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UNDERSTANDING AIRPORT BENCHMARKING

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Introduction

Airport benchmarking has become increasingly popular as a means of assessing the performance of different airports around the world.¹ In this article, we discuss the ways in which airport benchmarking has been used and the some of the issues around the quality of data and analysis and the interpretation of the results.

The use of benchmarking in the airport sector

Benchmarking is a means by which to assess the performance of a firm, industry or sector by comparing its performance with other, similar firms, industries or sectors. Early benchmarking focused on manufacturing processes. (Xerox Corporation is widely credited with initiating benchmarking in the 1970s, which it used to improve its manufacturing and distribution processes by benchmarking against its major, generally Japanese, competitors.²) Benchmarking has since been used too in sales, marketing, pricing, product development, customer satisfaction, and in the public sector and non-profit organisations.

A benefit of benchmarking is that it can be a fairly straightforward means to identify performance deficiencies or exceptional performance, without detailed and complex examination of processes. For example, it can be used to determine whether a firm has achieved high productivity levels by comparing its productivity with that of peer firms. Without this comparison it would be a difficult and complex process to determine whether the firm was in fact productive.

As many airports have transformed from government operated public utilities to privately operated commercial enterprises, there has been an increased interest in utilising benchmarking to assess and improve performance. Benchmarking has been used to examine a number of different aspects of the airport business, namely:

- Pricing: the cost to the airline of flying to the airport in terms of landing fees, terminal charges, etc.
- Service quality: customer satisfaction levels, average queue times, incidences of delays.
- Cost: unit cost, such as operating or total cost per Work Load Unit (WLU).
- Productivity or efficiency: Total Factor Productivity (TFP), Variable Factor Productivity (VFP), or single factor productivity measures (e.g. WLU per labour hour).

¹ Within the aviation industry, benchmarking is also used to assess the performance of airlines and air traffic control services. This article focuses just on airport benchmarking.

² Another famous example of a benchmarking study is the MIT study of the automobile manufacturing (*The Machine That Changed the World*) which analysed in-depth automobile manufacturing processes at plants across the world and led ultimately to significant changes in production processes in North America and elsewhere, by enabling managers to recognise what they had to do to achieve world class standards.

As a result of the demand for airport benchmarking, a number of commercial publications are produced on a regular basis to benchmark airports in various dimensions. These include the ACI *Airport Service Quality* programme, the *Airport Performance Indicators and Review of Airport Charges* reports published by Jacobs Consulting (previously published by the Transport Research Laboratory) and the Air Transport Research Society (ATRS) *Global Airport Benchmarking Report*. In addition, individual airports (or groups of airports) may commission their own benchmarking studies.³

The results of these benchmarking studies are often used to highlight some positive or negative aspect of an airport – highest customer satisfaction in Asia, most efficient airport in North America, most expensive airport in the world. However, it is worthwhile understanding how these statistics were produced and how different approaches and different data quality can affect the results.

Who is being compared?

The comparator airports will often be made of natural competitors to the airport or “best in class” airports whose performance the airport management may wish to emulate. For example, Heathrow Airport may be benchmarked against Frankfurt, Paris, Amsterdam (competitors for European hub traffic) or Hong Kong, Singapore, Dubai (best in class). Another practical factor is simply which airports are willing to participate in (and possibly fund) the study or which airports have suitable data available for the benchmarking.

The selection of comparator airports is fairly critical to the analysis – for example, an airport catering to largely Low Cost Carrier airlines may wish to benchmark itself against airports serving similar airlines, rather than a major international hub (and vice versa). An airport operating in a cold weather environment (with the associated weather disruptions, de-icing and snow clearance costs) may be better compared with airports experiencing similar conditions rather than airports in tropical parts of the world (more on comparing across different airports later).

Getting appropriate data

One of the major challenges in benchmarking airport performance is obtaining workable data. The availability and quality of data on airport activities and finance varies considerably around the world, depending on the ownership structure of the airports, accounting practices in each country, and the data collected by government statistical agencies. While most private and not-for-profit airports publish detailed financial accounts, the financial accounts of some publicly owned airports are not readily available in any great detail. Even airports actively providing data to a benchmarking study may not have data in a format that is compatible with some other airports. Differing accounting practices can also create data inconsistencies. For example, some airports surprisingly treat interest expenses as an operating cost, while others treat it as a non-operating expense. U.S. airports treat grants and monies received from the Passenger Facility Charge (PFC) as offsets to capital expenditures rather than as revenues; however, in Canada, the Airport Improvement Fee (AIF, similar to the PFC) is generally treated as a revenue source. The BAA depreciates runways over period of up to 100 years, while many other airport operators use shorter periods of between 20 and 40 years. To some extent, the data can be adjusted in order to apply a consistent accounting standard, but this can be a difficult task requiring very detailed data.

