SERVICE ORIENTATION AND INNOVATION IN THE STRATEGIES OF MANUFACTURING SMES

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ABSTRACT

Manufacturing SMEs have an important role in the supply chains of larger firms. When large firms servitize their business, also SMEs may need to consider their strategies concerning services. Limited research attention has been directed at servitization as a strategic choice of SMEs and its different manifestations in service orientation and innovation. The aim of the paper is to increase understanding on the role of services in the strategies of manufacturing SMEs. The focus is on service orientation and innovation, and identification of differences between component manufacturers and equipment manufacturers. A qualitative, exploratory research strategy is employed in the context of nineteen technology-intensive manufacturing SMEs. The findings from SME managers' interviews show that equipment manufacturers have a stronger service orientation than component manufacturers in terms of share of services, orientation to process-centric services, and service variety. The majority of respondents have experiences with in-house service development primarily, and customer-centric service development took place only in a few companies. Furthermore, companies featured services in their strategies either minimally, reactively or proactively. Equipment manufacturers were more likely to take the proactive approach whereas component manufacturers were more reactive or fully avoided services. This paper offers valuable knowledge about the ways in which technology-intensive SMEs feature service orientation and innovation into their strategies. Besides changes in offerings, capabilities and value networks, servitization can drive changes in the business scope and innovation processes of the manufacturing SMEs.

Keywords SMEs, manufacturing, service orientation, service innovation, servitization, strategy

INTRODUCTION

Background

Manufacturing firms are moving towards industrial service business by adding intangible components to their offerings. By complementing goods with services manufacturing firms have sought new ways to gain competitive advantage, maintain revenue streams and profitability in the future, and create closer relationship with customers (Wise & Baumgartner 1999). As the importance of services and service business has increased in industrial firms, also service innovation is becoming increasingly relevant.

The industrial context sets various requirements for service innovation (Kindström & Kowalkowski 2009). For example, service innovation needs to take into account the customers' needs and requests (Panesar & Markeset 2008), the process and logic of service delivery (Kindström & Kowalkowski 2009), and the influences of existing manufactured goods as an essential part of the firms' offerings (Kindström & Kowalkowski 2009, Gebauer et al. 2008). Much of previous research has focused on large firms' service orientation and innovation (Gebauer et al. 2008, Panesar and Markeset, 2008), whereas the perspective of small and medium sized enterprises (SMEs) is only recently gaining attention (Gebauer et al. 2010, 2012, Paiola et al. 2012). There is a need to understand the practice of service innovation more profoundly across different types of manufacturing SMEs.

SMEs differ from large firms in many ways as they tend to lack resources and capabilities for innovation (Hausman 2005, Narula 2004), they have less specific divisions of labor (Vossen 1998), and lower level of bureaucracy (Rothwell 1989) than large firms, which has an effect on innovation processes and outcomes. More innovation and service specific differences have also been listed such as SMEs' preference for risk aversion (Lasagni 2012), lack of systematic development processes (McAdam et al. 2007), and bigger capacity for absorbing new knowledge and technologies (Vossen 1998).

Also manufacturing SMEs have pursued services for the purposes of differentiation, profit and growth expectations, decreased price competition, enhanced customer relations, and balancing the cash flow (Malleret 2006, Gebauer et al. 2010, 2012a). In this paper, we focus on service orientation as the company's espoused or enacted strategic choice that is reflected in its processes, practices and culture and that may either augment or replace goods orientation. Service orientation also should reflect on service innovation, i.e., whether and how new services are developed and existing services are improved. Manufacturing SMEs may have an integrated perspective of products and services, which can affect the service innovation process (Kindström & Kowalkowski 2009, Gebauer et al. 2008a, b).

Goals and research questions

The purpose of this study is to explore the practice of service orientation and innovation as part of the strategies of manufacturing SMEs. The goal is to complement previous strategic-level explorations of SMEs' service business development with new knowledge on the practice of service orientation and innovation. The focus is on two main research questions:

1. How do manufacturing SMEs differ from each other in their service orientation?
2. How is service innovation featured in the strategies of manufacturing SMEs?

A qualitative, exploratory study is conducted in one region of Finland, and the focus is limited to technology-intensive manufacturing SMEs. As this is a prestudy for a

broader investigation of the region's manufacturing SMEs, the data is collected with a limited set of companies and interviewees. After this study, we intend to build a framework for a broader questionnaire study on service orientation and innovation in SMEs.

