



6COSC023W – Final Project Report

Predicting the Tourist Arrivals After Covid-19 Outbreak  
in Sri Lanka Using Machine Learning

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This report is submitted in partial fulfillment of the requirements for the  
BSc (Hons) in Business Information Systems degree  
at the University of Westminster.

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Date: 5<sup>h</sup> of May 2022

## **Abstract**

Predicting tourist arrivals has been done previously by many researchers. However, tourist arrivals have never been predicted after the covid 19 outbreak. The aim of this research project is to analyze the effectiveness of predicting tourist arrivals after the covid 19 outbreak in Sri Lanka and design, develop and evaluate a web-based tourism demand forecasting system that that can predict the number of tourist arrivals accurately after the covid 19 outbreak. Therefore, in this research study, we propose a web-based tourism demand forecasting system that can predict the number of tourist arrivals for the upcoming months accurately. It integrates with two Power BI dashboards in order to gain deeper business insight and improve decision-making process efficiency. This system will allow users to perform forecasting using different statistical models, considering the time series as the baseline model, and trying to improve the forecasting accuracy using machine learning techniques. This research project was chosen using the agile software development approach to be more flexible to make changes at any moment. The mix approach was chosen as the appropriate primary data collection methodology for this project because data was gathered through interviews as well as questionnaires. The past tourist arrivals data from January 1977 to December 2021 was collected in order to build the models. The predictions were calculated from the ARIMA(3,1,1)(0,1,2)[12] model and NNAR(14,1,8)[12]. The error measurements of ME, RMSE, MAE, MPE, MAPE, MASE, and ACF1 are used to evaluate the models. This research study found that the NNAR(14,1,8)[12] model performs better than the ARIMA(3,1,1)(0,1,2)[12] model because it has comparably lower error measurement values than the ARIMA(3,1,1)(0,1,2)[12] model. Therefore, the NNAR(14,1,8)[12] model is the best model for forecasting tourist arrivals after the covid 19 outbreak.