SWOT ANALYSIS OF PUBLIC TRANSPORT SYSTEM IN BUCHAREST

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Abstract

European Capital-Bucharest is in a continuous development from all points of view, and the demand for more effective modes of transportation is constantly increasing. The population of the city has increased significantly in recent years, the number of passenger cars registered here exceeds 20% of the total of those registered at the country level, and the transport system has to face all the challenges.

The aim of the present research is to conduct an analysis on the public transport network in the capital of Romania, Bucharest. In this study, we will analyse the external and internal factors influence both for the underground transportation system, as well as of for surface transport to highlight the strengths and weaknesses of the network, as well as the opportunities and threats in the economic environment.

The result of the research will be represented by a detailed SWOT analysis, which will be used later in the development of a methodology for implementation of a series of actions concerning management measures on the public transport system in order to improve the overall quality of the network.

Keywords: SWOT, analysis, public transportation, Bucharest.

1. INTRODUCTION

Increasing the number of inhabitants of Bucharest, development of economic activities at a very high-level and high number of motor vehicles registered and used in the capital, require a detailed analysis on public transport network, a network with a huge direct influence in carrying out daily activities of a stable population of over 2 million people.

"Radical transformation processes of the economic and social spheres, the formation of goods and services markets, beginning the country's integration into the global economic system are unimaginable without creating a reliable transport system, economical, safe and environmentally friendly, geared towards the interests of the citizen, entrepreneur, market and of the whole society" (Strategy development of the County's public transportation service in Alba Iulia, 2012).

In the sections that follow will be analyzed elements with direct or indirect influence on the public transport system of both exogenous and endogenous system sectors.

Context

Urban public transport is particularly important for any city because it allows rapid and continuous movement of a major part of the population towards a large geographical area. Basically, the mobility of the majority of citizens is directly influenced by the level of development and efficiency of the transit system provided by the local authorities.

Also, public transport offers a number of advantages for users: lower costs per trip than private or personal transport; diminished risks of road accidents due primarily to lower travel speed and drivers experience and most important a shorter travel time in terms of duration.

Bucharest is the capital of Romania, being at the same time the most developed city in the country in terms of economic, social and infrastructure.

"Population of the region of 2.264.865 inhabitants in 2012, is distributed inversely proportional to the size of two administrative entities. Bucharest is the largest urban agglomeration in Romania, its population being 1.924.299 inhabitants (85% of the region's population and 16.4% of the urban population over the country, or around 9% of the total population of Romania) having a density of about 8090 inhabitants / km ²" (Stoicescu, Alecu, & Tudor, 2013).

According to (Romanian National Institute of Statistics, 2014) the official Romanian population in June 2011 was 21.354.396 inhabitants, the capital finishing in 7th place in the top 50 European cities in terms of population. In addition to the resident population, in the town is working, studying or in transit approximately 1 million people, unofficial population reaching in these circumstances nearly 3 million people daily.

"High-density urban areas with increasing density trends have the opportunity to invest in significant infrastructure to accommodate the expected additional transport demand" (Grunig, 2012).

Urban public transport have to face a series of challenges regarding the number of daily users, providing them with the necessary mobility, quality at the highest level and the system reaction time as low as possible.

"Public transport companies play a quite visible role in the dimensions of corporate social responsibility because the provide daily services crucial to mass customers's mobility" (Teles & Sousa, 2014).

A priority task of every public authority must be to identify ways which individuals gradually abandon the use of private cars in the large urban areas in favor of public transport. However, in order for this social phenomenon to take part and to evolve constantly, it is necessary to ensure appropriate conditions to

potential users. They must identify a suitable alternative transport network for movement at any time compared to travel by their own means, not only in situations where there is no other way.

