

Product-Service Systems across Life Cycle

Transition to product-service systems: principles and business model

Ke Xing^{a*}, David Ness^b

^a*School of Engineering & Barbara Hardy Institute, University of South Australia, Mawson Lakes Campus, Adelaide, SA 5095, Australia*

^b*School of Natural and Built Environment & Barbara Hardy Institute, University of South Australia, City East Campus, Adelaide, SA 5001, Australia*

* Corresponding author. Tel.: +61-8-8302-3406; fax: +61-8-8302-3380. E-mail address: ke.xing@unisa.edu.au

Abstract

The Product Services Systems philosophy has frequently been put forward as the ultimate form of customer-producer relationship, with mutual benefits in terms of cost, more efficient use of resources, improved performance for the customer, and development of innovative solutions to meeting customer requirements via holistic management of a suite of services for the customer, of which the products form a part. However, it is difficult for enterprises to begin making the shift to PSS without understanding the changes required to their current business models, how these changes may be undertaken in a progressive manner, and the potential benefits that may accrue along the pathway toward PSS. Firstly, this paper establishes a value proposition for PSS, with a set of key principles. These are then examined in terms of the well-established Business Model Canvas. A pathway is then established to assist firms make the shift by taking the necessary steps, and to understand the requirements and potential benefits associated with each step along the way. A case study of an SME is then described to demonstrate these steps in a practical way.

© 2016 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of the scientific committee of the 8th Product-Service Systems across Life Cycle

Keywords: Value Proposition; Product-Service Systems; Resource Efficiency; Business Model Canvas

1. Introduction

The Product Services Systems (PSS) philosophy has frequently been put forward as the ultimate form of customer-producer relationship, with mutual benefits in terms of cost, more efficient use of resources, improved performance for the customer, and development of innovative solutions to meeting customer requirements via holistic management of a suite of services for the customer, of which the products form a part.

These days, PSS has assumed increased importance, due to demands to increase business competitiveness, increase entrepreneurship and innovation, foster start-ups and create more enterprises and jobs, reduce material consumption and carbon footprint, and respond to customer requirements with more tailored and cost-effective solutions.

However, it is difficult for businesses to begin making the shift to PSS without understanding the changes that may be required to their current business models, how to accomplish these changes in a progressive manner, and the potential benefits that may accrue along the pathway towards PSS. In

this regard, use of the well-recognised Business Model Canvas (BMC) may enable firms to understand what aspects of their business may need to change. The BMC is a strategic management template for developing new or documenting existing business models. It is a visual chart with elements describing a firm or product value proposition, infrastructure, customers, and finances. Extant research largely focuses on applying business model concept and BMC to analyse and interpret adoption of PSS through the lens of business model innovation (see [1-4]). However, in these studies BMC serves more as a mapping tool and falls short of providing an effective decision support for making the business transition, as there is lack of integration between BMC and product-service design and management strategies

To address such limitations, this paper proposes to connect the value perspective and business principles for PSS development with the construct of BMC and the PSS transition path for firms to determine the creation and delivery of product-service offerings, how these are aligned with customer needs and their end goals, and what changes are

required for the next step of PSS development in the context of the business.

The paper firstly establishes a value proposition for business transition to PSS. Next, a set of key principles are outlined, based upon an earlier research paper focused upon PSS within ICT industries. These principles are subsequently mapped in terms of BMC. A roadmap is then defined to assist firms make the shift by taking the necessary steps, and to understand the requirements and potential benefits associated with each step along the way. A case study on PSS development in an Australian SME is used to demonstrate these steps in a practical way. Finally, a number of considerations requiring further investigation are highlighted.

2. Value Proposition and Principles for Transition to PSS

PSS is a specific type of value proposition that a business offers to (or co-produces with) its clients. One definition of PSS is ‘a mix of tangible products and intangible services designed and combined so they are jointly capable of fulfilling final customer needs’ [5]. PSS is often referred to a leasing or renting society, where the producer retains ownership of products and provides these as part of a service to customers.

However, in its most sophisticated form, PSS is differentiated from leasing and renting by the holistic management of a suite of services and a fleet of products by the ‘solution provider’. PSS involves a partnership between the provider and the customer (not consumer), where the outsourced provider manages and reports on the performance of assets that enable the customer/ business client to undertake its core business. The shift from procuring products to services also requires new sets of skills and fundamental changes underpinned by a more sophisticated relationship between producer and customer. Therefore, the transition from a product-oriented business model to a service-oriented business model often requires enterprises to identify what particular value can be offered to customers, how such value can be created and delivered through product-service bundles, how to develop and manage such bundles, how to interact with customers and other partners (if any) in value creation and value delivery [3].

2.1. PSS Value Proposition

Whilst PSS within a leasing society may lead to economic benefits for both producer and customer, environmental sustainability is not automatically guaranteed. To achieve PSS transition, further careful design of business cases is required to increase resource efficiency, while even more consideration is necessary to increase social sustainability via affordability and generating increased employment. In this paper, PSS is viewed in the wider sense of integrated economic, environmental and social sustainability.

Thus, with a business model in mind, a value proposition for a PSS may be expressed as: ‘*Providing products to customers via an ongoing service contract can not only be more profitable than one-off sale transactions by means of repeat business and finding new profit centres, but also enable efficient use of manufactured products by take-back and reuse*

with commensurate environmental, financial and social benefits’.

2.2. Business Perspectives and Principles for PSS

The key principles that support the realization of value proposition in PSS development are outlined based on [6]. These involve specific perspectives on product, service and management features, as follows.

Product Perspectives (P)

A key feature of PSS is the mitigation of environmental impact of product through “reduce”, “reuse”, and “recycle”, which can be best achieved by a smart design of product function, structure, and materials. General guidelines for product design to facilitate PSS:

- 1) The product is of a relatively high market value, or relatively high selling prices in comparison with other similar products, which can make it worth for the company to take up stewardship over the life-cycle of the product.
- 2) The product is durable and of a long physical life which warrants the possibility for multiple use. The product and its components will be designed for durability and reliability to minimise the need for repair and enable use life extension. The lifespan of various components is considered and categorized, so that the quality of recycled/reused parts is equivalent to new ones.
- 3) The product will be designed with minimal footprint i.e. less material consumption, less energy and less water, and lower environmental impacts.
- 4) The product’s structure will be modular to facilitate disassembly, maintenance, reuse, remanufacture, and material/component recovery. Design will also enable ease of technological updating/upgrading for function improvements.

Service Perspectives (S)

PSS aims at selling the services and functions of a product, rather than selling the product itself, to the customers. Typical business scenarios include *sell-and-service*, *product lease*, *product renting and sharing*, *product pooling*, and *pay per unit of service*. In the case of PSS, the following are some key principles:

- 1) The ownership of product will be retained by service provider. As the product is legally owned by the provider, the provider can better exercise ‘extended producer responsibility’ and devise an appropriate 3Rs (reduce, reuse, and recycle) logistics plan for the product.
- 2) There must be some basic service options (e.g. leasing or renting, desktop support, performance monitoring, and maintenance contract) and their combinations as building blocks for PSS in place. These service options focus not only on delivering the standard functions of a product, but also on customised solutions for user support with regard to installation, upgrading, repair and replacement, and collection. They focus on building a long-term customer relationship and brand loyalty through a comprehensive customer service.

Download English Version:

<https://daneshyari.com/en/article/1698351>

Download Persian Version:

<https://daneshyari.com/article/1698351>

[Daneshyari.com](https://daneshyari.com)