

Vegetable Market Price Prediction Using Machine Learning: A Case of Sri Lankan Vegetable Markets

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Abstract

Every aspect of this digital world is making a huge difference due to the impact of the IT sector. As a country that has an emerging economy, Sri Lanka's agricultural sector needs more assistance for improvement. Forecasting the prices of the agricultural products is in a critical situation due to lack of technology adoption for that. Price forecasting helps farmers and the government to make an effective decision. In recent years, crop prices have been changed dramatically due to unpredictable climate change, natural disasters, and other problems. Farmers are unaware of these uncertainties and they incur huge losses. In addition, from the Sri Lankan point of view, there is no evidence that crop prices were predicted using machine learning. The main objective of this research is to predict crop prices and fill in the gaps in the literature using machine learning methods. Data mining is emerging as an important field of research in agricultural crop price analysis. In this study, researchers have discussed methods of forecasting vegetable prices, which are aimed at farmers, government, consumers, and other stakeholders focusing on profitable vegetable cultivation in Sri Lanka. The population of the present study is all the vegetables available in the vegetable market in Sri Lanka. Among them, Beans, Brinjal, Carrot, and Pumpkin were selected as the sample for this study by employing the systematic sampling method. The analysis was performed using five different classifiers and the results were evaluated using the mean absolute error, root-mean-square error, relative absolute error, and root-relative square error. The predicted data were compared with the actual data and this model created a significant level of accuracy. Artificial neural network classification predicted the best results of the model. Vegetable prices have high nonlinear and high noise-like properties. Therefore, it is difficult to predict vegetable prices.

Keywords: Agriculture, artificial neural network, data mining, machine learning, vegetables crop price