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## Development of Industrial Service Offerings – A Process Framework

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### Abstract

**Purpose** – The purpose of this paper is to propose a service development process that is adapted to manufacturing companies and to discuss its implications for companies with a traditional focus on product development and product sales.

**Design/Methodology/Approach** – The paper looks at new service development (NSD) literature and argues for a rationale to study NSD processes in a manufacturing context. Next, a generic NSD framework for manufacturing companies is presented. Examples are given based on an explorative multiple case study (10 companies) with in-depth interviews and focus groups. The analysis reveals organizational requirements and other critical factors related to each stage of the NSD process.

**Findings** – A four-stage service offering development framework is presented. Critical aspects of NSD in a manufacturing context are highlighted. The importance of considering both NSD and NPD together is also emphasized.

**Research Limitations/Implications** – The limitations are based primarily on methodology; the case studies focused only on the service organizations of the manufacturing companies studied.

**Practical implications** – Managers need to be aware of the inter-relationship that exists between NSD and NPD and on the specificities of service development in companies where an industrial logic dominates. A number of managerial implications are proposed and discussed.

**Originality/Value** – The study emphasizes the importance of latter stages in NSD, something that has not previously been extensively studied or addressed. In addition, to explicitly discuss NSD in a manufacturing context is novel.

**Key words** – NSD, NPD, Industrial offering, Service innovation, Manufacturing companies

**Category of paper** – Conceptual

## **Introduction**

Increasingly, across many industries, manufacturing companies are extending their product offerings with services (see, for example, Davies, 2004; Gebauer *et al.*, 2005; Kowalkowski *et al.*, 2009; Mathieu, 2001; Matthyssens and Vandenbempt, 2008; Penttinen and Palmer, 2007). Competition from, among other things, low-cost countries decreased margins for traditional product sales due to commoditization, and increased customer demand, drives companies to extend their business with new service offerings. Market-leading capital goods manufacturers are in a good position to take advantage of the possibilities of increased service content, due to their often substantial installed base with a long life cycle and their in-depth product knowledge (Oliva and Kallenberg, 2003). Research implies that companies in the manufacturing industry are moving towards a ‘servicification’ (Normann, 2001) or ‘servitization of business’ (Vandermerwe and Rada, 1988), meaning that companies are not only augmenting their product offering with services, but are also developing new offerings where the product is not necessarily at the center of the value proposition. For example, instead of primarily selling warehouse trucks, truck manufacturers are turning to various forms of rental agreements using new revenue models through investing in service and maintenance activities as well as financing and insurance (cf. Kowalkowski, 2008).

However, manufacturing companies have typically exhibited a product and technology orientation and many of them are relatively new to a service logic and to service innovation. Service development often becomes more complex in manufacturing companies than it is in pure service firms since manufacturing companies have a core product that has traditionally carried most of the value and which is heavily embedded in the company culture. As a consequence, manufacturing companies may need to manage the symbiotic relationships of having two different business logics; a service oriented and an industrial, product oriented one (Gebauer *et al.*, 2005). The tension between a service and a product/manufacturing culture is

likely to be a constant challenge particularly for companies undertaking a goods-services transition and choosing to bundle goods and services, (cf. Brann *et al.*, 2007), thus affecting management commitment and resource allocation to new service development (NSD).

The process of NSD is generally complex and can be problematic to define and articulate (Perks and Riihela, 2004) and there are a number of unique aspects of service development that need to be taken into account that do not necessarily exist in manufacturing companies' new product development (NPD) processes. For example, typically, services do not require the same initial investments as products (e.g. physical prototypes and manufacturing facilities) and services typically require more interaction with and feedback from customers (Edvardsson *et al.*, 2006; Gallouj and Weinstein, 1997). Compared with NPD, technology and related processes such as patent applications are not at the center of the NSD process (cf. Cooper and de Brentani, 1991) and in opposite to high-tech product development, service firms usually do not pursue conventional R&D (cf. Hipp and Grupp, 2005; Hollenstein, 2003). However, technologies such as internet and communications technologies can be at the center of service offering innovation. Drejer (2004, p. 560) concludes that "a manufacturing based technology-focused product-process approach to innovation is too limited within services" since the co-production aspect of services requires, among other things, a more customer-centric approach.

