



Measuring airport service quality: A multidimensional approach



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ABSTRACT

Currently, airports are expected to be operated as self-sufficient service organizations providing efficient and high-quality services to a variety of customers. In this context, improving airport service quality (ASQ) has become paramount. However, due to the complexity of the airport service environment, an effective process of measuring and analyzing passenger perceptions of ASQ is not easily achieved. Generic scales for perceived service quality might not cover some particularities of the passenger–airport interaction. Furthermore, while some measurement practices have been developed within the airport industry, there has been only limited consideration for validity and reliability. These concerns are certainly relevant to avoid misinterpreting passenger perceptions. In view of these concerns, this paper has a twofold objective. First, to fit a measurement model for perceived ASQ built on typical service measures within the airport industry. Second, to test for the model's equivalence across groups of passengers. Sample data from an extensive survey applied at a major Brazilian airport was used for confirmatory factor analysis. The results suggested that a six-factor structure provides a meaningful multi-item measurement model for perceived ASQ. The model was validated for international and domestic departing passengers with respect to its factorial structure and metric invariance. The proposed measurement model could be considered an alternative for a multidimensional approach in the context of airport performance measurement regarding service quality. Finally, the findings from this research might contribute to the discussion on passenger perceptions of ASQ, particularly concerning its multidimensionality and the need to review current practices for ASQ analysis.

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1. Introduction

As traffic volume rises, airports struggle to optimize infrastructure while adopting a customer-oriented focus to achieve better performance (Fodness and Murray, 2007; Halpern and Graham, 2013). Also, non-aeronautical revenues have become critical for airport sustainability, which leads to increasing concerns with the marketing of retail areas within airport terminals (Gillen, 2011). Therefore, the relevance of understanding passenger perceptions of airport service quality (ASQ) is paramount.

Within the airport industry, service quality measures based on passenger perception have typically been used for operational performance measurement and benchmarking purposes. Moreover, regulators and governments habitually use service quality monitoring to assure that the interests of airport users are not being

compromised (Francis et al., 2002). With the growing interest in the subject, ASQ surveys have been systematically carried out by international agencies, regulatory authorities, airport operators, and other organizations (ACI, 2014; Fodness and Murray, 2007; IATA, 2015; Kramer et al., 2013; Zidarova and Zografos, 2011).

More recently, some approaches and methods usually applied within other industries appear to have gained momentum. For instance, analysis of passenger expectations regarding the airport service and using a structural equation modeling approach to the complex relationships between passenger attitudes and ASQ (Bogicevic et al., 2013; Fodness and Murray, 2007; Jeon and Kim, 2012; Nettet and Helgesen, 2014; Park and Jung, 2011). It seems that there is increasing interest in understanding ASQ multidimensionality and the multifaceted nature of the passenger–airport interaction.

Nevertheless, due to the complexity of the airport service environment, an effective process for measuring and analyzing relevant information regarding passenger perceptions of ASQ is not a simple achievement. Generic service quality measurement

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approaches might not be able to cover the more particular aspects of the passenger's interaction with airport services and facilities (George et al., 2013; Pantouvakis, 2010). Furthermore, current practices within the airport industry have usually been based on the service attribute level, with none or only limited consideration for the validity and reliability of the measurement instruments.

In this context, the objective of this paper is twofold. First, to fit a measurement model for perceived ASQ based on typical service quality measures within the airport industry. Second, to test for the equivalence of the proposed model across groups of passengers. This present paper is part of an extensive research project that considers the multidimensionality of ASQ and its monitoring in the context of airport performance measurement. The relevance of these objectives is related to avoiding misinterpretation of the results taken from service quality surveys within the performance measurement process.

Sample data from a survey applied to departing passengers at Guarulhos International Airport, in Brazil, was used. Confirmatory factor analysis was used to test for the factorial validity of an ASQ framework, based on a previous exploratory study by Bezerra and Gomes (2015), and for model specification. Afterwards, the invariance of the measurement instrument was tested across groups of international and domestic departing passengers.

In the next section, a background on ASQ is provided, including the evolution of the literature research and current challenges. In the methods section, the sample characteristics, data collection, research procedures, models, and variables are described. Results and discussions on the findings are subsequently provided. Finally, the concluding remarks section outlines the contributions of this research effort and considerations for future research.

2. Background

Airport Service Quality (ASQ) has become a regular topic within the airport-related literature. Nonetheless, until the 1980s there were few studies related to the subject, typically concerned with assessing the level of service in the passenger terminal (e.g. Bennets et al., 1975; Mumayiz and Ashford, 1986; Omer and Khan, 1988; Tosic and Babic, 1984). Later, in the 1990s, some studies focused on understanding passengers' needs and their perceptions regarding elements of the passenger terminal and airport-related processes (e.g. Hackett and Foxall, 1997; Lemer, 1992; Muller and Gosling, 1991; Mumayiz, 1991; Park, 1999; Seneviratne and Martel, 1991, 1994; Yen, 1995).

