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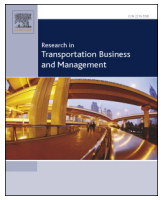

Quality assessment of airport performance from the passengers' perspective☆

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ABSTRACT

Passenger satisfaction has become a key factor for the operation of an airport. In recent years, a wide range of studies have analysed airport quality from many viewpoints but predominantly based on explicit and visible aspects of airport performance. Our paper suggests that passengers' assessments may also include implicit evaluation of features that are not directly observable regarding an airport's management and characteristics. We merge data from 111 international airports worldwide, including information on perceptions of quality by passengers, management and regulatory schemes and airport features. Our estimations show that private participation at airports leads to a higher perception of quality. In addition, we may infer a preferred institutional model, in which legislative aspects related to the industry are strongly regulated by the government but each airport may freely decide how to perform in the market. Our results are positioned in favour of a more market-oriented approach to airport management: the airport quality assessment improves when this is subject to market forces, such as competition in fares or the inclusion of private participation.

1. Introduction

In 2050, aviation will transport 16 billion passengers and 400 million tonnes of cargo (IATA, 2011). Thus, airports have to be able to meet the growing demand for aviation. As IATA (2011) states, "Governments and investors alike recognized (sic) the importance of air transport as a driver of economic development and social integration, and have worked collaboratively to ensure that at least some of the additional capacity needed to cater to such an increase has been put in place" (p. 66).

COM (2011) points out that 70% of all delays to flights are caused by problems at airports. Moreover, "(…) the overall quality of ground-handling services has also not kept with evolving needs especially in terms of reliability and resilience, safety and security". Therefore, the quality and efficiency of services at airports are pointed out as crucial factors within the overall air transport services.

Passenger satisfaction is a key performance indicator for the operation of an airport; it can be used as both a benchmark and management tool (Yeh & Kuo, 2003). Today, air travellers have meaningful choices of airports and there is an increasing urgency among airport marketers to differentiate themselves by meeting the needs of customers better than the competition (Fodness & Murray, 2005). However, there is no exact definition of what constitutes airport performance (Lemer, 1992; Yeh & Kuo, 2003). Consequently, the level of quality provided at an airport can be measured from different perspectives. This paper adopts the definition of airport performance given by Bilotkach and Mueller (2012), who describe an airport "(…) as an entity that provides infrastructure airlines need to perform their operations" (p. 2), but we add that they are providers of services to passengers.

Airports worldwide comprise a wide range of specificities regarding not only infrastructure – size, terminals, location, services provided, etc. – but also management and regulation settings. There are both public and private airports, some with different degrees of private participation. We also acknowledge that there are different regulatory frameworks between states regarding airfares, entrance or slots, among other factors.

Although the academic literature has explored airport quality from the passenger's viewpoint at length, as far as we know, no paper exists on whether the airport management model affects perceived airport quality in a worldwide approach where the aforementioned characteristics are taken into account. Thus, this paper aims to analyse whether users' perceptions of airport performance reflect the impact of the quality of different airport management schemes and characteristics. For this purpose, we establish the hypothesis that user assessments of airport quality based on visible characteristics reflect perceptions of features non-directly observable regarding airport management and other characteristics. That is, even when users may not explicitly identify these features, they assess their performance. To this end, we merge

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Table 1
Studies on airport quality analysis from passengers' perspectives.
Source: authors.

Research paper	Quality analysis perspective
Park (2003)	A study of the competitive status of major airports in the East Asia region, based on a multi-decision criteria approach.
Yeh and Kuo (2003)	A fuzzy multi-attribute decision-making approach for evaluating the passenger service quality of 14 major Asia-Pacific international airports via surveys.
Fodness and Murray (2005)	The construction of a conceptual model of service quality in airports by conducting an empirical investigation of passengers' expectations[a]
Rendeiro Martin-Cejas (2006)	A study examining the level of service of the facilities of Gran Canaria airport (Spain) as an approximation to evaluate service quality.
Correia and Wirasinghe (2007)	They developed a new methodology to develop level of service. Data from a survey in Sao Paulo international airport is used.
de Barros, Somasundaraswaran, and Wirasinghe (2007)	The evaluation of air transit passengers at an international airport in Sri Lanka of perceptions of the quality of terminals.
Fernandes and Rodrigues Pacheco (2010)	A discussion of aspects of airport service quality evaluation in Brazilian airports using fuzzy multi-criteria analysis and the alpha-cut concept.
Liou, Tang, Yeh, and Tsai (2011)	Authors applied a new method to evaluate passengers level service in Taiwan.
Lubbe, Douglas, and Zambellis (2011)	An empirical application of Fodness and Murray's (2005) model at O.R. Tambo International Airport (South Africa).
Kuo and Liang (2011)	Analysis of the service quality of Northeast-Asian international airports through a customer survey and the application of a VIKOR and grey relational analysis.
Tsai, Hsu, and Chou (2011)	An exploration of the gap between passengers' perceptions and their expectations at airports.
Subha and Archana (2013)	An investigation of the impact of service quality on passenger satisfaction from surveys and factor analysis of data from an international airport in India.
Chao, Lin, and Chen (2013)	An analysis of the satisfaction of domestic and international tourists at Kaohsiung International Airport (Taiwan) based on questionnaires and an importance-performance analysis (IPA) to assess priority services.
Bogicevic, Yang, Bilgihan, and Bujisic (2013)	Content analysis of 1095 traveller comments posted in the period 2010–2013 on an airport review website to identify satisfiers/dissatisfiers.
Cosmas and Chingarand (2013)	SERVQUAL analysis of customers' perceptions of the quality of services offered by an airport in Namibia.

