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Organising servitization: an in-depth case study

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Why this paper might be of interest to Alliance Partners:

Transitioning towards service provision has been suggested as an advisable strategy for manufacturers responding to price competition. Servitization refers to the transition process of adding services into a goods-based offering, where the importance lies in the relationship between the corporation and the customer. Instead of viewing services and goods from a traditional point of view, servitizing companies offer bundles of products and services.

This paper identifies the structural changes that are needed when a manufacturer seeks to increase its service provision. Using a longitudinal case study design, we explored the organisational changes that took place as a manufacturer shifted to service provision. The paper illustrates how different organisational tensions emerged during the shift to services and how the service teams self-organised in response to these tensions, in advance of management's decision to re-organise.

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Organising servitization: an in-depth case study

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Abstract

Manufacturers are transforming their businesses towards greater service dominance. The literature suggests that service provision can offer a means of differentiation and competitive advantage for manufacturers to operate in global, highly competitive markets. While much has been written about this transformation, there are relatively few studies of the detailed organisational design aspects of combining manufacturing and service operations within one organisation. This paper identifies the organisational design characteristics that are needed when a manufacturer seeks to increase its service provision. Using a longitudinal quasi-experimental design, we explore the organisational changes that took place as one manufacturer shifted to service provision. The paper illustrates how different organisational tensions emerged during the shift to services and how the service teams self-organised in response to these tensions, in advance of management's decision to re-organise.

The manufacturing industry in developed economies has experienced significant transformation in recent years. Competition has intensified, not least because of the growth of emerging economies especially in Asia, South America and increasingly, the Middle East. To cope with this increased competition, many commentators have suggested that manufacturing firms in developed economies should expand their role in the value chain by seeking to innovate and design new products and services so they do not have to compete on the basis of cost alone (Porter & Ketels, 2003). Therefore, this paper will examine the emergence of servitization in the manufacturing industry (Baines, Lightfoot, & Kay, 2009; Oliva & Kallenberg, 2003; Wise & Baumgartner, 1999). Servitization encourages manufacturers to increase their service provision in an attempt to achieve higher margins, a more stable flow of revenues and a better competitive position (Martinez, Bastl, Kingston, & Evans, 2010).

The servitization literature compares the key characteristics of service operations to those of traditional manufacturing. In addition, some authors have highlighted the challenges related to servitization (Baines, Lightfoot, Benedettini, & Kay, 2009; Gebauer & Friedli, 2005; Wilkinson, Dainty, & Neely, 2009). Much of this literature focuses on the difficulties of managerial decision-making and strategy-formation, as well changing organisational cultures and mindsets. The benefits of shifting towards services and combining products and services have been examined from a variety of perspectives. Initially, the marketing perspective was emphasised in the literature and product-related services were seen mainly as a way to react to changing customer needs and to attain critical information from

customers (Lele & Karmarkar, 1983; DeBruicker & Summe, 1985; Hull & Cox, 1994). The underlying theme in these studies was the recognition of change that took place in the manufacturing industry. For example, Wise and Baumgartner (1999) refer to manufacturers moving downstream, Martin and Horne (1992) address the move towards a service orientation and Oliva and Kallenberg (2003) discuss the transition from products to services.

In addition, the operations management perspective has gained attention. This research has covered, among other things, the delivery channel design for services (Armistead & Clark, 1991; Loomba, 1996; Goffin & New, 2001; Johnson & Mena, 2008) and the development of new services as an area of exploration for manufacturers (Menor et al., 2002). Recent literature has questioned why firms are servitizing and three main reasons have emerged: strategic, customer needs and the competitive advantage that services can provide (Anderson et al., 1997; Shepherd & Ahmed, 2000; Davies, 2004; Davies et al., 2006; Martinez et al., 2010). A rich stream of organisational design literature has not yet been included in the debates on servitization. This paper seeks to rectify this oversight by drawing on organisational theory to explain some of the empirically observed challenges of servitization. The main empirical evidence in this paper was drawn from a single organisation, which we studied for 3 years. The organisation has multiple divisions and we monitored two of these during their shift to service provision, which provided us with the opportunity to adopt a quasi-experimental design methodology.

The paper is organised around three guiding research questions: First, what are the options for organisational design in servitized manufacturing organisations? Second, how stable are the organisational solutions linked to servitization and which factors in the company's structure may change these solutions? Finally, what kind of influence does the business environment have on the organisational design? To answer these questions, we will examine a stream of literature that has been formed around organisational design. In line with this literature, we suggest five different organisational design propositions that have to be taken into account when servitizing. Thereafter, we test these propositions by drawing on data from a longitudinal case study setting, conducted in a Finnish forklift manufacturing company that has been searching for an optimal organisational design during its years of servitization. Finally, we present our findings and conclude by offering contributions for future research and practice.

THEORETICAL BACKGROUND

Servitization of manufacturing

In 1988, Vandermerwe and Rada introduced the concept of “servitization” to describe the phenomenon whereby manufacturing firms broaden their position in the value chain by seeking to generate revenues from services as well as products. Subsequent research has shown that servitization is a suitable strategy for mature and stable industries, especially where physical assets have long-operating life spans. In such situations, the installed capital equipment requires service and support over a period of decades (Gremyr, Löfberg, & Witell, 2010).

There are three sets of reasons why manufacturing firms servitize. The first are economic reasons. Some authors claim that services have higher profit margins than goods do (Anderson, Fornell, & Rust, 1997) and that they provide a more stable stream of revenues because of their resilience to economic cycles (Quinn, Doorley, & Paquette, 1990). Second, servitization can be perceived as a strategic shift. Companies seek to offer a total solution that delivers value to their clients. Usually, these solutions require both services and products. Furthermore, some customers are outsourcing their non-core functions to third party service providers, thereby encouraging the growth of total-solutions providers (Oliva & Kallenberg, 2003). The third set of reasons is environmental in nature. Some firms are seeking to innovate their business models and redefine the contract between customer and supplier to reduce resource consumption (Baines, Lightfoot, Benedettini, & Kay, 2009; Davies, Brady, & Hobday, 2006; Martinez et al., 2010; Neely, 2008; Shepherd & Ahmed, 2000; Wise & Baumgartner, 1999).

