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Research article

Forecasting Model using Fuzzy Time Series for Tourist Arrivals in Langkawi

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ABSTRACT

In several applications, fuzzy time series forecasting was utilized to generate predictions about the future value of variables that were of interest. This study focuses on predicting how many tourists will visit Langkawi since a precise estimate of tourism demand would enable the government to decide whether to raise or lower the money allocated to the sector in the future. To be more precise, this study attempts to choose the best model that may be applied to forecast visitors to Langkawi and assist the public and private sectors in managing tourism-related preparations. The data collection contains monthly data from January 2009 to December 2010 and was directly extracted from the Langkawi Development Authority (LADA) website. When estimating visitor arrivals to Langkawi, the suggested fuzzy time series' accuracy was compared to that of the earlier technique. The experimental findings in this study demonstrated that the Fuzzy Time Series approach can anticipate more accurately. The results of this study could serve as inspiration for the public and private sectors to take action to bring more tourists to Langkawi, make their stay pleasant and pleasurable, and improve the possibility that they would visit again and again in the future.

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1. Introduction

Tourism industry has become a prominent sector that gives an impact on development of the country's economy that can be taken into consideration. Most of the country earnings and job opportunity offers by the tourism industry. One of the popular attentions on the tourist industry, where the potential for tourism includes nature, beaches, and islands that are large enough to be frequently referred to as "green tourism" and "blue tourism." [1]. The government has also made numerous large-scale initiatives to increase security, comfort, and cleanliness so that infrastructure and facilities can be developed that can be enjoyed not just by tourists but also by the entire population, which is estimated to be approximately 30 million [2].

In Malaysia, one of the most popular destinations chosen by the travellers is the Langkawi Island, located in the state of Kedah. In such cases, the Malaysian government need to pay their attention on the growth of the tourist's number that arrive and stay in Langkawi, since it tends to increase the country's potential income [3]. Thus, forecasting the tourism demand is crucially needed and the suitable forecasting model that can validly predict the tourism demand will help the government and private sectors properly build tourist infrastructures and give the best services to the tourists. Tourism industry is found to be an interesting matter to deal with Fuzzy Time Series forecasting.

In the previous study, [4] was conducted a study to forecast wheat production by using the Fuzzy Time Series method to assist the government in managing the wheat yield and storage space. The results showed that the forecasted value is close to the actual data in the wheat production data. Additionally, in the other study [5] an estimation of Taiwan's export trade using an ARIMA and fuzzy time series model was performed. In order to find the best forecasting model that can support and implement economic policies and business policies, particularly in the international export trade, both forecasting methods were examined. According to the findings of the forecasting, the Fuzzy Time Series model performed better than the ARIMA model by having a smaller average