

The Future and the Urban Bus

Me. Eduardo Facchini¹, Willian Reginato Este²

Dr. Eduardo Mario Dias³

¹*Engenharia Elétrica pela Universidade de São Paulo USP - Escola Politécnica de Eng. Elétrica em Automação pelo Gaesi.*

²*Engenharia Elétrica pela Universidade de São Paulo USP - Escola Politécnica de Eng. Elétrica em Automação pelo Gaesi.*

³*Engenharia Elétrica pela Universidade de São Paulo USP - Escola Politécnica de Eng. Elétrica em Automação pelo Gaesi.*

Corresponding Author: Me. Eduardo Facchini

Abstract: It investigates the strategic importance of using the best practices in the operational planning process, to achieve quality improvement and the expectation of time in the urban bus service. It is a case study of a pilot project implemented in São Paulo, with demonstration of qualitative and quantitative data.

The model presented is based on the implementation of a Quality Program in a public organization, manager of services in public and urban transportation by bus. The theoretical foundations show different conceptions, in qualitative and quantitative research, and make a brief discussion about the underlying context of the service.

The systemic approach used in the elaboration of the model masters a basic structure, presented, and can be used in the implementation processes of Quality Programs and Resource Optimization, in urban bus transportation. The conclusions are corroborated by qualitative and quantitative surveys, before and after. It presents as contribution, strategic planning as main instrument, and comprises three levels: corporate that deals with the sector of action and decisions for the different processes in the operation (management and operation), that it operates; in the unit that make the decisions and that define the best way to carry out activities to reach the objectives; and functional aspects known as the decisions and actions elaborated by the areas of action: traffic engineering and transportation. These organizational levels should serve the same purpose in order to achieve the expected results successfully.

Keywords: Operation; Control; Mobility; Traffic; Connectivity

Date of Submission: 06-08-2018

Date of acceptance: 23-08-2018

I. INTRODUCTION

Mobility and connectivity are contemporary words that have come to stay. You can not imagine the world today without these two words, to classify periods in different stages, punctuated in the evolution of technologies, is no longer what we can call easy task. Teleportation is very imaginative in our science fiction, it is close to becoming reality, but man still seeks solutions to balance the cost and benefit of essential things like transportation, food, housing, etc. Countries without financial resources, with difficulties of investment in areas such as mobility, as is the case in Brazil, seek to adapt low capacity transportation systems to move what would be plausible in a medium or high capacity system. Systems such as the BRT-Bus Rapid Transit, in which the urban bus moves in a segregated territory, has been one of the last advances of the technicians of the sector in the attempt to maximize service and supply, or to meet other demands, such as Uber's novelty, shown below. On the other hand, CRUZ explains (1998, p. 46), the peculiarities of urban public transportation must be analyzed from its service characteristic, which involves dimensions such as: intangibility; Competition between production and consumption; Difficulty in standardization; Great dependence on the human factor; Irregular demand, not allowing stability and uniformity in production; Extramural production with great geographic dispersion, in a non-controllable environment, subject to several variables (topography, urban layout, traffic, etc). The market, in the case of public transport, is regulated by government agencies, and its main actors are: users (demand), entrepreneurs (supply) and public power (regulator). The article is based on the experience of the city of São Paulo between the municipal management in the years 2014 and 2016, known as "controlled operation", and that was put into practice in the dawn period as an Experimental program, by the administration. This experience sought to solve the issue of regularity in the Itineraries (Lines) of part of the system (Night time) and to make the transport companies respect the pre-established schedules, by the public manager. At the exit of the vehicles from the starting points and at the final and passing terminals. These failures were pointed out as the main complaints of users. Thus, a study group was created, named by the Municipal

Transportation Department (SMT), an organ of the city of São Paulo, composed of employees of municipal public enterprises (CET) traffic engineering company and (SPTrans) São Paulo transport SA in conjunction with specially contracted consultants whose objective was to diagnose the problem, having the freedom to conduct experiments and, as the case may be, to implement a pilot project in search of results. This was in charge of the Transport and Planning Council of SPTrans.

II. THE RESEARCH PROCESS AND SYSTEMATIC CLASSIFICATION

About the physical and financial effort linked to the launch of a physical product, one can be sure that no one doubts its real need. Some authors even say that the question of the cost of the investment needed to implement a service is substantially lower than that required to launch a product. (MOREIRA, 1993, 244), and present this justification for the problem of not taking the same care in the "Service Operation" projects that you have for the product launch.

What we can judge, is only academic misunderstanding. Since in the business world we know that a service such as the urban bus operation in a city like São Paulo, for example, comes to have huge direct and indirect costs that should not be Belittle's.

In an article with about three hundred academic citations, published in the Harvard Business Review, by Lynn Shostack (1984). The author, on the subject of service errors, reports that while services may fail due to human inadequacy, the fundamental factor of errors is the lack of systematic methods for service design and control.

In the same article, the author proposes a list of initiatives to guide the best way to implement or improve a service, among them: Identify the processes; Identify actual and potential points of failure; Establish execution times and analyze profitability / productivity.

Some of these suggestions seem obvious, but there is a risk of confusing the "physical" product with the "service" product.

An identification of the processes and the mapping of them was what the study group did in the first place, in the case of São Paulo.

The simple systematic classification of activities presented what works and what should be restored.

For example: the institutional relationship between municipal enterprises was not the best, and problems appeared, as is explained below.

