



# **Decision Support System for Overcoming the Challenges in Vocational Education in Sri Lanka**

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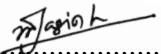
# Declaration

I declare that this research work and research thesis has been completed by myself and submitted for the Postgraduates degree program which is entitled as MSc in Information Technology. This research work has not been submitted for any other degree program or professional qualification except where explicitly state in the text.

This research work was done under the Lecturer Dr. Dasuni Nawinna, Faculty of computing, Sri Lanka Institute of Information Technology.

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# LIST OF ABBREVIATIONS, ACRONYMS

<b>GCE OL</b>	General Certificate of Education Ordinary Level
<b>GCE AL</b>	General Certificate of Education Advanced Level
<b>MOE</b>	Ministry of Education
<b>NIE</b>	National Institute of Education
<b>TVEC</b>	Tertiary and Vocational Education Commission
<b>SLTS</b>	Sri Lanka Teachers Service
<b>NVQ</b>	National Vocational Qualifications
<b>OJT</b>	On Job Training
<b>VET</b>	Vocational Education and Training
<b>VEMS</b>	Vocational Education Management System
<b>DSS</b>	Decision Support System
<b>ML</b>	Machine Learning
<b>ANN</b>	Artificial Neural Network
<b>DL</b>	Deep Learning



# **Decision Support System for Overcoming the Challenges in Vocational Education in Sri Lanka**

**J.K.A. Maneesha Lakshani**

## **ABSTRACT**

The vocational education is undergoing continuous changes. In the past, high youth unemployment has taken place due to unfamiliarity with vocational education. Researchers and policy makers are paying attention to the vocational education because of the hidden importance of the vocational education. In Sri Lanka, there is a vocational education system as the 13 years mandatory education system. The project is going to discover the challenges of the vocational education and give some solution to enhance the effectiveness of vocational education using the sample scenario of the professional entry. There are several issues in vocational education system. Among them, the major challenge is the lower rate of successfully completed students than commencing students. The main objective of this research is to develop a Data-driven decision support system to mitigate the students' dropouts from vocational education using deep learning model with higher level of accuracy rate than previous systems. Accurate data collection helps to maintain the integrity of the research in any field. The project has collected real data set from the students and teachers in selected government schools in Sri Lanka. Data has collected mainly in three categories as demographic factors, academic performance and candidate interest. Collected data has analyzed according to the data analysis techniques. Decision support system has used machine learning model to predict the suitable vocational education pathways to the students. The model has used deep neural network (DNN) with PyTorch library. After training the model, the model has predicted the accuracy level as 96.06%.

**Keywords:** Vocational Education and Training, Professional Entry, Online Platform, Data Driven, Online Education, Decision Support System, Classification, Machine Learning, Deep Learning, Artificial Neural Network.