2. PURPOSE AND METHOD RESEARCH

The study will approach in detail the information present at the current time, displaying and analysing successively the following aspects:

- Transportation modes available for the surface transport

- The study of specialized literature, along with the presentation of similar analyses carried out in various cities at international level

- SWOT analysis of public transport of passengers in Bucharest

The research objectives are the following:

A. To identify the main strengths and weaknesses of the current system infrastructure.

B. To identify the main opportunities and threats of the transport network.

C. To analyze the main problems of Bucharest traffic

The method used will require SWOT analysis: Strengths, Weaknesses, Opportunities and Threats. "The analyses performed in this regard are both internal analysis involving economic and financial viability and also management of the organization, and external with referring to competitors, consumers, certain environmental factors, both national and international" (Nicolescu & Verboncu, 2008)

Following completion of this study aims to establish a series of decision-making processes that include support activities in order to:

1. Maximizing Strengths

2. Elimination/Decreasing effect of Weaknesses

3. Additional exploring of Opportunities

4. Idetify methods to reduce the impact of Threats

Prior to SWOT analysis, we decided to present a comparison between means of transport provided by the network surface. Each mode of transport has its specific advantages and drawbacks directly influencing users' decisions.

TABLE NO. 1 - PUBLIC SURFACE TRANSPORT SYSTEM. TRANSPORTATION MODES

Bus	Tram	Troleybus
Advantages		
• Reduced costs associated to road infrastructure: buses do not require their own running route. • Reduced costs in terms of the procurement of bus units compared to other means of transport. • Very high adaptability to change existing routes without new investments in road infrastructure or circulating park. • Ability to avoid a possible roadblock by temporarily leaving the default route. In the case of the tram or the troleybus this action is not possible.	• Higher transport capacity, both on seats and standing. • Space available for passengers more generous than in the case of buses and trolleys. • Dedicated routes for tram traffic without access to private or personal vehicles. • Superior safety offered for passengers in the event of impact. • Reduced possibilities of a accident with another means of transportation, since trams benefit from a properly traffic light system. • Time of ascent-descent into stations decreased compared to other means of transport, due mainly to the higher number of access doors.	• Reduced resource consumption. Modern trolleybus uses technologies for energy recovery in moments of braking or deceleration. • The least polluting vehicle due to the fact that it uses electrical power as a source of propulsion. • Quieter than other modes of transport, which leads both to increase user comfort and reduce noise pollution on the traffic routes. • Higher movement speed than some buses, because trolleys benefit from superior acceleration due to instantly torque offered by the electric propulsion. • Development time for the required infrastructure is shorter compared with that required for a tram line: 2-4 years for planning and construction in comparison with the period for trams that exceed 5 years. • Operating time greater than in the case of buses with approximately 60 months, due primarily to the type of engine propulsion.
Disadvantages		
• The lack of its own dedicated bus routes, with special lanes where private cars may not have access. • Lower travel speed, especially during peak hours. • High risk of accidents and traffic jams. • Higher chances of delay and failure to comply with established schedules	• Higher costs in terms of infrastructure required to transport activities. • Operational difficulties in modifying existing routes or the emergence of new trails. • High duration of design and construction of a tram lines: over 60 months. • The infrastructure for tram lines require an additional space on the roadway or outside it for ascent-descent users stations.	• Reduced flexibility in case of road rehabilitation works, which could lead to the temporary stop of the trolley line. • Acquisition costs of a trolleybus is higher than purchase of a similar bus. • Trolley exploitation requires maintaining an intervention team for periodic revision of the network which can increase the operating costs.

"Based on conclusions drawn from relevant studies, two preliminary statements are made, which serve as a starting point of the research. First, demand for public transport is expected to be higher for tram services than for equal bus services. Second, if so, this effect is influenced by different cognitive

reactions to these public transport systems" (Ohnmacht, Diferențe în cunoașterea sistemelor de transport public. Perspectivă și comportament față de transportul public, 2012). Basically, users' perception are influenced by the elements presented in listed Table no. 1

A very important aspect for urban management in terms of public transport, is the type of infrastructure required for transportation network and its direct influences on the use of public space. Basically, there are considerable differences between the necessary infrastructure of the network of buses, trolleybuses, trams, and especially underground system. Additional facilities to the current road surface are minimal for bus network in comparison with the investments in case of the tram line. Also, these structural changes have a direct impact on the urban architecture, sometimes being necessary amendments to existing streets, demolition of buildings, land and property restitution .

Thereby, a potentially competitive advantage for public transport in Bucharest can be represented precisely by adapting the system to the environmental changes and the use of innovative technologies. Therefore, the system can be upgraded by switching the propulsion of vehicles on electricity or renewable energy sources.

