MULTI-FACTOR MODELS FOR AIRLINE DELAYS

CASE STUDY: ENTEBBE INTERNATIONAL AIRPORT

BY

Masimbi Brian

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BSTAT. - MUK

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Abstract

The study aimed at developing multi factor models for airline delays and also explain the different factors that contribute to airline delays. The aviation data used was obtained from the Civil Aviation Authority Statistics Unit. The study hypotheses were tested using the two-way ANOVA F-test and further measures of associations and post-hoc tests were calculated. An ANCOVA model with general intercept was used in this study because it easily addresses the questions in which they normally have the greatest interest. And lastly time series models for each airline were derived where all stages of the Box- Jenkins approach of developing a time series models were followed.

The study found out that a difference in the delays amongst the airlines was dependent on the day of the week as noted from $F(16, 4523) = 2.215$, $p > 0.001$ but on the month as noted from $F(55, 4495) = 1.88$, $p < 0.001$and also the most total variance of the delays were attributed to the airline (29%). From the model, it was noted that Eagle Air, Kenya Airways, South African Airways and Ethiopian Airways were more delayed than the British Airways (base airline) by 33%, 62% , 55% and 16% respectively while KLM was less delays than BAW by 58%. Also the flights were more delayed on all the days of the week than Wednesday (base day). Lastly flights were less delayed in October and November than in June (base month) by 26% and 3% respectively which was not the case for the rest of the other months where the flights were more delayed.

The study recommends the following; each airline should be treated individually according to its unique characteristics in the process of improving performance, a policy framework needs to be developed to determine a maximum level of scheduling that would not compromise airport management income and operational departure efficiency. In modelling delays for flight scheduling process, the parameters of “Airline” “day” and “month” should always be considered to be in the model due to their significant effects.