Chapter 9
Servitization of Capital Equipment Providers in the Pulp and Paper Industry

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Abstract The digitalisation of society and a reduction in the need for printed media has resulted in dramatic changes to the pulp and paper industry. During the past 10 years, investments in this industry decreased by approximately 40 %. Consequently, service provision has become more important and a larger portion of the business of many capital equipment providers. This chapter describes and discusses the servitization of capital equipment providers regarding technology, business model, offering, organisation and network. Technology is a driver of servitization in the pulp and paper industry and it has introduced a wide range of new offerings for customers. A key issue for capital equipment providers have been to start charging for services, i.e. to turn services for free to services for fee.

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9.1 Introduction

Many manufacturing firms add services to their offerings (Gebauer et al. 2010; Oliva and Kallenberg 2003), a process often referred to as servitization (Gustafsson et al. 2010). This trend implies that services are becoming a greater part of the offerings and the revenue. The pulp and paper industry rely heavily on capital equipment and traditionally sold capital equipment at a high price, provided spare parts and maintenance for a reasonable price and then provided additional services for free. When the demand for new capital equipment decreased, this approach to doing business became no longer possible, and capital equipment providers developed an interest in servitization. Such a change calls for significant changes to the business logic followed by changes in the activities and interactions with customers throughout the whole business of the capital equipment provider in the pulp and paper industry.

The pulp and paper industry is experiencing a pronounced development. Digitalisation has changed behaviour and fewer people use printed media in favour of the Internet and other digital platforms. During the past 20 years, the structure of the industry has changed, with the number of mills decreasing by approximately 40 % (CEPI Key statistics 2011). Moreover, the number and employment of paper machines has decreased and investments in the industry have declined by 40 % (CEPI Key statistics 2011). Yet, pulp and paper production remains at the same level as 10 years ago, indicating that pulp and paper mills attempt to produce greater volume using existing capital equipment and mills, and that services have become key to improving their effectiveness and efficiency, including environmental responsibility. A reduced use of paper threatens the industry and we expect that not many new paper mills will be built, particularly in the western part of the world.

The change in the pulp and paper industry can be described as from making great paper machines to creating a great business for customers and at the same time pay attention to environmental issues. A chief executive officer (CEO) in the industry described the change as follows: '*We start from making the customer more profitable than our competitors do… and if we can do that, we will make money, otherwise not. That is the foundation for our businesses*'. The change from a focus on technology to a focus on the customer's business illustrates the fundamental change occurring with capital equipment providers of the pulp and paper industry. Today, manufacturing outstanding capital equipment is not enough; improving the business of the customer demands knowledge and competences not only of technology but also of business models, offerings, organisations and the network.

The present chapter shares our knowledge of the role of servitization in the pulp and paper industry. In particular, this issue is discussed from the perspective of capital equipment providers. Information on servitization in the pulp and paper industry comes from a series of surveys, cases studies and interviews with CEOs, service managers and key account managers. The chapter starts with the

introduction of a framework that includes technology, business model, offering, organisation and network. Then, the chapter discusses these issues, with a specific emphasis on what is happening in the pulp and paper industry.

9.2 A Framework for Servitization in the Pulp and Paper Industry

The pulp and paper industry places high value on capital equipment, and the role of the service business is increasing in importance. Previously, the only role of services was to contribute to customer satisfaction, customer retention and the generation of new product ideas. Over time, services have begun to constitute a substantial and stable source of revenue (Panesar et al. 2008) and a way to come closer to the customer's business processes. Fischer et al. (2012) showed that the margin leverage for paper machines is five, suggesting that the profit margin for capital equipment is from 1 to 3 %, whereas the margin on services is 10–15 % (see also Ren and Gregory 2007). Most capital equipment providers are attempting to grow through services, and many of them have succeeded in making services a substantial contributor to both turnover and profit.

To describe the changes in the industry, this study suggests viewing servitization as changes in different parts of the business of a capital equipment provider. The different parts were identified as important to the process of servitization and a manufacturer can engage in different possible servitization changes and routes, which are summarised as follows:

- Technology
- Business models
- Offering
- Organisation
- Networks

When a firm changes in one area of its business, it often needs to change other areas of its business. As an example, Gebauer et al. (2010) suggested that different organisations are needed to provide different types of services, indicating that a specific fit between offering and organisation is needed to succeed with servitization (see Fig. 9.1). The following sections discuss the role of each area in the servitization of capital equipment providers in the pulp and paper industry.