LITERATURE REVIEW

Servitization of SMEs

The concepts of service business development (Gebauer et al. 2010, Gebauer et al. 2012, Palola et al. 2012), servitization (Baines et al. 2009) and service infusion (Kowalkowski et al. 2013) have received more attention in the past few years both in large enterprises and in the context of small and medium-sized manufacturing firms. Neely (2008) conducted an extensive cross industry database study and found that small manufacturing companies are less active in their servitization, but they tend to benefit from servitization more than large manufacturing companies, in terms of profit as a percentage of sales revenues. Many other studies have reported SMEs' servitization in a fairly positive light, as a strategic choice worth considering. Gebauer et al. (2012b) state that understanding the performance impact of servitization to manufacturing companies is still limited, and there is evidence for both negative and positive impacts in the literature. The study of Fang et al. (2008) in U.S.-based publicly traded manufacturing companies explored in what conditions servitization actually contributes to company value, if at all. They found that the effects of servitization on company value become pronounced only when the level of service sales reached a critical mass. They also found that servitization is more effective for companies whose service business is closely related to their core product business.

Transforming from a manufacturer into a service provider is a significant strategic choice and managerial challenge for companies (Oliva & Kallenberg 2003). In the continuum between pure product firms and pure service firms, companies may evolve by changing their customer interactions from transaction-based to relationship-based logics, or by changing the focus of the value proposition from product centricity to the end-user's process centricity (Oliva & Kallenberg 2003). Previous studies have covered the success factors of changing toward service business (see e.g. Oliva & Kallenberg 2003, Tsang 2002), the importance to adapt customer-oriented way of thinking and acting (Grönroos 2011), and cultural changes (Mathieu 2001b) in association with service business transformations. Increasing attention is directed at integrated solutions and ways to combine goods and services in customer-oriented offerings (Brax and Jonsson 2009, Windahl & Lakemond 2010). Current understanding is that service business will alter the ways in which previously product and technology-centered companies operate (Araujo & Spring 2006, Brax 2005, Martin & Horne 1992, Oliva & Kallenberg 2003).

Some research has already investigated alternative strategic maneuvers that companies may make in different circumstances, and their associated benefits and costs (Mathieu 2001b). Also, alternative growth strategies through services have been explored, in the context of product-centric B2B businesses (Raddats & Easingwood 2010). To succeed in servitization, manufacturing SMEs should consider their organizational capabilities (Gebauer et al. 2012, Paiola et al. 2012), business environment (Gebauer et al. 2010) and business networks (Kowalkowski et al. 2013) as a part of the service business development efforts. Some characteristics in the SMEs' business environment such as distribution networks (Gerbauer et al. 2010) or

larger competitors' pricing strategies (Malleret 2006) may inhibit smaller firms to develop their service business.

Service orientation and strategy in manufacturing SMEs

As SMEs may lack both innovation resources and service resources, a key question in the beginning of servitization is the orientation and strategic need for services. Service orientation can be considered as the company's choice in its business strategy (Homburg et al. 2002) and it is reflected in the organizational culture (Nuutinen & Lappalainen 2012) and structural parameters (Homburg et al. 2002), and it may either augment or replace goods orientation. According to Homburg et al. (2002), service orientation of a business strategy can be defined in terms of three dimensions: the number of services offered, how many customers these services are offered to (broadness), and how strongly these services are emphasized in the business. Homburg et al. (2002) study was conducted in a consumer-oriented retail environment where the range of services across firms was expected to be rather similar, and they studied contextual, store and customer characteristics as potential antecedents of service orientation.

The service oriented strategy of the firm is reflected on customer relationships, capabilities, and network management. Manufacturing SMEs need customer-oriented attitude to succeed in their service business development efforts (Paiola et al. 2012). This attitude is essential for understanding the individual customer needs and for designing service packages according to these needs. Building intimate knowledge about the customers and their needs will probably serve as hard-to-imitate resource for the customers (Gebauer et al. 2010).

Successful implementation of the chosen new service strategy requires co-evolvement of a set of dynamic and operative capabilities which vary depending on the pathway given by the business environment (Gebauer et al. 2012, Paiola et al. 2012). This capability development takes place at operational level in e.g. corporate culture, human resource management, and organizational structures, while at the business level it requires dynamics in sensing, seizing and reconfiguring the existing operational capabilities (Gebauer et al. 2012).