Another important decision that brought fundamental knowledge to solve the problem raised was not to propose or open spaces for new information systems, offered by consultants or affiliated companies, without first checking the resources available in the tool available.

The Integrated Monitoring System - SIM, which should have used as a Municipal Network Monitoring System by bus, providing the necessary information for the operation.

It was developed and deployed in mid-2005, and little or nothing was known about its characteristics, failures and / or lack of training of the end-users of the operational area responsible and the main customers of the system, due to the lack of follow-up and because of the discontinuity of the government it had implemented.

Thus, a detailed mapping was developed, which resulted in an accurate diagnosis, where a complete abandonment of the system was verified and very little was used in the operations of the Urban Bus Transportation Services.

"The strategy of operations in service companies is usually inseparable from corporate strategy. For most services, the delivery system is business-oriented, and therefore any strategic decision must include operational considerations. marketing to add a new route to an airline, or to add new services provided during the flight, can be made despite protests from operations personnel regarding feasibility (as well as manufacturing). (CHASE, 2006. p.36)

The System Manager operational team, which represents the public authority, began to feel threatened and presented several obstacles to arriving at a real diagnosis, which probably could also happen if it were the launch of a physical product.

The need to relate to CET, a municipal company responsible for city traffic, and also the public power, with the aim of removing any obstruction that appeared on the road during the operation.

It represented a dispute between CET and SPTrans, who was directly responsible for the project and the task of managing the urban bus service in the city. However, it was possible to verify the most susceptible activities, the erroneous ones and the probable nature of these.

As for establishing a time of execution, in an attempt to search for an automatic control process, not only was a scheduled schedule of service hours elaborated, but also defined a logical sequence of strategies ranging from the total lack of the information system (level 1), for the operation of all the components of efficient control by the operations center (level 3), which would work with the help of a synoptic panel that would complete the information for the control station in the control unit.

And simultaneously for the on - board vehicle team in operation, passing through (level - 2), which meant operating with a minimum of control, lacking the information system, for example.

At the same time, it was defined that after the critical period, which would be the peak in the movement of users, the outputs and returns would operate in a pendular way, not using hourly charts but instead attending a sequence of outputs depending on their demands between peaks.

It is also important to speak of the Profitability / Productivity analysis, which Daniel Augusto Moreira (1993, 245) describes as: "Delays in the execution of the activities that constitute the service can drastically affect profits, delay, beyond a maximum time allowed, has its price".

This statement by Moreira addresses the problem in focus, the users' complaints about the lack of regular service and the apparent or false impression of the lack of supply in public transport systems, due to the constant delays and lack of regularity. , often due to problems and obstructions in the routes of their itineraries.

In addition to the false impression, the lack of vehicles to meet the demand of passengers.

The uncertainty about regularity over long intervals makes it almost unnoticed, the biggest problem.

The "lack of planning and strategy" of the operation.

III. IMPROVE QUALITY TO INCREASE PRODUCTIVITY

In the literature, as in business practice, one can find among the main aspects of quality and production management strategies, strategies based on ISO (International Organization for Standardization Yes, International Organization for Standardization) in total control and quality and global management of Quality.

However, when talking about quality in urban passenger transport services, the conceptual approach must always be linked to the full satisfaction of the end user of the service and to the correct diagnosis of the quality of the expected and desired supply by the public power.

"(...) Three basic concepts can be associated with this movement in its current stage: the incorporation of the desires of the clients to the company, the motivation of the people for the pursuit of excellence and continuous improvement and the emphasis on the management of processes According to with a systemic view, several factors have increased the importance of this approach in business activities, be they public or private. For private companies the main motivating factor for improving quality has been the increase of competition in the national and international markets. competitive variables and the increasing value of quality as a competitive differential "(LIMA, 1995)

The efforts and waste of values, as in the industry, are also expressive and other damages caused by the lack of quality, mixed with the time and comfort wasted by the users within a certain period of time in their movement through the city.

After all, if the government wants us to leave cars at home, some effort to provide us with safe and comfortable transportation should be done.

These factors induce customer loss and are fully qualified as a loss to the companies.

In other cases, they are externalities, according to social spending paradigms with delays in congestion and the constant delay of public transport.

The current model is cruel to the population that moves around the city.

Today we witnessed 'Uberização', a verb that arose due to the enormous popularity of the Uber American multinational, which has been operating in Brazil since 2014. Electronic service provider in the private urban transport segment, which offers an application that allows the search of drivers who are close to their location, offering a service similar to the Usual Taxi.

Considered, despite the huge controversy surrounding its regulation, as "pay-as-you-go" services.

In fact, the emergence of this form of transportation was possible thanks to the poor-quality service of urban public transport, which, due to lack of choice, cost and reasonable benefit, compensates the user.

We look forward to another comfortable service and within the time of your need, to get around.

During its expansion, Uber found a violent resistance by the services of taxis and regulators of the government.

In 2014, taxi drivers in London, Berlin, Paris and Madrid staged a large-scale protest against Uber.

Taxi companies claim that because Uber avoids expensive license fees and ignores local laws, this creates unfair competition.

IV. THE SERVICE, THE STRATEGY AND THE CONTROL.

The organized system of urban bus transportation, In the Brazilian case has little more than a century as Explains (Bamford, 2016, p.141), and the simple configuration of the design of the processes comes to be almost that of "uses and customs", so rooted that it ends up hindering any modification, suggestion or interpretation of reversal of relations of priorities, which proposes.

