



Performance measurement practices in airports: Multidimensionality and utilization patterns

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ABSTRACT

The purpose of this paper is to assess the current profile of airport executives concerning key aspects of their performance measurement practices. The results suggest that these practices still emphasize operational issues, such as safety, economic-financial, and service quality. In contrast, measuring performance according to a broader perspective of the airport business, including competition, long-term economic results, and the environmental and social outcomes of the airport activities, was not evident. This study has significant contributions for performance measurement and management in the airport context. Overall, the findings stress the need for broadening the approach to airport performance measurement as a business service organization, which may require adjustments in the current management information systems. Practical implications for airport management are presented.

1. Introduction

An effective performance measurement is a key element of strategic management for any organization. However, establishing an appropriate performance measurement process in complex and dynamic service settings, such as airports, seems to be a practical challenge. Airports are no longer considered exclusively as large facilities and public utilities, but complex organizations delivering a vast set of services related to the air transport, plus several ancillary services (Gillen, 2011; Graham, 2014; Halpern, 2010).

Nowadays, with increasing pressures for improving efficiency and service quality, while accounting for the social and environmental impacts of their activities, airport executives are confronted with conflicting objectives and the need for monitoring different aspects of performance (Adler, Liebert and Yazhensky, 2013a; Bezerra and Gomes, 2016b; Graham, 2014; Skouloudis et al., 2012). It has become increasingly important the identification of key performance dimensions, their measurement, analysis, and disclosing relevant information to stakeholders.

Different aspects of airport performance have been covered by several studies and professional-related literature, as presented in the next section. However, in general, the research literature seems to avoid the multifaceted nature of the airport business. Notwithstanding, a broader perspective for measuring and analyzing performance is

needed, which demands understanding the measurement practices in view of the multidimensionality of the airport performance.

Based on the literature reviewed, a lack of research on the actual performance measurement practices in the air transport literature was also found. Concerning the airport industry, besides a few research efforts (Francis et al., 2002, 2003; Fry et al., 2005; Graham, 2005; Humphreys et al., 2002), this specific issue seems to have been overlooked. In this context, a relevant research question is what is the current profile of airport operators concerning performance-related practices?

In light of these considerations, the main objective of this paper is to examine the current profile of airport executives concerning key aspects of their performance measurement practices. Accordingly, three specific objectives are pursued. First, to identify the extent of utilization, perceived relevance, and information availability regarding a set of performance measures associated with different performance dimensions. Second, to analyze the effects of the perceived relevance and information availability on the extent of utilization of these measures. Third, to identify whether inconsistencies between the relevance of the performance measures and their extent of utilization can be associated with a lack of information availability.

Grounded on an extensive literature review, a set of performance measures representative of different performance dimensions was submitted to a sample of airport executives in Brazil. Data analysis

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included different techniques such as cluster analysis, regression analysis, and gap analysis.

It has been advocated that assessing actual measurement practices may contribute to understanding the executives' perspectives on the business performance (Bourne et al., 2013; Gomes and Yasin, 2013). In this sense, this exploratory research attempts to shed light on the current practices in the airport industry and has the potential to help airport executives in the process of reorienting their efforts towards a more comprehensive approach to performance measurement and management.

2. Background

The research and practical interest in performance measurement increased since the 1970s, along with a change from a financial emphasis to a multidimensional perspective (Bititci et al., 2012; Kennerley and Neely, 2003; Richard et al., 2009; Venkatraman and Ramanujam, 1986). In this regard, a more comprehensive approach to performance measurement has been imperative (Bourne et al., 2013; Neely, 2005).

Today's organizations are ever more compelled to improve their practices for measuring and analyzing performance, as a mean to improve effectiveness. For this purpose, the literature has emphasized the design and implementation of performance measurement systems (PMS), as well as the integration of the performance measurement process within the organization's environment, strategies, and culture (Bourne et al., 2013; Franco-Santos et al., 2012; Nudurupati et al., 2011).

According to Neely et al. (1995), PMS can be defined as a set of measures used to quantify both the efficiency and effectiveness of the organizational activities. Based on a wider perspective, Garengo and Bititci (2007) characterized a PMS as a balanced dynamic system supporting the organizational decision-making process by monitoring, gathering, and analyzing performance-related information. Such approach requires an integrated information system with accurate, timely, and accessible information related to different aspects of the business. Hence, there is the need for a set of performance measures that reflects the complexity of each organization's dynamics and the interests of the several stakeholders (Ackermann and Eden, 2011; Franco-Santos et al., 2012; Harrison et al., 2010; Kaplan and Norton, 1996; Kirby, 2005; Neely, 2005).

Concerning the air transport sector, airports are currently seen as organizations delivering efficient and high-quality services to different customers, including airlines, passengers, retailers, and users in general (Adler et al., 2013a; Gillen, 2011; Graham, 2014; Kalakou and Macário, 2013). Major airports are complex and dynamic organizations consisting of many interacting parts, and different stakeholders need information on several aspects of the airport performance. Accordingly, airports represent the epitome of complex systems with multiple stakeholders, multiple jurisdictions, and complex interactions among many actors (Wu and Mengersen, 2013).