Network management has been emphasized as one of the key aspects in succeeding with SMEs' servitization efforts (Kowalkowski et al. 2013, Paiola et al. 2012). Kowalkowski et al. (2013) identified nine different mechanisms or value constellations for SMEs to conduct service business in their networks. Gebauer et al. (2012a) explored different pathways for SMEs' service business development: incremental enhancement of relational value, financial value-seeking, and radical value constellation leaps. Their study with nine SMEs discovered capabilities relevant to each pathway, suggested that each pathway has somewhat different underlying drivers, and proposed that SMEs do have similar servitization pathways as large companies that are positioned as system suppliers. The qualitative study with seventeen SMEs by Paiola et al. (2012) directs attention to the way required capabilities are developed among different distribution channels and customer bases and suggests four key phases of service business development that are somewhat different, depending on the distribution channels and customer bases.

Service innovation in manufacturing SMEs

Service innovation in small and medium sized firms has been discussed broadly from the viewpoint of general service industries or knowledge intensive business services (KIBS). Most of the studies in the context of manufacturing firms' service innovation

have concentrated on large companies (Ettlie & Rosenthal 2012, Gebauer et al. 2008a, Panesar and Markeset 2008). In the case of business to business service companies there are only a few studies that have included also small and medium-sized companies to their data.

Customer has been considered as an integral part of new service development (de Brentani 1995, Vermeulen 2005). The interest has been on customer-oriented new service creation, its success, and its prerequisites, tools and processes (Alam & Perry 2002, Bitner et al. 2008, Edvardsson et al. 1995, Neu & Brown 2005).

The formality of new service development process has gained interest in most of the studies concentrating on SMEs' service innovation efforts (de Brentani 1995, Vermeulen 2005). For example, de Brentani (1995) found that NSD process formality was found similar, but quite low in importance, in both small and large companies. For larger companies this notion was more surprising but in the case of smaller companies it makes sense that the development process is more customer-driven and spontaneous. However, this does not mean that smaller companies should not manage their NSD process effectively or include at least some level of formality into it (de Brentani, 1995).

Development efforts should be concentrated on services that can be created with expert capabilities of the firm (de Brentani 1995). This leads to the notion that for developing radically new services a firm might have to be prepared for making changes to existing routines in order to develop firm's capabilities (Hillebrand et al. 2011, Njissen et al. 2006). de Brentani (1995) guides smaller firms to stay close to the types of service offerings for which the company is known and has a strong expertise when developing a new service. Smaller firms usually lack "size-proxy" which means that small firms do not have the same kind of credibility as large firms, both in terms of introducing new-to-the-firm services to customers and in terms of attracting the capital and human resources required for developing and producing these new and different service offerings. Hence, for small service companies, diversifying outside of their known sphere of expertise might be both difficult and unlikely to succeed.

To overcome their liability of smallness SMEs can utilize external networks to gain knowledge and other resources (Vermeulen 2005). This aspect has been widely discussed among SME innovation literature (Lasagni 2012) but in the context of service innovations there seems to be lack of empirical evidence.

RESEARCH METHODS

Research design

We employ a qualitative, exploratory research strategy with technology-intensive manufacturing SMEs in the region of Central Finland. This research design was chosen so that a variety of different manufacturing SMEs could be covered, and to enable an inductive approach to the analysis, as previous research has not, yet, covered service orientation and innovation sufficiently in the manufacturing SMEs' context. This prestudy will, thereby, assist in developing a framework on service orientation and innovation to be tested with a broader sample of SMEs.

In Finland over 99 percent of the companies are SMEs and they employ almost 65 percent of the whole working population and account for 53 percent of the annual turnover. The economic growth derives from SMEs at the moment as the large corporations are losing more jobs than they are able to create. The trend is similar in all of Europe and according to European Commission, SMEs have created 85 percent

of new jobs lately and they are the key to ensuring economic growth, innovation, job creation, and social integration in the EU (European Commission 2015).

Data collection

Semi-structured interviews were conducted in 19 SMEs with 30 managers and experts. The companies are metal processing companies, machine manufacturers, wood processing companies, factory builders, engineering companies and software companies. We acknowledge that the nature of the business differs between these industries and the context is taken into account during the analysis. The target companies can be divided into component suppliers and original equipment manufacturers (OEMs), which enables a comparison across value chain positions. Component suppliers represent mainly companies that do metal and wood processing. OEMs are machine manufacturers, factory builders, engineering companies and software companies.

