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Transit quality evaluation: processes conducted by managers and operators

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Abstract

The development of quality policies applied to the public transport sector has increased the operators and managers interest in ensuring passengers' satisfaction standards; therefore, their actions have been instrumented through the quality of service perception. In this context, the research project GESCAL performs a comparative analysis about the evaluation techniques used by the operators, from the passengers' point of view, as a tool that support the service quality management. This comparison shapes the innovative nature of this research. This paper presents, the diversity of procedures carried out at a national level for evaluating passengers' perceptions about the transit service quality. Some conclusions are obtained through a qualitative analysis based on in-depth interviews conducted to operators and administrations of different public transport services (bus, train, tramway and light rail services in the urban, metropolitan and interurban contexts). These results permit to affirm that these procedures are to a large extent standardized, but the implemented methodologies are heterogeneous between organizations due to the influence of the exogenous context and different endogenous factors of the organization. Likewise, the objectives of the quality evaluation service campaigns can be affected by these conditioning factors and, in some cases there is no correspondence between the applied methodology and the postulated objectives

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1. Introduction

In this paper it is presented the context that frames and conditions the quality of service studies carried out by the administrations and providers of the public transport. This objective is part of the research project GESCAL, which main objective is to perform a comparative analysis on the diverse techniques used by the land public transport administrations and operators for evaluating the quality of the service from the point of view of the passengers. This information is of great interest for the different stakeholders, in order to enhance their knowledge, to quantify the perceived quality and to identify in which management field should act for promoting a higher quality service. In this way, it is possible to increase the passengers' satisfaction, their loyalty, and to attract now passengers to the service. It will impact in a significant way to the service operator's profitability and productivity as the demand will grow. From a global perspective, this will contribute to a more sustainable mobility, by promoting the public transport system in detriment of the private transport.

The aim is to cover a deficiency. The public transport authorities and operators face a necessity of knowing the demand opinion in order to adjust their supply, and to enhance the quality of the service conform to the Quality Certifications Standards, if they pursue to obtain this quality mark. For this issue, among other actions, they conduct service quality evaluations campaigns through objective and subjective indicators. These subjective indicators are obtained performing customer satisfaction surveys, which can be challenged from a technical, methodological and analytic point of view. There is no guide or manual that proposes the best method or technique to use (survey type, technique used for collecting the data, methodology for analysing the data, etc.) according to the moment, the study objectives, the mode of transport, the territorial context, the budget constraints or the level of reliability required.

In this paper it is presented which are the contextual constraints of the Quality Evaluation Surveys Campaigns (QESC) conducted by the public transport organizations (administration or operators). For this purpose, it has been analyzed a small sample of the GESCAL case studies (public transport authorities and operators). The qualitative methodology, based on in-depth interviews and the subsequent content analysis, has allowed, in a descriptive and reflexive way, to exhibit the main results about which are the contextual elements that impact on the users' service quality evaluation campaigns, and how these elements interfere in the postulated objectives, the design and implementation of the survey and in the methodological process and analysis.

2. Background

The main reason for unsustainable mobility on cities is produced by the massive used of the private vehicle at the expense of public transport. A modal shift is required for amend this unsustainability. Service quality at public transport represents an essential factor for a citizen considering it as an alternative mode (Cascetta & Carteni, 2014). Therefore, service quality becomes one of the central priorities for the sustainable transport policies (European Commission, 2007). Moreover, service quality is a critical factor for companies for achieving a differential advantage over their competitors (Grönroos, 2001). According to the Handbook for Measuring Customer Satisfaction and Service Quality (HMCSSQ) (Transportation Research Board, 1999), it is believed that for public transport agencies, an increased in passengers' satisfaction will be translated into retain passengers, a higher used of the system, new attracted clients, and an improvement of the public image.

In 2002, the European Union elaborated the EN 13816 standard for establishing a common framework for defining the quality in the public transport passenger service. This standard considers two points of view: on the one hand, the administration and operators point of view, and on the other hand, the clients (current and potential). Moreover, it provides a generic list about all the service characteristics that the organizations could use for ensure that the passengers' experience is considered entirety. Likewise, it stipulates that the service provider should minimize the discrepancies between the delivered service quality and the perceived service quality. Consequently, it is vital that service providers understand users' requirements about the service.