Although servitization is a major trend among manufacturers, the literature increasingly comments on the challenges associated with this transformation. Studies suggest that only a few manufacturing companies are successful in their transition towards service provision (Oliva & Kallenberg 2003). Some manufacturers have been able to grow and/or increase their revenues through services. Yet, many others appear to be challenged in terms of increasing their profit margins. Indeed, some literature suggests that servitized manufacturing firms achieve lower margins than pure manufacturing firms (Anderson et al., 1997; Grönroos & Ojasalo, 2004; Neely, 2008). Recent studies have examined the managerial implications of these challenges. Baines et al. (2009) analysed the efficient delivery of products and services in terms of human resources, quality control, product/service range, performance measurement and supplier and customer relations. Neely (2008) emphasised that companies should not only increase the number of services in their total offering, but should focus on shifting the company's mindset, transforming relationships from transactional to relational and developing service offerings that genuinely meet customer needs.

Despite the recognised challenges associated with transformation, there is limited research on how the transition to service provision should be carried out. To explore this issue fully, longitudinal, in-depth studies are required that explore the organisational arrangements required for firms that offer both products and services. A rich stream of literature exists in the field of organisational design that could inform such studies. The next section reviews this research and uses it to inform the development of our research propositions.

Organisational structure

For over 50 years, management research has sought to explain the differences in organisational structures (Wolff, Drenth, & Henk, 2001). In their classic work, Burns and Stalker (1961) highlighted that there was more than one way to organise. They argued that the choice about how to organise is contingent on several factors including market dynamics and organisational size. Since then, research has shown that there is single best way to organise. Firms can exhibit high degrees of efficiency when decision-making processes are highly centralised or highly decentralised and when they are structured in highly formal or more organic ways (Donaldson, 2001).

In recent years, the notion of organisational ambidexterity has gained credence (Duncan, 1976; March, 1991; O'Reilly & Tushman, 2004; Raisch & Birkinshaw, 2008; Raisch, Birkinshaw, Probst, & Tushman, 2009). In essence, all organisations want to be ambidextrous. They want to be able to simultaneously explore (search for new opportunities) and exploit (achieve a return on current investments). The challenge is that developing the capabilities to explore can limit a firm's capabilities to exploit. One proposed solution is for organisations to separate their new, exploratory units from their traditional, exploitative ones, thus allowing the two departments to have different processes, structures and cultures (spatial separation) (Benner & Tushman, 2003; Gilbert, 2005; O'Reilly & Tushman, 2004).

The servitization of the manufacturing industry ultimately involves a transformation towards a new business area – the provision of services. The literature highlights the difference between products and services (Anderson et al., 1997) and, more recently, the difference between producing and servicing (Martinez et al., 2010). For manufacturers of long-standing and complex assets, servicing their installed base is a potentially valuable business opportunity. One way of conceptualising this shift is to think of the traditional business of producing products, with its present processes and functions, as an exploitative activity, while the service business can be conceptualised as an exploratory business that seeks new ways to secure revenues and provide services. Ultimately, firms that choose to servitize must move along the value-chain towards their end users. In doing so, they have to innovate their processes and capabilities as they explore and approach new customer segments. According to O'Reilly and Tushman (2004), companies that separate their new exploratory business units from their traditional exploitative ones perform better than organisations that seek to combine exploration and exploitation within one organisational unit. Much of the existing research on ambidextrous organisational design suggests that spatial separation at business unit or corporate level is recommended. Therefore, we postulate:

Proposition 1: When companies are servitizing, a new business unit for service operations should be formed.

The structure as such has formed a major research stream within the organisational research. The different dimensions of organisational structures allowing exploration and innovation have been under a spotlight (Ford & Ford, 1994; Lawrence & Lorsch, 1967; Thompson, 1965). One of the major contributions of Lawrence and Lorsch's (1967) study to contingency theory was the notion that the styles of organising may need to vary between organisational subunits because of the unique characteristics of their environments. Therefore, it is necessary to differentiate between different organisations while making distinctions within organisations. The servitization of the manufacturing industry is perceived as a transformation process in organisations that are trying to cope with the pressures of the changing market environment. Therefore, in order to meet the necessary requirements, companies are trying to change their business models towards greater recognition of service operations. In order to accomplish this, they must also change their organisational structures. However, the question of whether or not the old ways of organising work in the service context has been evolving. It has been demonstrated that services and products are different (Anderson et al., 1997) and, therefore, servicing and producing departments should also differ. The main difference is the distance between the

provider and the customer. While production units can perform as "closed systems," service units need to be more open and flexible, not least because of the variation in customer and service demand. Furthermore, as discussed earlier, if service provision represents a new and evolving business area for the manufacturer, then a high rate of learning and innovation is needed. Therefore, it can be assumed that:

Proposition 2: The organisational principles of service units differ significantly from the organisational principals of production units because they are different types of businesses.

Mechanistic and organic ways of organising

One significant option in organisational design is the choice between mechanistic and organic structures (Burns & Stalker, 1961). The organic theory of organisation is built around the two polar extremes of the forms under which firms can operate – mechanistic and organic (Burns & Stalker, 1994). Burns and Stalker (1961) suggest that the mechanistic (centralised, formalised) structure works well in situations of low task uncertainty, whereas the organic structure (decentralised, unformalised) fits situations with high task uncertainty, including those involving high levels of innovation. The mechanistic structure emphasises hierarchy as tasks are divided into specialised roles that are performed by occupants who remain dependent upon their subordinates to retain specific knowledge and information (Donaldson, 2001). The image of a mechanistic structure is of a hierarchy with centralised decision-making that tightly prescribes lower-level roles. In contrast, in the organic structure, understanding of the task is widely shared among employees who use their initiative accept joint responsibility, and work flexibly.

