

Can a product  
manufacturer be a  
success



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Can a Product Manufacturer Become a Successful Service Provider? In Pursuit of a Business Model that Fosters Complementarity between Product and Service Activities perspectives Vivian Visions and Bart Van Alloy Academic paper to be presented at the Academy of Management Conference, San Antonio, LISA, August 2011 Why this paper might be of interest to Alliance partners paper quantitatively examines the relationship between serialization and performance, in terms of growth dynamics between products and services and profitability of serialization.

The findings not only suggest the importance of carefully considering business models in terms of complementarities, substitution effects and their net impact but they also suggest pathways to sustainable growth for servicing manufacturing firms. Can a Product Manufacturer Become a Successful Service Provider? In Pursuit of a Business Model that Fosters Complementarity between Product and Service Activities 1 Serializations, a trend among manufacturing firms to extend the scope of their product offerings into services, has captured a majority of industrial firms in developed economies.

While proponents argue that serialization brings strategic and economic benefits to customers and providers alike, recent findings indicate that servicing firms can encounter hurdles that may lead to an overall performance decline, the so-called service paradox. In this paper, we analyze the value-creation process of a large manufacturing firm that has been successfully developing an after-sales service business over the last decade.

The integrated nature of the service business model allows the firm to transcend substitution effects, resulting in reciprocal growth dynamics at the level of revenues. Additional, positive effects on future) product sales stem from increasing levels of customer intimacy. In terms of profitability, our findings reveal a positive effect of serialization while simultaneously signaling a moderating impact of the investment required to scale up service activities.

These findings not only suggest the importance of carefully considering business models in terms of complementarities, INTRODUCTION

Serialization's represents an increasingly popular trend among durable goods manufacturers to extend the scope of their product offerings into services that accompany products throughout their life cycle. A welkin representative of this trend is Rolls-Royce Aerospace, which evolved from a pure manufacturer of 1 This paper benefited from the insightful comments of a number of colleagues and conference attendees. Authors would like to thank in particular Bruno Caimans, Andy Newly and Sergei Intestines. Ere engines to a (product-service) provider of aerospace solutions.

Rolls- Royce involvement in services began with the provision of spare parts, developed into maintenance and overhaul services, and further evolved into the provision of manpower by the hour or total care packages where customers ay the capability the engines deliver, whilst Rolls-Royce retains responsibility for maintenance as well as risk (Newly, 2008). Other examples of firms engaged in serialization include ABA, Caterpillar, GE, IBM, and Xerox (Cohen, Augural, & Augural, 2006).

Indeed, competing on the basis of services is not limited to a few well-known corporations but is becoming one of the most prevalent strategic choices in durable goods industries (Fang, Paltrier, & Statesman, 2008; Nee & grown, 2008; spring & Aragua, 2009; Tulip, Kohl, & Broadway, 2007). Recent data suggest that, globally, over a third of large manufacturing firms offer services, with the proportion increasing to almost 60% in Western economies (Newly, 2008). In addition, for an average manufacturing firm, the share of service sales has reached 31 % (Fang et al.

2008), suggesting that serialization is not only a prevalent trend but also that the service business is becoming an important constituent in a manufacturing firm's performance. While a growing number of studies – stemming from the fields of service operations management (Kim, Cohen et al. 2007; Guarded, Cohen et al. 2011; Kim, Cohen et al. 201 0) and environmental economics Brutally, 2009; Mont AAA; Mont Bibb) -? point to the benefits of serialization for product performance, longevity and, hence, customer value, the impact of serialization on the performance of manufacturing firms is less well understood.

At the same time, some of the case-study evidence indicates that manufacturing firms face some worrisome challenges in both the formulation and implementation of a service-oriented business model.

These hurdles, pertaining to differences between organizing and managing product and service activities, may result in a decline in overall firm performance, the o-called service paradox (Olivia & Goldenberg, 2003; Gabbier, Fleischer, & Fried, 2005; Nee et al. , 2008).

Recent quantitative, empirical studies analyzing the impact of serialization on the financial performance of firms display mixed results (Fang Paltrier, & Statesman, 2008; Newly, 2008). Despite reports from firms that services are sold frequently and with higher margins, empirical results -? in some cases -? associate this strategy with a decrease in overall financial performance.

Thus, a better understanding of the value dynamics underlying serialization processes seems entirely warranted.

Our study seeks to contribute to this aim by developing a set of propositions concerning the nature of the value-creation process and testing these propositions on 44 country subsidiaries of a large durable industrial equipment manufacturer that has been actively pursuing a serialization strategy over the last decade.

