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THE QUALITY OF THE URBAN TRANSPORT IN BUCHAREST AND HOW TO IMPROVE IT IN ACCORDANCE WITH THE EXPECTATIONS OF THE CITIZENS

# THE QUALITY OF THE URBAN TRANSPORT IN BUCHAREST AND HOW TO IMPROVE IT IN ACCORDANCE WITH THE EXPECTATIONS OF THE CITIZENS

**Armenia ANDRONICEANU**Bucharest University of Economic Studies, Piata Romana 6, Bucharest, Romania  
armenia.androniceanu@man.ase.ro**Abstract**

Public transportation is an essential public service for the citizens of the urban environment. Most city halls from all over the world were able to manage this urban service effectively. Unfortunately, there are several cities in Europe and not only where the urban public transport needs consistent investments in order to increase the quality and to become more attractive for the citizens. Bucharest, the capital of Romania, is among the cities with several problems in urban transport and this is the main reason for approaching the subject. The aim of this research was to find out the main solutions for increasing the quality of the local public transport in Bucharest based on the positive and negative aspects discovered and the main expectations of the Bucharest's citizens, as they were formulated during the survey. In order to do that, a representative sample for Bucharest containing 384 respondents was set-up. For data collection was used a questioner and a simplified SWOT analysis related to the local transport in Bucharest was developed. The final part of the work contains some recommendations for improving the quality of the public transport in Bucharest according to the citizens requirements and the Bucharest City Hall's strategy.

**Keywords:** Urban Transport, Quality, Public Sector, Surface Local Public Transportation, Citizen.

**1. INTRODUCTION**

Urban transportation has become an intrinsic part of citizens' life in any city as it ensures the opportunity for everyone to move from one place to another, to cover various distances, safely, conveniently and comfortable. The quality of the urban transport system is a key factor that influences citizens' will to use the public transport system rather than drive their personal vehicles. In certain circumstances, improved accessibility may be enough, but when users are emotionally attached to their personal car, further quality features need to be provided. For a certain segment of users, the following characteristics of the transport services may be of greater importance: security, more beautiful stations and better passenger information, marketing and advertising. For other travellers, the following characteristics are more important: higher speed, frequency and reliability. (Redman & al. 2013).

A definition of the quality of a product or service is defined by P.C. Crosby: "Quality means complying with the requirements" (Paraschivescu 2008). Another suggestive definition is highlighted in the paper "Total Quality Management", where Professor Ion Stanciu defined quality as "what makes the difference between excellent and inferior things" or, in other words, "what makes the difference between success and failure", as well as the one laid down by the representatives of large international companies such as IBM, whose opinion is simple, but with a special meaning: "Quality equals customer satisfaction." (Stanciu 2003)

Currently, the most commonly used definition is given by ISO 9000, where quality is expressed through a set of characteristics: "the extent to which a set of intrinsic features meet the requirements" (Thummim & Tang 1996). Thus, it is highlighted that although sometimes we intend to think about high performance products and services and with outstanding features, this definition emphasizes the idea that the term quality can also take both positive and negative attributes.

Thus, even if there is no general definition of the concept of quality, there are many similar aspects of the definitions stated through time. Synthesizing what other authors and specialists in extensive areas have stated, in my opinion, the concept of quality appears in goods, services, people, environment and requires continuous improvement as what is good and fulfils our wishes today, may not be enough tomorrow and also involves meeting as well as exceeding customer's expectations.

## 2. STATE OF ART

The definitions of the concept of transport services quality are often specialised. During the last decades, following numerous debates, there have been established two main elements based on which the quality of transport services is assessed: the performance of the organization which provides transportation services and citizens' perception and their satisfaction level regarding the provided services.

Public services quality is a recent trend in the public management context (Ancarani & Capaldo 2001). Public transport quality and efficiency improvement is important if we want to change the way this service is provided. The quality of the public transport system depends on several factors such as: thought regarding vehicle comfort and safety, the time needed to cover routes, convenience and the existence of any infrastructure support. (Olion & al.2011).

