

Chapter 3

Product–Service Systems as Enabler for Sustainability– Oriented Innovation: The Case of Osram’s Off–Grid Lighting

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ABSTRACT

Corporations increasingly subscribe to the principles of corporate sustainability, which is generally described as the integration of economic, environmental, and social dimensions. As sustainability presents a new source of ideas and visions leading to new business opportunities and competitive advantage, the role of Sustainability-Oriented Innovation (SOI) is ever more emphasized. However, developing products under the paradigm of SOI is risky: both the product’s market success and (non-economic) sustainability effects are uncertain. Product-Service System (PSS) – i.e. a combination of products and services – constitutes a significant approach to overcome some of the limitations of SOI and, additionally, can spur the diffusion of SOI. In this chapter, we use an exploratory research strategy to further investigate the links between SOI and PSS. We present a case study on off-grid lighting in Kenya and analyze the sustainability effects on the product and PSS level. The complexity of SOI and the sustainability potentials of PSS are illustrated. Moreover, we also emphasize the role of a joint achievement of sustainability-oriented product innovations and PSS innovations.

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INTRODUCTION

For the last decade, the prevailing form of doing business has been increasingly challenged by a number of problems such as climate change, environmental degradation, and social inequalities. These challenges culminate in the view that to only focus on economic aspects of business is ever more difficult or even impossible as it is essentially unsustainable (Hart & Milstein, 2003).

From a business perspective, corporate sustainability seeks to address these issues by transcending the conventional responsibilities of businesses (i.e. to make profits) to also include non-economic aspects such as ecological and social responsibilities (Sharma, 2002; Schaltegger & Burritt, 2005). Scholars have lately emphasized to put sustainability at the core of the corporation, i.e. its products and services (Hart, 1997; Schaltegger & Wagner, 2010). New regulations, but also raising consumer demand for socially and environmental benign products drive the need for more sustainable products and services. The notion of sustainability-oriented innovations (SOI) thus embraces concepts, criteria, and processes to develop more sustainable products and services (Hansen et al., 2009).

One important lever for SOI is the concept of product-service systems (PSS) or servitization (Baines et al., 2007; Mont 2001, 2004; Hansen et al., 2009). Generally, PSS approach represents a spectrum between pure products and pure services (Baines et al., 2007; Pawar et al., 2009). PSS where the manufacturer remains with the ownership of the products are especially interesting. In this case, PSS follows the idea that the environmental burden is dramatically decreased when switching from selling products to providing solutions through product-service combinations. In contrast to mid to long-term leasing and performance contracting in the business to business context (Williams, 2006), this chapter focuses on systems of shared use in business to consumer markets.

Current empirical studies on shared use in business to consumer markets are usually case

studies (Baines et al., 2007) and focus on such as car sharing (Huyer, 2004; Engelhardt et al., 2003), ride sharing (Hansen et al., 2010), and on washing machine and power tools service centers (Mont, 2004). Besides few others (Devisscher & Mont, 2008; Manzini & Vezzoli, 2000), existing cases predominantly focus on developed nations. The cases often evaluate the sustainability impacts of PSS (Pawar et al., 2009, Devisscher & Mont, 2008). PSS is said to be a concept that “aims to improve overall system efficiency, along with improving efficiency of each system element” (Mont, 2001, 13). However, most of the case studies are limited to studies where existing products and technologies are integrated into a PSS, i.e. the innovation considers only the servitization of the unchanged product or technology. There is virtually no research on cases where the product innovation joins the introduction of the PSS. Our research question is thus twofold: (1) how can the mechanism of PSS help to introduce a sustainability-oriented product innovation? (2) Which sustainability effects materialize on the product level, which ones at the service level?

This chapter addresses this gap with a case study approach (Yin, 2003) about a multinational corporation based in Germany that offers a product-service system in a developing nation. By concurrently addressing economic, environmental, as well as social impacts, the case highlights the multi-dimensionality of SOIs. We furthermore emphasize the importance of PSS as being an innovation enabler on a (technological) product level and therefore underline the importance of product-service offers in the context of sustainability.

The remainder of this chapter is structured as follows: first, a literature review introduces the concepts of SOI, life-cycle assessments, and PSS. Building on this framework, a case study on off-grid lighting in Kenya is presented and its sustainability effects are analyzed. The results and implications of the case study are then discussed and future research directions are given.

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