

A Fuzzy Inference System for Predicting Air Traffic Demand Based on Socioeconomic Drivers

Authors : Nur Mohammad Ali, Md. Shafiqul Alam, Jayanta Bhusan Deb, Nowrin Sharmin

Abstract : The past ten years have seen significant expansion in the aviation sector, which during the previous five years has steadily pushed emerging countries closer to economic independence. It is crucial to accurately forecast the potential demand for air travel to make long-term financial plans. To forecast market demand for low-cost passenger carriers, this study suggests working with low-cost airlines, airports, consultancies, and governmental institutions' strategic planning divisions. The study aims to develop an artificial intelligence-based methods, notably fuzzy inference systems (FIS), to determine the most accurate forecasting technique for domestic low-cost carrier demand in Bangladesh. To give end users real-world applications, the study includes nine variables, two sub-FIS, and one final Mamdani Fuzzy Inference System utilizing a graphical user interface (GUI) made with the app designer tool. The evaluation criteria used in this inquiry included mean square error (MSE), accuracy, precision, sensitivity, and specificity. The effectiveness of the developed air passenger demand prediction FIS is assessed using 240 data sets, and the accuracy, precision, sensitivity, specificity, and MSE values are 90.83%, 91.09%, 90.77%, and 2.09%, respectively.

Keywords : aviation industry, fuzzy inference system, membership function, graphical user interference

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