

Preface

Manufacturers in developed countries today regard service activities as increasingly important. Not surprisingly, some manufacturing firms are strategically shifting from “product seller” towards “service provider” (Oliva and Kallenberg 2003). One reason is the severe competition among hardware manufacturers; another is regarding services as critical value-added. Yet another reason, from the demand side, is the “servicification” of customers’ activities, which in some cases means a shift from customers’ owning physical products to getting access to the functionality of products. On the supply side, on the other hand, and parallel to the trend above, concepts such as Product/Service Systems (PSS) (Tukker and Tischer 2006; Mont 2002), Integrated Product Service Offering (IPSO) (Lindahl *et al.* 2006), and Functional Sales (Lindahl and Ölundh 2001) are already found, not only in theory, but also in industry. What these concepts have in common is that they comprise combinations of hardware and support services. It has also been argued that PSS has great potential for decreasing environmental impacts as well (Tukker 2004).

Importantly, service activity is beginning to be increasingly incorporated into the design space, an area which has been traditionally dominated by physical products in manufacturing industries. This has a great impact on the business in such companies. Fulfilling PSS design is a complex task, and may force companies to change development process, organizational structure and their mindsets along with PSS design. This issue is also relevant to service industries, as they often have power to develop the hardware utilized in their business offerings; developing a good combination of hardware and services is key in those cases.

In order to encourage industrial practitioners to consider or fulfill PSS design/development, especially from an engineering viewpoint, this book will serve as a guide for learning the state-of-the-art in theory and practice. It will be useful as a textbook for university students for learning or researching this new and critical theme for industries today and tomorrow.

Introduced here are three dimensions of PSS design: *the offering*, *the provider*, and *the customer/user* dimensions based on (Sakao *et al.* 2009). The first dimension refers to both “product” and “service” elements of PSS. In addition, the other two dimensions, i.e. the provider and the receiver, are indispensable in addressing PSS.

The offering dimension addresses the elements and activities in the offering's life-cycle. It includes the lives of physical products being a part of the PSS, as well as service activities. Successful design of PSS depends on a thorough understanding of the solution life-cycle and active design of beneficial linkages with heterogeneous systems.

The customer/user dimension addresses the evolving needs of service receivers. It is crucial for the provider of services and products to be able to anticipate the receivers' reaction to new offerings.

The provider dimension addresses the evolution of product/service providers' organisation and operations. This covers such issues as the setup of development projects, organisational streamlining of the company towards service delivery and the identification of necessary partnerships for the successful operation of services.

In principle, any PSS design is supposed to address at least something on all three dimensions, since service includes activities of customers and providers, and since products are included. As such, these three dimensions are fundamental for PSS design. In addition, anticipating and utilising the dynamics along each dimension is crucial.

The remainder of the book is, with the three dimensions, structured as follows. Obviously, every chapter does not belong only to one of the themes; rather, each chapter belongs to the most relevant part.

Part I addresses the offering dimension

- **Chapter 1 PSS Layer Method - Application to Microenergy Systems**

This chapter addresses three topics: a new method for developing Product-Service Systems (PSS), a commendable example to explain the theory of Product-Service Systems, and finally, sustainability as driver for Product-Service Systems and microenergy systems.

- **Chapter 2 Life-cycle Perspectives of Product/Service-Systems: In Design Theory**

Besides presenting several considerations and theories for the different stages of the PSS life-cycle, this chapter elucidates how manufacturers can develop their PSS with a life-cycle perspective.

- **Chapter 3 Life-cycle Perspectives of Product/Service-Systems: Practical Design Experiences**

This chapter elucidates how manufacturers have worked with, or could adapt their products for, Product/Service-Systems. Several design improvements, all of which are fairly inexpensive and easy to implement, are described.

- **Chapter 4 Systematic Generation of PSS Concepts Using a Service CAD Tool**

A systematic method and a computer-aided design tool to generate design concepts for integrated product/service offerings, or PSS, is presented with an example from the health care service industry.

- **Chapter 5 Value Creation in PSS Design through Product and Packaging Innovation Processes**

This chapter reviews research on the integration between product and packaging development, and highlights some important challenges and opportunities related to improved value creation in the PSS paradigm.

Part II focuses on the customer dimension

- **Chapter 6 Service Engineering – Methods and Tools for Effective PSS Development**

This chapter presents a design process model for services or service-oriented products based on Service Engineering. In addition, a method for evaluating service solutions is introduced along with a method for designing service activity and products concurrently and collaboratively.

- **Chapter 7 Addressing Uncertainty of PSS for Value-Chain Oriented Service Development**

Based on a literature review which identifies uncertainty as a critical concept in PSS along with interviews conducted with nine Swedish companies, this chapter presents a simple tool for managing uncertainty when developing PSS offerings.

- **Chapter 8 Value Visualization Strategies for PSS Development**

The concept of value visualization is concerned with the way that firms communicate and demonstrate the value of their PSS. This chapter presents a visualization strategy framework for PSS development.

Part III describes the provider dimension

- **Chapter 9 Using Company-Academia Networks for Improving Product/Service Systems at Large Companies**

This chapter describes challenges faced by large PSS providers in Sweden when developing PSS offerings, and how these can be explored and discussed within a PSS company-academia network setting.

- **Chapter 10 Service-Oriented Strategies for Manufacturing Firms**

PSS can be seen as a strategy for manufacturing firms to gain competitive advantage in the marketplace. This chapter establishes PSS approaches in the context of manufacturing firms, and presents a path for manufacturers to make the change from product to service-orientation.

- **Chapter 11 People, Product and Process Perspectives on Product/Service-System Development**

In this chapter, the authors elaborate on product and service development processes models, as well as system models, to propose a frame of reference for multiple perspectives on PSS development.

- **Chapter 12 Managerial Recommendations for Service Innovations in Different Product-Service Systems**

This chapter provides guidelines on how to develop service innovation, what phases of the development process to focus on, and how to involve customers throughout the development process.

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