The biggest demonstration in relation to this fact, were the attempts of inclusions made in several cities, in the state of São Paulo, mainly in the capital, when it was sought, at the time, the implantation of new models

to Absorb the Transport Illegal (owners of turkeys who made direct competition to the system), a lot of people died or got hurt, and finally after a lot of fighting and confusion ended up being included in the systems. It becomes almost a 'mortal sin', to speak of something that is different, of what is already stipulated as standard a few years, even with technical arguments and information.

Strategy and leadership walk together as described George A. Montgomery (2012) in his book "The Strategist", strategy is not a puzzle to be solved, it is a progressive evolution and needs constant leadership.

The very nature of the public service may be the justification for those principles that guide the strategy in Montgomery's view (2012) are not pursued: the lack of a full-time strategist is one of them, no doubt.

The alternation of power, healthy, more that forces a discontinuity of ideas and projects.

The shortage of political projects without due commitment to ethical and viable public policies, lacking in the discourses of contemporary politicians, can also be another factor responsible for this deficiency.

Or the simple omission of control, which would perhaps be its main and most important action.

The verb or control expression can take on different meanings.

Because when you talk about controlling, you immediately think of meanings such as regulating, confronting, ascertaining, checking, or exercising authority over someone or something.

Finally, comparing with a model, it makes us think of something that represents a critical judgment.

However, seeking as Foucault (1997), the greatest possible meaning, we can understand how to control and punish:

a) Control as a restrictive and / or coercive function: employed to repress or limit abnormalities or conduct not allowed by society.

b) Control as systematic regulation: as well as feeding with automation a stable coefficient in the trajectory of a system. How we try to mount in the case of the controlled operation of São Paulo with the aid of a synoptic panel.

c) Finally, control as an administrative performance: that becomes control as a component of the administrative process, such as Idealization, program, planning, organization, trajectory, leadership and command or Government of the situation.

"(...) Corrective action aims to make what is done exactly according to what was intended to be done." (CHIAVENATO 2000, p.208)

It is still important to remember that:

"(...) Public transport planning involves the three conventional levels of planning: strategic, tactical and operational. The strategic, with macro characteristics, encompasses the definition of collective modes of public transport to be used, the general location of routes (...) While the operative addresses more detailed questions, and focuses on scheduling the operation of the system (2004)

But controlling apparently should be the most important function of public power in the matter of transport services.

And this one does?

Yes, with regard to Financial Control, this is undoubtedly the type of control most referred to in the system, by operators, for obvious reasons, by public authorities to analyze the economic-financial balance.

However, the long-term strategic institutional systemic vision and the search for operational planning do not exist in an organized way.

Public authorities and operators completely ignore this control.

They do not spend time to better understand your user profile, which would result in better long-term planning.

They do not use the electronic ticket information that can provide important data for an analysis of the effectiveness of the system.

At the intermediate level, structures must, both operators and managers, maintain coherence in the hierarchical chain of control and in the articulation of the actors of the service.

Operational control must be exercised with the minimum strategic planning, always seeking the improvement of the system, avoiding unfounded processes, with emphasis always on efficiency.

V. THE SITUATION OF THE SECTOR IN BRAZILIAN CITIES

When checking the interrelation of the various actors involved in the production chain of the public transport system on tires in Brazilian cities, there are conflicts of all kinds.

More traditional, as 'Uberization', involving regulation Capital / labor relation, even other more sophisticated and without any ethical basis, as the 'loosening' of rules, aimed at remedying problems generated by the economic crisis, defended by some entrepreneurs and accepted by municipal governments.

The big question is that this interrelationship is not always so good, and whoever "ends up paying the bill" is the user.

And even the issue of public-private partnerships (PPPs) that, according to Mello & Slomski (2009), "emerged in the world as an alternative to encourage private participation in public investments.

In Brazil, the discussion of its implementation raised doubts about the transparency of these contracts, the guarantees offered by the Government and the accounting treatment of public expenditures. "

"The state is to provide transportation to the population In Brazil, the management of public transportation systems is the responsibility of the municipal public authority, however, the service is performed in the majority, by private organizations, of the granting power. of Brazilian companies in the sector have some characteristics: they are private properties, mostly large Unlike Europe, for example Teller, where the public power operates a large part of the lines; To have a significant size, in contrast to other countries in South America , where individual or small companies must be dominated, such as the use of diesel as a fuel, which requires more maintenance, Influence and extends to other branches of EconoMia besides being a sector where the introduction of new and more technologies control and operational monitoring.
CRUZ (1998: p.46)

The entrepreneurship of this sector in Brazil has a comfortable attitude due to lack of competition, since the contracting model is made by "public bidding" and grants a concession or permission for a certain time to operate some lines or regions of the cities.

On the other hand, to put a bus in the streets, a high investment is required: labor, purchase of very expensive new vehicles, fuel and risk of violence that has caused more and more depredations and fires, destroying in a few minutes active (which are for public service) of high values.

All these expenses must be covered in the Brazilian model of mobility costs by tariffs. In general, there are few systems that depend on subsidies. Several Transport Systems suffer from unrestricted tariff freezes, subsidy uncertainties and unbalanced costs of integrations. In São Paulo, the largest bus system in Latin America has been freezing the unit tariff by political decision of the mayor in 2017, but there is uneasiness regarding the costs of this decision.