Table 1 shows an overview of the number of companies, number of interviewees and average duration of interviews. The smallest target company employs 6 people and the largest 220 people. The annual revenues of the companies vary between 800 KEUR and 26 MEUR. The selected number of companies gave a good view of the current state of the manufacturing SMEs in central Finland.

Table 1. An overview of the number of companies, number of interviewees and average duration of interviews in target SMEs.

	Number of companies	Number of interviewees	Average interview duration (min)
Component suppliers	10	15	51
OEMs	9	15	54

We used purposive sampling to select interviewees to achieve the best possible view of SMEs in the region. A local business development organization helped in selecting the contact persons in the SMEs. All were contacted personally with a short description of the purpose of the research and invitation to participate in a result seminar after the data collection and analysis, and all agreed to participate in the study. Mostly the interviewees were the CEOs of the companies. Some interviewees were office managers, R&D managers, production supervisors, sales managers, plant managers and other managers.

The interviews were conducted using a semi-structured interview protocol. The interviews covered SME strategies generally, specific actions of service development and offering, servitization and significance of services in strategies, and strategic changes from the perspective of different functions. In addition, some other topics were covered as this study is part of a broader research project.

Data analysis

The interview data were content analyzed iteratively based on inductive coding and reflection on earlier research. When coding the data on service orientation, we initially attempted to use Homburg et al. (2002) framework on service orientation, but the service profiles of the firms differed significantly across companies and from retail services and, thereby, the absolute numbers of services or customers did not differentiate the companies properly. Therefore, we explored the data more inductively and decided to analyze 1) the share of services in the revenue of the firm,

2) process vs. product-centricity of the service, and 3) variety of services in the business. For service innovation, we coded and analyzed 1) the company's level and ambition of advancement in the servitization process, and 2) the practices of the in-house vs. customer-oriented service development process. For both research topics, we compare the findings between OEMs and component manufacturers. We use cross-tabulation, illustrations and selected quotes from the interviews, to highlight the key issues in the results.

The validation of results occurred in three main steps. After the analysis, the key findings were first presented as a slide set to a team of representatives the local business development organization with in-depth knowledge of the SMEs in the region. They were allowed to comment and critique the findings. At this point the comments primarily related to the clustering of the firms on other domains than those relevant to this particular paper. Then, the results were written into a report, covering the findings as a whole, and the report was sent for all the participating companies for checking and verification. Changes were not requested by the company representatives at this stage. Finally, a result seminar and workshop was organized for the SME representatives, and the results were presented and discussed, primarily to validate the findings and identify next steps for the research.

RESULTS

Service orientation in manufacturing SMEs

When asking the interviewees about the significance of services, the results clearly indicate that views of company representatives are very polarized. A majority of the interviewees emphasized that, from their point of view, services are an essential part of the offering of a successful modern company. However some of the interviewees, especially from component manufacturing companies, did not see services adding significant value in their business. More specifically services were seen as something that the company must offer, as there is a strong buzz around services in the public discussion, and all the competitors and other companies in the industry are offering services.

Even if the majority of the company representatives consider services as an essential part of their companies' business, the service offerings of the manufacturing SMEs are mainly quite limited. The service orientation varies greatly between the studied SMEs – in some of the companies there has been a clear focus in increasing the share of services in the revenue whereas some companies have not taken any actions to increase the sales of services. Also the nature of the service offerings varies a lot among the companies because some of them offer only basic aftermarket services (spare parts, maintenance) whereas others offer even consulting and operative services. Some generalizations may be done inside specific industries that the companies represent. Table 2 introduces the share of services of the companies' total revenue and number of component manufacturers and OEMs in each segment based on the interviews.

Table 2. The share of services of companies' total revenue and the number of companies in each cluster.

The share of revenue from services	Number of component manufacturers	Number of OEMs
0 %	2	0
< 1%	3	1
< 5%	3	3
< 10%	0	2
< 50%	1	1
< 100%	1	2

Table 2 indicates that services account for less than 5 percent of the total turnover in most of the target companies. The companies with the largest share of services are mainly engineering companies whose primary offerings are in fact services. Also services account clearly on average for a greater share of companies' revenue among OEMs the than among component manufacturers. One of the company representatives claiming that the share of services is 100 percent of the company's revenue, considers even machining metal parts and building hydraulic assemblies as services. According to that respondent, *"You have to see this whole business as a service because our customers could do this also by themselves. Nothing prohibits them to purchase these machines and make these products themselves but at this time they have decided to buy the service from somewhere else."* This claim is not in line with the definition of industrial services, but characterizes the thinking logic of some respondents.