Results reveal that the manufacturer enacts complementarities (Milord & Roberts, 1995; Geologies, 2002; Novak and Stern 2009) between products and services by relying on an integrated service business model] (Amid & Coot 2001; Spring et al. 009), characterized y offering a variety of services related to the product activities of the firm. Deployment of an integrated service business model not only ensures the effective deployment 2 of a service business but service activities also act as a driver of the product business. This reciprocal relationship be; en service and product activities is achieved in spite of the inherent substitutive relationship that characterizes products and related service offerings 2.

In terms of profitability, our findings underscore a positive effect of servicing while simultaneously signaling a iterating impact of the investment required

to scale up service activities during the serialization trajectory. Overall, these findings suggest the presence of the service paradox (see): a growth paradox that may unfold when a manufacturer neglects the feedback effect from products to services, allowing substitution effects to prevail, and a profitability paradox that occurs when a manufacturing firm either does not recognize the importance of scaling up service activities or simply fails to scale up.

On a more conceptual level, our research aspires to contribute to the literature on implementations and conceptuality (Geologies, 2001; Caimans & Buglers, 2006; Novak et al. 2009; Porter & Edgeless, 2008).

Interdependencies on the level of product and service activities can reveal characteristics of both complements and substitutes; the net outcome of which is contextual on the managerial practices that promote complementary in order to supersede us obstruction.

The remainder of the paper is structured as follows.

First, we provide an overview of the relevant literature and derive propositions on the value dynamics of serialization. After describing the research context, the data and the empirical models, we present the results obtained when testing the outlined propositions empirically. We end with a conclusion and a discussion of the managerial implications, the shortcomings of this study, and fruitful directions for future research.

**LITERATURE REVIEW** Serializations was first coined by Vandenberg & Radar (1988) to delineate the tendency of manufacturing firms to “ offer fuller

market packages or bundles of customer-focused combinations of goods, services, support, self-service, and knowledge” 3.

Though the label and definition of serialization come from marketing literature, notable contributions also stem from operations management in general (Cohen & Hang al. 1997) and service operations more specifically (Hinkle & Davis, 2007; Mach, Gonzalez- Somoza et al. 007). Effective servicing leads to the extension of the product life cycle (of existing products) and limits the potential sales of replacement products. Here, paradoxically, service-product relatedness would lead to product centralization if it was not for the aforementioned managerial practices that ensure service-to-product complementarity. 3 As the research on segmentation has developed across various disciplines, alternative terms have been advanced to refer to the same phenomenon (e.

G. Revive orientation, service transition, industrial services, service strategy in manufacturing, promulgated services, product-services, total solutions, hybrid solutions, integrated solutions, service maneuvers, product-service systems, servicing, serialization, and certification). 3 Understanding effective ways to (commercially) engage in after-sales service stemmed from an appreciation of the characteristics of effective warranty provision (Blanchard, 2001 ; Blanchard & Earthshaking, 2005; Jack & Murphy, 2001; Murphy, Soles et al. 004; Paternal & Miter, 1995).

Of particular interest are the studies that consider the tendencies of manufacturers to extend their warranties or commercially offer after-sales service. Cohen et al.

(2006) develop a product life-cycle model that studies a set of strategic choices facing manufacturers as they design the joint product/ service bundle for a product, which may require maintenance and repair support after its sale. Allan and Feuring (2009) extend this work by developing a model that accounts for distinct sensitivities to the price of service as well as the quality (delays encountered) Of different customer classes or market segments.

Finally, Jack and Murphy (2007) discuss the pricing choices of the extended warranty that offers greater flexibility, and they investigate optimal pricing strategies for the extended warranty provider, and optimal maintenance and replacement strategies for the consumer. More recent literature goes beyond the understanding of the effects of price and quality characteristics (Olivia and Steersman 2001) to examine the nature of the relationship between the provider and the customer; in particular, the implications for contracting, the incentives on product performance, and the effectiveness of the contract (Toffee 2008).

Kim, Cohen et al.

(2007) study the effectiveness of performance-based contracting versus traditional cost-based or fixed-price contracts in terms of equipment availability. The results of a game-theoretical model demonstrate that the first-best solution can be achieved if channel members are risk neutral but, when channel members are risk averse, they find that the second-best contract incorporating a fixed payment, a cost-sharing incentive, and a performance incentive prevails. In a subsequent study by Kim, Cohen et al.



2010), additional differentiations between two types of performance-based contracts are analyzed. When the product performance is observed in terms of prevention against the infrequent and random nature of disruptions, their findings reveal the presence of unexpected incentives, due to a misalignment between the nature of the performance measures used in contracts and the disruptions. This situation results in counterintuitive behavior and variation in the suppliers ability to influence the frequency of disruptions.

Further, Guarded et al. (2011) empirically investigate the impact of different forms of serialization on product reliability. Firstly, they find that larger customers and users of certain equipment types are more likely to select performance's contracts over time and material contracts. When controlling for this selection process, they find evidence for a positive and significant effect of performance incentives, created by performance-based contracts, on product reliability.