Accounting for the diversity of stakeholders' interests should lead airport executives towards the adoption of a wider approach to measuring performance. Consequently, performance measurement practices should embrace a multidimensional perspective. Humphreys and Francis (2002) claimed that measurement practices at airports were likely to be driven by the forces of a market-oriented emphasis, increased responsiveness to targets set by regulators, and increased sensitivity to environmental standards. In this context, the focus of performance measurement should progressively move from operational and financial performance towards a more holistic and multidimensional approach, in which other performance dimensions are equally relevant (Bezerra and Gomes, 2016b; Skouloudis et al., 2012).

The research literature on airport performance has covered several important issues, such as:

- i. Airport efficiency/productivity, including their determinants (e.g. Adler and Liebert, 2014; Assaf et al., 2012; Barros and Weber, 2009; Chang et al., 2013; Chi-Lok and Zhang, 2009; Fan et al., 2014; Gillen and Lall, 1997; Merkert and Mangia, 2014; Oum et al., 2006; Oum et al., 2008; Sarkis and Talluri, 2004; Voltes-Dorta and Pagliarib, 2012; Yang and Fu, 2015; Yang and Zhang, 2011); the methods used (e.g. Abrate and Erbetta, 2010; Assaf et al., 2012; Assaf et al., 2014; Barros, 2009; Barros and Dieke, 2008; Jessop, 2009; Lai et al., 2015; Martín-Cejas, 2005; Suzuki et al., 2010); and benchmarking studies (e.g. Graham, 2005; Lai et al., 2012; Merkert et al., 2012; Morrison, 2009; Vogel and Graham, 2013);
- ii. Service quality, including passenger's perceptions and satisfaction (e.g. Bezerra and Gomes, 2015; Perng et al., 2010; Bogicevic et al., 2013; Prebezac et al., 2010; Chen, 2007; Lupo, 2015; Janic, 2003; Fodness and Murray, 2007); level of service assessment (e.g. Borille and Correia, 2013; Correia and Wirasinghe, 2007; Correia et al., 2008; De Barros, Somasundaraswaran and Wirasinghe, 2007; Omer and Khan, 1988); and simulation models of airport operations (e.g. Andreatta et al., 2007; Ignaccolo, 2003; Manataki and Zografos, 2010; Zografos et al., 2013; Zografos and Madas, 2006);
- iii. Safety performance (e.g. Chang et al., 2015; Enoma and Allen, 2007; Enoma et al., 2009; Leva et al., 2015; Pacheco et al., 2014; Roelen and Blom, 2013);
- iv. Security issues (e.g. Enoma and Allen, 2007; Gillen and Morrison, 2015; Gkritza et al., 2006; Leone and Liu, 2011; Sindhav et al., 2006);
- v. Economic-financial aspects, including the impact of non-aeronautical revenues on financial performance and sustainability (e.g. Fasone et al., 2016; Graham, 2009; Halpern, 2010; Halpern and Pagliari, 2008; Merkert and Assaf, 2015; Vogel, 2011; Vogel and Graham, 2010);
- vi. Environmental issues, including the effects of undesirable outputs of the airport processes (e.g. Pathomsiri et al., 2008; Scotti et al., 2014; Monsalud et al., 2014; Skouloudis et al., 2012).

Fig. 1 outlines the relative frequency of those issues in the literature reviewed, which covered 369 documents.

Airport efficiency/productivity appeared as the main topic, with an emphasis on benchmarking studies covering different methodologies and countries, as well as the development of assessment methods (for further discussion, see Assaf et al., 2014; Lai et al., 2012; Vogel and Graham, 2013, and Graham, 2005). Despite this great interest in airport benchmarking, authors advocated that there is limited value in simple comparisons between performance indicators. Accordingly, there is the need for exploring the effects of airport characteristics, managerial factors, and exogenous variables on airport efficiency/productivity in order to provide useful insights from the benchmarking results (Adler et al., 2013a; Humphreys and Francis, 2002; Lai et al., 2012; Sarkis, 2000; Yoshida and Fujimoto, 2004).

Service quality/Level of service is the second most frequent issue.

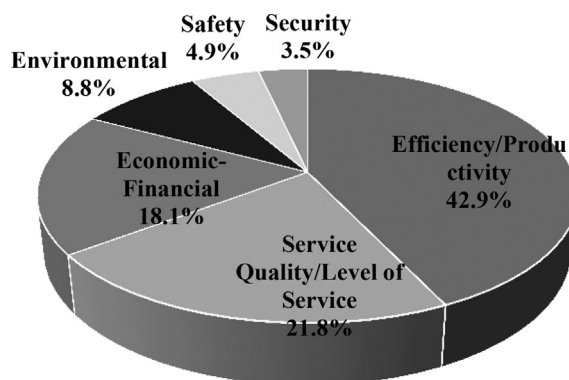


Fig. 1. Documents reviewed by issue.

- i. Airport efficiency/productivity, including their determinants (e.g.

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