Organic organisations involve a network of actors in which experts and specialists collaborate in ad hoc ways to create results (Donaldson, 2001). Burns and Stalker (1961) argue that mechanistic structures are only effective in conditions of low rates of technological and market change, while high rates of change require an organic structure in order for the organisation to be effective. From a management perspective, this suggests that in low rates of change top managers' posses' adequate knowledge to specify the work roles of their subordinates. In contrast, with high rates of change, top managers lack knowledge and, therefore, must rely on the expertise of their subordinates who can organise the work among themselves (Donaldson, 2001). The mechanistic and organic types mark the poles of a continuum that represent the degrees of mechanistic and organic ways of organising. Organisations may operate at any point along the continuum. The table below summerises the characteristics of mechanistic and organic forms of organisation.

To summerise, according to Lawrence and Lorsch (1967), companies need must differentiate their organisational units and organise them differently. Burns and Stalker (1961) further this discussion by pointing out that the organic theory offers different models of organising. According to contingency theory, the reason why the organisation of units differs is explained by the contingencies that these units are facing. This theory suggests that in each case, the contingencies that the company faces have to be evaluated in order to find the best way of organising (Lawrence & Lorsch, 1967). Donaldson (2001) concluded that the need for differentiation could be measured by the types of contingencies that the firm is facing. The next section will explain what these contingencies

are, and what kind of consequences they hold for the organisational structure, particularly in the case of servitization.

Table 1. The characteristics of mechanistic versus organic organizations (Burns & Stalker, 1961).

Mechanistic	Organic
The specialized differentiation of functional tasks into which the problems and tasks facing the concern as a whole are broken down.	The contributive nature of special knowledge and experience to the common task of the concern
The abstract nature of each individual task, which is pursued with techniques and purposes more or less distinct from those of the concerns as a whole	The 'realistic' nature of the individual task, which is seen as set by the total situation of the concern
The reconciliation for each level of hierarchy of these distinct performances by the immediate superiors, who are also responsible for ensuring that each is relevant to his or her own part of the main task	The adjustment and continual re-definition of individual tasks through interaction with others
The precise definition of rights and obligations and technical methods attached to each functional role	The shedding of responsibility as a limited field or rights, obligations and methods (problems may not be posted upwards, downwards or sideways as being someone else's responsibility)
The translation of rights and obligations and methods into the responsibilities of a functional role	The spread of commitment to the concern beyond any technical definition
Hierarchical structure of control, authority and communication	A network structure of control, authority and communication.
A reinforcement of the hierarchical structure by the location of knowledge of actualities exclusively at the top of the hierarchy where the final reconciliation of distinct tasks and assessments of relevance is made	Omniscience no longer imputed to the head of the concern: knowledge about the technical or commercial nature of the here and now task may be located anywhere in the network
A tendency for interaction between members of the concern to be vertical	A lateral, rather than a vertical, direction of communication through the organization, resembling consultation rather than command
A tendency for operations and working behavior to be governed by the instructors and decisions issued by the superior	A content of communication which consists of information and advice rather than instructions and decisions
A greater importance and prestige attached to internal rather than general knowledge, experience and skill	Importance and prestige attached to affiliations and expertise valid in the industrial and technical and commercial milieu external to the firms

Contingencies and their implications for servitization

A contingency is any variable that moderates the effect of an organisational characteristic on organisational performance (Donaldson, 2001). Contingencies of organisational structures include some that are within the organisation and some that are outside of it. Donaldson (2001) summerised the research that has been adding contingencies such as task uncertainty (Gresov, 1989) technology, innovation (Aiken & Hage, 1971), environmental change, technological change (Burns & Stalker, 1961), size (Blau, 1970), strategy (Child, 1972), diversification, vertical integration, (Rumelt, 1982) and task

interdependence. Donaldson (2001) argues that these can be reduced to three common underlying concepts – task uncertainty, task interdependence and size.

Task uncertainty

According to Donaldson (2001), "environmental and technological change lead to uncertainty for the organisation and its managers, creating uncertainty in the tasks conducted inside the organisation." Task uncertainty is reinforced by the need for innovation as a response to environmental and technological change (Burns & Stalker 1961). Since servitization relates to companies that have been acting in the manufacturing industry for several years, technological development may be somewhat stabilising; therefore, the tasks within the company may increase in predictability. In recent years, many manufacturers have been adapting principles such as mass production to increase the efficiency of their production. Even in highly technological manufacturing, research and development (R&D) processes usually follow strict formulas where each person involved in the product design has their own specified task. As the companies try to change their position through servitization and enter a new business area, they have to rethink their technology and processes. Innovation is needed both in the development of the service offering as well as in the product design, not least because many service innovations are built around information technology developments (Lightfoot, Baines, & Smart, 2011). In addition, the innovation process in service provision can be viewed as somewhat different from the traditional R&D processes of manufacturing firms (Gebauer et. al., 2008). In service provision, the customer is central and may even be an actor in the design and development of new services. Therefore, the predictability of the processes decreases and it can be argued that the service business has to deal with greater task uncertainty than in purely product-based businesses.

Task interdependency

Task interdependency classifies the way in which activities in an organisation are connected (Donaldson, 2001). Connectivity can be pooled (indirect connection), sequential (direct one-way connection) or reciprocal (direct two-way connection). When a company aims to servitize and builds a specific service provision division, we can assume that this changes the requirements for task interdependency. Whereas a company that has diversified functions or units for specific product lines can be used to pooled, indirect communication between different units, the introduction of service business might change this setting. As the environment becomes more complex and operations become less predictable, the company will be forced into vertical integration between the units to increase its innovative capability and strengthen the relationship between the service and production units. Furthermore, when we consider the product related services that servitization is usually concerned with, we can see that there is a need for cooperation between the service and production resources. Therefore, companies must change their business mindset to incorporate reciprocal, two-way connections; production staff need input from service staff in order to design products that are more ready for services and service staff need input from the production staff to design services that meet the customers' needs while ensuring product functionality. Considering these two contingencies—task uncertainty and task interdependency—we can conclude:

Proposition 3: Servitization increases task uncertainty and task interdependency and, therefore, requires an organic structure for the service unit.

