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AN APPROPRIATE MODEL FOR DESCRIBING TOURIST ARRIVAL PROCESS TO SRI LANKA FROM TOP-TEN COUNTRIES

by

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DECLARATION

The work described in this thesis was carried out by me under the supervision of Mr. P. Dias, Senior Lecturer in Statistics in the Department of Statistics and Computer Science, University of Sri Jayewardenepura and a report on this has not been submitted in whole or in part to any university or any other institution for another Degree/Diploma.

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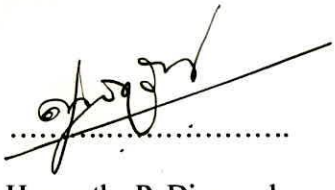

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SUPERVISOR'S CERTIFICATE

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An Appropriate Model for Describing Tourist Arrival process to Sri Lanka from Top-Ten Countries

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ABSTRACT

The study was based on tourist arrivals data from the highest tourist generating countries viz; United Kingdom, Germany, India, France, Netherlands, Italy, Australia, United States of America, Japan and Maldives to Sri Lanka during the period from January, 1977 to April, 2006. The tourist arrivals series of each country exhibit different cyclical periods and trend patterns, strong seasonality, and irregular fluctuations. To find the appropriate time series models for describing tourist arrivals processes in Sri Lanka from each country, it is useful to obtain cyclical and seasonal effects removed series from the respective origin countries. Further, this study applies the moving average technique for estimating the seasonal components of monthly tourist arrivals from each ten countries to Sri Lanka for identifying tourist seasons in the country.

The autocorrelation and partial autocorrelation functions, Ljung-Box (LB) statistic (test for the randomness of the residual autocorrelations), T-test (test for the significance of estimated coefficients) and model selection, and accuracy measurement, criteria, namely the Akaike Information Criterion (AIC), Schwarz Bayesian Criterion (SBC), Mean Absolute Deviation (MAD), Mean-Squared Error (MSE), Mean Absolute Percentage

Error (MAPE), Root-Mean-Squared Error (RMSE) and Root-Mean-Squared Percentage Error (RMSPE) are used to identify mostly appropriate Time Series Models for describing tourist arrival processes in Sri Lanka under the most commonly applied and accurate methods of Winter's multiplicative exponential smoothing method and Box and Jenkins Multiplicative SARIMA method on both levels and logarithmic tourist arrivals series of selected periods. Similarly, the scale developed by Lewis based on MAPE was applied to grade the accuracy levels of most appropriate model obtained by the estimation for each country.