Studies and previous research on transport services focused on measuring productivity and performance. In fact, achieving performance involves efficiency, effectiveness, productivity and qualitative services. From another perspective, consumer's opinion is the most relevant in assessing

performance and only customers can actually define the quality of the services provided by public transport systems. (Liou & al. 2012)

The research conducted by Hu and Jan (2006) developed four dimensions and 20 characteristics regarding the quality of transport services. The four dimensions refer to the interaction with passengers, the tangible equipment, the convenience provided by the service and support management.

The team coordinated by Parasuraman designed a framework method that defines service quality degree and the difference between expectations and citizens' perceptions. Their model was further developed and is known as SERVQUAL. (Parasuraman & al.1988).

According to the research team coordinated by Pérez, the features of transport services that influence quality are intangibility, inseparability, variability, perishability and the lack of ownership over the transport service (Pérez & al. 2007).

In the article "Measuring service quality in urban bus transport: a modified SERVQUAL approach", there are listed and explained the main goals and trends of an efficient transport system, namely: availability, accessibility, optimal transport capacity, minimum time to get to the destination, safety of the means, passengers comfort, as well as minimizing its negative impact upon residents' tranquillity and the environment. (Parasuraman, & al. 1988). There are mentioned in the literature the benefits of providing qualitative transport services, as follows: possible increase in the customers' satisfaction indices, measurability and comparability of qualitative attributes used to evaluate the performance of a transport service, efficiency improvement and better allocation of the available financial resources. (Barabino & al. 2001).

Currently, in order to encourage and to highlight the importance of public transport, the International Association of Public Transport (IAPT) conducts the global campaign known as "Grow with Public Transport". The main objective of this project is to encourage continuous investment in developing public transport in terms of quality and quantity. In an interview, Mr Alain Flausch, the Secretary General of IAPT, mentioned: "We strongly believe that public transport represents a vital element in transforming cities more attractive places to live and work."

The overall quality of public transport services is highlighted by a set of quality criteria such as (Steg & Gifford 2005):

- The service offer – transport mode, frequency, served geographical area, schedule;
- Accessibility – access to the public transport system and connections to other means of transport;

- Information System – citizens' access to different information in order to plan and have their journey;
- Duration – the necessary time to plan and have the journey;
- Comfort and safety – provide the necessary conditions for an as pleasant and as safe journey as possible for each traveller;
- Environmental impact – reduce and combat environmental damage.

However, these indicators do not always suffice to provide a complete picture of the quality of public transport services. The quality of passenger transport depends on "the transported object", the person and their specific requirements (Patel & Mukherjee, 2014). All these coordinates identified in the literature represent the elements based on which the research tools were developed.

### 3. RESEARCH AIM AND OBJECTIVES

This paper is an exploratory endeavour that aims to identify the main changes needed to improve the quality of public transport services in Bucharest so that they become more attractive for the citizens of the city. These recommendations are based on the opinions of the citizens included in a representative sample for the population of Bucharest.

The main objectives of the research are:

- To determine how frequently public transport is used;
- To establish the reasons why public transport is used;
- To know the positive aspects of the quality of public transport, according to the public opinion;
- To determine the barriers that influence the quality of public transport provision;
- To identify citizens expectations with regard to the public transport services provided.

### 4. DIMENSION AND STRUCTURE OF THE SAMPLE

The target group addressed in the sampling phase and hence in the actual research is made up of Bucharest citizens.

The formula used to determine the sample size is:  $n = t^2 * P(100 - P) / e^2$ , where:

t = the theoretical value of the probability with which is used = 1,96;

$P$  = probability, the percentage of the studied population that presents the sampling feature=95%;  
(research representativeness for the target group is 95%)

$e$  = maximum representativeness error allowed = 5%

Hence, the representative sample for Bucharest, which has a population of 1,883,425 inhabitants (National Institute of Statistics, 2013) is 384 people.

Approximately half of the respondents - 43% - are less than 25 years old, the rest are distributed as follows: between 25 and 30 years - 38%, between 31 and 50 years - 16% and only 3% are more than 50 years old.

Regarding the level of education, the sample structure is: the majority are people with higher education (68%), followed by those with post-graduate studies (21%), while 11% are respondents with secondary education.

Respondents' monthly income is another indicator that was taken into consideration in categorising the population in order to analyse how it influences the results of our exploratory endeavour. Thus, half of the questioned persons (50%) earn between 1501 and 3000 lei monthly, 30% earn between 851 and 1500 lei, 18% of them earn less than 850 lei and only 2% earn more than 3000 lei.