Users may be attracted by the positive change, especially in the conditions if public authorities use a series of marketing policies that will bring to the attention of passengers the efforts of the City Hall representatives.

In this way, the system can simultaneously achieve two significant things for the sustainability of public transport network:

- reducing operating costs

- the possibility of a more advantageous offer to customers in terms of cost of travel tickets and subscriptions.

3. LITERATURE REVIEW

Specialized literature provides us with a wide range of detailed analysis on urban transport in various cities worldwide. Although each city has its particularities, some aspects are similar due mainly to the effect of globalization. Therefore, it is necessary to take into account other relevant studies on the same theme, and more importantly is that we should try to use some of the proposed recommendations in order to improve the process of public transportation in Bucharest.

In the study conducted by (Adamski, 2014) on the introduction of an informatic control system of public transportation, the author identifies three essential influences of public transport of passengers on:

- travelers (service standards)

- transit operators (best use of existing resources)

- the city community (potential of public transport to mitigate of the congestion related problems).

These influences should be carefully analyzed in order to understand them and to avoid the occurrence of undesirable events such as transport modes schedule deviations, increased traveling and waiting times or the overloading of transit means.

A detailed research on sustainable urban transport planning has been realized by (Grunig, 2012), and in his opinion sustainable urban transport can be cost-effective and in the same time improves mobility for everyone involved. "Future transport demand will evolve unequally. While in many urban regions population will increase, some regions will stagnate and still others

will shrink. These demographic impulses will be key drivers of shifting transport demand" (Grunig, 2012). This suggests the necessity of conducting an SWOT analysis.

(Nae & Turnock, 2011) conducted a study on the effect of 20 years of restructuring in post-communist Bucharest. Researchers investigated the effects of population growth in the coming years on the organization of the whole city and also on the transportation system. "Traffic problems mount, as Bucharest has a 3 million daily population by day which could rise to 4 million in 5 years) while the 1.3 million locally- registered cars increase by 400–500,000 vehicles bringing commuters from the surrounding areas" (Nae & Turnock, 2011).

(Duxbury, 2012) conducted an SWOT analysis on public transport network in Vancouver after completion of the Winter Olympics held in Canada, Vancouver in 2010. The purpose of the research was to identify issues related to public transport that has directly influenced the transport of passengers, both domestic and tourists. The final aim of the study was the development of a general guidance plan which will be used for future organization of high importance events by different cities.

Likewise, (Lau, 2013) researched applying the concept of sustainable urban transport planning in Guangzhou, the third largest city in China in terms of economic power (without Hong Kong) in Xiguan region. Study author proposed a planning model for Xiguan in order to suggest some changes of the

present legislation that would facilitate access for lower income population to public transportation modes.

"A sustainable urban transport planning model can be used to estimate travel demands and basic needs, to identify the unmet travel demands of the poor and to suggest necessary policies accordingly to improve unmet travel demands and achieve equal access for all" (Lau, 2013).

Considering the current development of the city in the coming years, designing a similar plan is required in Bucharest in order to ensure sustainable development of the public transport.

Another eloquent study regarding sustainable public transportation was realised by (Bachok, Osman, & Ponrahono, 2014) in the District of Kerian, Malaysia. The aim of the research was to improve the public transportation system. "Public transportation is a gateway to sustainable accessibility system. Apart from that, an efficient public transportation services enhance personal economic opportunities, save fuel, provide economic opportunities, save money and reduces the environmental impacts" (Bachok, Osman, & Ponrahono, 2014). The study was based on the answers of 100 respondents, user of the public transport system. Thus, the researchers could determine the strengths and weaknesses of the network and propose a series of solutions.

4. SWOT ANALYSIS

In the following, will be presented a summary of the SWOT analysis, followed by its elements presented in detail.

TABLE NO. 2 - SWOT ANALYSIS OF THE PUBLIC TRANSPORT SYSTEM IN BUCHAREST

STRENGTHS	WEAKNESSES
- High complexity of the overground network. - High density of surface transport routes: 4th place in the European Union. - Increased efficiency of underground transport system: provides daily transportation to over 600.000 users with only 4% of the total length of the transportation system. - Continuous investment process in the case of underground transport. - High capacity transport for both networks: over 2.6 million passengers transported daily.	- Termination of the agreement between the company that manages surface transport and underground transport company in order to use common tickets. - Technical outdated infrastructure in the case of surface transport system. - Negative financial situation in case of overground transport in 2013: approx. 10.437.778 € loss. - Lack of long-term strategies within the R.A.T.B. to include measures to improve services and increase the quality of services offered to customers - Low validity time of tickets for travel by surface transport.

