

Application of Machine Learning Techniques to Improve Customer Satisfaction at Book Fairs: A Case Study of Colombo International Book Fair in Sri Lanka

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Book fairs have a great impact in many aspects on customers of book fairs. Number of data about the choices they make and factors for them to come to the events can be obtained. But the main problem is translating such captured data into sensible information so that book fair organizers can understand the satisfaction of customers to improve customer satisfaction and increase revenues and profits of organizers. But no machine learning techniques have been applied into book fairs to boost customer satisfaction. So, this study recognizes a way to propose a prediction model to group and convert gathered data to predict satisfaction of customers. Various attributes of the customers were selected to gather data from the customers in this study. The study combines data gathering techniques, various machine learning techniques such as Decision Trees, Naïve Bayes and Logistic Regression to find the best technique and to propose a prediction model. Selected case study is the Colombo International Book fair in Sri Lanka. Data analysis was conducted using above algorithms and best model was measured. Then a prediction model was built to predict customer satisfaction and to make decisions. Analysed results displayed that decision tree is the best model with the highest accuracy and lowest error rate. Then accordingly, the prediction model was built. Book fair organizers will make vital decisions by considering most influential factors found in the model development. Some customers were bias towards certain answers in the questionnaires and over-fitting problem arose in the study.

Keywords: Machine Learning, Book Fairs, Prediction Model, Customer Satisfaction, Data Analysis