Size

Size is proven to be a major contingency factor that affects many different structural aspects (Blau, 1970; Child, 1972). As a contingency variable, size refers to the number of organisational members that require organisation (Donaldson, 2001). According to contingency theory, when the size of an organisation reaches a certain limit, organic ways of organising become less efficient than mechanistic forms of organising.

The resource intensity of service provision can cause servitizing organisations to grow rapidly. As the delivery of services often requires human resources, one of the major challenges in servitization is the organic growth that forces companies to spread their operations geographically in order to reach all of the customer sites. One of the main problems caused by this locality of service delivery is the lack of control over the operational force, namely mechanics. To gain control and hierarchy, firms usually adopt more mechanistic ways of organising. Therefore, we suggest:

Proposition 4: As the service unit increases in size, a more mechanistic structure is required.

High task uncertainty, high task interdependency and large size

The previous discussion highlights a conflict. Servitization increases task uncertainty and task interdependency, which suggests that organic structures are preferable. Yet, servitization also increases the organisation size, which suggests that mechanistic structures are more appropriate. These conflicting recommendations are likely to lead to tensions; therefore, we propose:

Proposition 5: In light of propositions 3 and 4, we assume that as servitization proceeds and companies become larger, some tensions in organisational design can be expected.

Testing these propositions requires deep and longitudinal data. Therefore, we have conducted a quasi-experiment in two divisions of a Finnish forklift and truck-manufacturing firm. The next section provides a detailed description of the reasons, background for the chosen research setting and design.

RESEARCH DESIGN

This paper analyses data from a Finnish forklift and warehouse truck-manufacturing organisation. Selecting a single case does not provide the confidence of a large n sample and inevitably raises concerns regarding generalisability. Nevertheless, three factors made a single case study particularly appropriate for this research. First, our goal was to understand (Meredith, 1998) as fully as possible what servitization means from an organisational design point of view. Second, servitization is a fairly recent research area, yet no profound theoretical models have been developed to explain this transformation in detail (Barratt, Choi, & Li, 2011). Therefore, this paper aims to build a framework that can combine different organisational design elements to explain the organisational form that is needed when firms pursue a servitization strategy. Finally, we had the opportunity to

conduct a quasi-experimental case study by comparing the performance and changes in two divisions of a single company over an extended period.

Data collection

The data was collected using multiple entities and means. Our primary data collection method was interviews, but the interview data were supplemented with financial data, memos from observed meetings and organisational charts. All of these data sources were used to conduct theoretical triangulation (Yin, 2009). The interviews were semi-structured, carried out face-to-face and lasted from 1.5–2 hour. The informants included organisational actors from different hierarchical levels and functional areas (Eisenhardt & Graebner, 2007).

Our first round of interviews was conducted during spring 2010 when we interviewed 15 employees from the service organisation, including informants from all organisational levels. The largest group was the shop floor, which included mechanics as well as upper-level managers, representatives from the development team and service managers. These interviews and the accompanying data provided a rich picture of the formal and informal organisational structures.

A second round of interviews was conducted a year later. This time, the interviewees were conducted with the product and service sales teams. This round of interviews allowed us to extend our analysis and understand how the organisation's form had changed over a twelve-month period that involved substantial growth in the service business. A key challenge identified was how to organise a growing unit for efficiency and control, while retaining the unit's flexibility and responsiveness.

Finally, to collect comparative data, we conducted two more interviews in the subsidiary company located in Denmark. The subsidiary was also servitizing, but not as successfully or as rapidly as the Finnish business. Therefore, we used the Danish subsidiary to explore the differences in organisational forms that might be affecting the growth of the service business. In Finland, we interviewed the top management level to gain a comprehensive overview of the organisation as a whole. The Danish subsidiary provided an excellent opportunity for triangulation because they were at a much earlier stage in the servitization process. Even when considering the financial data and human resources numbers, the Danish service operations were lagging behind.

Data analysis

The data were analysed in three separate phases. We started our analysis immediately after the first round of interviews. All of the interviews were tape-recorded, transcribed and coded using an open coding approach (Strauss & Corbin, 1998). Two researchers carried out the coding independently and compared the results (Glaser & Strauss, 1967). Once this process was completed, the results were presented to company representatives in interactive sessions. These interactive sessions increased the validity of the analysis by providing opportunities for company representatives to provide feedback and suggest corrections if the researchers misunderstood some characteristics of the organisation. The same procedure was followed after each of the three interview rounds.

After the first round of familiarisation interviews, we began to investigate the organisational design that the company had adopted. We began by comparing the formal structure, presented in the organisational charts with the reported structure, which was revealed through our interviews. This analysis highlighted that the formal structure did not always follow the structure that was reported by the informants. For example, the formal structure suggested that field service was divided geographically so that the manager responsible for that specific area conducted the necessary communication and reporting procedures. The revealed structure highlighted that communication occurred in rather ad hoc ways as field service personnel reported their work to whomever they could reach at any given time.

In the second round of interviews, we continued to explore the differences between the formal and informal structures. During this round of interviews, we began exploring questions regarding how the service business evolved over the previous five-year period (2005–2010). Our questions asked how the service business had evolved and why – essentially, what triggered the evolution. We also explored the future and asked how the informants expected the business to evolve in the future. The second round of interviews involved sales representatives from all the organisational levels.

