UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

CLASSIFICATION OF EXCESSIVE WATER USAGE BASED ON A QUANTIFIER FUZZY CLASSIFICATION SYSTEM

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HALIMATUSAKINA BINTI OMAR
HANIS WAHIDAH BINTI UZI

Bachelor of Science (Hons.) Mathematics
Faculty of Computer and Mathematical Sciences

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Abstract

Excessive usage of water at residential premises can be predicted based on consumer water consumption data. Unfortunately, the estimation of domestic water consumption involve many predicting variables.

Fuzzy Rule-Based System (FRBS) could be used to classify the dataset containing variables related to consumer water usage activities. However, the presence of too many variables and linguistic terms will make the decision making in determining the classification of water usage complicated. Other than that, some of the decision may not be accurate and the prediction of accuracy is expected to be very low due too many data that cannot be properly interpreted by expert.

This study investigates how Fuzzy Rule-Based System (FRBS) can be used to classify data containing variables related to water usage activities at residential premises. A fuzzy quantifier based classification system or known as Fuzzy QSBA is proposed to be used as a method to generate and simplifies rules. The fuzzy rulesets will be executed into classification of water usage by likely or unlikely. Then, the predicted classification outcomes will be compared with the actual classification.

The contribution of this study is obvious as the resulting outcomes which is Fuzzy QSBA will give the predicted comparable classification outcomes with the actual classification. The uniqueness of this study exists in the fact that the decision making will be easier and there has no dependency of experts in determining the classification of excessive water usage.

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