The assessment is that the subsidies would be necessary around R \$ 3 billion, however, and is reserved for launching for the year, only R \$ 1.79 billion. And somehow, they have to invent that lost money, that's what's leaking in the press.

Another critical point is the issue of costing, a fundamental ingredient, but always used for a good excuse of the lack of investment and quality of the sector: No one likes to adjust the fare, especially the passenger.

The tariff in Brazil is expensive but does not covers Cost. And what is most desired by the passenger, by the information of the managing organs, is a good service, reliable, with new vehicles, comfortable and quantity of buses that really meet the demand.

And this has become increasingly difficult with the financial imbalances of systems in Brazil. The issue of transportation costs urgently needs to be remodeled in Brazil.

The CIDE municipal tax on fuels, which would have the tariffs to cheapen and finance the high number of gratuities and integrations, may be one of the paths according to experts.

It would be a way of financing the collective, which is currently no longer possible, because it was used as the bargaining chip in a transporter strike in Brazil in the first half of 2018. The tariff must be an element of public and social policy, but without political demagoguery. It is necessary to verify if the situation in Brazil, of the sector is not of the best. But looking at other moments in the history of mass urban transport in Brazil, similar situations can be found when, for example, in its first issue of July 2000, the National Association of Public Transport (ANTP) as the first of a series called, ANTP sector documents, name: the clandestine transport in Brazil.

In this, the association approaches the theme of the then expressive growth, at the time, of the so-called clandestine transports and the claim of the businessmen of the sector.

This publication may say that it reflects the moment and leaves a good idea about this crisis, cited.

At the end of the publication, the association begins to relate basic and detailed institutional, normative, strategic, operational and tactical measures, based on certain real experiences of confronting this sector crisis, aiming to point out several of the probable solutions for the time, and others that always appeared in their studies, but were never put into practice by entrepreneurs and also by public transport managers. (ANTP, 2000, pp. 132-45)

In order to have a contemporary idea of the situation, the National Association of Urban Transport Companies (NTU) commissioned a survey on the economic and financial scenario of companies in the sector published in Urban Urban NTU Magazine, number 27 May / June 2017, second the association:

Part of society does not see the rapid worsening of urban public transport, which is dying in the midst of an unprecedented crisis.

In order to translate it into numbers and show the urgency of actions to reverse it, the National Association of Urban Transport Companies (NTU) commissioned a survey on the economic and financial scenario of companies in the sector. And there was no other: according to the survey, 67.6% of the respondents have some type of debt and, for 29.1%, the debts already occupy 40% of the annual revenue. Most of the deficit is with the Union (36.9%), while 19.6% declared having accounts to settle with the municipality, and another 11.1%, have the status as creditor. Unprecedented, the study was conducted by the FSB Research Institute.

Also, in the same publication, Octavian Cunha (2017), CEO of NTU, states:

"The sector is going through a structural crisis, which is further aggravated by the economic recession. But to not sound like an entrepreneur's cry, we commission the research, which reveals the problem and the importance of discussing proposals to get around it and reach a transport efficient and sustainable " and adds to the end:

"Quality public transport is expensive and, as a social right, needs more attention from public managers."

According to the magazine, for the accomplishment of the research the companies were classified "by Porte, defined by the annual revenue" (NTU, 2017)

With this critical judgment, "large companies were defined by revenues above R \$ 90 million, averages with annual sales between R \$ 16 million and R \$ 90 million and small companies for sales of R \$ 16 million." Executives from 225 large companies, medium and small companies were interviewed in 115 municipalities, between March and May of this year, the companies have a fleet of 32,349 vehicles and employ 133,547 employees, but this last number was already higher: with the economic crisis, there was a decrease of 5.1% in the workforce in the last two years, according to research. "(NTU, 2017)

(...) "Non-compliance with contracts is one of the practices responsible for corporate debt. According to the survey, it is common to disregard the clauses that determine the tariff readjustments: 41.3% of the companies interviewed did not have the lowest price tariff, although 92.4% of companies operate under a concession or permit agreement. adjustment due in the last three years. "

Available at: (<http://ntu.org.br/novo/upload/Publicacao/Pub636354502024110478.pdf>) Accessed on 07/25/2017

VI. QUALITY SERVICE AS A PRODUCT

The service presented in general is not "good" as we can see.

"It is natural today to hear frequent complaints from users of public urban transport, who complain mainly of the difficulties faced in using this service. Delays at set times, overcrowding at peak times and few available lines are the most common complaints. This project proposes as an alternative to mitigate the impact of these problems on users, to develop an automation system based on the use of an Adaptive wireless network to provide the information necessary for users inside the vehicle and bus stops to receive the updated information constantly about which ones units are approaching their stop, with an estimated time of arrival of each bus. So you can choose which time and line is most appropriate and also offer arrival time information for the subsequent stop "

(Rodrigues, G, Brossard, C., Claiton, C, 2013)

In fact, it is that the service includes many problems, which also must and can be solved, with another "big" number of actions, be it the manager of the public energy system, operators and even from the point of view of uses and customs on the part of the users.

Even the new form of service hirings. Here it is understood that all proposals and studies are not exclusive.

But the main strategy of action is in a careful planning of the processes, because over the years, the model and procedures for the service of this service have deteriorated and today without a set of actions programmed and studied in detail are not able to move forward.

Unfortunately, that is not the direction the industry has been seeking. On the contrary, we are accustomed to follow the constant crises and always listen to the same music and recommendations of the technicians, and everything continues as before.

