

# **EFFICIENCY OF GLOBAL AIRLINES: AN APPLICATION OF THE METAFRONTIER DEA MODEL**

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## **ABSTRACT**

This paper evaluates the technical efficiency of low cost and full cost carriers over the period 2002 to 2011 amid the high level of competition faced by airlines in Asia and Europe since the 2000s using the metafrontier technique based on Data Envelopment Analysis methodology. The application of this technique to airlines is interesting in order to identify the technology gap between low cost and full cost carriers. The study findings suggest that full cost carriers are technically more efficient than their low cost counterparts. The high value of TGR between the full cost carrier group and the metafrontier technical efficiencies indicates that full cost carriers have achieved the highest potential output.

**Keywords:** Performance, technical efficiency, metafrontier Data Envelopment Analysis, technology gap ratio, airline business model.

## **1. INTRODUCTION**

An estimate by the International Civil Aviation Organization (ICAO) suggests a total of 3.5 billion passengers have been transported by global air carriers in 2015 (ICAO Economic Development, nd). The fast growth of the aviation industry is inevitably contributed by the rapid growing of low cost carriers (LCC) from both European and Asian regions, where the LCC accounts for approximately one third of the total scheduled passenger traffic carried by global airlines. At regional level, statistics estimates that 43 percent and 23 percent of the total seat capacity is contributed by LCC's passenger traffics from two fast growing air transport markets namely the European Union and Asia respectively. Based on a report by ICAO (2017), there were about 131 registered LCC airline companies globally, a figure that has been growing remarkably since the opening up of the air transport markets in Europe and Asia between 1990s and 2000s. On the other hand, the full cost carriers (FCC), being one of the earliest business model introduced in the aviation industry, is catching up with the intense competition posed by the LCC through expansion of aircraft fleets and routes to high demand regions such as South America and Asia. A forecast by Pune (2019) indicates that the FCCs is expected to experience a stable growth rate exceeding 5 percent for the period 2019-2023 amidst the fast growing competition from the LCCs. As a

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