## 5. RESEARCH METHODOLOGY AND RESULTS ANALYSIS

The methods used in this research are the questionnaire (Brace, 2008) and a simplified form of the SWOT analysis performed based on the subjects' responses and accessed documents.

The questionnaire is an instrument used to collect the data. In this research, we have used a semi-structured questionnaire with 20 questions, grouped into 2 sections:

- Respondents' profile;
- The quality of public transport.

SWOT analysis is an instrument used to identify the main strengths, weaknesses, opportunities and threats regarding the public transport service in Bucharest.

The survey shows that most respondents (80.8%) use local public transport service. Only 12.6% of the respondents use their private car and only 3.6% prefer cycling, while the rest use other means of transport or walk.

Regarding travel frequency, nearly 75% of the citizens included in the research sample affirmed that they use public transport every day, a more reduced percentage - 13.6% affirmed that they use public transport every week, thus one travel in maximum 3 days per week, and 11.4% of the citizens of Bucharest choose to use the local transport occasionally.

The research has facilitated identifying the main reasons why Bucharest citizens use public transport. Thus, in Bucharest, approximately half of those questioned (49.6%) have argued that travelling to work is the most important reason why they use local transport. The second most important reason for which 26.3% of the participants to the study have opted for public transportation is that it helps them get to the institution where they study, and 20.1% said that the main reason is to buy food, clothes or other products. In Figure 1 we can also see that there is a rather small percentage of respondents (4%) for whom the main reason to travel is determined by other factors, such as: walking, visiting friends, relatives, etc.

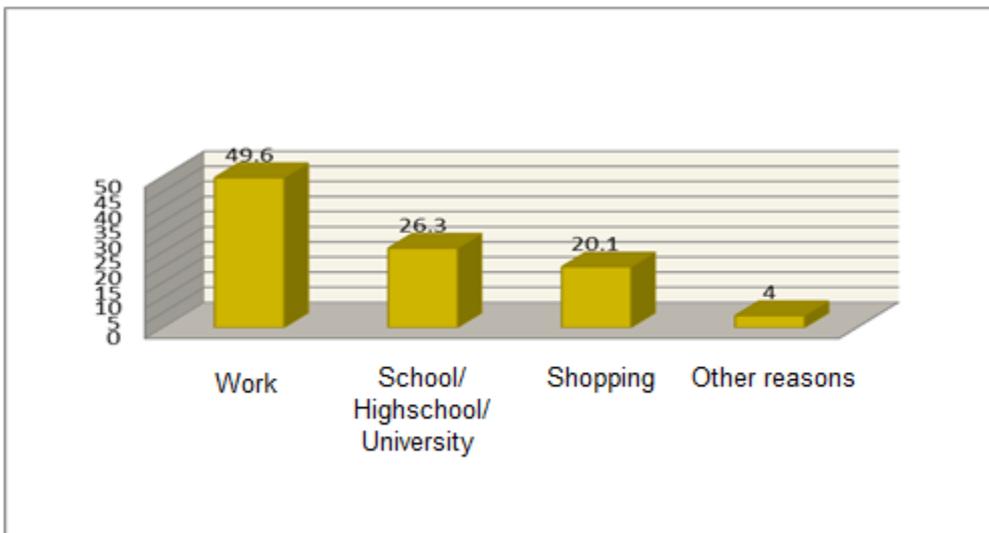


FIGURE 1- THE MAIN REASONS OF CITIZENS FOR ACCESING THE PUBLIC TRANSPORT SERVICES

An important objective of the research was to know respondents' opinion regarding the quality of transport services. As shown by Figure 2, 73.6% of the respondents are dissatisfied and rather satisfied with the quality of public transport services, in most cases there is an inequitable relation between the quality of the provided service and their requirements. Only 26.4% of the respondents are satisfied with the quality of public transport services offered by RATB. In this circumstances, we can emphasize that for a certain group of users the characteristics of the service transport may be more important (safety, comfort, more beautiful stations and improved information services for the passengers, marketing and advertising etc.), unlike other persons who relate to physical attributes (speed, frequency, coverage) and to satisfying the need to travel at low fares.