The key issue is that the segment needs to mature, to the point, the activities that previously required and consumed a lot of energy, today begin their journey seeking Automation, at least in some redundancies in controls that do not allow elemental errors.

Technical recommendations should not only occupy spaces in scientific articles and conferences but serve to improve the quality of the system.

Moreover, if we observe, there has been, at least in the known history of this sector, a competitive volatility of the companies, in the phase of growth, entering and exiting the market.

Otherwise, the companies in the sector would not be familiar, traditional and somewhat stable in Brazil, looking like a game of territories marked and duly respected by the competitors, who come together in defense of their territory, whenever threatened, see case two clandestine operators.

As well as, the phase that the sector passed in the beginning of the highway model, as shown by the urbanist Marcos P. Bicalho.

Many cities, neighborhoods and bus lines expanded in a process that Erienne Henry and Anísio Brasileiro (1998) called "onibusurbanization" characterized by the combination of accelerated urban growth and the emergence of a service model based on road technology and the structure of the private business sector. (Bicalho, 2016. p.142)

The intensification of competition in the bus service of São Paulo was visible from the appearance of clandestine operators (owners of vans, service providers without authorization), lacked the system, creativity to launch new complementary services, which eventually emerged, forced by the emergence of the new competitive force, small vehicles, which have become selective, for example.

On the other hand, this sector does not present a conventional life cycle, which should be understood, and made a complete study of its life cycle, exploring an analytical view.

VII. THE TRANSPORT SERVICE AS A SYSTEM STRATEGICALLY ARTICULATED IN SEARCH OF AUTOMATION

The system of operations of the transport service by urban bus should be evaluated based on a certain care as to the categorization of its components. First, the apparent elements of the operations of a service can be divided into two groups: those related to the internal actors (managers, operators and regulators) and those connected to the place of provision of the service (public road, Itinerary); the vehicle, the driver, the collector, the terminal and the stopping point).

What happens behind the scenes (behind the curtains, or in the "Behind the Step") has little interest for the user.

By making it only evaluate the production of the elements with which it has contact and its perceived benefits.

However, it is clear that if the team and Backstage Operations fail at a certain point that compromise the quality of service, the user realizes.

And of course, this will have a negative impact on the image you may have on the service.

It is understood that quality management in the process is something that must be sought to exhaust, because only then can the fruit appear.

Quality must be generated from the articulated and productive processes of the service, this must undoubtedly be the first step and elementary principle of this service.

Different components can and should collaborate for the specific perception of the consumer or, in this case, user of the service.

Like: Advertising, loyalty, new technologies, messages from MKT, 0800, SAC, ombudsman, rumors in social networks, participation in meetings with the community action of the manager etc.

It can be said that these components bring together all the different ways in which the organization can be contacted, and that contribute in some way, to generate its quality, through the feedback of the users.

And any traces of extreme weakness may, and undoubtedly, lead to a decrease in the reliability of what is offered.

The service is delivered and consumed simultaneously, so every detail of the operation is important and therefore should be planned.

Thus, the perception of quality must be generated at the process level, it is necessary to confer reliability to the service analysis.

The process in the case of the urban bus is the methodology of the stages developed in the operation or the set of initiatives that imply in several steps that are necessary in a succession established a priori, in entrances and exits:

"It is important to understand the process perspective is the idea that all processes transform inputs into outputs" (...)

Process Inputs - Inputs to transformed resources are resources that are somehow modified in a process. They are usually materials, information or customers. (...) There are two types of transformation resources that form the basis of all processes. They are the facilities (the buildings, the equipment, ...) and the people (who operate, maintain, plan and manage the operation). The exact nature of the two resources, facilities and people, will be different between the processes. (...) (SLACK et al., 2008, p.35).

In the process of operation of the bus service the two expedients marked by Slack (2008), process inputs, above and process output, then, appear neatly.

If you look at the entire productive cycle of travel, from the regulation of the sector (with trained technicians and with expertise in government agencies and companies in the sector), through the analysis of passengers that is intended to meet and the financial balance of equation.

And Analyze fleet maintenance and garage repairs, behind the scenes, made to put the vehicles in service and the good or bad training of the boarded crew (driver and collector) that maintains a direct relationship with the user should be considered.

"Results of the process - All processes produce products and services and, although the products and services are different, the difference may be subtle. have a shorter shelf life. Usually the products can be stored for a while - some food products only for a few days.

But the duration of a service is usually much lower. For example, accommodation service in a hotel room tonight will be lost if it is not sold before tonight - accommodation in the same room tomorrow is a different service. "(Slack et al., 2008, p.36).

Just like some empty place while traveling on the bus route, you become less a customer, and on the next trip, if it is busy, it will be worth the amount computed.

Therefore, no detail should be passed in the operation of the whole production chain of the urban transport service by bus, without special attention, since each detail may contain a valuable value to the result.

"A productive process in the service area can be seen as the way in which input resources are transformed to create useful output services. Input resources in the case of an urban passenger transport company are vehicles, operating personnel, maintenance personnel, administrative staff and miscellaneous equipment, which are used to provide an urban public transport offer as a final result of this passengers are transported to their destinations. "CRUZ et al., 2008, p.2)

VIII. IDENTIFYING THE VIRTUES IN THE PROCESSES

It can be appreciated that when you have different processes, you have distinct difficulties, or rather, "split" difficulties, which can be good or bad, depending on point of view and referrals. Managers and operators must understand that operational processes, while precious, are only a means to an end. The main focus is to interpret the specific advantages that the service offers to its user or client and to explore maximum focus on optimization, effectiveness and efficiency of the process.

