Strategies for Efficient Material Use through a Reverse Engineering Approach in Rattan Furniture Production in Cirebon

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ABSTRACT

Indonesia is one of the world's largest producers of rattan and has significant potential to develop and process this natural resource into valuable products. Tegalwangi Village, located in Weru District, Cirebon, West Java, is one of the most well-known centers for rattan craftsmanship. The village is renowned for its skilled production of processed rattan goods, especially furniture. However, each stage of the production process produces various forms of waste and is often not managed optimally. The objective of this study is to identify the underlying factors that influence material usage and waste produces in the rattan production process. The study also seeks to formulate practical strategies to enhance material efficiency and minimize waste. Adopting a descriptive qualitative method through a case study approach, the research focuses specifically on the rattan industry in Cirebon. A reverse engineering-tear down approach will be applied to gain a detailed understanding of the production workflow and identify inefficiencies. This technique enables an in-depth analysis of product and process structures, revealing critical sources of waste and material inefficiency. The data collection process involves in-depth interviews with industry stakeholders, direct on-site observations, and a thorough review of relevant literature. The study aims to generate concrete, actionable recommendations for improving material efficiency in rattan production by integrating these data sources. The results of the study are expected to be one of the references for efficiency strategies in the design-based rattan production process in reducing waste and promote the long-term sustainability and competitiveness of the rattan industry in Cirebon.

Keywords: *efficiency Rattan Industry, Process Production, Rattan Waste, Reverse Engineering.*