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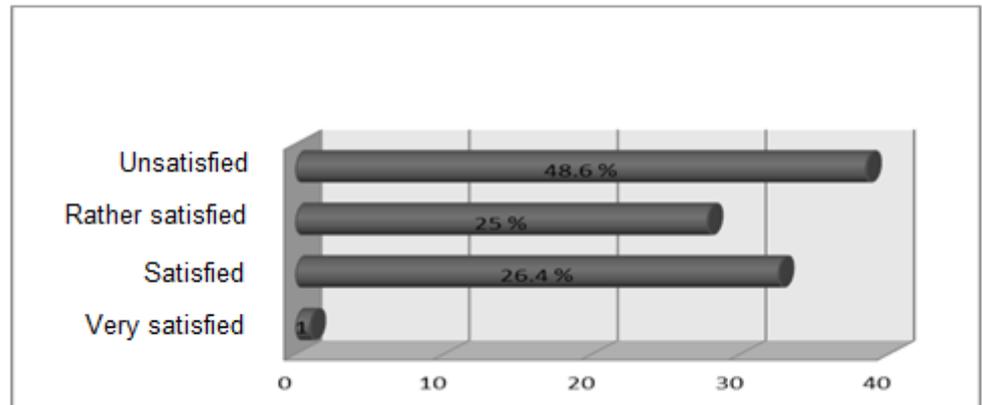


FIGURE 2 - THE DEGREE OF SATISFACTION WITH THE QUALITY OF URBAN TRANSPORT SERVICES

The following variables were grouped in order to assess the level of satisfaction of the persons who use public transport services in Bucharest in terms of meeting the quality characteristics that underlie the services provided by local public providers: comfort, number of vehicles, accessibility, clear information, passenger safety, schedules and journey time. The results of the research, presented in Figure 3, show that the dissatisfaction extremes are related to travel comfort, lack of interest of the transport service provider towards passengers' safety and security, as well as to poor infrastructure, as there are not enough vehicles to ensure transportation for the large number of passengers of the city. In this context, the approximately 1100 vehicles provided by local transporter represent a small number compared to the one million people who travel every day, a fact that can be easily noticed in almost every public transport station from the important areas of the city. In addition, an important weakness is represented by the lack of information regarding the journey. The means used to present it (information tablets, leaflets regarding the routes, speakers inside the vehicles, running shedule etc.) are scarce, a fact that lowers the quality of the provided service.

Accessibility in terms of the fares applied is one of the few features that managed to gather some positive feedback from the questioned persons.

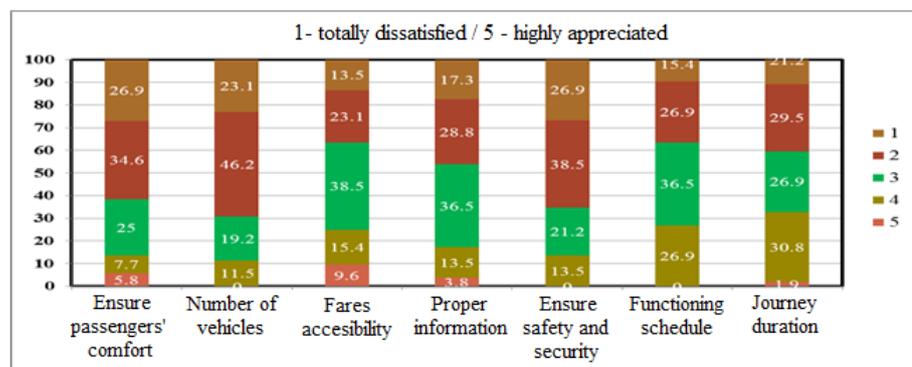


FIGURE 3 - THE VIEW OF THE CITIZENS RELATED TO QUALITY OF THE PUBLIC TRANSPORT SERVICES IN BUCHAREST

The research has revealed the fact that the passengers are not satisfied with regard to the behavior of the RATB staff. As shown by Figure 4, there are complaints regarding the behavior of the drivers, the ticket controllers, but also regarding their safety and security during the journey using local public transporters.

