Extended abstract

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The population of rural areas is retracting, making urban population continually grow. Taking advantage of the increased demand, speculators seek to maximize gains increasing the rent value of the property.

"The most widespread pursuit for attractive rents creates geographic differences in proportion to the intensity of investments, often ensuring that regions with an abundance of capital become richer while the poor become relatively poorer" (Harvey, 2004). Especially in the city of Rio de Janeiro, where the economic and financial area is concentrated, this unfortunate population that increasingly is being removed from the center and the South Zone, is subject to long commutes to work. Combined with the problem of increasing distances, the public transit is inadequate, stingy and without quality, both in terms of comfort, and in relation to security, exposing its users extremely long terms, exhausting and dangerous journeys. Given these conditions, the least unfortunate opt for private transport, increasing traffic, reducing the average speed, while reducing the rationale and the financial viability of the public transit system - and thus also potentially reducing the mobility of those who depend this system (Massey, 1991). In other words, the time-space expansion pushes the neediest population away from opportunities, from the possibility of studying, and ultimately restricts social mobility.

The public transit is the most rational and efficient way to move people from long and medium distances in medium and large urban centers. Even if the public transportation by bus (SPPO in Portuguese) is fed at the ends by other modals, whether they are not motorized or automobiles, it should be fast, reliable, safe, inexpensive and minimally comfortable, and these characteristics should be intensified the greater is the volume of use.

Public transport suffers from acute and chronic shortages in Brazilian cities in general. The inefficiency of bus services and the inadequacy of rail transport
have a severe impact on the so-called "Brazilian Cost".

As our urban population already exceeds 84% of Brazilians, these aspects also severely affect the environmental and social conditions, deteriorating the quality of life and wellbeing of this whole amount of people.

One of the "gurus" of quality in the 1950s, Armand Vallin Feigenbaum, created a management concept called "hidden factory", which he says is embedded inside the main factory and maintained with waste, rework, other reasons, and may represent 40% of losses.

By analogy with the concept of Feigenbaum, it can be said that long travel times, low levels of passenger comfort, reduced productivity on passengers traveling to work due to stress and fatigue, and fuel waste, are just a few examples of factors that generate a "hidden cost" effect, ultimately reducing the competitiveness of domestic products and services, both domestically and externally. This becomes one more component of the "Brazilian Cost".

The population is divided feeling like a sardine in a can, or a slug in the car. In the light of the above, studies are needed to identify reasons for these deficiencies in public passenger transport in Brazil, which certainly have a high degree of complexity, encompassing business interests, political aspects, and cultural issues, both for users and for not users, and propose alternatives to break the vicious circle that prevents us from moving forward in this field.

The central issue in this work is to understand the reasons for using and not using buses, which is the basis of the public passenger transport system in the city of Rio de Janeiro.

The main hypothesis to be investigated is that there are ways to adjust the system, so that a significant number of non-users, who currently use individual transportation, change their behavior and start using the bus.

The main objective of this research is to evaluate three points related to system users, to validate the hypothesis and possibly to propose suggestions for adjustments. The survey was restricted to users of the BRT, which is a modern, high capacity model that is still in the evolution phase in the city, but already has two corridors operating full time. That is, if the citizen does not want to use the Bus Service (SPPO) with BRT, which is theoretically the buses’ quintessence, he probably will not want to use it only with conventional buses, which have a much lower operating standard comparing to BRT.

To quote Feigenbaum, its definition establishes that quality is given by the customer's perception, and is based on the customer's experience with what is
being consumed, measured in relation to their wishes and needs, whether declared, implied, conscious, just perceived, rational or subjective. In other words, the composite product characteristics that determine the degree to which the product in use will meet the expectations of the customer.

Following this concept, it will be pursued in parallel to achieve the following secondary objectives:

- Identify needs and desires relevant to users, which may influence the evaluation of the quality of buses services;
- Identify the level of user satisfaction with the current system;
- Identify the main causes that may lead to a reduction in satisfaction assessment for actions that are the responsibility of the SPPO operators;
- Identify the main causes that may lead to a reduction in satisfaction assessment for actions of public authority responsibility.

According to the company that manages the BRT consortium, the group of users totals 430 thousand passengers per day. From this group it can be estimated that 20% has the possibility of using private transport, and that the remaining 80% are totally dependent on public transportation.

The methodology adopted was the application of structured questionnaires, with a Phrase Completion scale of eleven points. Sampling was estimated considering an error of 5% and a confidence interval of 95% for this population considered infinite.

The aim of this research will be BRT users in the Transoeste and Transcarioca corridors, divided into two groups, which are users who do not have a current possibility of using private transportation and those who have this possibility, but who opt for public transportation.

The questionnaire sought to allow the separation of each of the profiles of interest. For the first case, we tried to verify if the users who do not currently have the real possibility of using an individual transport would migrate from the public transit, if they had this possibility and why. In the second case, it was sought to identify in the users that have the real possibility of using an individual transport, the main attributes that if degraded would make them leave the public transport, and what reasons bring them to the bus currently. And for all cases, seek to identify the degree of evaluation of the level of quality perceived by the two groups for the buses service in the city of Rio de Janeiro.

This work is structured in seven chapters. Chapter 1 presents the justification, objectives, methodological questions and how the work is organized.
In the second chapter a historical contextualization is made, explaining about segregation of spaces, the changing of the main modalities of public transport and on the establishment of the bus as the current basis of mobility in the city.

Chapter 3 presents the literature review, giving an overview of urban mobility in the city of Rio de Janeiro, and discusses the BRT concept, and the models adopted in Curitiba and Rio de Janeiro, comparing them. Also in this chapter are presented the concepts of the satisfaction survey and the measurement model.

The forth chapter provides the details of the research methodology, how it was constructed, how it was applied, how the data were worked and what the results were obtained.

Chapter 5 presents statistical data of the sample, showing distribution of age, gender, education, main occupation, income, frequency of use, if and how does integration with another modal and if have available private vehicle.

In the sixth chapter the results are analyzed, trying to answer the original questions, and also evaluating the weight of the attributes for the users, considering several stratifications.

Chapter 7 presents the conclusions of analyzes, as well as the limitations and suggestions for operators, public authorities and other researchers interested in continuing this study. Also presented suggestions for new research that use the data obtained here and seek a deeper understanding of the issue.

Regarding the issues that guided this work, it can be said that:

• The users seek a transport that presents a standard of comfort, albeit at a minimum level, such as the capacity limit established by transit agency (4,5 pax/m²), and air conditioning adjusted in the temperature established by health agency;

• The current level of satisfaction is very low, with 80% of users dissatisfied, according to Net Promoter System;

• The main causes of bad evaluation due to the responsibility of the concessionaires are bus overcrowding, comfort and maintenance of vehicles;

• The main cause of the low evaluation due to actions of the public authority is related to the behavior of the other passengers, since there should be an intensification of the police control to contain assaults, robberies and vandalism.

**Keywords**

Mobility; public transit; bus system; urban segregation