

# **AN ANALYSIS OF TRADE DYNAMICS OF SRI LANKAN TEA EXPORTS**

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## **DECLARATION**

I declare that this is my own work and this thesis/dissertation does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any other University or Institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text. I retain the right to use this content in whole or part in future works (such as articles or books).

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Name of Supervisor: Dr. R. P. Abeysooriya

Signature of the Supervisor:

Date:

## **DEDICATION**

*I devote this thesis to my parents and husband.*

*For their everlasting love, generous support and encouragement....*

## **ACKNOWLEDGEMENT**

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## ABSTRACT

Tea exports significantly contribute to the Sri Lankan economy since it is one of the major agricultural export crops in this island nation. Even though Sri Lanka is one of the leading tea exporting nations in the world, the percentage share of Ceylon tea in the global tea market has been gradually decreased over the years. With this background, this study aims to comprehensively investigate the growth patterns, instability, influential factors, and future predictions of tea exports to propose recommendations to improve the tea export industry in Sri Lanka. Secondary data were mainly used in this study. The Compound Annual Growth Rate Analysis was employed to measure growth rates in production and exports of Sri Lankan tea while instability in production and export indicators of tea in Sri Lanka were calculated by using Cuddy Della Valle Index. The Sri Lankan tea export quantity was modelled and predicted by applying forecasting techniques as Seasonal Autoregressive Integrated Moving Average, Gaussian Hidden Markov Model, and Multilayer Perceptron. Sri Lankan tea exports has shown negative growth while tea export value has depicted positive growth during the period from 2011 to 2022. In the same time Iraq was the most stable market for Sri Lankan tea exports. The comparison of the prediction accuracy of various forecasting techniques in tea export quantity prediction was revealed that the Multilayer Perceptron was performed better than other techniques employed in this study. Tea export types as bulk tea, tea packets, and tea bags as well as year majorly affect on the future predictions of Sri Lankan tea export quantity in order to the data series which was applied for this study. The study findings will be useful for researchers, policy makers, exporters, and other relevant authorities. Further research efforts are recommended to do for tea export prices and earnings.

**Keywords:** Artificial Neural Network, Growth, Instability, Tea Exports, Time Series Forecasting

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## LIST OF ABBREVIATIONS

<b>Abbreviation</b>	<b>Description</b>
ACF	Auto Correlation Function
ADF	Augmented Dickey Fuller
AIC	Akaike's Information Criterion
ANN	Artificial Neural Networks
AR	Autoregressive
ARIMA	Autoregressive Integrated Moving Average
BANN	Bayesian Artificial Neural Networks
BIC	Bayesian Information Criterion
CAGR	Compound Annual Growth Rate
CDVI	Cuddy Della Valle Index
CII	Coppock's Instability Index
CIS	Commonwealth of Independent States
CTC	Crush, Tear and Curl
CV	Coefficient of Variation
FFANN	Feed Forward Artificial Neural Network
FOB	Free on Board
GDP	Gross Domestic Production
GHMM	Gaussian Hidden Markov Model
HES	Holt's Exponential Smoothing
HMM	Hidden Markov Model
KPSS	Kwiatkowski, Phillips, Schmidt and Shin
LSTM	Long Short-Term Memory
MA	Moving Average
MAD	Mean Absolute Deviation
MAPE	Mean Absolute Percent Error
MLP	Multilayer Perceptron
MSE	Mean Squared Error
PACF	Partial Auto Correlation Function
RMSE	Root Mean Squared Error
SARIMA	Seasonal Autoregressive Integrated Moving Average
SBC	Schwartz's Bayesian Criterion
SECM	Seasonal Error Correction Model

SES	Single Exponential Smoothing
SLTB	Sri Lanka Tea Board
UAE	United Arab Emirates
VEC	Vector Error Correction
WDI	World Development Indicators

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