[a] The research presented in this paper is especially remarkable. In their study, the authors develop a conceptual model of service quality in airports analysing passengers' expectations for this service industry. They employ factor analysis on data from nearly 1000 airport users of the US air market (a few airports) to conclude that expectations of airport service quality comprise a multidimensional and hierarchical construct that includes three key dimensions: function, interaction and diversion.

dispersed data into a worldwide database that includes the following: airport quality as perceived by passengers, airport characteristics and institutional airport factors. The structure of the paper is as follows: Section 2 provides a literature review on airport performance valuations; Section 3 graphically shows our hypothesis and describes the data, variables and methodology; Section 4 addresses the drivers of airport quality; Section 5 contains our conclusions and policy recommendations.

2. Literature review

The literature related to air transport management and institutional characteristics has focused primarily on efficiency. Oum, Adler, and Yu (2006) measure and compare productive efficiency and profitability among airports worldwide, considering different ownership schemes (public, private, mixed models, etc.).[1] They find that airports with a private majority ownership achieve significantly higher operating profit margins than other airports. They also suggest that private–public partnerships with a minority of private sector participation and multi-level government ownership should be avoided, supporting the majority private-sector ownership and operation of airports. In a similar fashion, Bel and Fageda (2009, 2011) analyse the airport management model system in Spain. They advocate fostering competition among airports to improve price systems and investment processes at each airport. As Bilotkach and Mueller (2012) state, airports generally exhibit many of the classic properties of local monopolies. Thus, regulation and monitoring by the authorities or general antitrust rules are required.[2]

With respect to research on airport quality, the literature related to users' perceptions is not extensive. Quality is a concept with multiple meanings in the transport sector and it is likely that this is the reason for the wide range of studies in which quality is regarded from completely different perspectives. Some papers have developed own indexes in order to control this (Correia, Wirasinghe, & de Barros, 2008, for example), and also to or to stablish a relationship between quality and efficiency (de Nicola, Gitto, & Mancuso, 2013).

Table 1 illustrates the recent studies on this topic from multiple viewpoints.

Airlines are users of airport facilities, just as passengers are. From their standpoint, Adler and Berechman (2001) study the relative efficiency and quality of airports. They try to determine why some airlines decide to create a hub at a specific airport. By employing a data envelopment analysis (DEA) methodology on a database elaborated from their own questionnaire, the authors benchmark airports to identify those that are most valued. More recently, Pabedinskaite and Akstinaite (2014) have examined the quality of airport services for airlines using the SERVQUAL method and have developed a system of criteria designed for the assessment of the quality provided to airlines.[3] In line with our aims, Advani and Borins (2001) analyse how airport service quality is affected by airport ownership status, among other factors. This study finds that private airports tend to provide better services, using data from a questionnaire survey of 201 airports worldwide.

On the industry side, some international comparisons on air transport quality have been carried out, for example by organizations such as the International Air Transport Association (IATA), through its *Global Passenger Survey*[4] and the Airports Council International (ACI), which annually delivers benchmark exercises for the industry in its *Airport Service Quality* reports.[5] The latter annually ranks airport service quality

[1] See Carney and Mew (2003) for a descriptive analysis of airport management models.
[2] Airport regulation has been studied widely in theoretical papers (Basso & Zhang, 2008; Czerny, 2006; Yang & Zhang, 2011) as well as empirical studies (Adler & Liebert, 2011; Bel & Fageda, 2009, 2011; Perelman & Serebrisky, 2010).
[3] In a related body of air transport literature, users' valuations of airlines have received particular attention. There are many studies analysing both ground and in-flight services (Aksoy, Atilgan, & Akinci, 2003; Cheng & Chang, 2005; Chow, 2014; Elliot & Roach, 1993; Gilbert & Wong, 2003; Jiang, 2014; Wittman, 2014; Yang, Hsieh, Li, & Yang, 2012, among others).
[4] https://www.iata.org/publications/Pages/global-passenger-survey.aspx.
[5] http://www.aci.aero/Airport-Service-Quality/About-ASQ.

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