Finally, Rolls, Carmaker et al. (2010) relate the effectiveness of a contract to the extent of customer involvement.

They find that fixed-fee contracts, contingent on performance, are preferred when the service output is more sensitive to the endorser's effort, that time-materials contracts are optimal when the output is more sensitive to the buyer's effort and that 4 performance-based contracts prevail when the output is equally sensitive to both the buyer's and the vendor's inputs.

Thanks to its ecological implications, serialization has also received considerable attention in studies of environmental economics alongside

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related phenomena, such as leasing (Augural, Ferguson, Dakota & Thomas 2011). As an illustration, the World Business Council for Sustainable Development identified service extensions as one of the four important elements of CEO-efficiency (Mont, AAA; WEBMD, 1996). The main reason for acceptance of serialization in this domain is that the addition of services such as maintenance, upgrading and remunerating prolongs product life and so reduces the need for assets (Mont, Bibb; Mont, AAA).

For example, White, Sought, & Fen, (1999) cite the case of Electrocute ABA, which conducted a life-cycle analysis of a servitude floor cleaning machine; it found that life-cycle services (maintenance and optimal utilization) reduced in-use (environmental) impacts as well as material and energy throughput in the product system via life extension, part reuse and recycling. Furthermore, a simulation model developed by Brutally (2009) demonstrates that services such as maintenance, repair, reconditioning, and technological upgrading bring an extension in product life and lasting ecological impact.

While the environmental lens points to increased efficiency in resource use, this argument gets closer to a firm perspective by demonstrating service market potential. More specifically, investment in capital products represents on average only 50% of the total life cycle costs, the remainder being services that range from installation and training to maintenance. Total life cycle costs (products and services together) represent only a fraction of the total costs of product functioning where energy, infrastructure and inefficiencies in asset management can exceed initial product investment by five to twenty times (Wise et al. 1999).

While extant literature investigates the impact of serialization on contract effectiveness and product performance (product availability, reliability, disruptions and CEO-efficiency), the understanding of how serialization influences the supplier performance remains limited. In this respect, some of the first empirical findings indicate that, in practice, service business development entails worrisome challenges that may even result in a decline in the supplier [Its overall performance, the so-called service paradox];

Building on case-study research, several authors have identified obstacles including lack of attention from top management, deficiencies in organizational design and information technology, the lack of an appropriate culture, and insufficient capabilities for service management (Gabbier, Kernel, Fleischer, & Fried, 2008; Nee et al. , 2008; Olivia & Goldenberg, 2003). The two studies that assess serialization in a more quantitative manner display mixed results with respect to the impact of this trend on the economic performance of the firm.

Fang et al. (2008) analyze the link between the degree of serialization and firm market value, measured by Dobbins Q. Results indicate that once a critical level of service scale has been reached, serialization has a positive influence on the overall value of the firm. This effect is, however, highly contingent on the industry; for firms operating in mature and/or turbulent industries, adding services to the core product is effective, whilst firms operating in other conditions may decrease their firm value by transitioning to services.

Secondly, the transition to services is effective for firms that offer services related to their core product business, whilst services that are unrelated to the core product offering seem to decrease firm value.

At the same time, Newly (2008) shows that the decision to serviette has a positive impact on profitability, while the extent of serialization is negatively related to net profit margins. Surprisingly, the decision to serviette has a negative effect on profits when the analysis is performed on a subset of large firms.

Finally, the findings reveal that considerably more servitude firms have declared bankruptcy than might be expected. This latter observation suggests that product firms may be engaging in since activities too late – I. E. When already in trouble – or in an ineffective way.

While operations management scholars and environmental economists demonstrate that serialization has a positive impact on product and customer, the impact of this strategy on the manufacturer is subject to debate.

The question of manufacturer value appropriation is highly complex and remains somewhat obscure, mainly because value creation transcends the boundaries of a single firm. At the same time, growing streams of literature on business model innovation (Spring et al. 2009; Tech, 2010; Coot & Amid, 2010) and activity systems (Porter & Geologies, 2008; Geologies, 2002) are proving helpful in framing value creation in serialization and in illuminating this intricacy. The business model, defined as a system of interdependent activities that transcends the local firm and stretches beyond its boundaries

(Coot et al. 2010), represents a sound phenomenological milestone in analyzing serialization, since it helps to connect this honeymoon to the constructs relevant to identifying value creation sources across firm boundaries.

We argue that serialization represents a specific innovation of the business model: by offering service activities that span the life cycle of a product, a manufacturing firm extends the content of their transactions with customers, leaving customers to directly benefit from the utility that the product provides (Amid et al. 2001, Spring et al. 2009).

