SERVICE VALUE CREATION USING A DIGITAL TWIN

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Purpose – The purpose of this exploratory paper is to discuss the concept of the digital twin from the perspective of service value creation, and to describe how it can be structured and designed in different dimensions.

Design/Methodology/approach – The study is based on a review of literature on the structure of the digital twin and its service value contribution and is built on the concept of data-driven service design. Additionally, a series of in-depth interviews and a quantitative survey were conducted with manufacturing firms, in order to validate the findings from the literature.

Findings – The digital twin is generated from a service perspective to conceptualize services that create value for a range of actors within the ecosystem. Given the concepts of service-dominant logic and service design, approaches are described for designing and delivering value to customers based on the digital twin. The technological concept of the digital twin is made up of the different layers of the twin and their contribution to value creation. The twin is structured in a number of layers representing the component, the assembly, the machine, the shop floor / production line, the factory, and the business system. Each of these layers is characterized by specific modeling tools and data requirements and has a particular value contribution to services. This value contribution can be assigned to different phases of the product lifecycle and to the actor who benefits from the services. Following service-oriented approaches, value is created by linking the digital twin, as a source of data, to the relevant actors in the ecosystem at the appropriate time and translating the data into relevant information to support decision making.

Research limitations/implications (if applicable) – The concept developed in this paper assists academics and practitioners to design a digital twin as a means of service value generation. However, further research is required to verify the applicability and implementation in different contexts.

Practical implications (if applicable) – The concept for the digital twin presented in this paper provides a framework which can be used for designing and delivering service value by manufacturing firms.

Originality/value – The innovation of this paper is the approach to the digital twin from the perspective of service value creation, which leads to its structuring in different layers that are relevant for business.

Paper type – Conceptual paper

Key words (max 5) - digital twin, smart services, service science, service design, servitization of manufacturing

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