

Air transport performance and global decision analysis

Summary

Since the beginning of aviation, airports have played a pivotal role in Aeronautical Engineering. The airport concept has changed a lot over the past century from small airfields to international hubs. These airport infrastructures have played a significant role in the economic development of the regions they operate. The emergence of the airport city concept as a new successful organisational model suggests that any infrastructure of this kind to be competitive should adopt it. With all its inputs and outputs, the airport industry significantly influences the global economy. The balance between the public interest in general, shareholders, and airport operators must seek to be reconciled.

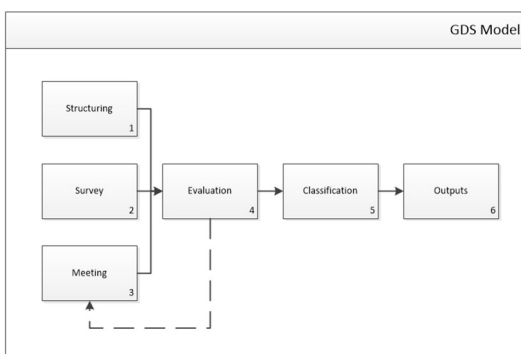
The studies review reinforces the idea that a global analytical tool is essential to find the global perspective (airside, landside, and agents) of any airport's performance beyond the challenges that will be put to them soon and a complete benchmark of direct competitors. The construction of a new methodology requires that airport, land, and airside infrastructures be considered, and agents near the airport, customers, shareholders and airport operators. Thus, a well-founded analysis for a Global Decision Analysis (GDA) incorporates all the infrastructure stakeholders' interconnections in a single tool. GDA is, therefore, friendlier to stakeholders given the management and optimization of decisions based on an analysis system based on the MACBETH multi-criteria methodology, the PESA-AGB. This tool was built and applied to an airport with dimensions identical to Lisbon airport, demonstrating and comparing the evolution of performance and efficiency over 11 years from 2003 to 2013 by six key performance areas of the airport and the respective key performance indicators.

The development of an airport efficiency tag for each year of assessment was implemented. An APE-Label implementation, applied to any airport, is presented, and discussed in this study regardless of its size and location. The main obstacle to implementing this APE-Label is the heterogeneity of the airport infrastructure since it differs in the number of runways for public, private or even public-private property, among others. However, with the PESA-AGB methodology, it was possible to mitigate this factor. The main proposal is to provide a graphical APE-Label that informs all interested parties which infrastructure assessment is analysed across the six key performance areas each year that will help to maximize performance and efficiency standards.

For the airport case study, a self-benchmarking analysis was carried out for the airport's study with distinctive characteristics representing the central Portuguese air infrastructure. The airport in study is considered the largest in terms of passengers, movements and cargo and is associated with Lisbon airport. Finally, the results of PESA-AGB and GDA have been presented in two visual analysis panels. The dashboards and the GDA report and recommendation are prepared.

Keywords

Air transport, global decision analysis, airport performance, airport efficiency, MCDA-PESAAGB.



GDS model steps and the airport efficiency label.



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