A model to integrate core cleaning & product serviceability into product modularity for enhanced remanufacturing – product service system synergy

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Abstract

Remanufacturing has been identified as the most viable economically and environmentally product end-of-life (EOL) management strategy. However, about 80% of manufactured products currently end up as wastes. Meanwhile, some of the bottlenecks in product remanufacturing could be remedied by Product Service System (PSS). Therefore, the integration of remanufacturing and PSS as an improved product offering has been increasingly recommended. However, the analytical research on remanufacturing-PSS synergy is sparse, and the benefits of this integration at the early phase of product development has not been fully addressed. This paper identifies two important factors that are critical for the success of remanufacturing and PSS: core cleaning and product serviceability. In order to determine the eligible modules that are clustered into the product, modules are assessed in pairs, and the modular pair compatibility indices are obtained through fuzzy inference system. The critical factors are optimized and integrated at the modular product development phase in order to make improved product configuration decisions that will enhance remanufacturing and PSS.

Keywords

Remanufacturing, product service system, modular product development, core cleaning, serviceability

Biography

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