Furthermore, the actual delivery of services, the service interaction with co-created value-in-use, is a pivotal part of a service, whereas the actual delivery of the product is often of less value, i.e., value-in-exchange only (Normann, 2000; 2001; Vargo and Lusch, 2004). Nevertheless, studies of NSD and NPD tend to make comparisons between service firms (NSD) and manufacturing firms (NPD) (e.g. Hollenstein, 2003; Sirilli and Evangelista, 1998), thus neglecting to recognize that that the division into service and manufacturing firms is

becoming increasingly blurred (Economist, 2005) and that many NSD projects take place in companies that are in the manufacturing industry.

Innovation literature has on one hand, predominantly focused on products (see, for example, Utterback, 1994) and studies of service innovation are still in a relatively early development phase due to “decades of neglect...in relation to manufacturing innovation” (Drejer, 2004, p. 551). Existing NSD literature on the other hand, has had a focus on either consumer markets or on professional service firms (for example in Edvardsson *et al.*, 2006). Hence, there exists a gap with regard to NSD in the context of manufacturing companies selling to industrial customers, where products most often are the pivotal part of the companies’ offerings.

This paper recognizes the need for a development process for service offerings in a manufacturing context. The purpose is to propose a service development framework that is particularly adapted to manufacturing companies and to discuss its implications for companies with a traditional focus on product development and product sales. Examples from ten market-leading manufacturing companies in different industries illustrate critical aspects in each stage of the development framework.

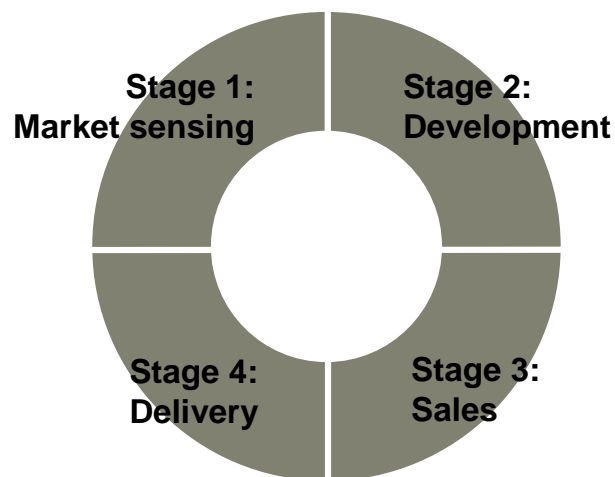
## **Theoretical framework**

New product development (NPD) and new service development (NSD) are often managed as two separate, albeit similar, processes. In NSD literature, focus has traditionally been on financial services (see, for example, Scheuing and Johnson, 1989), on consumer services, and on professional service firms without any tangible products (see, for example, Droege *et al.*, this issue; Edvardsson *et al.*, 2006). Today, services are a pivotal part of many industrial markets and yet there are few studies of NSD in this setting. These industrial services are often created sequentially, that is, they are not managed strategically, tend to be developed ad hoc, and are generally added once the product deal is landed, without much integration with product development and other business functions. This reduces the potential impact of the services and the complete offering (product-service bundle), and also reduces both efficiency and effectiveness for supplier as well as buyer (cf. Kowalkowski, 2008). The reality and challenge for many industrial companies is to simultaneously develop both products and services (Johne and Storey, 1998) and thus approach what Shostack (1982) terms hybrid entities that balance both these aspects. A more complete offering (see e.g. Stremersch *et al.*, 2001) addressing a greater part of the customer's problem, typically includes higher levels of service components, thus emphasizing the need to address both NPD and NSD simultaneously. In these cases, the offerings are widened and become more complete.

An increased servicification also has implications for the recognition of the role of the customer. With a service perspective (Edvardsson *et al.*, 2005), the customer is no longer regarded as a passive transaction-oriented actor that interacts with the supplier in brief sales and delivery moments but rather an active relationship-oriented actor with a long-term perspective in the interaction (cf. Tuli *et al.*, 2007).

### *A four-stage framework*

In this paper, we forward a generic four-stage framework of offering development based on market sensing, development, sales and delivery (see Figure 1). The framework is circular, which implies that companies must go through the stages continuously and not become complacent after completing one revolution. Furthermore, after each stage, companies should reflect upon the previous phases and review experience of the process (both success and failure) in order to learn how to improve NSD (cf. Bessant and Davies, 2007). In NSD literature, focus has been on the earlier stages, with aspects such as idea generation, concept development, and pilot studies (which are included in the development stage). Very often, not only in NPD literature but also in NSD literature (see, for example, Scheuing and Johnson, 1989), the process tends to be limited to what we view as the development stage. Although this stage is critical, we argue that there is also a need to make explicit also the other three stages of the NSD process in order to fully grasp the complexities of and prepare the organization for its new offerings.