According to the respondents, in many of the companies' services are still considered as add-ons for products and can be considered product-centric services. Examples of these are: after-market services (maintenance, spare parts, repairs and improvements), assembling, coating, engineering and installation. There are also services that are more process-centric, including: consulting, data collection, commissioning (i.e. supporting the implementation of a certain software or solution), operation, and training. The target SMEs offer both process-centric and product-centric services. The service offerings differ quite a lot between different companies. Table 3 shows the different kind of services produced among the component suppliers and OEMs and the number of companies providing that service.

Table 3. The services produced by the component suppliers and OEMs and number of companies providing that kind of service.

	Services	Number of SMEs
Component manufacturers		
	Installation	4
	Assembling	2
	Coating	2
	After market services	1
	Engineering	1
OEMs		
	After market services	5
	Training	4
	Consulting	3
	Engineering	3
	Data collection	2
	Commissioning	2
	Operation	1

As table 3 shows, most of the produced services are mainly related to the products that are produced by the companies. However, there are also quite a few services that represent the process-centric end of the product-service-continuum like engineering, consulting, data collecting and operating services. The target OEMs offer product-centric and process-centric services whereas component manufacturers offer only product-centric services. Figure 1 illustrates the different services offered and focus areas of the component manufacturers and OEMs.

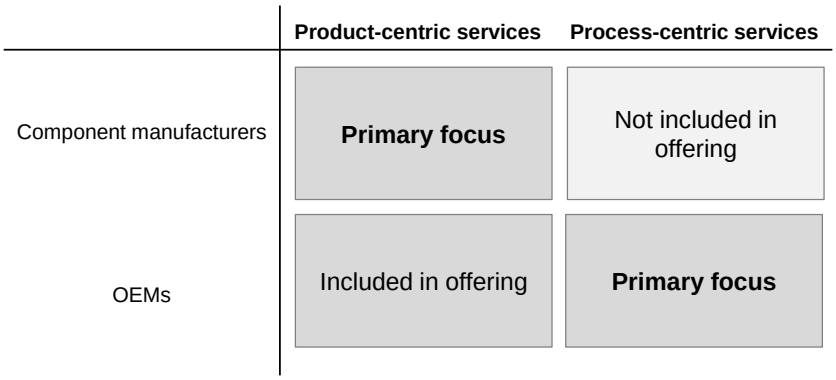

Figure 1. The nature of service offerings and focus areas of component manufacturers and OEMs.

Service innovation in manufacturing SMEs

Service innovation in the SMEs varies a lot between the companies. In some companies, new strategic goals have been set to focus more on services. For example one of the respondents mentioned that *"Now we are focusing more on developing new services concerning preventive maintenance so we can offer more information for the customer about their process."* Some of the respondents informed that even if no services are produced at the moment there is a clear desire to do so in the future.

The interviews show that in some of the companies there is a really strong will to put more effort on service development and production. For example a representative of one OEM mentioned that *"Lately we have put a great effort in new service development. For example, we have been trying to develop data collection abilities for our products so we can offer more comprehensive reporting services in the future. Also we have developed our maintenance services even further lately."* However, also very contradictory findings can be made based on the interviews as one OEM's representative said: *"After sales and spare part sales account for only 2 or 3 percent of our total revenue so it is not a business per se, and actually we don't even want it to become a significant business. We are just trying to make our products as reliable and durable as possible."* Also these comments show that the studied SME field is quite divided in terms of servitization.

The ongoing servitization process is in progress especially among OEMs. For example one of the respondents noted that *"At the moment we are forcing our organization to provide more services for our customers. We have been seeking for new service opportunities with help of our customers and finally received some potential ideas."* Some companies have plans to complement the cash flow from products through services. One of the representatives of an OEM said that *"We are planning to implement more maintenance services to improve the revenues of services and to achieve more stable cash flow."* The attitude towards services differs quite a lot between OEMs and component manufacturers. For example one representative of

a component manufacturer noted that: *"I can't say that we have developed any new services. However, we are trying to productize our services to support and market our products."* Another interviewee told that: *"Our earning logic is based on products and projects and we do not offer any services."* These comments illustrate the general mindset among the component manufacturers. Based on the interviews, machine manufacturers are the ones who have the biggest interest in growing the sales and development of services.

