DETERMINATION OF NEW FLIGHT ROUTE WITH DEA METHOD IN AIRLINE OPERATIONS

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ABSTRACT

Purpose- For airline companies to continue their operations, their growth is of critical importance. Increasing the number of passengers transported and/or cargo volume compared to the previous period is one way to gain a larger share of the market. At this point, selecting the most profitable potential flight routes is crucial in optimizing resource utilization. The aim of this study can be reported as selecting the most effective flight route through data envelopment analysis (DEA) from potential flight routes for evaluating aircraft resources in the airline industry.

Methodology- The study consists of two phases. In the first phase, effective flight routes are determined in three stages using the DEA method. In the second phase, the flight route to be flown was decided by evaluating factors such as transit passenger numbers and flight hours among the most effective routes determined in the first phase using the DEA method.

Findings- Despite having a flight time of more than 25 minutes longer than DMU 9, DMU 6 is forecasted to have an additional 26 transit passenger revenue. Therefore, it can be reported that DMU 6 is a more effective route than DMU 9. DMU 6 is executed with an average of 02:35 hours less flight time, despite the prediction of 8 transit passenger revenue less than DMU 7. Therefore, as using the aircraft resource for an additional flight would result in more revenue, DMU 6 may be a more effective route for the airline. These data indicate that DMU 6 is the optimal DMU for scheduling flights.

Conclusion- The aim of this study is to measure the efficiency of airline flight route selection using the DEA method. The results of the study reveal that the DEA method is not suitable for determining the most efficient flight route, but it can be used to eliminate inefficient flight routes and narrow down potential flight routes. To determine the most efficient route, it is critical to eliminate inefficient flight routes using the DEA method and evaluate other flight-related factors. This will help in identifying the optimal flight route

Keywords: Airline flight route, efficiency, Data Envelopment Analysis (DEA), flight revenues, flight expenses, transit passengers.
JEL Codes: L93, M21, C44

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