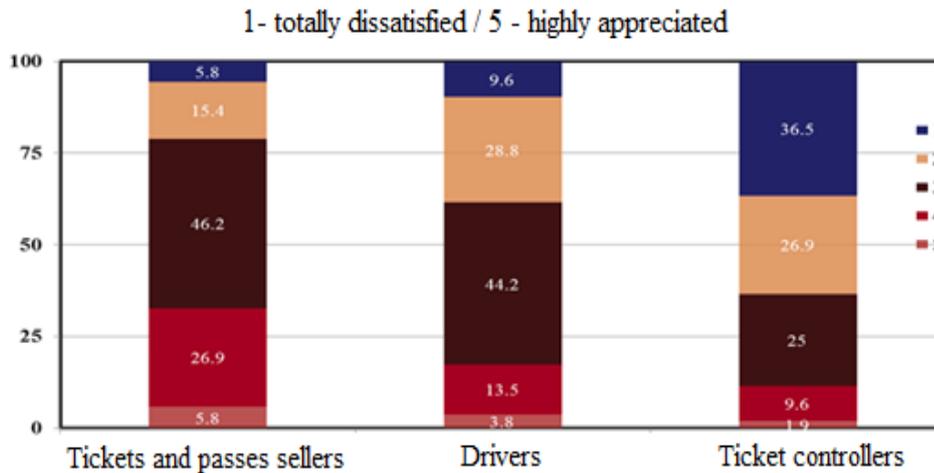


FIGURE 4 - THE QUALITY OF PUBLIC TRANSPORT INFLUENCED BY THE PERSONAL OF THE PUBLIC TRANSPORTER

Returning to the quality of the transport services, the next variable allows us to identify citizens' opinions regarding the pollution level. We can note that the views of the respondents from Bucharest are relatively divided: 54% of them are dissatisfied with the pollution level, while 42% answered that it is of a medium level thanks to the acquisitions made. In addition, local transporter has various action plans regarding environmental protection: the Local Action Plan for Environment Protection in Bucharest, the Integrated Management Program of Air Quality in Bucharest, Noise Strategic Maps and the Action Plan for Noise Reduction in Bucharest. There has been registered an extremely small percentage (3-4%) of those who consider that the pollution level is reduced.

Regarding the mobility degree and the coverage of the city surface with means of transport, the answers of the users are divided between those who have answered affirmatively (approximately 70%), who are satisfied from this point of view, and those who answered negatively (approximately 30%), who are not satisfied with the coverage level, because the current route of the means of transport fail to meet their requirements.

The next variable concerns the level of modernization of the vehicles in the fleet. The research shows that the opinions of the respondents participating to the survey conducted in Bucharest are divided, as the three types of vehicles have obtained similar percentages: the tram (34%), the bus (39%), the trolley (27%). Thus, the need to modernize the infrastructure is urgent so that the services would live up to

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passengers' expectations and requirements. A study about local transport in Bucharest was conducted by Bugheanu (2015).

To identify the positive aspects of the quality of the services provided by local transporter, an open question was used through which the questioned persons were asked to present three positive aspects of the surface public transport, thus offering the individual the opportunity to answer freely without being influenced. The same approach was used in order to establish the negative aspects that impede the provision of an efficient and qualitative services. Following the content analysis, the answers were grouped into six categories according to the first option of the questioned persons. A consolidated report is presented in Table 1.

TABLE 1 - POSITIVE AND NEGATIVE ASPECTS RELATED TO PUBLIC TRANSPORT IN BUCHAREST

Positive aspects	%	Negative aspects	%
Reduces traffic congestion	9.7	Large number of passengers	17.5
Reduced fares	7.6	Major delays	11.7
Answers the need to circulate	4.3	Infrastructure quality	9.2
Precise destination	2.6	Unhygienic conditions	5.3
Journey safety	1.1	Lack of staff to ensure travelers' safety	2.8
Electronic card for journeys	1.0	Failure to comply with the schedule	1.9

In what follows, there are synthetically presented the results of the SWOT analysis elaborated based on participants' responses to the questions included in the questionnaire and on specific documents, studies and analyses.