In this context, the European Union has adopted a vision about the quality of service in public transport oriented towards the passenger, promoting a service quality approach focused on the requirements and expectations of passengers (European Commission, 2001; 2007). Numerous researchers consider that the clients' point of view is the most relevant for evaluating the service operation (Berry et al., 1990; Das & Pandit, 2014). For example, Das and Pandit (2014) stated that "since public transport service is offered directly to the passengers, the resulting service

quality should be the outcome of passengers' perception". Thus, the service operator, based on his knowledge about the system (technical quality), pursue to know the quality perceived by passengers through periodic service quality surveys records.

These surveys can be of different nature according to the information they are able to obtain (such as satisfaction surveys, attitude surveys or stated preference surveys, etc.), or according to the constraints of the data collection, such as the use or not of technology (p.e., paper-based with interviewer support, tablet-based with interviewer support, paper-based without interviewer support and return getting off the mode, or postal sending, on-line, etc), the survey typology, the place it is conducted, the available financial resources, the questionnaire length and the questions complexity, the data reliability, the transport mode where it is going to be conducted the survey (bus, tram, metro, light rail, suburban train, rail, etc.), the territorial context or the type of service (urban, metropolitan, interurban, ...).

Despite each typology of survey has its specific characteristics and limitations, the selection of one of these surveys should be performed according to the real requirements of the service managers, due to they usually are not designed based on this basic criterion, but they use "standard designs", without adapting the questionnaire to the context, neither to the techniques used for the information gathering.

Subsequently, the methodologies used for analyzing the information collected with the survey should be related with the transit service manager's objectives and the typology of data obtained with survey. However, there is a wide separation between the analysis models used in the academic field and the usual practices carried out by the managers of the public transport system. The largest part of the operators only focus on simple analysis for evaluating the provided services, such as frequencies or quadrants analysis (p.e., Christopher, et al., 1999; Figler, et al., 2011). On the other hand, the academics have used more advanced techniques (de Oña et al., 2012; de Oña et al., 2013; de Oña et al., 2017) that fit better to the objectives and the requirements of the study; thus, the benefits of using these more advanced methodologies directly contribute to the development of more efficient strategies for improving the service, and consequently, a more effective distribution of the resources.

Due to the large quantity of methods currently emerged (de Oña and de Oña, 2015), it is really complex for a transit operator to have a global vision about which is the analytical methodology that better fits their objectives, as well as to be able to identify the limitations and opportunities of each of them for the proposed objectives. At the moment, there are a number of standards and manuals at an European level (the EN13816 and EN15140 standards) and at an American level (the Transit Capacity and Quality of Service Manual, TCQSM, Transportation Research Board, 2013) that provide some recommendations about which are the aspects that should be considered for analyzing service quality. However, none of these standards/manuals respond to the issues raised in the previous paragraphs about: type of survey to design, how to select the best technology of carrying out the survey, or which is the analysis methodology that better fits the operator objectives. Hence, the present research project GESCAL pursues to analyze all these issues in order to provide to the public transport managers, operators and administrations some guidelines, or recommendations, that specify, with the higher precision as possible, how should be performed the transit service quality evaluation process according to their own objectives and constraints.

3. Contextual factors

The contextual factors of each studied organization are essential for conducting a comparative analysis about the procedures that are undertook on the Quality Evaluation Surveys Campaigns, QESC. The most important factor, of exogenous character and common for the majority of the study cases, is the economic period denominated as "The Great Recession", presented in our country since 2008. The transport sector, as the majority of the public services, has been affected by the consequences of this economic downturn. This fact has been repeatedly underlined by the public transport authorities and operators at the interviews. In this section we identify the variables that have suffered a higher or lower affection by this factor. Primarily, we group them on "organization changes" and "service changes".