*Figure 1. A four-stage framework of new service development.*

The separation of market sensing from development implies a thorough scanning of the customers, the installed base, competitors, and also the internal organization before addressing specific promising ideas in the development stage. Similarly, customers can be

addressed in a co-developing effort. In the literature on the goods-services transition in industrial markets, the NSD process tends to be limited to the first two stages in Figure 1 (cf. Gebauer *et al.*, 2005). Market sensing is seen as a distinct stage which is critical regardless of the extent of actual, formalized service development in Stage 2.

Furthermore, not only the development of the offering is an important part of a successful NSD process but also to ensure the sales and the delivery of the offering is pivotal (see e.g. Edvardsson and Olsson, 1996; Lovelock, 1984; 1996). Thus, the sales and the delivery processes need to be taken into consideration, especially in industrial companies with a sales force that is predominately used to selling products and not services. de Brentani (2001) argues that incorporating the structuring of the market launch into the service development process is to be recommended and is supported by Jong and colleagues (2005) stating that market launch is a necessary activity during service development. The latter two stages of the framework in Figure 1 are further emphasized in that, rather than only seeing a bundle of product and service elements, customers tend to see offerings as a set of customer-supplier relational processes, comprising both deployment and post-deployment support (Tuli *et al.*, 2007). The same study also sheds light on the need to involve customers early in the process, if the aim is to construct attractive offerings, and this demands more frequent and deep interactions (see e.g. Galbraith, 2002).

Interaction is one of the distinguishing factors of service offerings (Johne and Storey, 1998). The consequence of this is that companies developing service offerings must develop their customer relationships, which in this sense, makes NSD a more complex process with a greater focus on relationship longevity, compared to product development (where R&D activities can take several years). In line with the view that relationships with customers are always present (Vargo and Lusch, 2004), developing service offerings implies a constant customer interaction that is not limited to the first two stages but instead exists in all four



stages of Figure 1. Thus, customers always have a role in the co-innovation processes of the supplier (Mannervik and Ramírez, 2006). Not only active, but also passive customers unwittingly co-design “patterns of behavior” that suppliers can use to improve their value propositions. In other cases, co-innovation is much more explicit. Mannervik and Ramírez (2006, p. 62) argue that “[c]ustomer co-innovation has been a natural aspect of the business models of large industrial business-to-business companies”. However, as with other aspects of customer relationships, when managing customer co-innovation there is no *a priori* value in more or less active customer co-innovation roles. As Grönroos (2008) points out, potential customers’ voiced needs should not always be used as guidance for service development, but rather, a focus on customer practices means that service development should be based on knowledge that goes beyond expressed needs and conventional market research.

## **Methodology**

This research was exploratory with the aim of studying a complex context-bound contemporary process; the development of industrial service offerings. Based on this, a case study approach was deemed to be an appropriate research strategy (Yin, 2003). The research was empirically grounded with an aim to discover emerging patterns and practices (Meredith, 1989). Through an iterative process, this research takes advantage of a systematic combining and matching of theory and empirical data, which can be regarded as an ‘abductive’ approach to case research (Dubois and Gadde, 2002). Employing cases as illustration for a conceptual discussion is valuable, and Siggelkow (2007) argues that research involving case data overcomes a number of shortcomings of purely conceptual arguments.

### *Selection of cases*

The empirical data comes from ten market-leading manufacturing companies of Swedish origin. The case companies are large international companies that also have a traditional focus on products and product development and have a communicated strategic intent to increase

their service orientation. All companies however, have a number of services and service offerings currently available and under development and are dedicated to increasing the share which services have in their total business. With respect to data confidentiality, the real names of the companies are not disclosed. By using a multiple case approach, more robust results are possible than with a single case study (Eisenhardt, 1989; Yin, 2003).

The case companies self-selected themselves for the research in that they expressed an interest in being part of the project. The researchers however employed a number of criteria in order to choose appropriate participants which imply that not all companies expressing an interest were included in the study. The companies needed to, 1) be in the manufacturing industry, 2) have an expressed intent of becoming more service oriented, 3) be of sufficient size (since the focus was to be on large, international companies), 4) be willing to commit to a substantial investment in time and effort, 5) provide appropriate and open access to information and informants, and 6) have at least one service development project of strategic importance currently under way. These criteria helped to ensure the validity of the study and also increased the possibilities of generalizing results. Furthermore, the study is not limited to the development of traditional after-sales services (cf. Gebauer *et al.*, 2008) as it includes also more extensive and process-oriented services and solutions.

