



A mathematical model to predict the US Airline Operations Costs and Airports Charges per route per passenger.

Approach

A mathematical model is proposed for calculating the average airlines operations costs and airports charges on a certain route by a specific airline. This model was set up by analyzing the domestic US air transport market.

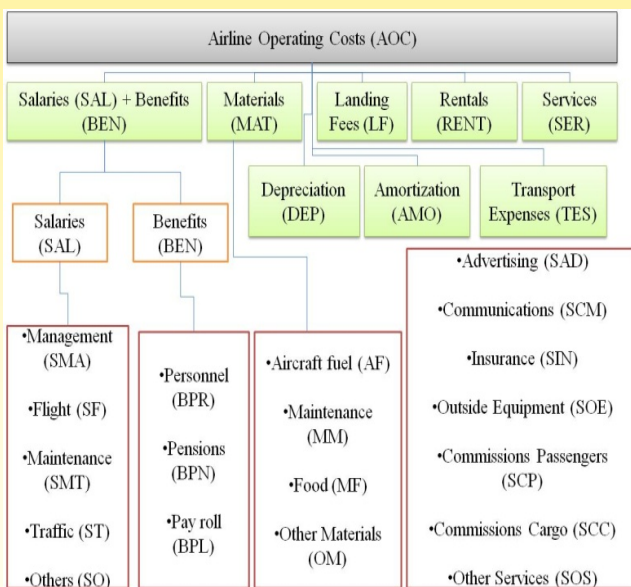


Fig 2. Airlines operations costs estimated by the model per route

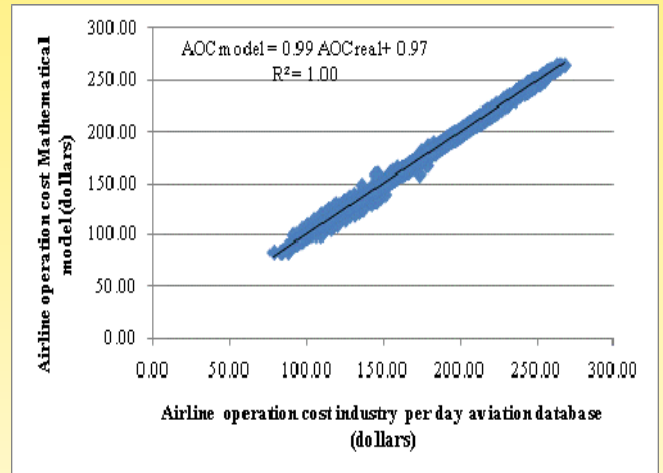


Fig 1. Correlation between estimated airlines operations costs and real data

Table 1. Percentage and number of routes estimated inside $\pm 10\%$ and $\pm 20\%$ relative error

Year	$\pm 10\%$ errors	Routes inside $\pm 10\%$ error	$\pm 20\%$ errors	Routes inside $\pm 20\%$ error
2005	0.98	3,936	1.00	4,000
2006	1.00	3,997	1.00	4,000
2007	1.00	4,000	1.00	4,000
2008	0.99	3,970	1.00	3,987

Outline

The airlines operations costs can be estimated by a regression analysis between real fare data and the fares calculated using the AOC model.

The airlines operations costs estimated per route by the proposed model have been validated comparing with real airlines operations costs data.

The model has been tested for 2005, 2006, 2007 and 2008 years.

Conclusions

The model allows determining a good estimation of the average airlines operations costs and airports charges per route.

A model like this can help airlines to find out their advantages and disadvantages when competing with other airlines or to decide if they are able to enter into new markets and be able to succeed.

The model could also be used for transport modeling for policy analysis, investment analysis for airports, etc.