

Assessment of the State of Quality in garments applying Data mining mechanisms: A Case Study in the Apparel Industry

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Forecasting the quality of sewed garments is an important area in the apparel industry. This paper consists of a case study relevant to a high-ranking apparel manufacturing plant in Sri Lanka. Quality is measured using the First Time Through (FTT) state which is a measure of production competence and capacity. The factory capacity is to afford the FTT 98% or above as a high state category. The low state is consisted of FTT of less than 98%. Recently Data mining methods are used to extract insights from data and to make fast decisions. The main objective of the study is to identify the better model to predict the FTT state with data mining mechanisms. Classification tree and Probabilistic Neural Network (PNN) models were used to forecast the FTT state with the under-sampling method due to the matter of class imbalance in the original dataset. True positive (TP), False-positive (FP), precision, recall, accuracy and F-measure were used as the performance measurements. FP rate was zero and precision was one in the classification tree. While the FP rate was 0.0649 and precision was 0.9348 in the PNN model. Both models had a high F-measure value of 0.9745 and 0.9287 respectively. Therefore, two models can be used in prediction with better performance measurements. Outcomes of the study will help to find out the optimum allocation of a style to a relevant team to achieve the highest FTT state, to recognize the training requirements of the employees and to improve the satisfaction of the customer.

Keywords: *Apparel, Decision Tree, First Time Through State, F-measure, Probabilistic Neural Network.*

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