The interviews indicate clearly that the processes of new service development vary between the target companies. Two archetypes of service development processes can be identified, labeled as in-house service development and customer-centric service development. The main focus across the target companies is clearly on the in-house archetype.

In-house service development can be described in the context of this research as service development primarily using the manufacturing firm's internal resources. New service development is usually initiated based on customer input or based on ideas generated in-house. One interviewee remarked: *"Based on the customer needs, very lately we have started to offer services so that the amount of work required by our customers could be minimized."* Another interviewee emphasized the internal starting points of service innovation: *"We have developed our services based on problems that we ourselves have noticed. The aim has been to be able to reduce the amount of work needed from us and the customer."* After the initiation of the service development process, the service is developed in-house from scratch with limited or no customer engagement. After the development is completed, the service is launched fully throughout the customer groups and offered for all customers simultaneously. Afterwards, the service is usually developed even further based on internal observations or client input.

Only a few of the interviewees indicated that in their company services are developed in close cooperation with the customers. According to the respondents, also this kind of a service development process can begin due to customer input or based on internal idea generation. The main difference compared to the in-house service development is the level of customer engagement during the actual development process. According to one interviewee, regular check points are held with the customer, during which the idea will be further developed and iterated to ensure that the service meets the customer needs. In the latter stages of the service development process, pilots are run with selected customers. By doing this, it can be ensured that the service is fully relevant for the customer and no service components are missing. After the pilot, the service will be developed further and finally launched to the full customer base. After the launch, the development continues even further based on the internal observations or customer input. Figure 2 illustrates the different service development archetypes identified. Additionally, the phases of service development, where customer is involved, are highlighted.

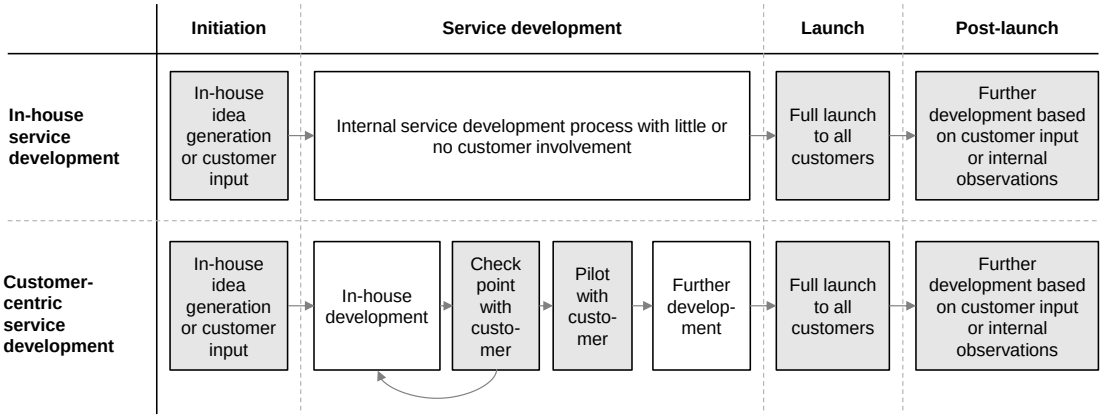

Figure 2. Service development process archetypes among target companies.

The main difference between in-house service development and customer-centric service development is that during the launch of a customer-centrically developed service, the service has already been tested and the functionality of the concept has been proven. Services developed fully in-house seem to be more applicable for companies offering less complex products and services, such as machined steel parts with special coating. As mentioned earlier, a majority of the target companies used the in-house service development process.

Based on the interviews, there are also companies where no services are produced or developed. According to one respondent: ”*We are not developing new services and we don’t have plans to do so in the future either.”* In companies where services are not developed, the process for service development cannot be identified, and this has been left out from Figure 2.

Strategic approaches to service orientation and innovation

As mentioned previously, some of the investigated companies are very focused on services in their strategies, whereas others have no interest in providing any services. Naturally in most of the companies the attitude towards services is somewhere in between these extremes. According to some company representatives, the reason for providing services is to boost the sales of tangible products. One respondent remarked that in their company services are considered as a fully independent business segment. All interviewees do not know or understand the strategic role of services. For example, one interviewee representing a software company brought up that in their company there is no significant focus on services, even if services account for a half of the company’s revenue.

