

Summary

Forecasts for the number of passengers in the air transportation industry have been conducted for years by governments, airports and airlines. These actors will benefit from good predictions in which they can rely when making strategy choices. An airport decides whether the capacity of the airport is sufficient or not, on the basis of the expected number of passengers. They consider the facilities and infrastructures such as runways, gates, passenger area, check-in desks, cafes, etc. An airline has other interests in the predictions of passenger numbers. It adapts its strategy, such as adjusting its capacity by, for example, purchasing new aircrafts or by predicting the most profitable routes. The growing and dynamic market creates a lot of competition, including the advent of budget airlines. Good predictions are needed to implement cost savings, to grow and stay profitable.

In this literature study, section 2 describes the theory of the existing forecasting methods. These forecasting methods can be divided into three categories, namely time series, causal models and judgmental models. Time series use data from the past to make an extrapolation for the future. For this purpose, one data set is used. Causal models include regression models, econometric models and fuzzy models, using multiple variables and combine them into a model that best fit with the data from the past. In this way, a prediction is made on future passenger numbers. Judgmental models are used when there is insufficient qualitative information and includes qualitative research and expert knowledge such as the Delphi method and scenario's.

In section 3, information is collected from the literature. The following forecasting models are described: Holt Winters, SARIMA, Gardner en McKenzie, Logit models, autoregressive models, exponential smoothing, econometric models, gravity models, neural network models, grey models and derivatives of them. The variables used in these models are summarized in section 4.

The key variables for forecasting passenger in aviation can be divided into dependent and explanatory variables. The explanatory variables can be divided into geo-economic and service-related variables. The main geo-economic variables are income, distance, population, employment and market size. The most important service-related variables are the number of flights, ticket prices and the size and technology of an aircraft. An airline may only affect the service-related variables and not the geo-economic variables. Besides these two groups of variables, also dummy variables are used in forecasting air passengers. The dummy variables are often related with trade or unexpected events such as attacks, earthquakes, floods and war. As stated, forecasting the number of air passengers is used for many purposes. Therefore, it is not possible, on the basis of this literature study, to decide which model is the best model. This depends in the purpose of the forecast, the locations and the prediction time.