**Strengths**

- a) varied means of transport (trams, trolleys, buses);
- b) well-established routes;
- c) lower prices compared to those used at European level;
- d) modernization of transport vehicles and purchase of new ones;
- e) implementation of the passenger information system;
- f) electronic displays;
- g) video recording systems installed in buses, trams and trolleybuses;
- h) air conditioned buses;
- i) automatic taxation system;
- j) change of the functioning hours of the sales units;
- k) various payment possibilities through 60 bank ATMs, ecommerce (the portal online.ratb.ro);
- l) implementation of the surcharge card in the ticket controllers' activity;

- m) implementation of RATB - Metrorex integrated fare system;
- n) expansion of public transport towards major shopping centres;
- o) projects to promote public transport;
- p) implementation of traffic management system (Urban Transport Control - PublicTransport Management);
- q) establishment of the Bucharest Metropolitan Transport Authority (AMTB);

#### **Weaknesses**

- a) lack of connections between public transport means;
- b) reduced number and length of the bus and trolley lanes;
- c) uncontrolled car parking which impedes traffic fluidisation;
- d) traffic congestion leads to increased travel time and reduces the reliability of the services;
- e) lack of firm measures to change the behaviour of the passengers who do not buy travel tickets;
- f) low movement speed;
- g) long waiting time in stations;

#### **Opportunities**

- a) increased passengers' income;
- b) revision of transport routes and networks to decrease operating costs;
- c) create an integrated network of the surface public transport;
- d) restrict the access to the city centre;
- e) establish Public Transport Police in Bucharest;
- f) increasing the number of ticket controller in the transport means

#### **Threats**

- a) increasing the number of personal cars;
- b) unpleasant public transport travel conditions during rush hours;
- c) the lack of necessary space on certain streets to increase the number of lanes in order to set up special lanes dedicated to public transport.

Besides respondents' opinion regarding the positive and negative aspects of public transport provision, the study highlights users' expectations concerning the quality of the public transport service in Bucharest. The research results are summarized in Figure 5. An important issue that approximately half (47.7%) of the persons participating to the research wants to be solved is to introduce an increased number of vehicles. Thus, these would run more frequently, while the duration of the journey would be significantly diminished. Adopting a series of safety measures for the passengers and reducing law-

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breakings (20.5%) are other aspects that should be considered. In 2014, the local transporter started the procedures to develop security tools aimed at increasing safety in public transport, but the project is a demonstrative one and there have not been registered promising results, so far.

The percentage of those who consider that the main alternative to improve quality by introducing some newer vehicles (11.4%) is similar to the percentage of the respondents who state that if they coordinated local transporter activity, the first measure they would undertake would consist in connecting outlying districts to the city centre (9.1%). All the other aspects that were prioritized in various ways by the respondents, as these are influenced by certain subjective factors, are equally important and must be considered in order to provide a qualitative service: the cleanness of the transport vehicles is an important aspect for 4.5% of the passengers; it is followed by building shelter refuges in the stations, better conditions for the acquisition of free passes and vehicles heating system which have obtained similar answer percentages (2.3%).

