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The nature and prevalence of the use of performance measurement techniques by airlines

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Abstract

This paper describes the nature and prevalence of the use of performance measurement techniques by airlines. The authors draw on evidence from an international survey of the largest 200 airlines in terms of total passengers carried per annum. The results provide empirical insight into the use of performance measurement, benchmarking activities and other performance management techniques. The survey revealed a very high utilization of benchmarking and quality management techniques by airlines, and evidence that certain measures are considered more useful than others by the airline managers.

Keywords: Airlines; Performance measurement; Performance management; Benchmarking

1. Introduction

Airlines face challenging, dynamic market environments that in the short term are extremely sensitive to the world economic and political situation. Long-term growth of around 4.5% per annum in air traffic has been forecast (Airports Council International, 2003). Events such as September 11th, the SARS outbreak, sharp oil price rises and poor economic conditions of the early 2000s have seen an overall stagnation and reduction of traffic during the period 2001–2003, although some market sectors have performed better. Historically, airlines have made very low margins, 8% on average. The pressure from competition, deregulated market forces, the decline of average yields per passenger and, in certain regions, the challenge from low-cost airlines, have presented management with the problem of how to improve airline economic performance. The aim of this paper is to empirically establish the nature and prevalence of performance measurement techniques by airlines.

2. Performance measurement of airlines

The continuing speed of change and rapid growth have resulted in a complex array of challenges for airline managers. These include increasing congestion of infrastructure, safety, sustainability, environmental and social opposition to aircraft operations, airport and air traffic privatization and commercialization, alliances and mergers between airlines, deregulation of markets, the operation of new larger aircraft and the continued rise of low-cost carriers. Such pressures have led managers, planners and regulators to use a variety of performance management techniques to measure and manage airline performance.

The importance of performance measurement to monitor operational, safety, and financial aspects of performance has been long recognized. Performance data is required to evaluate customer response to services and to maintain management control of

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geographically disparate route networks (Doganis, 2001; Shaw, 1999; Hanlon, 1999). Data are frequently collected electronically and managed via a series of databases. The range and volume of data has increased, with much of it collected and collated and managed electronically. Many airlines are fed detailed information on the flight performance of each aircraft via the flight data recorder (FDR). This operational information is downloaded and used to identify performance improvements that can be made and to highlight specific operational problems on certain sectors. With the agreement of a 'no blame' regime, certain airlines use this data to identify safety issues and the need for pilot training/retraining. Operations data is an example of performance data that is often collected in real time, reviewed by an operations department and used to manage flight operations. It is also reviewed by network planning analysts to feed medium and long-term planning decisions (Doganis, 2001, 2002; Kirkland et al., 2003; Caves and Gosling, 1999).

Airline alliances, franchise agreements and code share agreements have led to airlines requiring certain service levels and safety standards to be achieved. Major airlines have undertaken such agreements to maintain brand quality for customers (Denton and Dennis, 2000; Hanlon, 1999). In extreme cases, partner airlines have had to withdraw from code share agreements or change service delivery as a result of 'audit' findings from partner airlines. For example, Korean Airlines was suspended from its alliance with Delta and Air France until safety standards had been raised. Both Delta and Air France shared and compared performance information and provided the expertise and knowledge of safety systems and culture to develop the processes required to address possible safety problems (Braithwaite, 2001).

Load factor data, yield and other commercial information is collected and fed into a database to provide airline management with information upon which to base pricing and capacity decisions in the short, medium and long term. The volatility of airline service with respect to hourly, daily and seasonal traffic patterns, the impact of competitor behaviour and sensitivity to economic conditions has made collection of commercial performance data essential. Use of this data enables management to react to market changes and to survive. Generally speaking, the use and analysis of commercial information is known to be commonplace. Little academic work has been undertaken as to the exact way information is used. This is due in no small part to the commercial sensitivity of such information. Examples of benchmarking from the literature include Southwest Airlines learning about the low-cost model of airline operation through visits and spending time with Pacific Southwest Airlines in California and Ryanair spending time with Southwest Airlines to understand how to develop a low-cost airline (Calder, 2002).

Airline managers compare operational performance both within the airline and in relation to the performance of other airlines. Inter-organizational learning is one way in which airlines can try to meet the challenges facing them. Cost data comparisons from published sources by organizations such as the International Air Transport Association (IATA), the International Civil Aviation Organization (ICAO), the UK Civil Aviation Authority. Periodicals such as *Air Transport World* and *Aircraft Economics* are available to assess comparative performance and are a starting point for exploring the reasons behind performance differences. Some of these differences can be explained by geographical variation in labour and other input costs. In addition to published statistics, a number of reports providing 'benchmark' statistics and comparisons of airline performance have been produced (such as Mason et al., 2000; Morrell et al., 2000; Transport Research Laboratory, 2002). Quality of service indicators are collected by airlines internally and by IATA's annual world passenger survey which monitors customer satisfaction with 29 aspects of airline service (International Air Transport Association, 2002). Each airline can compare itself with the ratings for the rest of the sample to provide a measure of relative performance.

Although the literature identifies a range of data collection methods and a comparison of key performance indicators, the nature and prevalence of performance measurement techniques and benchmarking activities oriented towards process improvement within the sector, have not previously been identified in a systematic way. A prime motivation of this study therefore is to address this gap by identifying the relative use of different performance measurement practices by airlines.

3. Methods

The set of airlines sampled was the largest 200 airlines as ranked by *Air Transport World* in terms of total passengers for 2001 (Air Transport World, 2002). The top 200 were chosen because it represented the major players in the industry who account for over 75% of airline passenger kilometres performed. It is symptomatic of the volatility of the airline industry that at the start of the survey, 12 airlines listed in the top 200 were no longer operating and were therefore deleted from the list. The next 12 airlines still in operation were added to make the sample up to 200. The questionnaires were addressed where possible to the person concerned with flight operations. Where it was not possible to identify a named person, the questionnaire was sent to another named senior person.