#### *Information gathering and analysis*

Most case data was obtained through semi-structured interviews lasting between twenty minutes and five hours, although most interviews lasted between one and two hours. The interviews were made between 2004 and 2008 and the respondents were primarily service managers, although general managers, R&D managers, and application specialists were also interviewed. Questions were of an open-ended character and allowed respondents to formulate their answers using their own words. All interviews were taped and transcribed and passages were categorized into to similar NSD subthemes before the information from

different respondents was compared and regrouped, following a systematic combining process (cf. Dubois and Gadde, 2002).

Primary data was also collected through the use of focus groups that ran continuously during the research period. Eight focus group meetings were held with service managers, and in addition to this, two focus groups were conducted with general managers. The focus groups were similar to the interviews in that they too were semi structured, but participants from more than one company took part at the same time. One purpose, which proved to be a major advantage of the focus groups, was the opportunity to present empirical data that had previously been collected, introduce preliminary results, discuss the findings, and continuously receive feedback, thus increasing validity. It is possible that participants opened up and shared insights that would not have been available from the interviews conducted (cf. Matthyssens and Vandembemt, 1998). Finally, intranets and internal documents were used as sources of information.

Feedback was received from the interviewees on the transcribed interviews and on the preliminary findings. As is often recommended, the write-up of the cases was run through key respondents in order to not only ensure its correctness but also to give feedback to the case companies (see e.g. Pettigrew, 1989). Within-case analysis was made before the cross-case synthesis, which corresponds to Eisenhardt's (1989) and Yin's (2003) idea to firstly become familiar with each case as a separate entity in order to identify case specific patterns, before making a cross-case comparison. A case study protocol was used to increase reliability (Yin, 2003). Overall, collection and analysis of information was simultaneous, and decisions about which interviews to conduct and which other data to collect next were determined by the theory in progress (cf. Suddaby, 2006).

## **Discussion**

Not only in NSD literature but also in the companies studied, is the NSD process concentrated to the development stage (and possibly also the market sensing stage) with a focus on designing NPD-like process models with similar gates and evaluation criteria. Often, the NSD models are designed from existing, very detailed, and rather complex NPD models. However, as we have seen in the companies studied, it is critical to manage all four stages (in Figure 1) in the NSD process (see Table 1). Several of the case companies explicitly mentioned the failure of successfully developed services to generate revenue, due to poor sales performance and/or inadequate service infrastructure. For example, many services are regarded as add-ons that can be supplied for free in order to close a product deal, even if this comes at the expense of overall profitability (cf. Anderson and Narus, 1995; Oliva and Kallenberg, 2003). Furthermore, at one case company performance problems of one of their service offerings were due to delivery problems such as uneven quality, poor delivery processes as well as internal miscommunication, primarily between sales and the service delivery functions. This illustrates the need to be aware of, and manage, all stages and their interdependencies.

Customer involvement is not only important in the initial stages, and the case company with the most pronounced service focus emphasizes the involvement of customers in all four stages of the proposed framework. Another important factor for all stages of the framework is organizational learning and companies that invest in organizational learning tend to benefit from greater internal collaboration (Le Meunier-FitzHugh and Piercy, 2007). Neither organizational learning nor NSD are linear processes (cf. Stevens and Dimitriadis, 2004) and the empirical evidence highlight the importance of facilitating organizational learning at different organisational levels. This also indicates that, although a formal NSD process is vital, NSD must not be conducted only as a centrally managed, ‘clinical’ development project with rigid structures, phases and gates; involvement from not only customers, but also from

the local organization, is needed. This, among other things, creates a sense of ownership, increases understanding for the services and also increases the possible sources for innovation. In some of the companies influential subsidiaries take on a vital role as lead generators for service development, whereas others can be regarded as “receiver country” subsidiaries. However, even in these local organizations, exploration takes place, although to a notably lesser extent.

*Table 1. Outlining the four stages of an NSD process and typical managerial implications and specific differences to NPD processes.*

<b>Stage</b>	<b>NSD specific traits (compared to NPD)</b>	<b>Critical aspects</b>	<b>Organizational challenges</b>
<b>Market sensing</b>	More sources for innovation; both local and central as well as external and internal. Innovation coming from local decentralized actors.	Balancing exploration and exploitation, and local and central innovation and learning. Structuring the existing service portfolio.	Many companies supply unstructured services and lack the capability to sense market opportunities.
<b>Development</b>	Significantly more customer input and interaction. Investment patterns are different.	Designing NSD process with customer involvement, not only blueprinting complex NPD models.	Most case companies have problems getting investment decisions and commitment, e.g. due to finding illustrative and convincing business cases.
<b>Sales</b>	Technical attributes are not in focus. Customer centric rather than product centric process. Emphasis is mainly on value-in-use rather than on value-in-exchange.	Developing measures and sales tools. Changing existing mindset, norms, and values.	Sales personnel are biased towards product sales and often lack competence and/or will to sell service offerings.
<b>Delivery</b>	People intensive and co-produced. Relationship intensive/enhancing.	Making service offerings visible for customers used to products.	Many companies lack the necessary service infrastructure including technology.