Errors by Researchers

Another problem is that some researchers doing benchmarking fail to fully understand the different airport business models and make errors in their comparisons.

For example, benchmarking landing fees may appear to be a straightforward exercise. However, airports around the world structure their fees and charges in quite different ways.

³ As an example, InterVISTAS Consulting undertakes benchmarking for Canada’s Level II airports, with the benchmarking studies commissioned by the airports.

Some airports bundle their charges into a single weight-based landing fee (perhaps with a separate passenger or seat based terminal fee) which covers all services at the airport; other airports have unbundled their fees into a plethora of additional charges such as gate utilisation fees, fees for use of the FID and announcement systems, special customs hall fees and other charges for specific airport services. In addition, many airports levy fees charged directly to the passengers, such as the AIF or PFC. Researchers who fail to tally up all the individual charges will create erroneous benchmark comparisons.

ATRS, for example, only looks at landing and terminal fees, with the result that ATRS results are biased against airports with bundled charging schemes. The airport it labels as being the most expensive in the world actually should be ranked much lower. The most expensive airport it ranks as number 10.⁴

Comparing performance across a wide variety of airports

A major challenge with interpreting the results of benchmarking studies is understanding the true causes of observed differences in performance. For example, does a difference in productivity or efficiency reflect managerial performance, or the impact of external factors outside the control of the airport (e.g., weather, government policy), or are they the result of data inconsistencies.

Some airports may have higher fees than others simply because they provide a wider range of services. While some airport's fees cover air traffic control charges for tower services, other airports do not provide these services (these services are instead provided by air navigation service providers), and thus have lower fees. In fact, there are a range of factors that can impact the comparison of airport pricing, cost or efficiency:

- **Degree of contracting out by the airport.** Where certain services are contracted out to third parties, who charge the airlines directly, this lowers the operating costs of the airport.
- **Weather.** Airports in cold climates require snow clearing and de-icing equipment increasing their cost base (unless, of course, these services are contracted out). Likewise, airports subject to inclement weather (hurricanes, high winds) may have higher costs or reduced output. Potentially, airports in hot areas could have reduced output levels as aircraft sometimes have to operate with lower take-off weights (hot air is less dense).
- **Government subsidy or assistance.** Airports operating within the public sector may benefit from government subsidy for operating, capital costs. Also, these may have access to lower cost financing as the loans or bonds are backed by the government.
- **Traffic mix.** International passengers tend to require more infrastructure and space than domestic passengers (e.g., customs and immigration, higher baggage loads). They also tend to generate higher revenues to the airport, through higher fees and charges to the airline and higher retail spend rates. Also, the proportion of connecting passengers, versus O/D passengers, can also have cost and revenue implications.
- **Capacity constraints.** The capacity of the airport may be constrained by factors outside of the airport's control. For example, the airport may be subject to night curfews, noise quotas or slot constraints.
- **Cost of Living.** Some airports face higher labour costs as they operate in higher labour cost countries. The cost of labour for Heathrow Airport is likely to be several multiples higher than that of New Delhi Airport.

⁴ An earlier version of this article referred to calculation errors in the Jacobs report, *Review of Airport Charges*. However, upon review it was found that the Jacobs report does not contain the errors we stated and this part of the article has been retracted with the authors' apologies.

- **Economies of Scale.** Airport productivity can potentially be enhanced by economies of scale. Airports with higher traffic volumes have higher productivity levels than smaller airports simply because they benefit from economies of scale.
- **Service Quality.** Productivity gains or cost reductions may be achieved by lowering the level of service at the airport. A comparison based purely on financial measures may miss this aspect of performance.
- **Congestion.** Unless service quality is controlled for, airports which are congested may appear to have very high productivity (e.g., movements per runway), when in fact they reduce the economic efficiency of commercial aviation.

Approaches have been developed to overcome these kinds of problems. For example, some studies “normalize” the data so that performance indicators are based on a uniform set of activities. Another approach is to use statistical or econometric analysis to adjust the performance indicators for outside factors, an approach known as residual benchmarking. In such cases, care must be taken to ensure that the adjustments made are logical and robust and the results produced are replicable and consistent over time and between airports.

Is airport benchmarking worthwhile?

While benchmarking has some issues and limitations associated with it, it is certainly not without value. It is a useful tool to identify deficiencies and excellence in performance. It can spur competitive forces and shake up conventional thinking. Benchmarking can serve as an effective decision-aid tool, but decision makers must be aware of the limitation of the analysis, and the analysis itself must demonstrate sufficient robustness. Critical to this is that the benchmarking studies are transparent in terms of the data used and the analytical approaches undertaken.

The views expressed in this article are the author’s and not necessarily those of IATA.