

Chapter 12

Service Systems as Digital Products

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ABSTRACT

In this research, the authors study service systems and assess one emerging service innovation model: services as digital products. The focused area of application is to make the remote healthcare platform developed at National Taiwan University Hospital (the U-Health Service System) a comprehensive and effective “Service System as a Digital product”—made possible by new technology but in need of service designs and innovations. In addition to studying service delivery and innovation for the U-Health Service System, our research aims to stimulate attention toward the promising research opportunities for information systems scholars in several domains: (1) the development of service systems as digital products, (2) the development of service value models based on service processes, service delivery, service metrics and service outcomes, (3) the development of service metrics and the fit between service models, perceived value, and service metrics, and (4) the management of service systems and how to make them sustainable operationally and economically.

INTRODUCTION

Service systems have become an important source of new digital products. Take Kindle, the e-book device developed and sold by the online retailer Amazon, as an example. The “product” being sold is not just the Kindle device itself. Amazon

is aiming to market the whole *system* and *services* that deliver books in digital formats—In other words, Amazon is selling a “service system” for consumers to purchase, download, and read books digitally. The same service system can be used for selling other products as well, such as newspapers. In that sense it will not be surprising if Amazon’s Kindle in the future competes with Apple’s iPod in selling digital music services because both are

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service systems selling digital products. There are many other examples of service systems as digital products. One particular example we will focus on in this chapter is a service system for healthcare delivery, also based on a mobile device that can be used in the comfort of homes.

In this chapter we address the following primary research issues concerning digital products:

1. The development of service systems as digital products.
2. The service value models based on service processes, service delivery, service metrics and service outcomes.
3. The service metrics and the fit between service models, perceived value, and service metrics.
4. The management of service systems and how to make them sustainable operationally and economically.

BACKGROUND

The Concept of Service Systems

The concept of service systems have been defined from different perspectives in recent years. We can categorize them into the following four viewpoints:

- **Front-back view:** A service system includes visible front stage and invisible back stage. Front stage is where “final assembly” of service elements takes place and service is delivered to customers. Back stage is the technical core where inputs are processed and service elements created (Teboul, 2006; Lovelock et al., 2008).
- **Provider-client view:** A service system comprises service providers and service clients working together to co-produce value (Spohrer et al., 2007). While front-back

view emphasizes the interactions with human customers, this view suggests value co-production by providers and clients as the essence of service.

- **Work system view:** A service system is a work system in which human participants or machines perform work using information, technology, and other resources to produce products and services for internal and external customers (Alter, 2008). In contrast to emphasize customer or producer concerns, this view analyzes the system from the business perspective and focuses on how to produce products and services for customers.
- **Value network view:** A service system is a value network where the value is driven and determined by the end consumer and delivered through a complex web of direct and indirect relationship between network actors (Basole & Rouse, 2008). This view is based on the premise that a service system is not merely operated in a dyadic provider-client relationship, but is deeply embedded in complex economic systems consisting of numerous inter-organizational relationships.

Based on our analysis of how other researchers have modeled service systems, we derive an integrative model of service systems that comprise elements in four levels: (1) front and back stage; (2) provider and client; (3) work system; and (4) value network (Figure 1).

The integrative model of service systems in Figure 1 focuses on customer or business concerns without describing how the system evolves when information technology (IT) is introduced. However, IT is a very important part in today’s service systems. The past literature has recognized that IT plays a central role in reducing complexity for consumers by providing greater levels of value network integration, information visibility, and

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