This economic phenomenon has produced, along with other factors of different nature, changes in the composition, structure, funding and management of the organization and also changes in the service. The changes yielded in the organization are related with the normative framework, management, concession model or funding, while those related with the service are focused on modifications about specific aspects, such as the spatial

coverage, the vehicle fleet, the network, fares, timetables, etc.; basically in favor of accessibility, new technologies, environmental protection or quality. These changes in the service supply have been a consequence of the changes in the service demand in particular, and the changes in the mobility in general. It is observed a direct effect of the downturn in a lower service demand, which requires a readjustment of the system by reducing the supply, and deriving in more negative perception of the service quality. The main reasons of the trips, as work and studies, in this recession period not changed, but recede in importance owing to the strong growth of the unemployment.

The adjustment between the supply and demand rests on the public transport administration or authority, as the articulator figure of the transport system. This institution faces a decrease of economic resources, which become an added challenge for realign the service planning. The operators, as the technical part of the system, have to execute this reorientation and assume part of the consequences. Nevertheless, the service supply and demand adjustment is a constant factor in the service planning and in the continuous relationship between both stakeholders.

Previously to this recession period, there were extended among the public transport operators some actions channeled towards the intensification of the service quantitatively, as a result of the population growth and the conurbation phenomenon, and qualitatively, searching a higher service quality. At the present time, we are in a moment of recovery of these strategies due to the revival of the demand.

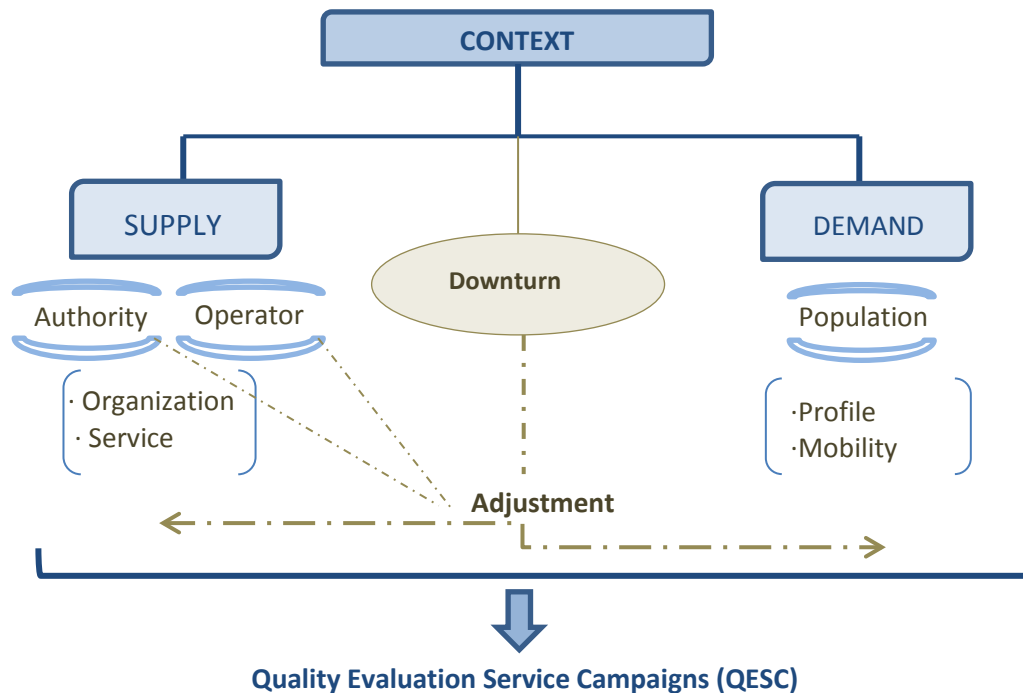


Figure 1.- Context of the transport system

The most relevant changes in the service are related with the incorporation of new technologies that facilitate a wider information about the service to the user (traveler information screens at the stops, mobile apps, web,...). In addition, other relevant changes in the service were the continuous and in real time record of data of the service operation (technical data), the geo-location of the service, the contact-free technology for the tickets cancellation, changes oriented towards the time optimization (speed, frequency or timetables) and/or a higher spatial coverage and connectivity (orthogonal network, short routes, etc.). Furthermore, other modifications at the services were registered on aspects related with the comfort, the accessibility or the environmental protection.