### *Stage 1: Market sensing*

Market sensing is a continuous process (Day, 1994) taking place within the company and in dialogue with customers. However, for international companies, it is critical not only to sense the external environment but also recognize proactive local actors that launch various local

service offerings in their attempts to increase local business and to create long-term relationships and increase local customer retention (Kowalkowski, 2008). Central service and business development managers at one of the case companies do not only find market sensing outside-in processes as a core capability but local-central market sensing also becomes more important for a more integrated and international firm. For example, a central supervision service project is based on a concept initiated by a local actor in the country subsidiary, and on the local level, it has been dependent on individuals working with it after regular working hours. Thus, without centrally allocated resources, it can be difficult to rise above a localized and unstructured offering. Local-central market sensing (as well as knowledge exchange between subsidiaries) is also critical for another of the companies, where leading subsidiaries have developed service offerings and applications that have been valuable also for other, less prominent subsidiaries.

Market sensing becomes particularly challenging for manufacturing companies where some services (e.g. technical consulting, maintenance, extended warranty) tend to be supplied free of charge, inclusive in the price of the product, as a way to support product sales (see e.g. Auguste *et al.*, 2006). Hence, this already existing service portfolio is often not managed in a structured and formalized manner, and consequently, these services are not necessarily visible in the companies' financial statements and performance measurement systems. Due to the fact that these services are not "packaged", they do not receive management attention and are not considered by decision makers. Nevertheless, these services can have substantial influence on turnover, profitability, and also on new product sales. An initial mapping of these "invisible" services can hold great potential in jumpstarting further service innovation and development. This has been particularly important for the companies which are in the earliest stages of the goods-services transition (Oliva and Kallenberg, 2003). By mapping and making these services visible, they can serve as examples of successful services and further, act as eye-

opens both internally and for potential customers, that services are, in fact, already a part of the company's offerings. In a number of the cases, subsidiaries have initiated projects to analyze existing service processes and offerings, thereby identifying opportunities to better structure their service portfolios.

There is also a need to sense other actors than customers (Matthyssens *et al.*, 2006), something particularly evident in the industries where system integrators, consultants and contractors often are major influences for the specification of larger contracts and often have intimate customer contacts. Because cost efficient operations are a major concern for the service organizations, this implies finding a balance between exploratory market-sensing activities with their open-minded inquiry and a more rigid exploitative structure to which the local organizations are aligned. One case company also employed a market-sensing approach in order to try to identify services in complex large-scale projects, geared to large key account customers, which would make it possible to separate, standardize, and offer the services to a larger customer base in a cost efficient manner.

### *Stage 2: Development*

NSD processes and service innovation require the involvement of several functions, notably both front-end and back-end, whereas NPD processes tend to emphasize the back end (i.e. a lot of time and resources are spent on the initial pre-study and concept phases and on the technical core in e.g. R&D). The development stage of the framework includes more cross-functional and intra-organizational elements and coordination aspects than for product development (cf. Kowalkowski, 2008).

Nevertheless, due to the dominant industrial logic prevailing and to established practices and routines, business developers in many companies found it necessary to adapt the NSD process to the existing NPD process including existing NPD steps and gates, as well as the existing terminology, in order to find acceptance. However, whereas NPD projects are rather heavily

weighted towards the first two stages, successful NSD projects need to be weighted towards the latter two stages, i.e. not only developing the value proposition but also ensuring its rollout.

At one company which has started to work strategically with NSD, the organizational set-up is basically the same as for NPD and the service development is conducted according to the general development process. That is, product management has service offering ownership and ordering responsibility, and regional product managers are responsible for the take-to-market activities. Existing governance models are applied and three gates are mainly used: Concept study, Development, and Take-To-Market. However, gates and classes are adapted to service offerings and the NSD process is standardized (as opposed to ad hoc development). As this case illustrates, many NSD processes exhibit steps similar to those of an NPD. One stark difference however is the intensive involvement of the customer and user throughout the complete process. Additionally, during the process, a greater number of different internal functions are generally involved. Furthermore, an NSD process demands a greater focus on achieving internal consensus, since there are numerous local actors involved in the actual delivery, and by extension the production, of the service. A formal and planned launch program was seen to be a critical factor by many of the case companies (cf. de Brentani, 2001) and these companies used programs similar to the established NPD ones. Thus, the design and testing of the service offering, service processes, and service system are critical (Edvardsson, 1997).

