



Industrial services, product innovations, and firm profitability: A multiple-group latent growth curve analysis

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ABSTRACT

Manufacturers in many industries seek service-led growth beyond their product core. Yet research on the link between service revenue growth and firm profitability is still at an early stage. To shed further light on this complex relationship, we report the results of a longitudinal study based on panel data of 414 companies in the German mechanical engineering industry collected over a five-year period. Employing latent growth curve modeling and using multiple group analysis, the study provides empirical evidence for the causality between service infusion strategies and manufacturers' profit trajectories. The results also reveal differential effects of service categories and the moderating role of manufacturers' product innovation efforts. For companies with high product innovation activity, services supporting the product (SSPs) directly increase firm profitability, while services supporting the clients' actions (SSCs) do not display any link with long-term profitability. Conversely, for companies with low product innovation activity, SSCs have a significant, positive effect on firm profitability, while SSPs have only an indirect effect. In sum, our findings caution managers that service offerings do not automatically improve company profits. Manufacturers must carefully consider the fit between their service offerings and product innovation activities to grow bottom line results.

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1. Introduction

In recent years, many industrial suppliers seek to grow beyond their traditional core product business by developing ancillary service offerings and value-added solutions (Evanschitzky, v. Wangenheim, & Woisetschlager, 2011). From a managerial perspective, there are straightforward economic reasons that goods-dominant companies increasingly venture into services. In business markets, in which manufacturers heavily rely on an installed base, substantial revenues and profits can be derived from services over the product life cycle (Potts, 1988). Service revenues typically display healthy profit margins that serve as compensation for declining revenues and profitability in equipment sales (Cohen, Agrawal, & Agrawal, 2006; Reinartz & Ulaga, 2008). In addition, services stabilize cash flows and provide increased visibility of revenue streams, a key benefit in times of economic downturns (Anderson, 2008). In summary, extant literature assumes that growing the service portion within overall

revenues leads to increased firm profitability (Wise & Baumgartner, 1999).

In general, managers and scholars agree about the fundamental benefits of moving towards services. Yet increasing anecdotal evidence also reveals that results are often mixed at best. For example, according to a Bain & Co. study, only 21% of companies succeed with service strategies (Baveja, Gilbert, & Ledingham, 2004). Product companies that enter service markets often cannot outperform their pure product counterparts in terms of revenue growth, profit margins, and returns on equity. In a similar vein, Stanley and Wojcik (2005) find that approximately 50% of all solution providers realize only modest benefits, and 25% actually lose money with value-added services and solution offerings.

These insights gained from managerial literature are highly valuable. However, empirical research on the link between service revenue growth and overall firm profitability in manufacturing industries is still at an early stage, and many questions require further investigation. For example, while several studies confirm a positive effect of services on manufacturers' sales and revenues (e.g., Antioco, Moenaert, Lingreen, & Wetzels, 2008; Gebauer, 2007; Homburg, Fassnacht, & Guenther, 2003), Fang, Palmatier, and Steenkamp (2008) show that this is not true under all circumstances.

Furthermore, with a few exceptions, most empirical investigations of industrial services treat services as a homogeneous entity. Yet evidence suggests that scholars must take a more fine-grained

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perspective to understand how different service categories relate to firm profitability in business markets (Antioco et al., 2008; Mathieu, 2001a). Thus, in this study, we build on Mathieu's (2001a) distinction between services supporting the product (SSPs) and services supporting the clients' actions (SSCs) to investigate how these categories affect companies' profits.

Finally, extant literature emphasizes moderator variables that affect performance outcomes of service growth strategies in manufacturing firms. In particular, scholars identify industry characteristics and firm characteristics as important moderators (Antioco et al., 2008; Fang et al., 2008; Gebauer, 2007; Homburg et al., 2003). Yet prior research does not account for the interplay between established product strategies and emerging service initiatives. Indeed, manufacturers' service infusion strategies pose a unique challenge: manufacturers must incorporate service activities into their existing product-based business model rather than transition from one to the other (Ostrom et al., 2010). This implies that product and service activities compete for limited resources (e.g., management attention) within the same company. We assume that the extent to which resource conflicts between product and service activities exist depends on the focus on product innovation activities within a company. The product innovation activity reflects the extent to which companies compete on the basis of product superiority to differentiate from competition (Rangan & Bowman, 1992). When companies stress product innovation activities and therefore allocate their resources to the product domain, limited resources remain for managing the service business. In turn, firms with a strategic focus on product innovation activities will lack necessary resources to enhance the efficiency and effectiveness of the service business and thus find it more difficult to reap the benefits of their service business.

