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An artificial neural network approach to forecast airline load factors

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Load factor (LF) is a measure of capacity utilization and has been considered as one of the most commonly used and important performance indicators for passenger airlines. It represents the proportion of the utilized capacity of a flight or the whole airline in general. LF is calculated by dividing the number of paying passengers by the total number of seats for a single flight. Airlines have flights with different distances and having a 90% LF on a long haul flight and 90% on a short haul flight doesn't have the same impact for the airline. Therefore the capacity utilization of an airline is better represented by an average LF calculation that takes individual flight distances into consideration. Hence, average LF is calculated by dividing Revenue Passenger Kilometers (RPK) by Available Seat Kilometers (ASK). Airlines use LF estimates as a means of planning their actions. For example, if a route's expected LF is significantly lower for a period of time compared to last year's same period, then pricing team may consider publishing promotional fares, whereas sales teams may decide to increase agency incentives and marketing may decide to make advertisement campaigns in order to stimulate demand. Therefore having accurate LF forecasts is of extreme importance for airlines. In this study, an artificial neural network (ANN) approach is presented to forecast LFs and its performance is compared to airline's current forecasting methodology. It is shown that the proposed ANN approach produce significantly better forecasts compared to the current methodology.

Biography

Emir Ali Goze received his BSc and MSc degree with honors in Industrial Engineering from Yildiz Technical University, Turkey in 2006 and 2008 respectively. He also holds an MSc in International Production Management from Hamburg University of Technology, Germany. He has been working in the field of Revenue Management and is a PhD candidate in Industrial Engineering with a focus on Airline Revenue Management.

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