Due to the importance of ensuring an excellent customer/need fit (de Brentani, 2001), NSD has to involve the local organization and its front-line employees during all steps of this stage (e.g. idea generation, concept development, and pilot study). NSD processes are, or need to be, customer intensive, in that customers are involved to a greater extent and in a larger part of the process compared to in traditional NPD processes. This is especially the case when new



service ideas are generated during the delivery of current services as a result of an interaction with existing customers. Several examples in our study show that customer involvement through in-depth interviews, market research and pilot tests, are a necessity if attractive and value adding service offerings are to be designed.

In the case companies, many service offerings are also driven by lead users and their needs and contexts. This implies that these service offerings are highly customized and contextual. One challenge stemming from this, is that the companies need to find ways to industrialize the service offerings in order to increase efficiency in the two latter stages of the framework (i.e. sales and delivery), especially if these services are to be launched onto a wider market.

### *Stage 3: Sales*

As mentioned earlier, NSD research traditionally put relatively little emphasis on the actual sales stage and the following delivery stage, compared to the development process, despite the fact that in many industries selling services are more complex due to difficulties visualizing the value created. Among other things, this is due to the intangibility of the service and also the inexperience of both supplier and buyer, in terms of understanding value created. It is essential to help customers appreciate the distinctiveness and benefits of the new offering (de Brentani, 2001) and, thus, to ensure that the front-line employees have sufficient knowledge in order to convincingly sell the service. Often companies emphasize designing and defining new services and seldom put much effort into developing tangible actions for how to commercialize, and scale up, the new services. Therefore, at one of the companies, internal “service champions” play an important role in the sales process by supporting the local organizations.

Many measures for market success focus on developing services, that is the concept and possibly the pilot, but, obviously, a service, as a product, is not successful until it is sold, and companies need to pay attention to the sales stage and develop tools and methods to aid the

sales force. For example, one of our case companies have set performance targets based on the number of developed services but have, so far, neglected to specify sales targets. This becomes even more important since the sales force is often unaccustomed to selling services. Findings here clearly show that, in the companies studied, selling services implies a focus on new unique selling points geared towards the customers' processes and their productivity. The sales personnel need to understand the customers' operations and their revenue logic and selling points change from reducing costs to increasing value and productivity. Consequently, sales personnel must be both well versed in managerial thinking and in business logic, as well as have an understanding of local service operations. Since communication between service and sales employees is vital, one leading subsidiary, for instance, has started formalized breakfast meetings with service technicians to which salesmen are invited. Furthermore, in the case companies that are most successful in terms of service sales, there are generally dedicated service salesmen in the service organizations as a complement to the traditional sales organization.

Sales tools that enable the sales persons and other employees interacting with the customers to assess monetized values of the offering tend to become complex for services, since not all values may necessarily be measured or monetized (Ramírez, 1999). Because not only the technical and economic benefits, but also social benefits (see e.g. Anderson *et al.*, 2006; Grönroos, 2007), including inter-firm cohesion, trust, and attraction (Holmlund, 2008) are offered to the customer, this stage of the NSD process must not be overlooked. Not only must the company ensure the delivery of superior value to its customers, but because the value proposition is a reciprocal promise of value (Ballantyne and Varey, 2006), the company must also get an equitable return on the value delivered (Anderson *et al.*, 2007).

Increasingly, company representatives have to be able to point at value-in-use, develop service capabilities, and cultivate customer relationships. Technical features, hardware, and

value-in-exchange become secondary arguments and tend to become qualifiers instead of order winners as they were in the past (see e.g. Lapierre, 2000; Ulaga and Eggert, 2006, Vandermerwe, 1994).

Especially in industries and markets with a high degree of rivalry, it may be difficult to sell on intangible attributes only (e.g. piece of mind). Instead, customers expect the provider to be able to point at the cost savings and/or performance enhancements of the new offering as compared to competitors' offerings. Under such conditions, it becomes particularly vital to have included the Sales stage in the NSD process and ensured that the employees have the competences required to communicate customer value in a competitive value proposition. This also relates to the implementation of service-based measures which are linked to sales incentives; a sales person who is rewarded for product sales only, undeniably leans towards giving services away free in order to sell more products.

