



When is servitization a profitable competitive strategy?



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ABSTRACT

Although servitization has emerged as a new competitive strategy for manufacturers, there has been little research about product-level servitization. We investigate the competition between two channels, one separately providing both goods and services and the other providing inseparable servitized goods through a game theoretic approach. Two critical parameters to understand competition between the two channels will be proposed: (1) service dependency – a degree of dependency of physical goods upon services – and (2) channel substitutability – a degree of substitution between conventional channels and servitized one. The study reveals that the servitization strategy is a better choice for a manufacturer selling physical goods only when the goods require a higher level of service (i.e., high service dependency), and when the competition between the two channels is more severe (i.e., high channel substitutability). In addition, obtaining cost efficiency is found to be an important factor to achieve higher competitive advantage over the other channel.

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1. Introduction

In more competitive markets, manufacturers have begun to offer products with services in inseparable formats to gain a competitive advantage to survive the market. More manufacturers are providing their customers with an opportunity to obtain highly integrated services. The term *servitization* has been used in both academia and practice to capture this phenomenon in which manufacturing companies provide services as an important strategy (Vandermerwe and Rada, 1988). For example, Rolls-Royce now earns higher revenue not from selling aircraft engines but from providing services such as maintenance and repair. Adobe no longer only sells desktop applications to attract more customers. Creative Cloud by Adobe provides access to the latest versions of the company's various programs as well as appropriate services for making the programs more efficient and valuable. Now the number of subscribers for Creative Cloud has increased up to almost 4 million (ProDesignTools, 2014) and the stock price has risen around 130% in the last 3 years. Xerox is no longer just a copier manufacturer but has transformed itself into a company that provides “document solutions” based on fees by copy machine usage.

There are various definitions of servitization in the literature, with narrow or broad views. Vandermerwe and Rada (1988) coined the term servitization evolving in three stages: Stage 1 (goods or services), Stage 2 (goods and services), and Stage 3 (goods and services combined with support, knowledge, and self service). Robinson et al. (2002) defined servitization as the inextricably linked status of the core product and the service elements. Neely (2008) defined servitization as a firm's capabilities and competencies that create mutual value not by selling products alone but by selling product-service systems (PSS). Quinn et al. (1989) explained that the services in the manufacturing industry are essential and not separate². As the economic environment changes, recently the servitization strategy is implemented under the situation that big data have a big role (Opresnik and Taisch, 2015). We examine product-level servitization rather than firm- or industry-level one. Servitized goods in this study are defined as goods integrated with and inseparable from services that have additional and supplementary characteristics such as maintenance, repair, and after-sales service for consumer convenience.

Simon and Wuebker (1999) proposed various rationales for bundling: price discrimination, complexity cost reduction, economies of scope and scale, transaction cost reduction, among others.

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² For more extensive reviews on the definition of servitization, see Ryu et al. (2012).

They also provided many forms of bundling according to its implications: pure bundling, mixed bundling, tie-in sales, add-on bundling, sales rebates, and cross-couponsing (Simon and Wuebker, 1999). Servitization is similar as bundling because servitization can be explained as a package of goods and services (Vandermerwe and Rada, 1988; Johnson and Mena, 2008). It is thus a type of mixed bundling for providing goods and services. The services in servitization, however, should depend on products in a strong way; thus, add-on bundling, in which the add-on goods are not saleable until the main goods are purchased by the consumers, is similar to servitization. The product-level servitization should be distinguished from bundling, also a managerial selection for providing goods and/or services in one package. We assume that “servitized” products are not a simple combination of goods and services but an inseparable transformation that has its own characteristics.

Though many articles have pointed out the empirical relationship between servitization and firm profitability (e.g., Visnjic Kastalli and Van Looy, 2013), little research has investigated conditions that make product-level servitization [i.e., “Stage 2 or 3 servitization” in Vandermerwe and Rada (1988) or “integrated package” in Van Looy et al. (2003)] a profitable competitive strategy for a manufacturer. Rather, extant empirical literature operationally measures servitization as the ratio of service revenue for manufacturers (e.g., Visnjic Kastalli and van Looy, 2013; Fang et al., 2008; Han et al., 2013), the number of services offered (e.g., Neely, 2008), the number of service types (e.g., Li et al., 2015), or new service products by manufacturers (e.g., Falk, 2014). These studies have found that the relationship between servitization and firm performance is moderated by various factors such as product innovation, product complexity, business areas, organizational design, and the level of investment. For example, Malleret (2006) noted that offering services does not always guarantee profitable results because the appropriate strategy applying service provision depends on the management environment.