OPPORTUNITIES	THREATS
• Expanding the underground network through the development of lines-M4, M5 and M6 • Possible raffic decongesting in crowded areas by introducing new road regulations order. • Restoring the agreement between Metrorex and R.A.T.B on using common tickets and travel cards. • The possibility of reducing pollutant emissions in the case of surface public transport through the use of modern and less polluting means of transport. • Organization by Bucharest 4 matches of the European Championship in 2020 that requires upgrading existing transport infrastructure.	• The phenomenon of continuous increase of motor vehicles registered in Bucharest, leading to the increasing urban agglomeration. • The constant increase in prices of traditional fuels. • Enhancing environmental pollution due to technologically outdated means of the transportation for surface system. • Lack of land needed for infrastructure development which leads to hampers the process of upgrading or expansion of public transport system • Expanding the urban area of the municipality of Bucharest in new geographical areas, not covered by public transport network.

A. STRENGTHS

a) Very extensive complexity for the surface network. The area served by the network's total area is: 563 km2 of which 228 km2 in the urban area, with a length of paths of 1.448 km double track: 229 km dedicated to trams, 140 km in the case of trolleys, and 1.079 km for buses (Regia Autonomă Transport București, 2013)

b) High density surface transport routes, placing the ground network 4th place in the European Union in this regard. At the end of 2013 are in operation for tram 23 lines, 17 lines for trolleybuses and 106 lines bus lines from which 25 lines for night transportation.

c) Top efficiency for underground transportation system. It provides daily transport for over 600,000 users to most important areas of the city. Very interesting is the fact that METROREX logistics has only 4% of the total transport network (underground + surface), but is accounted for 20% of the daily total number of passengers, 600,000 users from approximately 3 million daily (S.C. Metrorex S.A, 2012).

d) Continuous investment process within the underground transportation system. Metrorex S.A. current made a significant investment in the purchase of new subway trains that use the latest technologies in the industry and simultaneously increase the quality level offered to passengers. On 12.10.2014, Metrorex opened procedure for the acceptance of public tenders for purchase of new Trains for Metro Line 5, Drumul Taberei-Pantelimon. The company will acquire in this project 51 new trains with an estimated budget of 6.781.088€ for one unit and a final budget of 345.835.485 € (SC Metrorex S.A, 17.10.2014).

e) Modernization of ventilation facilities of subway trains. Metrorex began the procedure of upgrading the facilities of the Line 1, 2, 3, and TL. The expected duration of the work is 12 months and for receipt and the meeting for receipt of tenders opened on 26.11.2014. Investement value of this agreement amounts to 6.092.640 €.

f) Extending the network through development-Line 4, Bus Connection 2: Gara de Nord-Parc Bazilescu. Through POS-T Project Cohesion Funds, the European Commission provides a contribution of non-reimbursable external funding 116.646.945 €, the total value of the project being 172.265.048 € (excluding VAT), thus reinforcing the linkage from the Northwestern districts of Bucharest with Basarab railway station, the Gara de Nord and the urban central area (SC Metrotrex S.A, 2014).

g) Improving underground transport services through modernization and restoration of Line 2, which will start in 2015. The project will include the complete replacement of the walkway running over a total length of 19 km double track improving its aspects relating to noise and vibration produced, respecting the rules imposed by the European Union. It will also modernise sanitary facilities, ventilation and user information. The value of the project amounts to approximately 403 million €.

h) High transportation capacity. Network surface has a very large fleet as follows: 481 trams, 297 trolleybuses and1.147 buses.

i) Compliance with accurate traffic charting along with shorter intervals of subway trains succession for underground transport transport. Traffic graphs are drawn up depending on the days of the week: Monday-Friday, Saturday-Sunday, public holidays and have different succession periods in peak hours. The ranges vary depending on bus and rail stations.