We analysed these interviews and compared our findings with the first round of interviews. At this stage, we began to draw out examples of tensions that exist as the organisation servitizes. For example, as the size of the company grows, management starts to worry about loss of control; however, the field service perceives the growth as increase of reliability in service delivery. To validate our findings we interviewed senior representatives of the Danish subsidiary. The firm's financial and operational data suggested that the Danish subsidiary was an appropriate comparator. While it operated in the same sector as the Finnish division, it was at an earlier stage in the servitization journey. Therefore, we expected to see signs of the tensions that were reported in the Finnish division beginning to emerge in the Danish division. This was indeed the case, although the data gathered in the Danish division also highlighted that the loss of control was not apparent or a concern for Danish management.

RESULTS

The research setting allowed us to undertake a longitudinal analysis that covered qualitative and quantitative data from 2005–2011. The Finnish division established a separate service unit in 2005. As Figure 1 shows, the service business turnover has grown consistently since 2005.

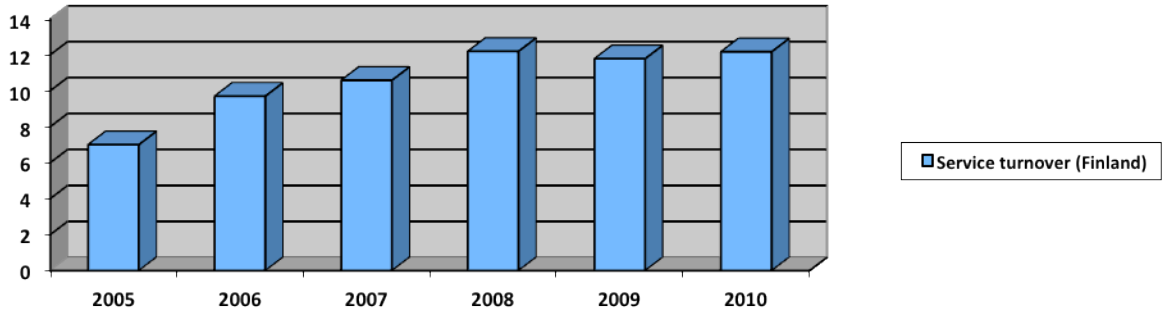

Figure 1. The increase of turnover from service provision (Finland).

In 2005, the Finnish division made a strategic decision to invest in the development of a service business. The service business was seen not only as a way to manage the economic downturns and decrease the downward demand on products, but also as a means of increasing demand for services:

"Customer needs are changing and our customers want to outsource non-core processes to us. We are surprised how much our customers value our knowledge on their processes and this is where we want to invest in the future" (CEO).

Early in this process, the Finnish division decided to separate the service unit from the main business. A separate service unit with responsibility for profit and loss was created. Since then, the growth of the service business has been relatively steady, even throughout the recent European economic downturn. Turnover in the service business grew at the same rate as the number of employees working in the unit, which meant that the service business could still be perceived to be in its investment phase. Yet, the growth that the company was seeking was gained quickly and effectively. However, our interviews revealed that the development path from 2005 has not been as steady and straightforward as the financial data suggests. The next section will discuss how the different organisational stages evolved in our case study.

Establishing a separate unit for services

Initially, services were developed in the production unit. This had the advantage of ensuring that people working in production and product innovation were handling the task of product design and service design simultaneously. However, it soon became apparent that there was significant growth potential for service provision given the customers' interest and demand in this industry. The CEO at the time decided to invest in the service business to support its growth. A separate service unit was established that allowed employees to focus on service provision. As the CEO said:

"We needed a separate service unit to define the customer's value and customer's role in the delivery, we needed to focus."

The business followed the traditional path described in the servitization literature (Oliva & Kallenberg, 2003). First, they offer after-sales services, such as repair and maintenance. Thereafter, the company decided to broaden the range of services offered by introducing

more sophisticated service offerings such as internal fleet optimisation, consulting and training.

Only the Finnish subsidiary decided to establish a separate service unit. All the other foreign subsidiaries kept the same structure, with the product and service operations carried out under the same organisation. The decision to separate the product and service businesses worked well in Finland. The separate service business allowed staff to focus and concentrate on growing their specific elements of the business and to have direct contact with customers to better map out their needs.

It is interesting to contrast the Finnish success in service provision with the other subsidiaries. Although Finland launched their service business only one year earlier, growth in the Danish business was relatively sluggish. This was particularly true of the more sophisticated solutions and services, which although successful in Finland, did not seem to take hold in the overseas subsidiaries. The interviews with staff in Denmark revealed that the dual roles were a significant problem as they were expected to manage both products and services even though the organisation was not fully aligned to support this. For example, the compensation of the Danish sales team was based on product sales, not product and service sales. Therefore, service sales were excluded from the incentive structure. As the Danish sales manager put it:

"In Denmark, they (sales personnel) are measured on what they sell, not if they sell services. That's also a problem. There isn't a bonus system for selling services."

As it became apparent that the dual roles of people working in both product and service roles was limiting success, the Danish subsidiary decided to invest in the service business. They did so by acquiring an independent service company that offered repair and maintenance services to the Danish customer base. While this approach had the advantage of clarifying responsibilities, it brought with it the challenges of managing a merger. Overall, the business sees the Finnish internal growth solution as preferable, not least because it was easier and quicker to deliver. As the Danish subsidiary CEO put it:

"And we are still talking, even it becomes way less today, but sometimes it's still this, us and them. It takes time. As I said, it takes normally five to ten years to transform into a new culture. It takes about 10 years before it's fully implemented and we have forgotten the past" (Danish subsidiary CEO).

Returning to our propositions, it is clear that both divisions needed to establish separate service businesses to achieve the growth they desired. They did so through different routes – the Finnish subsidiary grew organically, while the Danish subsidiary grew through acquisition, but until separate service businesses were established, growth was slow and challenging. Therefore, we conclude that our first proposition holds true:

Finding 1: There seems to be a need to establish a service unit in the early stages of servitization because dual roles cause people to favor product sales over service provision. In addition, it seems that internal growth is favored over acquisitions so that problems caused by mergers can

be avoided. However, this requires the early establishment of a service unit so that growth is manageable.