However, technological innovations in the provision of services need to direct attention to this complementary part of the service, because, it is still the service.

Technological innovations can allow organizations and service companies to offer the same benefits of the service through a number of different processes, such as editorial publications that can be offered in digital format (online) or in a printed version (magazine or book).

But in any case, it is very important for operations experts to create new processes, when this is the case, in which we look for the best way to deliver the services and their benefits to their users and in the most pleasant configuration for this one.

When clients, or users, visit the point of production of the service, their satisfaction suffers the influence of several factors.

Among them, the simple encounter with the team that produces the service, the internal or external environment, with the interactions with the equipment of use and with the behavior of the others.

A good example, for those who know, is the different behavior that the same user of the São Paulo Metro has when transferring to the urban road in a terminal in the city of São Paulo.

One can observe the change of personal conduct, with respect even in hygiene, when the same person, does not throw debris inside the dependencies of the subway and does not have the necessary urbanidad in the terminals of buses.

This phenomenon Researched by a Study Committee Installed by ANTP, in which one of the authors had the opportunity to participate, shows that when the provision of the service comes with the physical presence of the user or client, the processes must be designed around this.

From the moment they arrive at the place of service, until their departure. At times, users or customers assume the leading role in establishing and delivering services. Leading market companies teach or instruct their users or their customers. An example of this is the São Paulo Metro, which uses the technique of not leaving any equipment broken or painted (debris), for the next shift, as it induces its user to not damage anything and use the equipment properly in the way that participates in a certain way of generating the service.

The demand for a mode of passenger transport, according to Mayerle et al (2008, p.49) "is a quantity of people who can buy for a certain period of time (annual, monthly, weekly or daily) or over a distance (kilometer or even the same place at two consecutive stop points).

Analyzing the demands, studying their variation over time and space, can be called temporal fluctuation of demand and spatial fluctuation of demand. The temporal fluctuation themes (monthly), monthly (weekly), weekly (weekly) and daily (per hour or per minute). The demand fluctuation shows the variation of the number of passengers inside the vehicle, an occupation, in the stretches between two consecutive stop points of a line, characteristics of each system.

And finally, what is "knowing the behavior of demand is essential for its sizing."

According to Kneib (2007), the structure and design of transport systems also exert a great influence on the occupation and use of the soil, impacting the economic efficiency of the cities and the quality of life of the population.

In this way, it is considered that the adequate planning of a city's transportation system is essential, with emphasis on the collective public transport system, due to its structuring nature of the urban environment.

The controlled operation started from the attempt to solve two classic problems in urban bus transportation systems that were: the crisis of confidence generated by the lack of regularity of vehicles in the transportation network, São Paulo, and the constant startup failures of the service.

A meeting was held with workers from various sectors, who work at night in the city of São Paulo (waiters, cooks, musicians, night professionals).

And in this meeting, it was found that a lot of people solved their transportation problems in unusual ways, like sleeping in the workplace, or on the bench of a bus shelter.

A study group was formed between SMT, SPTrans and CET technicians, and consultants hired specifically for this purpose. Systematic meetings were held in which a number of issues related to Service Operation were discussed, focusing on the dawn

A script was set up for discussions and various presentations of the processes used by the Transport Operation Directorate of SPTrans, where the processes were mapped, analyzed and identified. The actual and potential failures of the operating system were identified, just as new procedures were established for the purpose of resolving the classified problems. For example, all the operational behavior of the supervisory team that has become more proactive in relation to the events of the files has been modified.

Bringing greater control to the quality of transport offered from the point of view of transport management, requiring operators, vehicles in basic conditions and with apparent quality and a real good operation.

The 'operational technical reserve' figure was created, not only virtual as it already exists in several similar systems, but a vehicle made available with the crew at the terminals, with the intention of remedying the possible failure of any vehicle that may have been stopped in transit, for some eventuality. There was a work of integration between the teams of public companies (SPTrans and CET), so that the operation occurs efficiently and efficiently from the point of view of task sharing.

A schedule of implementation of the tasks related to the implementation of the pilot project was established, to verify the effect on the operational actions implemented, as well as the training of all those involved in the operation.

IX. METHODOLOGY

The methodology used took into account that urban mobility has a relationship of interdependence with the Cities, and São Paulo has a management infrastructure that can be considered as good for the treatment of problems presented with companies that are experienced in certain sectors, although chaotic from the point of view of numbers.

According to Vasconcellos (2012), Existing transport and transit systems have a direct impact on urban development, while already urbanized areas require a mobility system to accompany their expansion.

It was defined that the non-recruitment of software developers without having previously tested all the variables and functionalities of the system already adopted by SPTrans, platform name, SIM - Information System and Monitoring.

The pilot project was successful in terms of the conceptual innovations for the production of the service, the teams of SPTrans, CET and the operators, finally, proved themselves and the processes appropriate and validated.

