a geographic information system. (Bachok et al., 2014).

Using the survey method, the researchers analyzed the problem of choosing a passenger between a transfer and an illegal taxi. Some private car owners use their cars as an “illegal taxi” to make money satisfying the need of passengers at the final distance between the metro station and the final destination, which increases the risk of speeding or other transport risks. Passengers talk about factors that influence the choice of an “illegal taxi” and evaluate them (Wang et al., 2013).

To evaluate the passenger satisfaction index, another article uses the PLS-SEM model as a basis. Data for the research was taken from the Chinese public transport service. In this article, the authors proposed a conceptual PSI model for assessing the quality of public transport services in China, applied PLS-SEM to measure PSI, and confirmed a causal relationship between passenger satisfaction and factors. The results of the article allowed the authors to expand previous researches and the concept of quality perceived by the passenger. (Zhang et al., 2019).

3. Methodology
Consider research methods.

To research the factors affecting the quality of transport services for passenger transportation, we use an analysis of the degree of satisfaction of the requests of serviced citizens. This method is a social method suitable for determining qualitative parameters. The article presents the results of a survey of residents of the tourist city of Sochi, who used transport services for the transportation of passengers.

The survey was conducted in January 2020 in the city of Sochi. To reduce the cost, increase the efficiency and speed of the process, a larger number of questionnaires were distributed electronically. Questions were also distributed through social networks, selecting users by geographic location.

A total of 217 people took part in the survey. A question was added to the questionnaire to verify the experience of using transport services in the city. The questionnaire consisted of 20 questions.

4. Results
The development of questions to the questionnaire and criteria for assessment was determined on the basis of the research of publications and regulatory documents.
To assess the market for passenger transportation services, respondents were asked to assess the sufficiency or lack of the number of transport organizations operating in the city (Figure 1).

And 54% of respondents answered that it was enough, about the same number of respondents believed that there were too many, and 11% found it difficult to answer the question. Such a range of opinions can determine not only the different needs of citizens, but also the landscape of the city and the presence of remote settlements, which are more difficult to provide with transport links.

71% of respondents noted that the number of passenger transport organizations has increased over the past 3 years, and 10% noted that the number of organizations has decreased (Figure 2).

Most of all, respondents chose the main factor that affects the choice of transport organization - this is the cost and payment, also chose the following factors: location, comfort inside a transport, ride quality, work schedule, driver professionalism and level of service (Figure 3).

Figure 1. Estimation of the number of transport organizations operating in the city.

Figure 2. Change in the number of passenger transportation organizations over the past 3 years.

Figure 3. The main factor affecting the choice of transport organization.
Most of the respondents use the Internet to obtain information about transport services. 18% of respondents receive information from advertising, 7% - from personal experience, 4% - from relatives, friends, colleagues, and 14% - use information at stops and stations (Figure 4):

![Figure 4. Source of information about transport services.](image)

30% of respondents believe that the cost of transport services is the most important factor that affects the recognition of the transport organization. Also among the factors that affect recognition, passengers identified: the presence of a regional brand, advertising, improving the design and quality of design, and environmental friendliness of services (Figure 5).

![Figure 5. Factors affecting the recognition of the transport organization.](image)

Further, respondents were asked to write what, in their opinion, factors affect the quality of transport services for passenger transportation of a tourist city. Respondents identified the following factors: fare; types of fare; adherence to the schedule; air temperature in a transport; transport ventilation system; availability of flight schedule information; accessibility of information about travel routes; the ability to plan a route; availability of a site with detailed information about the services; availability of an application with detailed information about the services; the presence of active information support; driver observance of traffic rules; vehicle driver skills; whether the driver is distracted by the cell phone while driving; the ability to travel with a pram; wheelchair accessible; cleanliness and odors in the cabin. The frequency of mentioning factors by respondents is presented in the table (Table 1).
Table 1. Factors affect the quality of transport services for passenger transportation of a tourist city.

| №  | Factors                                                                 | Frequency of references |
|----|-------------------------------------------------------------------------|-------------------------|
| 1  | Fare;                                                                   | 78%                     |
| 2  | Types of fare;                                                          | 93%                     |
| 3  | Compliance with the schedule;                                           | 45%                     |
| 4  | Air temperature in transport;                                           | 74%                     |
| 5  | Ventilation system;                                                     | 36%                     |
| 6  | Availability of flight schedule information;                            | 64%                     |
| 7  | Accessibility of information about travel routes;                        | 51%                     |
| 8  | Possibility of route planning;                                          | 9%                      |
| 9  | Availability of a site with detailed information about the services;    | 32%                     |
| 10 | Availability of an application with detailed information about the services; | 86%                     |
| 11 | The presence of active information support;                             | 21%                     |
| 12 | Compliance with traffic rules by the driver;                            | 44%                     |
| 13 | Skills of a driver driving a vehicle;                                   | 31%                     |
| 14 | Is the driver distracted by the cell phone while driving;               | 45%                     |
| 15 | Possibility of traveling with a pram;                                   | 25%                     |
| 16 | Wheelchair accessible;                                                  | 6%                      |
| 17 | Cleanliness and odors in the cabin                                       | 68%                     |

44% of passengers prefer to order services and pay via the Internet, 36% choose self-service, 20% of respondents preferred personalized service through the driver, and less than 1% of respondents indicated “Ordering tickets by phone with home delivery” (Figure 6).