j) Increase the transport vehicle fleet of surface transport from 1925 transport units 2012 in to 1961 units in 2013, which demonstrates a continuing adjustment to the requirements and the evolution of passengers travel demand.

k) The existence of suburban lines in the case of RATB with direct connections with the urban lines. At the end of 2013 there were 60 suburban lines in operation, served by the buses. These totals 111 kilometers of double track and 167 stations in Ilfov County.

l) Attractive pricing packages and highly diversified:

  ▪ Underground system provide the customers with a set of 9 types of tariff plans as follows

- a magnetic card with 2, 10 or 62 trips;

- a daily, monthly subscriptions with 62 trips or with an unlimited number of trips monthly or weekly;

- a subscription for pupils/students with 62 trips or unlimited trips at half the normal price;

- a travel identification cards for special categories of users: war veterans, disabled people, revolutionaries, etc.

Prices fall in the range 0.9-13.5 euro.

m) The use of modern methods of payment in the case of underground network:

- Payment of the trip through the NFC Contactless technology through banking cards MasterCard PayPass and Maestro PayPass or mobile devices with NFC technology. The cost of a voyage in this case is 0.5 €.

- Pay the journey via SMS by sending a message to short number 1700. Thus, you can pay 1, 2 or 10 trips with a cost of € 0.5, 0.9 € and € 3.25 for 10 journeys (prices excluding VAT).

n) The existence of direct connections between urban area and Henri Coanda International Airport. Public surface transportation system benefits from the presence of 2 express lines:

- Line 780 that connects the Basarab railway station and the International Airport Henri Coanda, with working hours between 05: 15 to 23.05. It has a length of 15.9 km (9.9 miles), and 9 stations in each direction.

- Line 783 makes the link between Union Square and Henri Coanda International Airport Arrivals, with working hours non-stop. Has a length of 17.9 km (11.1 miles), 15 station tour and 17 stations in return.

o) Introduction on 19.06.2013 of a public security unit known as "Police squad" which will have as its objective the protection of the means of transportation. This unit is part of the General of Police Agency of the municipality of Bucharest.

p) High accessibility in underground network for people with disabilities. In the process of modernization of subway stations, 42 of the 51 stations are adapted to the requirements of people with special needs. So, the subway system features a total number of 93 elevators, that make the connection between underground and surface.

b) *WEAKNESSES*

a) Termination in 14.03.2014 of the agreement between underground and surface transport companies regarding the use of the ticket for 60 minutes in both systems, and the validity of the card in case of both systems. The measure was taken unilaterally by the representatives of Metrorex due to overdue debt of about 4.4 million € from R.A.T.B.

b) Lack of a long-term strategy within the R.A.T.B including measures to improve services and increase the quality of customer service. A strategy of this kind, carried out over a medium to long-term, with precise objectives and deadlines, with an indication of the strategic options to achieve the objectives, and especially publicly presented to users, could be a real advantage for the surface transportation system.

c) The current infrastructure, technically exceeded. At 31.12.2013, the transport units belonging to public surface transport system registered a very high average wear degree, as follows:

- Trams: 89.97% average technical wear

- Trolleys 92.99% average technical wear

- Buses: 82.46 % average technical wear

Another relevant example is the fact that "Traffic Dispatching Service" recorded in 2013 by 2.6% more towing transport units that have encountered technical problems compared to 2012. The fact that caused this increase is the high rate of technical wear of modes of transport.

d) Minor investments in procurement of new vehicles for the surface transportation system. In 2013, the R.A.T.B has not acquired even one new transport unit. The only relevant event in the process of fleet renewal has been manufacturing under its own plants of a single Bucur type tram with the floor partially lowered by 80%.

e) Negative financial situation at the end of 2013 for surface transport network. R.A.T. B has experienced a significant loss of € 10.437.778. This was primarily due to the increase in total expenses of 3.525.333 € compared to 2012.

f) Lack of underground transport network connections to the center city with International Airport "Henri Coanda". Line 6 is under construction, but at the moment, the only lines that serve the Otopeni Airport are 780 and 783 express bus lines. The existence of an underground route would considerably increase the speed and at the same time the number of users per race.

g) Absence of an information system enabling electronic display of updated information about surface transport network. A similar system is operational in the case of the underground system, having the function of informing the users about the exact time of arrival of the next train, the minutes remaining in queues or the previous train arrival.