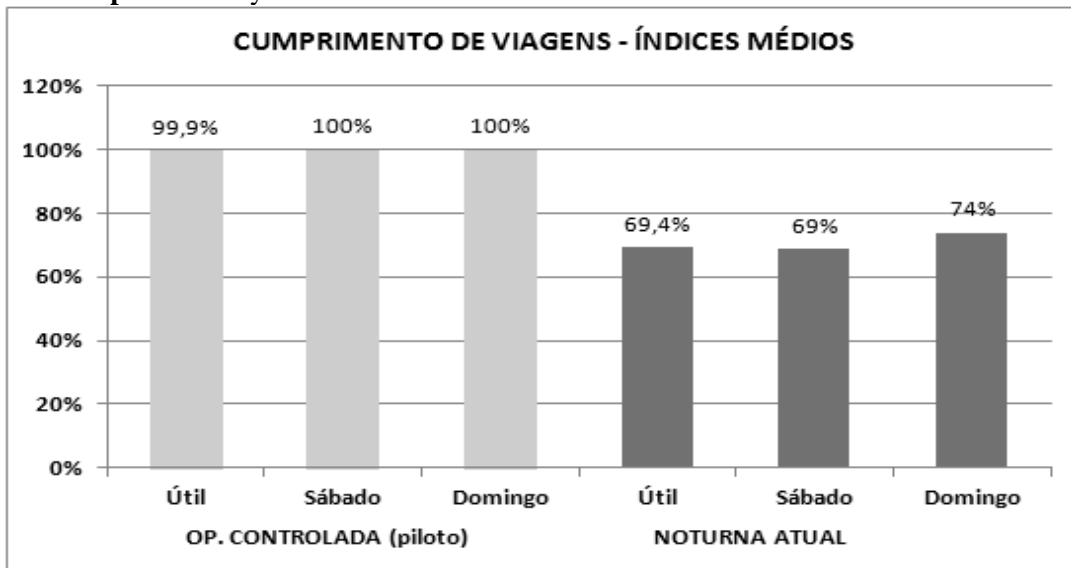
The theories raised have served as a basis for the conceptualization of 'Controlled Operation' and can also help us to understand the ways we do not fall into elementary failures.

The information technology and monitoring system was used for the satisfaction and discovery of system defects and failures and for the training of the teams responsible for monitoring. Generating a demonstration report where modernization was proposed for the system and equipment. The public power, in the figure of SPTrans, took control of the operation, and together with CET, presented a good performance as the action of clearing the road used by buses.

The operating companies and cooperatives provided the fleet and the teams with personnel trained by SPTrans and vehicles under the established conditions, which was fundamental to the success of the operation.

In the end the experience showed a high result in the number of departures without delay and a high degree of regularity in the operation, according to the graphs 1 and 2.

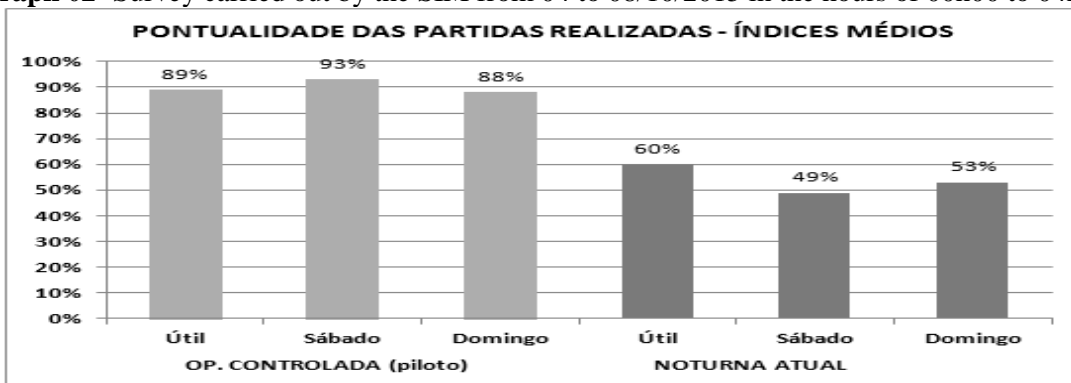
Graph 1- Survey conducted between 04 to 08/10/2015 at 00:00 a.m. to 04:00 a.m.



Levantamento realizado entre 04/08 a 10/08 no horário das 00h00 às 04h00

Source: Presentation of Transportation Planning Board of SPTrans (2015).

Graph 02- Survey carried out by the SIM from 04 to 08/10/2015 in the hours of 00h00 to 04h00



Partidas Realizadas no intervalo de +/- 3min do Horário Programado
Levantamento realizado pelo SIM de 04/08 a 10/08 no horário das 0h00 às 4h00

Source: Presentation of Transportation Planning Board of SPTrans (2015)

X. FINAL CONSIDERATIONS

This article had the objective of analyzing the processes of Operation and Service of transport by urban buses, aiming as a fundamental strategy, the operation itself and its processes, for the search of quality.

It is concluded that, when it comes to qualitative research, it is possible to give greater importance to internal validity, since generalization is not usually the objective of qualitative research. However, their conclusions are corroborated by quantitative research, showing the before and after.

In the experience developed in São Paulo, denominated 'Controlled Operation'. Seven lines (itineraries) were studied previously, where a demand was identified.

New rules and an innovative operating model have been established.

It presents as a contribution, 'strategic planning' as the main instrument, and comprises three levels: corporate that deals with the sector of action and decisions for the different processes in the operation (management and operation), which act; level of unity that are the decisions that define the best way to perform organizational activities in order to achieve the objectives; and functional known as the decisions and actions elaborated by the operational areas: transit engineering. These organizational levels should serve the same purpose in order to achieve the expected results successfully.