First stage: setting up an organic structure

After the initial investment in the service unit, the Finnish subsidiary decided to search for ways new service concepts that would deliver growth. The management decided that they wanted to keep the unit as flexible as possible so that innovation would be feasible at all organisational levels and there would be a steady flow of customer information to the service design team. No official or hierarchical structures were created, but the unit was allowed to operate in a rather ad hoc manner. The individual mechanics were a core element of the service delivery organisation. Each mechanic looked after a specific geographical area. Two field managers, with responsibilities split geographically, managed the mechanics.

The service unit was given the freedom to operate as flexibly as possible with the intention of encouraging idea generation and a strong flow of customer information. The staff members were encouraged to communicate with one another to gain insight, expertise and to share ideas. In essence, the service unit was operating in exploration mode. The need for continuous innovation resulted in higher levels of task uncertainty. Simultaneously, task interdependency increased because the service business was new to the company and, therefore, the mechanics were reliant on one another to help solve problems and issues. As one of the sales managers said:

"This services business, service sales…it is more like performing the job…it is not individual anymore, it is group work: we work as team, perform as team and offer solutions as team" (Sales manager).

"This organisation, at the moment, needs a lot of flexibility so that we can survive. The creativity is the only limit we have…" (Sales manager).

The relatively informal structure of the service unit, based on its need for flexibility and creativity, can be contrasted with the more structured and hierarchical organisation adopted in the production unit. In the production unit, the levels were clearly differentiated and based on distinct and specialised teams with specific skills and capabilities. As a result, we conclude that the findings support our second proposition:

Finding 2: The principles of organising an entrepreneurial service unit differ significantly from those used to organise a more established production unit.

Furthermore,

Finding 3: Services that represent new business areas require higher levels of innovation (accompanied by greater task uncertainty). This sets the requirement for a more organic organisational structure, which is reinforced by increased task interdependency as the complexity of the service provision increases.

Second stage: transforming into a more mechanistic structure

Between 2005 and the first round of interviews in 2010, the Finnish service business grew steadily and new service concepts were introduced to the portfolio. Therefore, growth can be seen in the service portfolio, in the number of employees involved in service provision and in the service unit revenues. However, this growth did not occur without problems. First, since expansion covered the whole of Finland, the service unit faced increasing challenges of coordinating resources. Management was concerned with knowing where individual mechanics were, what they were doing and how well they were performing their tasks. This growth resulted in the service managers feeling like they were losing control. Indeed, the Finnish Service Manager, said:

"In the last half year, one year, since I have been in charge of this, I would like to have more control back" (Service manager).

This perceived lack of managerial control was heightened by challenges with the ERP—Enterprise Resource Planning—system, which was not designed to support service operations. Management sought ways of gaining more control over the volume and quality of work performed by mechanics, but the geographic spread of activities, coupled with the range of service tasks, made this difficult. New technologies, such as GPS tracking tools, were recognised as possible ways of coordinating and controlling activities. However, the proposed solutions provoked strong resistance amongst the mechanics who enjoyed the independence they had previously held and did not understand why management wanted to "spy on them" in the future:

"It would feel like big brother would be watching us, when our competitor did it a lot of guys (mechanics) took off, they were fighting with the management…if that happens (if GPS systems are installed to the field service cars), it would seem like a lack of trust and well, fighting, and I can say that turnover among the mechanics would be extremely aggressive…" (Mechanic).

This tension—between management's desire for control and co-ordination, and the mechanics search for autonomy and flexibility—is a natural evolution in organisational design. As the service unit grew, management started to feel a lack of control and, therefore, looked for more mechanistic ways of organising. However, the transformation from an organic to a mechanistic structure is seen as unsuitable for a service operation that requires flexibility. Management recognised this tension and started to search for a middle ground between organic and mechanistic forms, although interestingly, the mechanics self-organised into geographic team structures before the management selected this organisational form.

Teams of mechanics were organised geographically and reported to single team managers, who in turn, reported to one of the two service managers. Management saw this geographic team structure as a way of introducing structure and hierarchy, which delivered control. As the CEO said:

"I think that the team structure will solve a lot of things, if we have a problem, we have basically 60 potential problems and 60 possible solutions (referring to each mechanic). When we have a

team structure, we can limit our problems to 12, we have 12 problems and 12 possible solutions and when one team works well, it solves 6 or seven problems at the same time" (CEO).

Interestingly, the mechanics were also positive about the geographic team structure, but for different reasons. For the mechanics, this new structure allowed for better knowledge sharing, which ultimately enabled them to solve problems quicker and more efficiently. As our interviews showed, the network structure already existed in the organisation of field service. The mechanics invented the structure because it made their lives easier and allowed them to share knowledge. In fact, the mechanics did not understand why management was talking about changing the structure to a geographic team-based structure, because in their view, this structure already existed:

"Well if we talk about the responsibility sharing at the field, in a way that we get together a good team that works together. Then it gets easier to share knowledge, share responsibilities for the whole group of mechanics. Otherwise we would be very lonely out there" (Mechanic)

The data suggests that:

Finding 3: There is a need for mechanistic structure as a service business matures and grows. Growth through revenues and numbers of personnel, coupled with increased scale and complexity of services, results in a need for more mechanistic structures. Interestingly, these structures can emerge through self-organising teams, as well as being imposed by management.

Tensions between units

The literature review suggests that a setting with high task uncertainty and interdependency, coupled with a larger organisation, causes conflict in terms of the required structure. At the outset, the service unit was exploratory in nature and needed to be organised through an organic structure. However, the contrast between this structure and the more traditional mechanistic structure used in the manufacturing industry created tensions in our case study.

This tension resulted in conflict between the field service and sales units. The field service was not satisfied with the performance of the sales units. Many of our informants reported difficulties in communication, which troubled the mechanics because they were often unable to deliver the service since they were unsure of what had been promised.