Figure 6. The preferred form of service when ordering passenger transportation services.

As a result of the analysis of the survey of passengers, summarize the main problems identified by the respondents:

- violation of the travel schedule;
- heat in the summer;
- re-boarding transport by passengers;
- a bad and not everywhere working fare payment system using bank cards;
- violation by the driver of a vehicle of traffic rules;
- drivers are distracted by mobile phones while traveling;
- not on all routes of movement around the city you can take a stroller with you for a child.

Satisfaction with the price level for passenger transportation services (Figure 7):
Satisfaction with the level of prices for transport services.

Figure 7.

Satisfaction with the diversification of passenger transportation services (Figure 8):

Figure 8.

62% of respondents noted that the level of quality of passenger transportation services increased, that 12.7% noted a decrease, for 20% of respondents the quality did not change.

35% of respondents are satisfied with the quality of passenger transportation services in the city, 44% of respondents are not completely satisfied, and 21% of respondents said that they are not satisfied with the quality (Figure 9).

The results of the research confirm the conclusions of previously analyzed articles. The quality of transport services can be considered as part of the journey and, accordingly, as part of the quality of tourism in the territory. But quality is a relative concept, it is commensurate with competitors, with the expectation of management entities and of course with the expectation of the consumer. Time is changing culture, changing technologies, creating new trends and standards, and are changing consumer expectations.

Figure 9.

Modern technologies and products of the digital economy, which are increasingly being received by consumers, each year more and more influence the market and consumer expectations standards. It is worth noting that the competent implementation of modern technologies can not only improve the
quality of transport services, but can also help reduce the costs of organizing the processes of transport organizations.

We will consider possible directions for solving the identified problems and developing the quality of passenger transportation services.

The first direction is working with information. It is actively necessary to use the website, and mobile applications. First of all, need to directly connect the information databases of organizations to the site and application. This will allow users to track the schedule in real-time, its changes, receive notifications if desired.

In the direction of tourism development and the quality of tourist services, it is necessary to describe in more detail the routes and the locations around them. There are more tourists in the city who travel on their own, and there are also local residents who can become consumers of tourism services and, accordingly, transport services too. The more residents know about the sights, the higher the likelihood of them visiting. And an organization that provides useful information improves service and the quality of its services.

It is also worth highlighting the availability of information and its design. Some respondents indicated their desire to see an interactive map in the transport showing the movement process and nearby important objects, including tourist sites. Such a decision will be relevant especially in the tourist season. Since city guests often do not know the stations, they distract the driver and get out of the transport at the wrong station. This increases the social burden on the driver and distracts him from driving, which reduces the quality of transport services.

To improve the microclimate, it is worth using temperature and humidity sensors in the cabin, as well as improving ventilation systems.

Another important issue that respondents noted was the toll payment process. The results of the analysis showed that most passengers are ready for online payment systems, contactless payments, or the use of transport cards. Automation of the payment process, especially on bus routes, will make it possible to increase service, as well as speed up the process of paying for travel and checking tickets, reduce the time of stops, downtime, and reduce the risk of the dishonesty of drivers. Online payments also simplify accounting and tax accounting.

Digital technologies can reduce the number of routine operations, and leave more time for important processes to improve the quality of transport services for passenger transportation of a tourist city.

5. Conclusion
The results of the study show that there are always directions and quality parameters that passengers need. When managing transport systems and passenger transportation, it is necessary to take into account the development of digital technologies, the speed of their implementation and their use for the convenience of users. The quality of passenger transportation services can also be improved using products from the digital economy. The modern user is increasingly using the products of the digital economy, getting used to them, and begins to expect the same level of convenience in all areas of his life.

As a result of the analysis of the passenger questionnaire survey, we summarize the main problems identified by the respondents: violation of the travel schedule, heat in the summer, passenger overload, poorly and not everywhere working fare payment system using bank cards, violation of traffic rules by the driver, lack of a unified information system.

Also, respondents identified factors that, in their opinion, affect the quality of transport services for passenger transportation: fare; types of fare; adherence to the schedule; air temperature in a transport; ventilation system; availability of flight schedule information; accessibility of information about travel routes; the ability to plan a route; availability of a site with detailed information about the services; availability of an application with detailed information about the services; the presence of active information support. Respondents also noted the importance of: driver compliance with traffic rules;
vehicle driver skills; whether the driver is distracted by the cell phone while driving; to travel with a pram; wheelchair accessible; cleanliness and smells in the cabin.

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