This study contributes to marketing research and practice in three ways. First, employing longitudinal panel data, this study analyzes long-term effects of industrial service offerings. By probing the underlying direction of causality, we contribute to the growing literature on the outcomes of service infusion strategies. Second, taking a more fine-grained view of industrial services, we underline their heterogeneity and uncover their differential effects on company performance. Third, this study enhances the understanding of conditions under which industrial services result in long-term profit growth for manufacturing companies. In particular, our findings show that manufacturing companies can enhance profitability with industrial services when they account for the interplay between service offerings and product innovation activities. In doing so, our study helps managers to decide on which service types they need to focus according to their level of product innovation activity and, in turn, how resources should be allocated.

We organize this article as follows: we first review the extant literature and develop our hypotheses. We then report on the results of a longitudinal study based on panel data of 414 companies in the German mechanical engineering industry collected over a five-year period. Employing a latent growth curve modeling (LGCM) approach (Duncan, Duncan, & Strycker, 2006), we analyze the causal relationship between the two service types and companies' profit trajectory. We measure the moderating influence of product innovation activity using multiple group analysis. Finally, we discuss academic and managerial implications and provide directions for future research.

2. Literature review

2.1. Classification of industrial service offerings

In the service marketing discipline, the purpose of developing typologies is to address the complex nature of services. Service classification schemes allow managers to develop meaningful strategies and action plans. They further provide an important foundation on which researchers can develop theories of relevance to specific service organizations (Cook, Goh, & Chung, 1999; Kotler & Keller, 2008). Several

classification schemes have been suggested for services predominantly within a consumer marketing context (for an overview, see Cunningham, Young, Ulaga, & Lee, 2004; Ng, Russell-Bennett, & Dagger, 2007).

Classification of industrial services has not received the same level of attention as the categorization of consumer services (Boyt & Harvey, 1997). However, industrial services that manufacturing companies offer are far from homogeneous. Indeed, extant literature suggests that industrial services differ substantially with respect to the level of risk, the level of competition, and the potential to create competitive advantages (Oliva & Kallenberg, 2003). Traditionally, industrial services have been classified according to different stages of the industrial purchasing process (Samli, Jacobs, & Willis, 1992). Boyt and Harvey (1997) distinguish among the categories elementary, intermediate, and intricate services on the basis of six service characteristics: replacement rate, essentiality, risk level, complexity, personal delivery, and credence properties. Frambach, Wels-Lips, and Guendlach (1997) divide services into two categories: transaction-related and relationship-related services. However, existing classifications of industrial services lack implications regarding the question whether and when companies can benefit from different service types.

Against this background, it is essential to distinguish between different service types when investigating how services affect firm profitability. Our study builds on Mathieu's (2001a) classification scheme, which distinguishes between two types of industrial service offerings: services supporting the product (SSPs) and services supporting the clients' actions (SSCs). Compared to competing approaches distinguishing more than two service categories (e.g. Gebauer, 2008; Gebauer, Edvardsson, Gustafsson, & Witell, 2010; Oliva & Kallenberg, 2003), Mathieu's classification is generic and therefore generally applicable, providing the scheme with strong managerial relevance. The generic nature of Mathieu's service classification is of particular relevance for our empirical study that is analyzing a whole industry (i.e., German mechanical engineering industry).

The first type of services, SSPs, supports the installation and use of the supplier's core products and ensures their proper functioning (Mathieu, 2001a). These basic services include, for example, spare part delivery, hotline, equipment repair, inspections, and maintenance. They are typically of low complexity, are purchased frequently, and are not essential to the industrial customer's primary functions (Boyt & Harvey, 1997). To offer these services, suppliers primarily need knowledge about the installed product base and how to service it (Kowalkowski, Brehmer, & Kindström, 2009). Their strategic objective is to maintain and enhance the value of the supplier's core products and increase customer satisfaction (Gebauer et al., 2010). Consequently, SSPs help the firm create and sustain product differentiation (Bowen, Siehl, & Schneider, 1989; Porter, 1980).

The second service category, SSCs, consists of services that support the client's actions in relation to the supplier's product. These advanced services include, for example, process optimization, research and development, business consultancy, and the operation of entire processes on the client's behalf. Compared with SSPs, these services are typically more complex, contain more credence properties, are highly customized, and more often require personal delivery (Boyt & Harvey, 1997). Therefore, these services are of high risk for both customers and companies (Oliva & Kallenberg, 2003). When offering SSCs, suppliers need extensive knowledge about how the product affects the customer's processes and how these processes can be improved (Kowalkowski et al., 2009). In contrast with SSPs, SSCs can be offered independently from the supplier's core products (Mathieu, 2001a). When offering SSCs, "the mission is not just to make the product work, but to help the client maximize all the different processes, actions and strategies that are associated with the supplier's product" (Mathieu, 2001a, p. 40). SSCs' aim is to enhance the efficiency and effectiveness of the customer's processes, reduce operating risks on the customer side, or become responsible for entire customer processes (Gebauer et al., 2010; Oliva & Kallenberg,

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