"Well, I have to confess, I don't know what sales is doing, to be honest, I have no clue what they are doing, I have seen our sales people very randomly, I have no idea what they promise to the customer" (Mechanic).

At first sight, this conflict seems strange. Since the sales team is mainly concerned with selling customer solutions, it would seem intuitive that the sales team would take advantage of the knowledge that the mechanics had about customer needs and to use this information in the design of their service offerings. In return, since the mechanics were so concerned with solving customers' problems, one could assume that they would be proactive in communicating customer problems to the sales team. However, our initial

interviews highlighted that this inter-departmental teamwork was not in place. Therefore, we supplemented our interviews with mechanics with a second round of interviews with the sales staff. The aim of these interviews was to understand the tensions between sales and service staff.

In these interviews, we asked the sales staff to describe how the development of service sales and the relationship between the service unit and the sales unit affected their work. Trust was the most dominant factor affecting integration. The sales personnel felt that they were not able to trust the field service personnel to deliver the promises that the sales team made to the customer.

"Well, I would hope better communication, smart communication, so that sales could trust that what we agree with the customer, will be delivered, and on the other hand the mechanics could understand what we have promised, and then again, come back to the point, mark it done, done and that's it"(sales representative).

Since the sales unit was involved in product organisation, the structure of the unit followed the traditional mechanistic form, with high levels of hierarchy and specified task descriptions. The contrast between this high level of formality and the more organic service unit structure meant that the sales unit perceived the field service unit to be chaotic, and as a consequence, unreliable. Sales personnel perceived the service provision staff to be uncontrolled and, therefore, reported concerns about the quality of the service delivery. According to our informants, the mechanics did not follow any guidelines or documented procedures, which was a cause of great concern for the sales personnel. The data suggest that the long manufacturing history caused a situation where the mechanistic way of organising was dominant in the organisation and, therefore, the organic form that enabled the field service to perform with increased levels of innovation was perceived as strange and unreliable.

Finding 4: The different was of organising between the production and service units causes tensions between these units. Therefore, we suggest that highly organic and mechanistic structures should be avoided within one organisation. Instead, structures that complement each other should be sought.

CONCLUSIONS

This analysis suggests that there are several phases in the adoption of a service differentiation strategy in organisations. Since servitization represents an exploration strategy, the initial steps towards services requires the release of the service unit from the product unit, as well as an organisational structure that enables innovation and the search for new solutions (organic form). However, as the business evolves and stabilises, there is a clear need for more bureaucratic structures to gain efficiency and control (mechanistic form).

Our research was motivated by the lack of theoretical models in the servitization research. Our intention was to theoretically explain the requirements for organisational design when companies aim to servitize. Furthermore, we clarified how the organisational form must evolve in tandem with the level of servitization, which is measured by the scale of services

offered, number of personnel and turnover. In line with this theory, we suggest that organic ways of organising are most effective at the beginning of the servitization journey. Therefore, we suggest that a separate service unit has to be established so that this new business area can adapt to the demands of the changing environment without interfering with the production unit. However, the organisational form has to be re-evaluated after this initial separation, as the service business matures and new tensions arise. At this stage, the organisational structure has to be altered so that the level of efficiency and integration required between the other units can be achieved. Our findings suggest that a structure between the organic and mechanistic models is most appropriate for this scenario.

This study contributes to the servitization literature by defining each of the phases in the servitization journey. We do not seek to advance the contingency theory, but rather, apply the theory in a novel context, i.e., servitization. Through the interdisciplinary nature of our research, we attempt to advance the servitization discussion, which is in need of more profound theoretical approaches.

As with any study, ours has some limitations. First, since this research examined a single case study, our results cannot be directly generalised. Factors such as the industry of operation, market structure and the basic structure of an organisation may have an impact on the organisational design to be pursued when servitizing. As some empirical findings indicate, companies performing in certain industries seem to be able to transform themselves faster than others do, and therefore, comparative studies between different industries and organisations are highly encouraged. In addition, our findings suggest that the integration between production and service units is one of the critical factors determining the success of servitization. Besides this notion, this study does not directly offer any suggestions on how to increase the level of integration between different units; therefore, there is a clear need for research that develops models for integration in servitizing manufacturing companies.

The growing body of knowledge in this area has pointed out the reasons and benefits for a servitization strategy in manufacturing. Contradictory to this, only a few research efforts have developed theoretical models, tools or suggestions on how to execute this transformation effectively. Based on a profound theoretical investigation, our study suggests phases for organisational design that are most appropriate in the early stages of servitization. We recognise that no organisational forms are permanent, but we believe that our results and findings can help managers with organisational design after the initial decision to servitize has been made.

References

Aiken, M., & Hage, J. (1971). The Organic Organisation and Innovation. *Sociology*, *5*(1), 63–82.

Anderson, E. W., Fornell, C., & Rust, R. T. (1997). Customer satisfaction, productivity, and profitability: Differences between goods and services. *Marketing Science*, *16*(2), 129.

Baines, Lightfoot, Benedettini, & Kay. (2009). The servitization of manufacturing: a review of literature and reflection on future challenges. *Journal of Manufacturing Technology Management*, *20*(5), 547–567.

Baines, T., Lightfoot, H., & Kay, J. (2009). Servitized manufacture: practical challenges of delivering integrated products and services. *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*, *223*(9), 1207–1215.

Baines, T. S., Lightfoot, H. W., Benedettini, O., & Kay, J. M. (2009). The servitization of manufacturing: A review of literature and reflection on future challenges. *Journal of Manufacturing Technology Management*, *20*(5), 547–567.

Barratt, M., Choi, T. Y., & Li, M. (2011). Qualitative case studies in operations management: Trends, research outcomes, and future research implications. *Journal of Operations Management*, *29*(4), 329–342.