Among the organizational changes (funding, management or normative/concession model), considered as exogenous factors as a consequence of the economic downturn, there are other changes produced by endogenous factors. Sometimes, the political ethic determines the processes, so a change in the management or technical team does not have to impact on the QESC. Nevertheless, it is also found that in some cases a higher competence on

quality of the management team can generate substantial modifications on these evaluation campaigns, such as the survey design, the time of the year for conducting the campaigns, or the sampling design.

Therefore, the changes on the organization are the ones that exert the highest influence on the modifications of the QESC, as a consequence of a politic, economic, or of quality intentionality, or these changes are derived because of norms, quality certifications or concession model contracts.

4. Influence of the context to the quality evaluation surveys campaigns

The origin of the QESC at the public transport services is identified primarily with a normative or contractual change. Most part of the operators analyzed in this research indicated that the achievement of the UNE-EN13816 quality certification was the justification for starting to conduct the QESC (among other obligations that they need to comply for obtaining this certification), from the implementation of quality systems in the organization.

However, the downturn impact on the preservation of these service quality systems in general, and on the QESC particularly, is a reality revealed by most part of the interviewees. The cutting of resources has influenced (joined to other internal consequences on the organization), on the one hand, on methodological modifications of these QESC, and on the other hand, on the funding source or the personnel in charge of the fieldwork. Regarding the methodological modifications, it has been produced a higher temporal spacing between campaigns, a reduction of the sampling size or a reduction of the questionnaire length. Concerning the funding source, it could have been altered or suppressed in some cases. Previously, the cost of these campaigns was assumed by the administration owner of the service in most transit services, but after the budget reduction it remains to the willingness of the provider company to conduct or not these campaigns. Likewise, in some cases, the fieldwork has been internalized to the company-own personnel. This internalization can be understand as a strength or a threat, depending on whether the company has a personnel team qualified for this issue or not. Ultimately, the cutting of resources has lead towards an intensive effort for optimizing the available temporal, human, technique and economic resources at any company.

Moreover, the changes produced in the organization and in the service have affected to the design of the objectives. While the changes in the organization seems to have a greater implication in the design of the general objectives, the changes in the service have induced to modifications in the specific objectives design, with the intention of reveal the effect of specific system's adjustments or updates between the users.

The available resources is a variable that highlights because its influence on the evolution of the QESC. Based on it, we can classify the study cases in two groups. On the one hand, those study cases for which the resources represent an added value or a strength for sustain the campaigns, and on the other hand, the group for which the resources are a limitation. To own technique and human teams with competence in the implementation of subjective quality analysis, the possibility of having a higher dedication to these studies, or use a contrasted methodology subjected to a continuous control, could counteract the impact of the cutting funds. Usually the organizations or companies with higher capacity entail this power, which look for management strategies oriented towards the optimization of these resources in order to keep the production standards on subjective quality.

It is important to bear in mind the stakeholder in charge of the evaluation of service quality, due to depending on who is the protagonist of the funding or the implementation of the QESC, or if it exists or not a transfer of results between the concessionary company and the public transport authority, it is possible to observe diverse scenarios in this evaluation that are decisive in the design of the objectives, techniques and methodologies applied. In this way, the public transport authority performs a study for the whole transport network and the operators carried out their own studies. In these occasions, it can exists a coordination between both stakeholders for designing the questionnaire, in order to collate afterwards the results obtained by both sources or, on the contrary, the results are not shared. Conversely, there are public transport authorities that economically cover the QESC to the operator and, as a consequence, they are the owners of the design and results of the campaigns. We can also find authorities that perform their own studies and the operators do not or vice versa, so, depending on the case, they share the results between them or not.