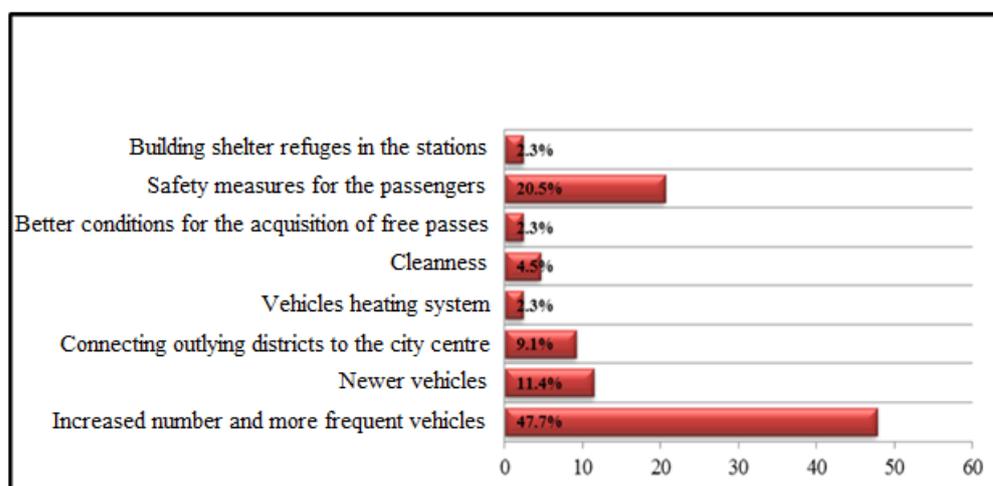


FIGURE 5- MEASURES FOR IMPROVING THE QUALITY OF THE PUBLIC TRANSPORT SERVICES IN BUCHAREST

The research has allowed us to find out citizens' opinions with regard to the public transport quality level in the next 5 years (Figure 6). In this regard, more than half of the respondents (58.1%) stated that the situation will remain the same, the attempts of the Bucharest City Hall and of the public transportation company to improve the quality of transport services in Bucharest are insignificant. However, there are few optimistic respondents (18.6%) who believe that in the next five years, the quality of the services will improve. In addition, 16.3% of the respondents did not wish to express their views on this issue, mainly because they do not know what the evolution of public transport services in Bucharest will be.

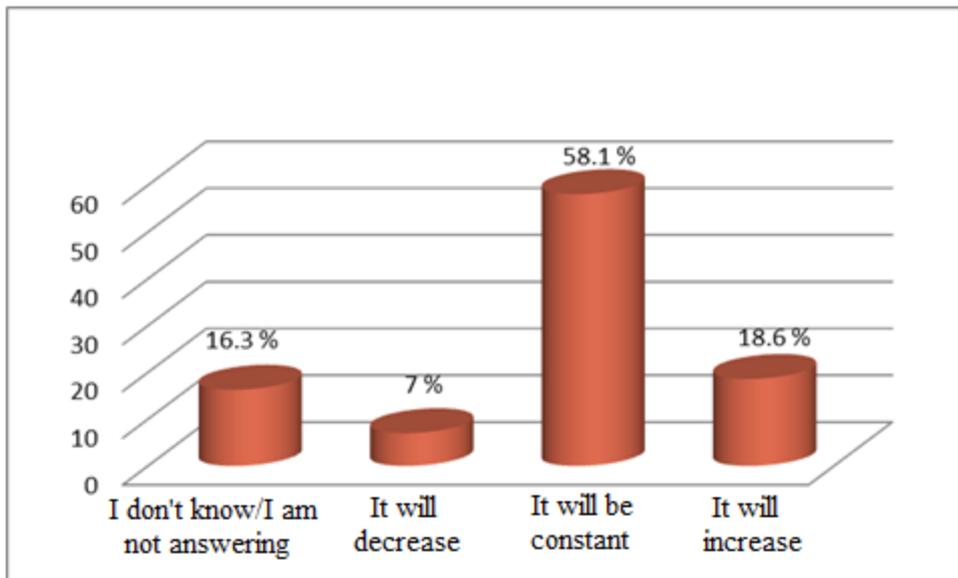


FIGURE 6 - CITIZEN'S VIEW ON THE EVOLUTION OF THE QUALITY OF PUBLIC TRANSPORT IN BUCHAREST

## 6. CONCLUSIONS AND RECOMMENDATIONS

Following this research, a series of recommendations and conclusions will be formulated. The most important solutions to improve the quality of public transport services, based on the opinions expressed by respondents included in this research are listed below.

- Infrastructure modernization and enhancement of the comfort of the entire journey by public transport, for example, by:
  - Setting up the space of the stations dedicated to urban public transport vehicles (seats, shelters, consumer goods sales services etc.);
  - Building secure stands for bicycles, "park and ride" systems, carsharing systems;
  - Facilitating the access to the stations (e.g. pedestrian and bike lanes, signs, redesign the environmental area)
  - Increasing the number of vehicles and the frequency these reach the stations to avoid overcrowding and travellers' discomfort.
  - Optimizing processes and maintenance workshops;
- Improve safety and security in stations, stops and inside vehicles for passengers and drivers, as well as the equipment, for example, by:

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- Implementing a security strategy such as installing video cameras in stations and inside vehicles;
- Increasing security in and around the stations (e.g., better lighting);
- Training in the safety and security area and increasing awareness level for drivers and passengers.
- Free Internet and fleet management system through GPS;
- Dynamic information for all passengers - Increasing accessibility level for all persons, especially for people with special needs, for example by:
  - Implementing different information tools adapted to the needs of the people with disabilities (e.g. visual assistance systems, voice announcements).
  - Ensuring physical accessibility in the waiting areas and in vehicles (for example, through prams, baby strollers, wheelchairs, walking frames).
- Transport service responsiveness to requests – It is a public transport service used in Poland, which allows users to reach their destination. Some services operate only for passengers with disabilities or for the elder people, who find it difficult to move.
- In order to increase the use of public transport, the company must aim to make the ticket issuing system more attractive and easier to understand for all. The system used to establish prices must be consistent and simple, with a satisfactory variety of tickets that would take into account the users' needs. The basis for the cost of tickets should be transparent and understandable. Tickets and payment systems must be widely available, for example:
  - Sale points spread throughout the city;
  - Automatic ticket sale points situated in various places (e.g. in "park and ride" parking stations, in the main bus stations or in vehicles)
  - On the Internet (e.g. passes for smart card holders).

The survey has highlighted the fact that in order to increase the quality and attractiveness of local public transport in Bucharest, numerous changes have to be made. These require coherent strategies and policies that should be consistently implemented by local public transporter and sustained by the Bucharest City Hall.

## REFERENCES

- Ancarani, A, Capaldo, G. (2001). Management of standardised public services: a comprehensive approach to quality assessment. *Managing Service Quality: An International Journal*, Vol. 11(5), pp. 331 – 341.
- Barabino, B, Deiana E & Tilocca P. (2012). Measuring service quality in urban bus transport: a modified SERVQUAL approach. *International Journal of Quality and Service Sciences*, Vol. 4(3), pp. 238 – 252.
- Brace, I. (2008). Questionnaire design. 2nd edition, Kogan Page, Londra.
- Bugheanu, A. (2015). SWOT analysis of public transport system in Bucharest. *Management Research and Practice*, Vol.7(1), pp.14-31.
- Cronin, Joseph, J., Jr. & Taylor, Steven, A. (1992). Measuring service quality: a reexamination and extension. *Journal of Marketing*, Vol. 56, July, pp. 55-68.
- Hu, K, C, Jen, M. (2006). Passengers perceived service quality of city buses in Taipei: scale development and measurement. *Transport Review*, Vol. 26 (5), pp 645-662.
- Olion L., Ibeas A, Cecin P. (2011). The quality of service desired by public transport users. *Transport Policy*, Vol. 18, pp 217 – 227.
- Liou, J. H, Hsu, C, Chen, Y. S. (2012). Improving transportation service quality based on information fusion. *Transportation Research, Part A*, pp 225-239.
- Parasuraman, A., Zeithaml, V.A., Berry, L.L. (1988). SERVQUAL: a multiple-item scale for measuring customer perceptions of service quality. *Journal Retail*, Vol. 64 (1), pp 12–40
- Patel, N., Mukherjee, AB. (2014). Categorization of urban traffic congestion based on the fuzzification of congestion index value and influencing parameters. *Theoretical and Empirical Researches in Urban Management*, Vol. 9(4), November, pp.36-51.
- Pérez, M.P, Abad, J.C.G, Carillo, G.M.M, Fernández, R.S. (2007). Effects of service quality dimensions on behavioural purchase intentions. *Managing Service Quality: An International Journal*, Vol. 17(2), pp. 134 – 151.
- Redman, L, Friman, M, Garling & Harting, G.2013. Quality attributes of public transport that attract car users: A research review. *Transport Policy*, Vol. 25, pp 119 – 127.
- Paraschivescu, A, O.2008. Managementul calității, Ediția a II-a revizuită și adăugită, Iași.
- Parasuraman, A., Berry, L. (1992). Prescriptions for a service quality revolution in America. *Organizational Dynamics*, Vol. 20(4), pp. 32-45.
- Stanciu, I. 2003. Managementul calității totale, Editura Cartea Universitară, București
- Steg, L., Gifford, R..2005. Sustainable transportation and quality of life. *Journal of Transport Geography*, Vol. 13, pp 59 – 69.
- Tummala, V.M.T, Tang, C.L. (1996). Strategic quality management, Malcolm Baldrige and European quality awards and ISO 9000 certification: Core concepts and comparative analysis. *International Journal of Quality & Reliability Management*, Vol. 13(4), pp.8 – 38.