#### *Stage 4: Delivery*

It is arguably in the delivery stage that the difference between products and services become most evident. The delivery of services is in its very nature fundamentally different to the delivery of products, since services are created in an interaction with the customer during the delivery process (Grönroos, 2007), and are often highly localized. Complex offerings, such as integrated solutions, often have a long life time, with an associated long delivery time, meaning that service processes are created over time and relationship longevity, which includes trust and commitment, becomes a factor. Furthermore, if services are to be delivered effectively and efficiently, a service infrastructure needs to be in place. This infrastructure often is very different from a product delivery infrastructure, primarily due to the fact that most services (with the exception of ICT based services) are people intensive and heavy in the relational dimension, thereby, creating new cost structures. Moreover, related to this, innovation in services frequently takes place during customer interactions and it becomes

pivotal to create capabilities to capture these innovation streams during the delivery stage. When companies extend into service offerings they must ensure that they have the service infrastructure required and that the competencies needed locally to deliver (and sometimes also to install) are in place. As exemplified by two case companies, third-party service partners can provide this infrastructure and quickly create a service delivery platform. However, by using third-party partners the manufacturers can not take advantage of the service encounter to the same extent. One company tried to manage this by increasing the ICT content in the products and thus increasing the possibilities of virtually substituting the interface.

In this stage, it is critical to be able to point at benefits achieved in monetary terms. However, it is also vital to address intangible aspects in order to increase the customers' positive perception of the provider before the current agreement is re-negotiated and/or a new procurement process starts. This is particularly challenging if the service is of a character that it is not explicitly noticed as long as it works (e.g. delivery of a continuous supply or a full-service rental agreement) but only receives attention during failure. It therefore becomes important to make the successful service operation tangible through various measures such as work reports, continuous meetings, and going through agreed-upon performance indicators. At one case company, regular reports on various maintenance and operation statistics are used to visualize the value delivered over time and to maintain the relationship; similarly an on-line system with continuous updates and real-time information is used for the same reason. Another company holds regular meetings with customers to convey the value created during the delivery stage. This also provides the opportunity to modify and improve processes during a long term contract. Furthermore, even less vital performance cues (Hartline and Jones, 1996) such as the service technicians putting stickers on the equipment on which the service has been conducted are seen and used by some companies as means to strengthen the local

customers' perception of the service quality. In particular, this is a means to create awareness for services that are expected to work continuously without interruption and are noticed only when they do not work.

### *The blurring boundaries of NSD and NPD*

Even if the NPD and NSD projects of the studied companies differ, and need to do so to a certain degree, "customers do not buy goods or services: they buy offerings which render services which create value" (Gummesson, 1995, p. 250). The increasing bundling of products and services into new industrial offerings implies that the NPD and NSD processes are increasingly interdependent and thus, cannot be conducted in isolation from one another. In addition, a strong presence of organizational innovation, the involvement of multiple actors in the development process, the importance of the codifying the knowledge, and other claimed characteristics of services innovation also apply to manufacturing (Drejer, 2004). Thus, companies undertaking a goods-services transition and/or adapting a service logic need to recognize these blurring boundaries between manufacturing and services. In this research this is illustrated by the increasing interest in performance based offerings, where the contracts are centered on customer performance. Here, products and services need to be developed together to ensure optimal functioning as an offering, a typical example being making products easy to service to minimize downtime in rental agreements.

From the perspective of new service offerings feedback loops from service personnel to R&D and/or product development, for example, are important in order to design equipment that is not only easy to assemble in the manufacturing plant but also easy to replace in the field. Particularly for more extensive services such as rental agreements and performance contracts in the companies studied, issues like predictability of maintenance and lifecycle costs are essential, which calls for intra-firm collaboration between the service organization and R&D and/or product development. As services increasingly become information-based

(Kowalkowski and Brehmer, 2008), the technology bundled into the equipment has to support the ICT systems and applications used for service provision and vice versa. In many of the case companies the embedded ICT systems are fast becoming very sophisticated and open up possibilities for remote services such as supervision, maintenance, process improvements, and upgrades. For example, by collecting operations data, one case company is able to offer process improvement consulting and operator training based on actual behavior.

Furthermore, even if the use of cheaper components in manufacturing will result in lower product prices, if the result is lower quality equipment, this will lead to more frequent repair and maintenance. In a short-term perspective, this can have a positive effect on service sales and the utilization of service personnel. In the longer term however, it will lead to deteriorated customer relationships and also obstruct the firm from having high margins on more extensive offerings with higher service content. In addition, on a strategic level, companies have to decide whether new products and services processes should be linked through bundling or not (cf. Johansson and Olhager, 2006).