Benner, M. J., & Tushman, M. L. (2003). Exploitation, Exploration, and Process management: The Productivity Dilemma Revisited. *Academy of Management Review*, *28*(2), 238–256.

Blau, P. M. (1970). A Formal Theory of Differentiation in Organisations. *American Sociological Review*, *35*(2), 201–218.

Burns, T., & Stalker, G. M. (1994). *The management of innovation*. Oxford University Press.

Child, J. (1972). Organisational Structure, Environment and Performance: The Role of Strategic Choice. *Sociology*, *6*(1), 1 –22.

Davies, A., Brady, T., & Hobday, M. (2006). Charting a Path Toward Integrated Solutions. *MIT Sloan Management Review*, *47*(3), 39–48.

DeBruicker, F. S., & Summe, G. L. (1985). Make sure your customers keep coming back. *Harvard Business Review*, *63*(1), 92–98.

Donaldson, L. (2001). *The contingency theory of organisations*. SAGE.

Duncan, R. B. (1976). The ambidextrous organisation: Designing dual structures for innovation (Vol. 1, pp. 167–188).

Ford, J. D., & Ford, L. W. (1994). Logics of Identity, Contradiction, and Attraction in Change. *The Academy of Management Review*, *19*(4), 756–785.

Gebauer, H., & Friedli, T. (2005). Behavioral implications of the transition process from products to services. *The Journal of Business and Industrial Marketing*, *20*, 70–78.

Gebauer, H., Krempl, R., Fleisch, E., & Friedli, T. (2008). Innovation of product-related services. *Managing Service Quality*, *18*(4), 387–404.

Gilbert, C. G. (2005). Unbundling the Structure of Inertia: Resource versus Routine Rigidity. *The Academy of Management Journal*, *48*(5), 741–763.

Glaser, B., & Strauss, A. (1967). *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Aldine Transaction.

Gremyr, I., Löfberg, N., & Witell, L. (2010). Service innovations in manufacturing firms. *Managing Service Quality*, *20*(2), 161–175.

Gresov, C. (1989). Exploring Fit and Misfit with Multiple Contingencies. *Administrative Science Quarterly*, *34*(3), 431–453.

Grönroos, C., & Ojasalo, K. (2004). Service productivity: Towards a conceptualisation of the transformation of inputs into economic results in services. *Journal of Business Research*, *57*(4), 414–423.

Hull, D. L., & Cox, J. F. (1994). The field service function in the electronics industry: Providing a link between customers and production/marketing. *International Journal of Production Economics*, *37*(1), 115–126.

Lawrence, P. R., & Lorsch, J. W. (1967). Differentiation and Integration in Complex Organisations. *Administrative Science Quarterly*, *12*(1), 1–47.

Lele, M. M., & Karmarkar, U. S. (1983). Good product support is smart marketing. *Harvard Business Review*, *61*(6), 124–132.

Lightfoot, H. W., Baines, T., & Smart, P. (2011). Examining the information and communication technologies enabling servitized manufacture. *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*.

March, J. G. (1991). Exploration and Exploitation in Organisational Learning. *Organisation Science*, *2*(1), 71–87.

Martinez, V., Bastl, M., Kingston, J., & Evans, S. (2010). Challenges in transforming manufacturing organisations into product-service providers. *Journal of Manufacturing Technology Management*, *21*(4), 449–469.

Menor, L. J., Tatikonda, M. V., & Sampson, S. E. (2002). New service development: areas for exploitation and exploration. *Journal of Operations Management*, *20*(2), 135–157.

Meredith, J. (1998). Building operations management theory through case and field research. *Journal of Operations Management*, *16*(4), 441–454. Neely. (2008). Exploring the financial consequences of the servitization of manufacturing. *Operations Management Research*, *1*(2), 103–118.

O'Reilly, C. A., & Tushman, M. L. (2004). The Ambidextrous Organisation. *Harvard Business Review*, *82*(4), 74–81.

Oliva, R., & Kallenberg, R. (2003). Managing the transition from products to services. *International Journal of Service Industry Management*, *14*(2), 160 – 172.

Porter, M., & Ketels, C. (2003). *UK Competitiveness: Moving to the Next Stage.* Department of Trade and Industry.

Quinn, J. B., Doorley, T. L., & Paquette, P. C. (1990). Beyond Products: Services-Based Strategy. *Harvard Business Review*, *68*(2), 58–67.

Raisch, S., & Birkinshaw, J. (2008). Organisational Ambidexterity: Antecedents, Outcomes, and Moderators. *Journal of Management*, *34*(3), 375–409.

Raisch, S., Birkinshaw, J., Probst, G., & Tushman, M. L. (2009). Organisational Ambidexterity: Balancing Exploitation and Exploration for Sustained Performance. *Organisation Science*, *20*(4), 685–695.

Rumelt, R. P. (1982). Diversification strategy and profitability. *Strategic Management Journal*, *3*(4), 359–369.

Shepherd, C., & Ahmed, P. K. (2000). From product innovation to solutions innovation: a new paradigm for competitive advantage. *European Journal of Innovation Management*, *3*(2), 100–106.

Strauss, A. L., & Corbin, J. M. (1998). *Basics of qualitative research: techniques and procedures for developing grounded theory*. SAGE.

Thompson, V. A. (1965). Bureaucracy and Innovation. *Administrative Science Quarterly*, *10*(1), 1–20.

Wilkinson, A., Dainty, A., & Neely, A. (2009). Changing times and changing timescales: the servitization of manufacturing. *International Journal of Operations & Production Management*, *29*(5).

Wise, R., & Baumgartner, P. (1999). Go Downstream: The New Profit Imperative in Manufacturing. *Harvard Business Review*, *77*(5), 133–141.

Wolff, C. D., Drenth, P. J. D., & Henk, T. (2001). *A Handbook of Work and Organisational Psychology: Volume 2: Work Psychology* (2nd ed.). Psychology Press.

Yin, R. K. (2009). *Case study research: design and methods*. Sage Publications.