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A HYBRID MULTI-CRITERIA DECISION ANALYSIS APPROACH FOR ENVIRONMENTAL PERFORMANCE EVALUATION: AN EXAMPLE OF THE TFT-LCD MANUFACTURERS IN TAIWAN

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Abstract

The study developed a quantitative evaluation model of environmental performance, using a hybrid multi-criteria decision making (MCDM) approach by key environmental indicators based on the ISO14031 environmental performance evaluation (EPE) dimensions. The causal relationships and influence intensity among the EPE dimensions were explored to construct the network evaluation structure. Three well-known thin film transistor-liquid crystal display (TFT-LCD) panel manufacturers in Taiwan were used as an illustrative example. The top three key environmental indicators were found to be factory sewage discharge, Greenhouse gas (GHG) emissions, and the ratio of green product designs in reducing CO_2 . The model could be further adapted to other industries.

Key words: environmental performance, multi-criteria decision making (MCDM), environmental indicator, ISO14031, environmental performance evaluation (EPE)

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