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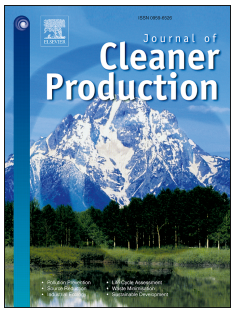

Alternative selection of end-of-life vehicle management in China: A group decision-making approach based on picture hesitant fuzzy measurements

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Alternative selection of end-of-life vehicle management in China: A group decision-making approach based on picture hesitant fuzzy measurements

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Abstract: Environmental conservation and sustainable development have attracted considerable attention in the automotive industries. Sustainability has become one of the main items of concern in end-of-life vehicle (ELV) management. Given the toxic substances and waste materials within end-of-life vehicles (ELVs), the Chinese government has encouraged the development of ELV management firms to solve ELV problems. A proper approach for prioritising the ELV management alternatives under an uncertain, dynamic and competitive environment drives an enterprise to meet economic, environmental, societal, and technical requirements. This study presents a systematic index system in selecting criteria for sustainable ELV alternative management and then constructs a group decision-making approach that utilises picture hesitant fuzzy entropy and similarity measurements to evaluate ELV management alternatives with picture hesitant fuzzy information. An empirical case in China is proposed to illustrate the application of the proposed approach. The results can aid firms in prioritising ELV management alternatives and making the best choice.

Key words: sustainability, end-of-life vehicle, picture hesitant fuzzy set, entropy measure, similarity measurement

1. Introduction

With the explosive development of the automobile industry, China has been the largest market for