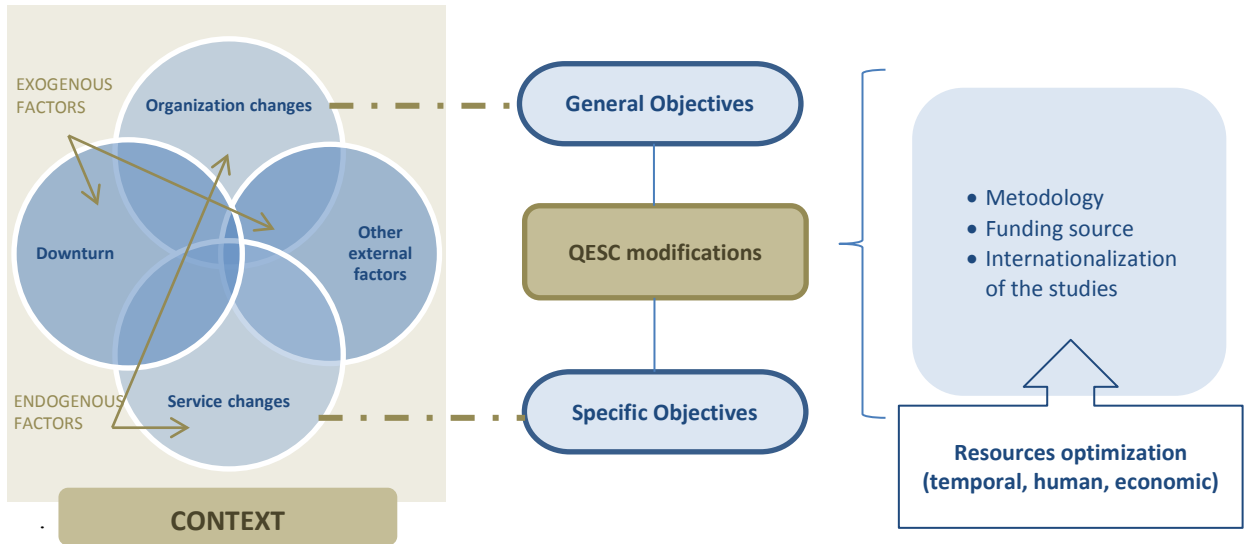


Figure 2.- Influence of the transport system context to the QESC

As it can be observed, this prospect about the evaluation of service quality reflects a voluntariness that goes beyond the normative requirements discussed earlier, therefore, it has incidence on the objectives and methodologies applied.

However, the relationship between the public transport authority and the provider company is different regarding the organization of the service. The position of both is hierarchical, so the administration controls and plans the service provided by the company, which in most cases is of private nature, although they can be also of public or mix nature, and in that cases, the subsidiarity relationship between both stakeholders becomes a relationship of coordination for planning the service, and also for designing and implementing the QESC.

The information flow about the service is frequent, due to the necessity of performing a continuous adjustment between the supply and demand. The operator delivers reports about the situation of the service to the public transport authority and this authority is in charge of making decisions. This relationship is not closed to two interlocutors, but both stakeholders obtain information from other sources, from other administrative levels -such as the council-, or the other stakeholders -such as social groups, by means of participation commissions, anonymous users, across the complaints and claims services-. All these, we find an integrative decision making process, not only for the social participation, but also for the concurrence of information about the quality of the service with an objective nature (service reports about objective data) and a subjective nature (claims and complaints through different channels, reports about the quality perceived by the users). This confrontation between the objective quality and subjective quality measurement leads to obtain the response to the conceptual model of service quality defined at the UNE-EN13816 standard. In this model, the operator first tries to know the discrepancies that exist between the service he pretends to offer and the level of quality achieved from a measurable point of view, and afterwards, he confronts the measurement of his performance with the perception of satisfaction of users about it.

Therefore, the usefulness of the QESC is different. It is a tool for measuring the perception of service quality by the users, but also it can be a tool for designing strategic actions or evaluating the impact that these actions have produced on the users' perceptions about the service. For this reason, the QESC can be understood as a part of the management strategy in various directions: "evaluation – action", "action - evaluation", and/or "feedback among campaigns". That is, the applicability of the empiric evidence for decision making and for defining new action or management strategies.

4. Conclusions

In summary, we can conclude that the external context of the organization in charge of conducting the QESC, especially in the case of the operators, produce changes in the organization and changes in the service throughout updatings or adjustments. These changes can have a higher impact on generating modifications in the specific objectives of the survey campaigns. In addition to these exogenous factors, the endogenous factor of the organization that exerts the major influence on the modification of the methodology is the available resources for implementing the campaigns, which depends in turn on other aspects of the organizational dimension of the corporation.

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