h) Reduced validity period of tickets for travel by surface transport. These are only valid in the means of transport which have been scanned. Basically, if you need to change the line a new ticket purchase is required. In other European cities there is a validity time for tickets of about 60-90 minutes for any route (example: Paris-validity 90 minutes).

i) Lack of accurate travel programs for surface transportation system. Due to the congestion in peak hours, arrival times at stop station are often not respected which leads to addition agglomeration and reduction in ride quality for passengers. .

j) High number of unpaid trips in the case of surface transport network. In 2013 have been drawn up by the administrative offence 97.862 records for passengers without tickets and were 98.452 surcharge processes. However, the actual number of people travelling without ticket or subscription is much greater, affecting directly the R.A.T. B revenues.

k) Reduced accessibility in case of surface transport system for people with disabilities. A total of only 20.78% trams and 48.79% trolleybuses are equipped with low platforms of descent that are designed to facilitate access for people with disabilities.

l) Lack of separate travel lanes for public transport. Currently, there are only 8 blocks in the Capital equipped with special lanes, separated by the normal path running through pillars of rubber, in order to facilitate the movement of public transport units. These lines provide both a faster travel speed and savings in the State budget of 112.000 € for each line by reducing fuel consumption. Buses on Line 104 and have reduced the time of the full route from 68 minutes to 40 minutes (Romanian Public TV News, 2014).

C. OPPORTUNITIES

a) A new agreement between Metrorex and R.A.T.B for introduction of tickets and common travel cards. Thus, the transition can be made easier for users between the surface transport network and underground system. It also would ensure the premises of an increased mobility of users and increase the overall quality of public transport service.

b) Expansion of the underground network through the following activities:

- Development of the M4 LIne with the new station: Bazilescu Park, Laminorului, Străulești, Străulești Depot

- Now building: M5 Drumul Taberei-Pantelimon, which will include 15 stations.

- Now building: M6 Line Gara de Nord-International Airport "Henri Coanda" Otopeni that will include 16 stations of which 14 new stations.

- Now building M7 Line Rahova-Colentina, which will include 29 stations.

c) High touristic potential, due to the existence of outstanding monuments in terms of architectural and cultural importance such as well as the Palace of the Parliament, the Romanian Athenaeum, the National Museum of Natural History Grigore Antipa, etc. Currently, the surface transport system is offering for tourists the "Bucharest City Tour" Project, operating in spring-autumn period, which includes a four special buses, overlapped, with a capacity of 77 individual seats. This enables the possibility of viewing the most representative sights of the city, tourists having the possibility to descend at any station. The ticket costs about 5.5 €, and the full-length of the route is 50 minutes.

d) The possible traffic decongestion in crowded areas through the introduction of new road regulations in order to establish new rules for parking places of private cars and some restrictions on access to downtown areas: Romană Square, University Square, Unirii Square, etc. Such measures would significantly improve the travel speed of means of transport, as well as reducing the risk of accidents.

e) Potential implementation of a management strategy to redesign the surface transportation network administrative system in order to increase the quality of services for users. At the same this action may increase the number of users, can decrease the percentage of unpaid trips and improve the overall image of the organisation.

f) Involving the R.AT.B representatives in the support of non-governmental organizations, educational institutions, cultural or sports activities. In 2013, 59 requests were honored by the surface transport system in order to provide vehicles rent for short-term.

g) The positive dynamics of revenues from the sale of travel documents and services within the surface transportation system. In 2013, there was an increase of approximately 4% in ticket sales and travel passes compared to the previous year, amounting to US $ 6.97 million (1.54 million €). This positive trend may be due to both increasing the use of surface transport

system, but mostly reducing unpaid trips travel, achieved through the introduction of new recharge cards centers and relocate some existing centres in locations with a higher flow of travelers.

h) Intensification of "Marketing Services" activity of overground transport system in order to improve the organization's image in the user's vision. In order to achieve this, in 2013 the company insisted on improving relations with users and diversification the methods of communication with them. Thus, new posters were developed, with instructions for the cards' validation, both in Romanian and in English; there are updated video materials, presented on LCD screens inside vehicles about the Automatic Charge system. Also, there has been realized new graphic materials on the general map for the routes of means of transport with printing and distributing them to users; creation of a whole new concept to promote the project „Bucharest City Tour„: map route presentation, flyers, vouchers, etc.

