

## The Functional-Engineered Product-Service System Model: An Extensive Review towards a Unified Approach

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**Abstract :** The study addresses the design process of integrated product-service offerings as a measure of answering environmental sustainability concerns by replacing stand-alone physical artefacts with comprehensive solutions relying on functional results rather than conventional product sales. However, views regarding this transformation are dissimilar and differentiated: The study discusses the importance and requirements of product-service systems before analysing the theoretical studies accomplished in the extent of their design and development processes. Based on this, a framework, built on a design science approach, is proposed, where the distinct approaches from the literature are merged towards a unified structure serving as a generic methodology to designing product-service systems. Each stage of this model is then developed to present a holistic design proposal called the Functional Engineered Product-Service System (FEPSS) model. Product-service systems are portrayed as customisable solutions tailored to specific settings and defined circumstances. Moreover, the approaches adopted to guide the design process are diversified. A thorough analysis of the design strategies and development processes however, allowed the extraction of a design backbone, valid to varied situations and contexts whether they are product-oriented, use-oriented or result-oriented. The goal is to guide manufacturers towards an eased adoption of these integrated offerings, given their inherited environmental benefits, by proposing a robust all-purpose design process.

**Keywords :** functional product, integrated product-service offerings, product-service systems, sustainable design

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