As serialization effectively represents a transition of service activities from the customer side of the business model to the manufacturer side, it is necessary to first understand customer gains in order to appreciate the implications in terms of manufacturer gains. In line with extant literature from service operations and environmental economics, we start from the value that serialization creates for the customer.

Further, we examine the interdependencies (Geologies, 2001; Geologies, 2002; Zeitgeist & Hein, 2007, Novak et al. 2009) that arise between products and services due to serialization.

Combining insights from both perspectives, we arrive at propositions concerning the implications for value creation by the manufacturer. 6 Value creation process From a customer's perspective, the decision to outsource services represents a make or buys decision, where a customer considers whether to continue to service products in-house or to outsource services to the product manufacturer. In line with arguments advanced by the theory of <https://assignbuster.com/can-a-product-manufacturer-be-a-success/>

the multipurpose firm (Tech, 1980; Tech, 1982), a customer can reduce costs by outsourcing services to the manufacturer, to the extent that the latter is able to offer them at a lower price.

Such an advantageous proposition will depend on the presence of economies of scale and scope as well as learning effects (Chase, 1981; Panzer & Willing, 1981; Akin, Ata et al. 2011). Economies of scale and learning effects arise as the manufacturer provides services for its entire installed base, while an average customer will need to invest in service resources and capabilities for a much smaller number of machines. Economies of scope are achieved by leveraging technological capabilities when defining and implementing service processes (Gabbier, Kernel, Chaise, & Fried, 2008).

In addition, manufacturing firms can capitalize on the existing CRM information and sales channel infrastructure developed for traditional reduce activities (Quinn & Agony, 1986), implying that transaction costs are reduced by spreading them over products and services (Williamson, 1975). Going beyond the mere price of the service, sourcing products and services from one and the same supplier can enhance productivity (e. G. Simultaneously signing product and service contracts or indeed bundling them into one contract for both) and reduce information asymmetries of customers (Nary, 1993).

Furthermore, customers may experience complementarities in use, such as interoperability, which have been studied as an important source of competitive advantage in IT markets (Minivan 002; Attainders & Pentagram 2005; Tan river & Lee 2008; Lee, Pentagram et al. 2010). Combined with the

interest in using products more effectively and extending their useful life, these arguments strongly suggest that customers will be inclined to purchase related, life-cycle services from the product manufacturer.

The term life cycle implies that the service offering that the manufacturer devises is related to the product offering and, hence, the manufacturer's competence base.

This logic results in the following proposition: proposition 1: The sale of products will be positively associated with the sale of services. While a thriving product business clearly creates opportunities for service business development, the impact of offering services on the development of the product business is less clear. As environmental economics literature suggests (Bratton, 2009; Mont, 2004; WEBMD, 1996; White et al. 1999), from the perspective of customers (and society at large), the major source of the value gain from serialization represents a lowering of the overall life-cycle costs and the cost of product functioning. From the manufacturer's perspective, however, providing services may imply repacks for product activities. Services – such as repair, maintenance, and even complete overhauls – are to a considerable extent oriented towards prolonging the product life cycle.

While the ecological imperative places services high on the list of CEO-friendly strategies, inevitably it has implications for the manufacturer's core product business.

As the life of an existing product is extended, the replacement – and therefore sale – of a new product is postponed. This means that services

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start to represent substitutes for products (Geologies, 2002). Judging solely by this argument, one could expect Revive sales to lead to less product sales overall.

At the same time, complementary effects – from services to products – can be advanced as well. First, customers who are satisfied with the services delivered will be more likely to purchase product replacements from the same manufacturer, thereby increasing the product renewal rate (Highest, Jones, Loveland, Gasser, & Schlesinger, 2008).

Second, by engaging in service activities, manufacturing firms become much more informed about customers needs: this information can be instrumental in enlarging the scope of the product offering resulting in additional product sales. Finally and closely related to the previous argument – additional product sales may accrue from extending the relationship into substituting equipment previously provided by competitors. This set of arguments points to potential complementarities between services and products.

In consequence, one could envisage two scenarios.

If substitution effects exceed complementarities, service sales will have a negative effect on product sales. This would be a likely scenario even in the case that complementarities are not actively pursued. Alternatively, complementarities could outweigh obstruction effects, resulting in a positive net effect from services to products and subsequently higher product revenues when service activities unfold.



Proposition AAA: An increase in service sales will be associated with a decrease in product sales Proposition b: An increase in service sales will be associated with an increase in product sales While we argue that the presence of complementarities will depend, at least partly, on the presence of customer intimacy, this assumption can be tested directly. Indeed, if positive, complementary effects from services to products are driven by more request interactions, and hence increased levels of information exchange, the presence of more encompassing, labor-intensive service offerings will drive the positive impact of services on product sales.