## **Conclusions**

Research on NSD processes tends to emphasize the earlier parts of the services life cycle primarily addressing development aspects. In this paper, we argue that the latter stages of that life cycle, sales and delivery, must be equally in focus in order for companies to become successful service offering suppliers. In our proposed NSD framework, we also include an initial market sensing stage to address the fact that the impetus for service innovation to a great extent emanates from customer needs. In addition, many companies in our context, which is different manufacturing industries, currently have a number a services in their portfolios but these are unstructured and often supplied free of charge to increase product sales. Further, findings show that service innovation also emanates from local subsidiaries and great potential exists in scaling up those innovations to a larger market.

The framework proposed here is not to be regarded as a process model with discrete phases (see e.g. Scheuing and Johnson, 1989) but rather a framework with four overlapping stages (cf. Edvardsson and Olsson, 1996). Although companies need to have structured NSD processes in place, the complexities associated with various modes of service innovation (cf. Gallouj and Weinstein, 1997) means that it is critical to have the capability to also sense and seize emerging innovation opportunities in a less formal, ad hoc manner. Thus, depending on the company and the market situation, the steps within each of the four stages are likely to differ notably. Nevertheless, we have seen that including all four stages (in one form or another) in NSD facilitates the success of not only developing new service concepts, but also of taking the innovative concept to the marketplace.

Managing NSD proactively and strategically is vital in order to achieve momentum and sustain competitive advantage as services are increasingly becoming a key differentiator. Compared to traditional NPD, NSD requires less initial investment in Stages 1 and 2 but Stages 3 and 4 are typically more time-consuming, resource intensive, complex to manage, and also costly. It is therefore important to consider and manage these latter stages before launching a service.

#### *Future research*

Several promising avenues for further research can be identified. Close studies and in-depth knowledge especially into the latter stages of the framework, Sales and Delivery, should yield many interesting insights for both practitioners and academics. Related to this is the issue of how to communicate the value of services during these two stages, and how to visualize the service offerings to convey both tangible and intangible elements (cf. Kindström, *et al.*, 2008). This is becoming more and more important as the service content increases. Another area for future research is to go beyond the supplier-customer dyad and study service innovation in the business networks, which would include third-party service providers,

external consultants, IT suppliers, etc. Finally, we believe that investigating NSD-related organizational learning in a manufacturing context is a promising research opportunity.

### *Managerial implications*

There is a potential danger that a too structured and formalized development and innovation process will inhibit exploration efforts, especially on a local level, in NSD since it relies heavily on interactions and local initiatives. If NSD, as is often the case with NPD, is a centralized process this risk increases. Therefore managers need to balance the need for structure with explorative encouragements. Evidence here shows that ad-hoc service innovations can be a powerful source for innovation and value creation.

As the service content increases, the delivery system and infrastructure need to be well developed. When extending their service business, many companies rely, at least initially, on local third-party service partners for service delivery. This can be a speedy approach to ensure service delivery capacity, but some problems can occur. First, depending on how critical the service is for the buyer, the behavior and quality of the third-party has a direct impact on the perceived value and performance of the offering making it pivotal to manage the third-party's processes also. Second, by relinquishing the customer interface to a third-party, valuable information can be lost and innovation hampered.

Although this study is limited to manufacturing companies, the importance of recognizing the Sales and Delivery stages in the NSD process also applies to traditional service industries. For example, a root cause for the catastrophic opening of London Heathrow Airport's brand new Terminal 5 in early 2008 was the insufficient training of employees and the lack of baggage handlers working with the so-called state-of-the art baggage system (i.e. inadequate delivery). Furthermore, management culture was poor at ensuring that instructions had been fully implemented on the operational level (Willman and Done, 2008). However, we argue that due to the difficulties of capitalizing on new service offerings (cf. Gebauer *et al.*, 2005), it is



particularly important to make the Sales and Delivery stages explicit in companies and contexts where the focus has been (and, often, still is) on product development and sales.

To sum up, an integrative approach to NSD and NPD (i.e. offering development) is emphasized. The need for such an approach is particularly evident in industries where the traditional products have economic lifetimes of several years, or even decades. This implies, among other things, that the importance of service interactions and infrastructure and customer co-innovation should be recognized and that service-related aspects receive a more central role in manufacturing companies' development and innovation processes.

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