Regarding the service industry as a whole, in a constantly changing business environment, understanding customer perception of quality became critical. As the perceived level of quality is an antecedent of customer satisfaction with the service performance, measuring service quality using customer-based variables may guide the organization's efforts to better deal with customer needs (Cronin et al., 2000; Falk et al., 2010; Wilson et al., 2012).

In this context, the airport industry has been progressively motivated to adopt a different approach regarding ASQ. More recently, the literature expanded in terms of quantity and the range of issues covered. Hence, a broader approach to ASQ based on passenger perception became more evident, including:

a. Further investigation on passenger perception of quality and his/her level of satisfaction with different airport service attributes. Some studies based on econometric approaches (e.g. Correia et al., 2008a; Correia and Wirasinghe, 2007; De Barros et al., 2007; Eboli and Mazzulla, 2009; Gkritza et al., 2006), and others based on Multi-Criteria Decision Analysis (MCDA) tools (e.g. Chien-Chang, 2012; Kuo and Liang, 2011; Lupo, 2015; Tsai et al., 2011; Yeh and Kuo, 2003);

b. Resuming investigation on passenger expectations regarding airport services (Bogicevic et al., 2013; Caves and Pickard, 2000; Chang and Chen, 2011, 2012; Fodness and Murray, 2007; George et al., 2013; Rhoades et al., 2000);

c. The nature of the effects of different service attributes on passenger satisfaction with the airport (Bogicevic et al., 2013; Mikulic and Prebežac, 2008; Prebezac et al., 2010);

d. Discussions on service quality measurement, including exploratory studies on the ASQ multidimensionality (Bezerra and Gomes, 2015; Fodness and Murray, 2007; George et al., 2013);

e. Taking into account for service quality within studies on airport efficiency measurement (De Nicola et al., 2013; Merkert and Assaf, 2015).

Also, there is a growing interest in the structural equation modeling (SEM) approach to account for the complex relationships among the various aspects of service quality and passenger attitude (Fodness and Murray, 2007; Jen et al., 2013; Jeon and Kim, 2012; Lubbe et al., 2011; Nettet and Helgesen, 2014; Park and Jung, 2011). It appears that a more comprehensive approach to understanding the multidimensionality of ASQ and the multifaceted nature of the passenger–airport interaction has been pursued.

Due to the complexity of airport settings, however, generic scales for measuring perceived service quality may not be able to cover some specific features related to airport services and facilities (George et al., 2013; Pantouvakis, 2010). Based on a functional approach, a passenger terminal system comprises three major areas: access interface, processing area, and flight interface (Horonjeff et al., 2010). The processing area, the focus of the present study, comprises every space where the passenger is processed in any activity related to the starting, ending, or continuation of the trip (e.g. ticketing, check-in, security inspection, etc.).

According to the passenger point of view, two main categories of activities in the airport terminal may be considered: process activities and discretionary activities (Popovic et al., 2009; Caves and Pickard, 2000). In the case of departing passengers, process activities comprise the passenger flow from check-in, security screening, until boarding. Discretionary activities comprise what the passengers are able to do with their slack time in the terminal (i.e. those moments when they are moving between processing points), when they can shop, eat, rest, change money, or engage in any other activity provided by the airport.

With respect to processing activities, passenger perception of quality has been traditionally associated with the efficiency of the processes, short waiting times, and the positive attitude of the service staff (Caves and Pickard, 2000; Fodness and Murray, 2007; Rhoades et al., 2000). As to discretionary activities, a variety of factors should be considered, including passenger perception of leisure/convenience alternatives and airport servicescape, i.e., the physical setting in which a service is performed, delivered, and consumed (Bitner, 1992; Bogicevic et al., 2013; Mari and Poggesi, 2011).

Regarding the current ASQ measurement practices, the literature review undertaken in this study revealed a focus on analysis at the service-attribute level, with data collection based on surveys. Common measures include items related to the efficiency of specific services or processes, signage and cleanliness of terminal areas, attitude of the staff, and availability of convenience facilities, among several others. Additionally, as an elaborate servicescape, an airport comprises a complex service environment, in which visual appeal, functionality, and comfort can affect passenger perception of service quality. The effects of airport physical surroundings on passengers' perceptions of ASQ has been more recently discussed (Fodness and Murray, 2007; Jen et al., 2013; Jeon and Kim, 2012; Bogicevic et al., 2013).

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