A study on private vehicle demand forecasting based on Box-Jenkins method

Noratikah Abu[1,a] and Zuhaimy Ismail[2,b]
[1]Faculty of Industrial Sciences & Technology, Universiti Malaysia Pahang Lebuhraya Tun Razak, Pahang, 26300 Kuantan, Pahang, Malaysia
[2]Faculty of Science, Universiti Teknologi Malaysia, Jalan Hikmah, 81310 Skudai, Johor, Malaysia
[a]Corresponding author: atikahabu@ump.edu.my, [b]zuhaimyi@yahoo.com

ABSTRACT

Demand forecasting has become a priority to an organisation in order to manage their operations. Literature reviews on car demand forecasting are rather limited and many methods used are confined to static approaches. Malaysia is a developing country and expected to be classified as a developed country in 2020. We envisage that the study on vehicle demand forecasting will yield fruitful results. Nevertheless, a proper study on private car demand forecasting is still limited due to heavy data requirements. In this study, we propose the development of suitable forecasting model for private vehicle demand in Malaysia based on the actual data from January 2000 until December 2009. The Box-Jenkins methodology will be used to analyse and forecast Malaysian private vehicle demand. Box-Jenkins method is by far one of the most efficient forecasting techniques, especially when dealing with univariate time series data. Standard procedure of identification, estimation and diagnostic checking are employed. Based on the diagnostic checking, we consider the seasonal ARIMA model and by using Minitab software, results show that SARIMA$(2,1,0)(2,0,0)_{12}$ model is most suitable for forecasting. The results show that the Box-Jenkins method is applicable to forecast private vehicle demand in Malaysia.

KEYWORDS

Box-Jenkins method; Demand forecasting; ARIMA model; Forecasting