Based on the Numbers and Data of the experience, it can be concluded that it was a success, from the point of view of the qualitative surveys made with the user population of this transportation in the night, regarding the reliability and regularity of the Offer.

If we analyze the graphs 1 and 2, fruits of the quantitative research, produced with data from Before and after the implementation of the pilot project. The significant improvement in the two analyzed points can be verified. In this way, it is concluded that, although strategy and planning have different meanings, they must be in harmony in all types of operations, because one precedes the other.

And if 'planning' is basic to establishing business objectives, in the case of operational projects, 'strategic planning' is the driving force behind formulating, coordinating, prioritizing, and establishing control and what you want to achieve.

REFERÊNCIAS

- [1]. ANTP. Documentos Setoriais ANTP – O Transporte Clandestino no Brasil. São Paulo: Ed. ANTP, 2000. n. 1, julho
- [2]. BICALHO, M.P. Modos de Transporte Urbano de Passageiros. Mobilidade Urbana no Brasil. São Paulo: Fundação Perseu Abramo, 2016. p. 117-173.
- [3]. CHASE, R.B. et al. Administração da produção e operações para vantagens competitivas. 11. ed. São Paulo: Mcgraw-Hill, 2006.
- [4]. CHIAVENATO, I. Introdução à Teoria Geral da Administração. 6. ed. Rio de Janeiro: Campus, 2000.
- [5]. CRUZ, J.A. et al. Qualidade e produtividade nos Transportes – Transporte Urbano de Passageiros. São Paulo: ed. Cengage Learning, 2008
- [6]. CRUZ, M.V.G. Produção do Serviço de Transporte Público Urbano por Ônibus: Aspectos da Organização do Trabalho. RAC, v.2, n.3, Set./Dez. 1998
- [7]. FACCHINI, E.; & DIAS, E. The importance of development processes and control methods for urban bus services. International Journal of Transportation Systems. Disponível em: <http://www.iiaras.org/iiaras/journals/ijts> - ISSN: 2367-9131 v. 1, 2016
- [8]. FERRAZ, A.C.C.P.; Torres, I.G.E. Transporte Público Urbano. São Carlos, SP: Editora Rima, 2004
- [9]. FOUCAULT, M. Vigiar e Punir – Nascimento da Prisão. Petrópolis, RJ: Ed. Vozes, 1997
- [10]. KNEIB, E.C.; & SILVA, P.C.M. Relação entre demanda e oferta de transporte público coletivo: uma análise estratégica utilizando SIG e estatística espacial. Tese (Doutorado) 2007 - Programa de Pós-Graduação em Transportes - Universidade de Brasília (<http://redpgv.coppe.ufrj.br/index.php/pt-BR/producao-da-rede/artigos-cientificos/2007-1/316-demanda-oferta-tranp-coletivo-sig-anpet-2/file>) pesquisado e disponível em 27/07/2017
- [11]. LIMA Jr., O.F. Qualidade em serviços de transportes: conceituação e procedimento para diagnóstico. São Paulo. 1995. 223p. Tese (Doutorado) - Escola Politécnica da Universidade de São Paulo. Departamento de Engenharia de Transportes, 1995.
- [12]. MAYERLE, S. et al. Qualidade e produtividade nos Transportes – Transporte Urbano de Passageiros. São Paulo: ed. Cengage Learning, 2008.
- [13]. MELLO, Gilmar Ribeiro de; & SLOMSKI, Valmor - Parcerias Público-Privadas no Setor Rodoviário: um estudo da concordância entre a essência do objeto contratual e a forma jurídica dos contratos no Brasil. Brazilian Business Review (Portuguese Edition), 2009.
- [14]. MONTEGOMERY, C.A. O Estrategista. Rio de Janeiro: Ed. Sextante, 2012.
- [15]. MOREIRA, D.A. Administração da Produção e Operações. São Paulo: Livraria Pioneira Editora, 1993.
- [16]. NTU - Associação Nacional das Empresas de Transportes Urbanos – Revista NTU Urbano, n. 27, maio/junho de 2017. Disponível em: (<http://ntu.org.br/novo/upload/Publicacao/Pub636354502024110478.pdf>). Acesso em: 25/07/2017
- [17]. NUNES, P. Conceito de Ciclo de Vida do Produto Disponível em:
- [18]. (<http://know.net/cienceconempr/gestao/ciclo-de-vida-do-produto/>). Acesso em: 23/07/2017.
- [19]. RODRIGUES, G.O.; & BROSSARD, C.; & COLVERO, C. - Anais do EATI - Encontro Anual de Tecnologia da Informação e Semana Acadêmica de Tecnologia da Informação - Sistema Automatizado de Controle de Rotas do Transporte Público Utilizando a Tecnologia Wireless. Anais EATI – 2013.
- [20]. SHOSTACK, G.L. Designing Services that Deliver. Harvard Business Review, jan./fev. p 133-39, 1984.
- [21]. SLACK, N. Gerenciamento de Operações e de Processos – Princípios e Práticas de Impacto Estratégico. Porto Alegre: Ed. Bookman, 2008
- [22]. VASCONCELLOS, E. A. D. Mobilidade urbana e cidadania. Rio de Janeiro: Senac, 2012.

Me. Eduardo Facchini . " The Future and the Urban Bus." IOSR Journal of Engineering (IOSRJEN), vol. 08, no. 8, 2018, pp. 05-15.