Based on the interviews it is possible to identify three different strategic approaches to service orientation and innovation in manufacturing SMEs: very small focus on services, reactive approach and proactive approach. Table 4 illustrates different strategic approaches and examples of actions that can be associated with each kind of approach, as identified in the interview data.

Table 4. Alternative strategic approaches to service orientation and innovation, and examples of actions in the studied firms.

Strategic approach	Actions	Component manufacturers	OEMs
Proactive	• Developing services internally based on customer needs • Piloting internally developed services with customers • Preventive maintenance • Offering services to boost sales • Strategy to boost service sales • Aim to offer long term service contracts	1	5
Reactive	• Developing services based on customer requests • Reactive maintenance • Often services are closely related to products • Services are offered only when requested	5	3
Very small focus on services	• No service offering • No development of new services	4	1

By the proactive strategic approach we mean an active attitude towards new service development and service sales work in the manufacturing SME. The reactive strategic approach represents a more passive attitude towards producing services, and developing services primarily based on direct customer requests. There is a clear difference between the strategic approach among component manufacturers and OEMs. OEMs tend to have a more proactive approach towards services whereas component manufacturers have a more reactive approach towards services, or no services at all.

DISCUSSION

This study explored service orientation and innovation in manufacturing SMEs that considered servitization in their strategies in different ways and varying degrees. The results revealed that the strategic approaches to services varied from negligent to reactive and proactive. Original equipment manufacturers were more likely to take the proactive approach whereas component manufacturers were more reactive or fully avoided services. As large manufacturing firms are undergoing servitization, it is expected that their SME supplier's roles in the supply chains will begin to change, too. The results show that different SMEs face servitization in quite different ways, thereby lending support to earlier research (Kowalkowski et al. 2013, Gebauer et al. 2012) and supplementing previous findings through the particular focus of service orientation and innovation.

Differences in service orientation

For the first research question, we explored how the different manufacturing SMEs (i.e. component manufacturers and OEMs) differ from each other in their service orientation. Due to the very different products and contexts of the SMEs, we had to deviate from the service orientation framework of Homburg et al. (2002), earlier applied in consumer-oriented retail environments. In our study, service orientation

covered: the share of services in the revenue of the firm; process vs. product-centricity of the service; and variety of services in the business. In this way, we were able to explore the relative role of services in the manufacturing firms' business and compare the companies' service orientation even across very different contexts. As earlier research has already pointed out the need to study SMEs' innovation activities with awareness of the context (McAdam et al. 2007), we suggest that the concept of service orientation indeed must be assessed in relative terms that allow comparisons across different contexts.

The findings from SME managers' interviews show that equipment manufacturers have a stronger service orientation than component manufacturers in terms of share of services, orientation to process-centric services, and service variety. Where earlier research has concentrated on capabilities (Gebauer et al. 2012, Paiola et al. 2012) and cooperation in value networks (Kowalkowski et al. 2013, Gebauer et al. 2012a, Paiola et al. 2012) as part of SMEs' servitization efforts, this study offers new information about service orientation as an antecedent to the capabilities and cooperation. Also, this study has compared component manufacturers and OEMs, which clearly adds to earlier research that either has not differentiated between different types of companies, or has primarily focused on OEMs. As component manufacturers' service orientation can be considered as weak, services may take a very different role in the firms' delivery networks (e.g. another firm may deliver services). Value creation in such interactive triadic settings may become very challenging.

Service innovation in SME strategies

The second research question inquired how manufacturing SMEs cover service innovation in their strategies. The results showed that the attitudes, focal domains, and maturity level in service innovations varied across the companies. In particular, the service innovation processes were divided into two process archetypes. The majority of respondents had experiences with in-house service development primarily, and customer-centric service development took place only in a few companies. Earlier research has focused on the process and formality of service innovation in SMEs (de Brentani 1995, Vermeulen 2005), and customer involvement in the innovation processes (Alam & Perry 2002, Bitner et al. 2008, Edvardsson et al. 1995, Neu & Brown 2005). Although this study, too, revealed that the early involvement of the customer in the innovation process assists in a fluent service launch, the frequent focus on in-house service innovation processes challenges the customer-centricity assumption. For some companies, knowing the customer's need properly can already be a sufficient driver for developing the right services, and in-house development can be carried out efficiently. It would be important to consider what are the occasions in which in-house service development are particularly successful, compared to customer-centric service development.