Therefore we ask the following straightforward research question: When is servitization a profitable competitive strategy? In this paper, we develop a mathematical model that examines competition between conventional (i.e., separately offering goods and services) and servitized (i.e., offering integrated goods and services) channels, and discuss a few critical strategic implications by various propositions. In this model, we pay attention to service dependency (i.e., the extent that service is required for utilizing goods) and channel substitutability (i.e., the extent that the servitized market and the conventional market can be substituted) to understand the outcome of the servitization strategy. This research contributes to the service and operations literature by theoretically investigating the channel conditions of superior competitiveness of servitization strategy under price and quality equilibrium. This research has also a practical value to identify the factors that influence the expected payoffs for a manufacturer considering a transition to servitization strategy.

This paper is organized as follows. The literature review will be covered in the next section, succeeding the above introduction. The model section consists of three subsections. First, Case 1 about the competition between the conventional channel (i.e., an independent manufacturer and a service provider exist) and the servitized channel will be provided. Second, Case 2 shows the situation where the manufacturer and the service provider in the conventional channel are integrated. Third, the benchmark case is compared with the alternative case. Lastly, the managerial implications, contributions, limitations, and future research directions will be discussed.

2. Literature review

The literature review is based on three research streams: servitization, bundling, and game theoretic channel analysis. Vandermerwe and Rada (1988) wrote a seminal paper that discussed how the manufacturing firm can obtain a competitive advantage through service. Anderson and Narus (1995) emphasized that services should be provided as a standard or as optional, for effectiveness and flexibility. Wilkinson et al. (2009) explained many terms related to the phenomenon in which product and service offerings are integrated, such as product-service system, integrated solutions, and servitization. A recent review by Harkonen et al. (2015) made distinction ‘productisation’ from servitization to explain a more general process of offering a product-like object to consumers by combining relevant elements.

Gebauer et al. (2011) summarized the effects of servitization on financial performance by measuring various indices of the servitization strategy while exploring the evolution of service strategy. Many researchers have found a positive relationship between servitization and firm performance. For example, Fang et al. (2008) found that a positive effect from servitization strategy takes place only after achieving a certain scale of service portion from the total revenue. However, there also exists a negative aspect of servitization due to diverse causes such as (1) additional investments for securing service-provision-related assets, and (2) the absence of a strategic focus by splitting firm resources (Neely, 2008; Visnjic Kastalli and Van Looy, 2013). Gebauer et al. (2005) also investigated the negative aspects of servitization and proposed a term “service paradox” that expected outcomes by servitization cannot be obtained by manufacturers while confronting with inefficient investment. Neely (2008) empirically validated with data for 10,634 firms that manufacturing firms might obtain lower profit in spite of higher revenue by applying the servitization strategy because higher labor costs and working capital are required. Malleret (2006) noted that offering services does not always guarantee profitable results because the appropriate strategy applying service provision depends on the management environment. Therefore, manufacturers considering servitization should thoroughly understand critical moderating factors that affect the relationship between servitization strategy and firm performance, and make appropriate adaptations such as costing practice optimization (Zhen, 2012; Settanni et al., 2014). Further, establishing supplier and buyer relationship in a servitized supply chain shows different patterns due to higher complexity than the traditional supply chain (Saccani et al., 2014).

Bundling has been studied as a common profit making strategy by combining complementary goods and services (e.g., Stigler, 1968; Adams and Yellen, 1976). There also have been many studies to investigate bundling in the channel context. For example, Bhargava (2012) investigated the differences among the distribution channel structures for product bundling, and Palsule-Desai et al. (2015) focused on the incremental value of add-on services on the core product. However, no studies can be found about the channel competition for servitized goods. Though product-level servitization can be seen as a type of bundling, there exists additional benefit from the services added to the products in servitization (Lin et al., 2011).

Many researchers have shown an interest in the game-theoretic approach for channels. McGuire and Staelin (1983) investigated the channel competition under two manufacturers and one retailer under the existence of product substitutability. Coughlan (1985) extended McGuire and Staelin's work (1983) while considering the empirical approach. In addition to these much-cited studies, various articles have been published regarding channel competition such as those by Gupta and Loulou (1998), Choi (1996), Chiang et al. (2003), Yan and Bandyopadhyay (2011), and Xie et al. (2011).

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