i) The possibility of reducing pollutant emissions in the case of surface public transport through the use of modern means of transport, using energy recovery technologies. We are referring here primarily to circulating park consisting of trolley buses and trams, which use electric propulsion. Both atmospheric pollution reduction and reducing noise pollution should be a constant concern for the public authorities.

j) The organization of the Bucharest of 4 matches in the European Championship in 2020. According to the official report drawn up by UEFA, Romania must improve a number of issues of infrastructure, mainly aspects related to public transport as well as the establishment of a direct underground line between the airport and the city centre or increase the capacity of transport between downtown and the stadiums where official games will be carried out (Romanian Football Federation, 2014).

C. THREATS

a) The phenomenon of continuous growth in the number of motor vehicles registered in Bucharest. Currently, in the capital are registered 20% of all vehicles at the country level. Thus, in 2012 public records listed about 1.050.000 vehicles registered in Bucharest, from a total of 5.249.187 registered in Romania (National Institute of Statistics, 2014). This process has a direct influence on public transport as it constantly supplements the number of vehicles that use transport routes, while infrastructure does not develop at the same rate.

b)   The high rate of motorization, leading to increasing competition from private cars. A study by the Competition Council made at the end of 2013, shows that in Bucharest there is an average of 471 cars per 1000 inhabitants, while the national average is just 203 cars/1000 inhabitants. This aspect poses a threat because potential users of the public transport network may choose to use personal means of transit at the expense of the public system.

c)   The urban area of Bucharest is continuously expanding in new geographical areas, where urban transport network does not have a sufficient number of lines, and the current infrastructure cannot meet the citizens need.

d)   The increase in prices of traditional fuels. Effect with direct influence on the increase in public surface transportation costs. The price of diesel fuel has had a steady growth in the past ten years, with a direct effect on the company operating expenses. In 2004, the price per 1 litre of diesel do not exceed 0.5 €, while in 2010 has reached the value of 1 €, and in 2014 the price climbed up to 1.26 euros/liter (European Commission, 2014).

e)   Increasing environmental pollution, due to technologically outdated means of surface transportation. "The pollution caused by transporting is the most important source of air pollution in Bucharest"-Ion Dedu, 23.10.2014, head of the of Infrastructure and Transport of the City Hall Bucharest.

f)   Lack of land needed for infrastructure development, which implies a delay of expansion of transport networks. In the case of the extension or modification of the public transport network, an important issue is the availability of the necessary areas. It is possible to impose a series of demolition of the current building, expropriation, changes in ownership or purchase land for reasons of public utility (Official Gazette of Romania, 1998) but all these processes require a long period of time.

A detailed and thorough SWOT analysis can provide for officials of a company or public institutions, as well as in our case, a general framework of standards and objectives which should be improved or fulfilled.

"Achieving many urban sustainability goals will require strategic, long-term thinking and careful meshing of long-term vision with detailed programs, policies and regulation" (Wheeler, Planning for more sustainable urban development, 2012). The issues identified in this study are concrete elements, with direct impact on the development of optimal conditions of work in the public transport system of Bucharest and therefore, should not be ignored.

It is gratifying that currently are made a series of costly investments in underground transportation system, which will lead to overall process optimization. However, a similar approach should be developed by the authorities and within the R.A.T.B in order to improve the surface transportation system.

"Good cities need efficient public transportation. It facilitates community to have access for many activities that contribute to individual and public wellbeing. It provides accessibility to people who cannot drive or could not afford to drive" (Bachok, Osman, & Ponrahono, 2014)

Studies in this area highlights a problem concerning the quality of services offered to users in case of ground transport. Similar negative elements arise also from the present research, in particular within the weaknesses analysis chapter.

An effective approach in terms of action taken after the SWOT analysis should look separately both at short-term objectives and long-term goals.

Within the public transport system in Bucharest, should be considered five main aspects in order to achieve the desired balance between supply and demand:

- The city population

- User needs

- An efficient public transport

- The necessary infrastructure

- An optimum quality assurance

These factors may represent potential threats or opportunities that may materialize over time into strengths or weaknesses.

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