CONCLUSIONS

Contributions

This paper offers valuable knowledge about the ways in which technology-intensive SMEs feature service orientation and innovation into their strategies. The significance of services varied greatly between the studied SMEs: in some of the companies there was a clear focus in increasing the share of services in the revenue whereas in other companies no actions have been taken toward services. The nature of the service offering varies across the companies because some companies offer only aftermarket

services and others offer value-added services such as consulting and operative services. We have reported a clear division of SMEs' service orientation into product-centric and process-centric services, and highlight how component suppliers and OEMs differ from each other in their service orientation and innovation. Besides changes in offerings, capabilities and value networks, servitization can drive changes in the business scope and innovation processes of the manufacturing SMEs.

Especially, the results show proactiveness, reactiveness and negligence as the dominant three approaches to service innovation in the strategies of SMEs. The results complement previous research on SMEs' service business by reporting experiences across a variety of firms, comparing them across value chain positions, and taking the viewpoint of innovation practice. As large manufacturing firms are increasing service orientation in their business, it is imperative that also SMEs in the large firms' value chains engage in service-oriented innovation.

Managerial implications

The results offer three main implications to management. A key finding was the new way to map service orientation in manufacturing firms, in terms of share of services, process vs. product-centricity of the service, and variety of services in the business. New measures could be developed, to follow-up the development of service orientation. Particularly in the early stages of servitization it is important that the firm can assess its progress and design action plans to move forward.

Service innovation processes have been discussed broadly in the literature, and customer involvement has been emphasized. Our results have shown that SMEs may carry out service innovation as an in-house activity - without much involvement of the customers before the launch phase. The findings in one way encourage the firms to involve customers earlier on in the service innovation process, in order to avoid potential problems in the launch phase. On the other hand, the findings may also imply that also in-house service development may be quite effective, if it is done based on a good understanding of customers' real needs. Therefore, we encourage managers to consider in which occasions they can successfully use in-house service development as opposed to customer-centric service development.

One of the key results dealt with the proactive, reactive and negligent approach to services in the SMEs' strategies. Servitization literature has typically focused on firms that are clearly and with determination moving towards services, whereas the no-services option has not been covered. Our findings indicate that also the reactive and no-services options are viable for manufacturing SMEs, because they may lack resources and they need to focus on their strategic core business. In such occasions, servitization may occur in some other parts of the value chain, by some other stakeholders. Managers need to consider the strategic alternatives carefully so that they can take a justified stand towards services, when customers may begin requesting them.

Limitations and ideas for further research

The study is limited through the focus on manufacturing SMEs in the metal and engineering sector, and in one region in Finland. Even if rather diverse firms were reached through the local business development organization, it is possible that the target firms differ from other firms e.g. in terms of activeness, innovativeness, success, or other factors. The idea is to continue this prestudy through developing a robust theoretical framework on service orientation, service innovation and some

other factors, and reach a broader sample of manufacturing SMEs to test and validate the findings.

The choice of interviewees was purposively focused to managers and experts either in charge of or at least aware of the strategies of the manufacturing SMEs. The number of interviewees per firm ranged from one to three. The informant choice causes a limitation to the findings. It is likely that all relevant issues regarding service innovation practices and processes are not revealed by the manager-centric sample. In-depth case studies with selected firms taking a more holistic sampling within companies are suggested, to develop further the knowledge on service innovation practices. The cases could then represent the three different strategic approaches of no services, and reactive and proactive approach to services.

With SMEs' limited resources, it is typical that "everybody does everything". It is not really clear, who in the SMEs engage in service operations and innovations. In-depth studies are needed, to delve deeper into the planning and collaboration in service work. As SMEs need to develop some degree of service orientation in order to build up their capabilities for services, the micro-level activities following from service-oriented strategies should be studied further, to map the emergence and evolution of service capability.

Above, we have pointed out the option of manufacturing SMES *not* to move towards services and the prospective challenge of value creation with other firms that may take care of the services in the delivery chain. Service delivery in triadic settings among the SME manufacturer, customer, and external service provider could be an additional relevant topic for further research.

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