ABSTRACT

Airports play a critical role in promoting trade, tourism and economic development of a country. During the last two decades, an upward trend in international tourism and globalization significantly increased traffic rates in the aviation sector. Although several external shocks e.g. Gulf war, economic downtime, terror attacks temporarily interrupted this trend overall growth was not significantly impacted. One major contributor to this growth has been the deregulation of the airline industry, which began in the nineteen-seventies and resulted in lower airfare. This was the starting point of a gradual liberalization process in the aviation industry. As a result of the airline deregulation, many airports have felt and still feel increasingly exposed to the cost pressure and are obliged to operate efficiently. Airports may now face competition from other airports or other modes of transport. Consequently, airport benchmarking has become a popular management tool for comparisons with competitors and to assess efficiency changes resulting from the structural changes. This interest has spurred the growing literature to aim at developing various quantitative approaches to benchmarking. Within academic benchmarking, a number of studies have emerged utilizing non-parametric approaches to estimate the productivity and efficiency of airports. Numerous studies have evidently confirmed that data envelopment analysis (DEA), a non-parametric approach, has been a widely utilized method for measuring airport efficiency and productivity. There is not much research done in India that computes the efficiency of airports from a representative sample of airports.
In recent years, structural changes such as commercialisation and privatization together with increased competition among airports have encouraged airports and aviation authorities to place more emphasis on quality. In this context, establishing measures to evaluate the operational performance of airports is one of the major problems faced by airport operators today. The study has proposed to develop a model to evaluate the overall performance of the airports using an Analytical Hierarchy Process (AHP). It is a popular approach to multi-criteria decision making (MCDM) method. The AHP technique has been applied during the last thirty years in decision making scenarios which includes airports and airlines. This study uses two quantitative approaches namely Data Envelopment Analysis (DEA) and Analytic Hierarchy Process (AHP) to assess the efficiency and ranking of airports respectively.

Deregulation of the airlines and other sectors of the air transport industry motivated the airports to improve their services. As a result, by the end of 1990s many airports were concentrating intensively on marketing activities in an effort to survive in an increasingly competitive market place. Now the airport industry has realized that service quality is significantly important to achieve genuine and sustainable competitive advantage.

The study presents the result of three research objectives. The first research objective provides an assessment of the efficiency of airports in India and measures their relative efficiency using DEA. The DEA is used to assess the relative efficiency of 17 International Airports in India which offered domestic service from January 2011 to December 2011. In this study, an output orientation DEA model has been employed to calculate global technical efficiencies, pure technical efficiencies, scale efficiencies and returns-to scale of each airport. The result indicates that airports in Mumbai, Bangalore and Goa form the frontier according to Charnes, Cooper and
Rhodes (CCR) model. Out of 17 airports, only 8 airports namely Bangalore, Calicut, Chennai, Delhi, Goa, Guwahati, Jaipur, and Mumbai operate in the frontier under Banker, Charnes and Cooper (BCC) model. The remaining 9 airports are technically less efficient as their scores were less than one. The airport in Ahmedabad, Amritsar, Calicut, Chennai, Cochin, Guwahati, Jaipur, Kolkata, Nagpur, Port Blair, Srinagar and Trivandrum operate in the area of increasing returns to scale. The airports in Bangalore, Goa, Mumbai and Hyderabad operate in constant returns to scale. The airport in Delhi operates in the area of decreasing returns to scale. The DEA also helped to identify a set of corresponding efficient airports that can be utilized as benchmark for improvements.

The second research objective provides an airport evaluation system for ranking the Indian Metro Airports. This study has adopted the Analytic Hierarchy Process (AHP) to evaluate the metro airports such as the airports in Delhi, Mumbai, Chennai and Kolkata. From this study, it is found that physical amenities have more influence on the evaluation results of the airports. Physical amenities have the highest relative weights (0.471) followed by Service Quality (0.310) and by Airport Performance (0.218). The findings are useful for airport planners and managers and will assist them during resource allocation planning.

From the study, it is found that the overall priority value is ranked in the following order:

1. Delhi Airport - 0.369
2. Mumbai Airport - 0.317
3. Chennai Airport - 0.175
4. Kolkata Airport - 0.137
The Third research objective is to measure the perceptions of passengers’ service quality in Chennai Airport. A self-administrated survey technique was conducted to collect primary data from the target respondents.

The perception of passengers’ on the quality of service rendered in Chennai airport has been captured and analysed. The results of Exploratory Factor Analysis identified five factors such as effectiveness, efficiency, productivity, décor and interaction. In this study, a first- order measurement model is tested by performing Confirmatory Factor Analysis. The model fit results for the first–order Confirmatory Factor Analysis for airport service quality indicated a good model fit with the data. All model fit indices were satisfied within their relative recommended thresholds. The second-order Confirmatory Factor Analysis model for airport service quality was designed to test the relationships between the sub-dimensions such as effectiveness, efficiency, productivity, décor, interaction and airport service quality. All model-fit indices were satisfied within their relative recommended thresholds.

Findings obtained from Confirmatory Factor Analysis tests indicated that all the five sub-dimensions are highly suited for measuring service quality in airports. The outcomes of the of the study would help contribute to the theoretical aspects of the Benchmarking and Service Quality concepts as well as providing inputs for both managers and policy makers of airports in India.