Sustainability performance of rental and sharing models: A Life Cycle Assessment

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Extended abstract

In a search for sustainability, customers, firms, and governmental bodies increasingly embrace the circular economy principles of regenerating natural systems (for instance by applying organic farming methods) and designing out waste (for instance by offering compostable packaging). Yet, a circular economy also requires keeping products in use, especially since many products – like clothes and cars – are most of the time left unused (De Bruyne & Verleye, 2023). To achieve this end, there is a need for businesses that offer services to increase the utilization rate of products, such as rental and sharing services. Nonetheless, recent research suggests that use-oriented product-service systems not necessarily realize environmental and financial gains (Carlborg et al., 2023). Further research is needed to understand the conditions under which rental and sharing models positively influence the sustainability of the business (Carlborg et al., 2023; Tukker, 2015). Next to that, when incumbent or new businesses launch this type of use-oriented product-service systems and hence increase their level of servitization, they may be confronted with a lack of engagement among customers (e.g., low willingness-to-pay), suppliers (e.g., products not designed for longevity), and governments (e.g., taxation systems that disfavor renting/sharing compared to buying) (Fehrer et al., 2024; Verleye et al., 2024). Against this background, key questions revolve around (1) how use-oriented product-service systems affect the sustainability of businesses from an environmental and economic perspective and (2) the way in which businesses implement these initiatives circumvent these engagement issues in their ecosystems.

To address these questions – which have been listed as key priorities for service scholars (Fehrer et al., 2023; Karpen et al., 2023) – this research relies upon multiple case study research. More particularly, we select five businesses with rental and sharing services that participate in the Green Deal Renting & Sharing in Flanders, Belgium, which is a living lab to strengthen the rental and sharing sector supported by the Flemish Government (https://vlaanderen-circulair.be/en/cases/detail/green-deal-renting-and-sharing). The products these businesses offer for renting or sharing differ in terms of electrification and seasonality. Additionally, some of these businesses exclusively offer rental and sharing services while other businesses offer these rental and sharing services in addition to their retail services. Furthermore, they differ in scope of application area between regional initiatives and nation-wide offerings regarding their use-oriented product-service systems.

In terms of data, we make use of primary and secondary data. Based upon observations and in-depth interviews with key informants linked to each business in combination with document analyses of financial reports and company websites, we gained a detailed understanding of the business models of the cases under investigation. Through abductive data analysis, the present research identified a set of strategies through which these businesses engage different actors within their ecosystem. We linked these strategies with the motivation-related (convincing and signaling), opportunity-related (matching and legitimizing) and ability-related related (supporting and empowering) practices of the circular economy engagement framework (Verleye et al., 2024). These strategies relate to internal facets of their business models (e.g., employees, infrastructure, operational activities, cost structures) and external facets of their business models (e.g., value proposition, partnerships, pricing and customer preferences).

We will complement these insights with a life cycle assessment (LCA), which is an established methodology to quantify environmental impact. The goal of the LCA study is to compare the rental and sharing model with its retail-based counterpart. For the different products and rental and sharing business models under investigation, we aim to identify the boundary conditions under which renting and sharing is more sustainable than buying. Additionally, the LCA analysis will provide insights into which individual links in the supply chain of a rental and sharing model are most substantial in terms of environmental impact, covering the manufacturing of the products, logistics services, booking and matching services, laundry and repair services, collection and processing services and final disposal (Hu et al., 2014). The results will be analyzed within-case and cross-case in order to be able to generalize some of our findings over the different product categories and business models.

By assessing the sustainability of different servitization strategies from an environmental and economic perspective, this research advances the literature on servitization, circular economy and sustainability performance.

Keywords

Circular economy, sustainability performance, life cycle assessment, engagement, servitization

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