9.2.1 The Role of Technology

Most capital equipment providers in the pulp and paper industry offer services, such as installation, delivery of spare parts, maintenance and repair, field assistance and expertise, to support their products (Kumar et al. 2004). Given a

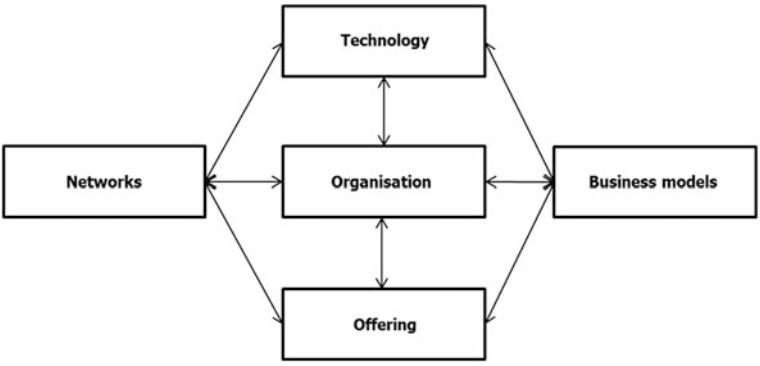

Fig. 9.1 Overview of different areas that are important for servitization of firms in the pulp and paper industry

decrease in employment of 28.5 % over the last 10 years but the same pulp and paper production volumes, companies are very much focused on the core activities related to producing and shipping paper to their customers. The technical capabilities on the customer side (paper mills) are reduced, requiring a greater need for external specialists and their competence. These mills must rely on capital equipment providers to identify and eliminate bottlenecks in the production processes, creating an opportunity for these providers to introduce new services and increase the share of services to their customers.

A versatile approach for capital equipment providers to improve their services is to use technology. Through technological solutions, customers can benefit from extended offerings, more reliable information and quicker responses from suppliers when a problem occurs (Walker et al. 2002). One way to integrate technology and services is to build sensors and ICT technology into the capital equipment and use the information provided to offer services (Davidsson et al. 2009). These services are called embedded or 'smart' services, and are successful at creating a competitive advantage (Wise and Baumgartner 1999). By using smart services such as remote monitoring systems, the capital equipment provider is able to predict problems and react to them before the customer does. Most capital equipment providers adopt 'smart' services, which may be decisive with regard to staying competitive (Allmendinger and Lombreglia 2005). A CEO of a capital equipment provider expressed his view on how his company wants to embed technological services into its products in the future: '*If you can be there before the customer calls you to provide that replacement component*, *before the customer even picks up the phone*, *you already know that some things need to be replaced*'.

However, to date, smart services have not lived up to their market potential. Many capital equipment providers in the pulp and paper industry focus on the introduction and sales of ICT-related services such as remote monitoring and diagnostic systems, help desks and online help for fast and efficient problem resolution (Kumar et al. 2004). Sensors and ICT technology are built into new

capital equipment, and remote services can be offered without any initial major investment. However, for the installed base of capital equipment, initial investments to enable ICT services are needed before they can be provided. Consequently, capital equipment providers are willing to introduce remote services, whereas industry adoption is low. Introducing such services is challenging for many companies because customers might not be interested in replacing personal contacts with technical solutions or they may not be convinced of the financial benefits of the new service.

A number of barriers are associated with selling ICT-based services in the pulp and paper industry. One important issue is that neither the sales staff nor customers can see the added value. Justifying the cost of a remote monitoring system is difficult when the capital equipment is highly reliable and has a low probability of failure. Another issue is the complexity of the systems. Information handling is becoming comprehensive and the supplier needs to be familiar with the customer's entire production system (Davidsson et al. 2009). ICT-related services that replace personal contacts, such as spare part ordering through the Internet instead of calling the manufacturer, prove difficult to sell. Customers fail to see the added value in using new technology for such services.

Remote monitoring systems require extensive organisational changes at the paper mills to be able to use the information and justify the extra costs. One maintenance manager suggested an additional reason for the low adoption of such services: '*It might also have something to do with my generation. The people that are employed now are actually more familiar with IT. And the people already working out there today were in a sense not there when IT was developed. So I believe that it's only a matter of time*.' Furthermore, the demand for ICT-related services should increase as paper mills continue to reduce staffing levels. The limited success of technology-based services is not only the result of a lack of customer demand. Many equipment suppliers become too occupied with what is technically feasible instead of focusing on the benefits of the services. For example, a capital equipment provider developed a technically advanced remote service utilising the latest developments in ICT technology. The service was functionally a success but failed in terms of customer interest because the company was too preoccupied with technology and did not pay enough attention to the customer value of such a service.

9.2.2 The Role of the Business Model

A key question for capital equipment providers in the pulp and paper industry is what their business model should look like. First, to what extent should managers charge for capital equipment and services? Second, how many parallel business models can a firm use simultaneously for a specific service?

A focus on transactions and selling capital equipment created a tradition of including free services with such sales (Oliva and Kallenberg 2003). Examples of free services are provision of knowledge and skills regarding the use and

maintenance of the capital equipment and minor improvements in operational performance. This tradition is common in many industries (Oliva and Kallenberg 2003) and, historically, particularly strong in the pulp and paper industry. Given a long lifecycle of capital equipment, suppliers have on-going business relationships with customers that last for more than 35 years. After offering a service free of charge to sell capital equipment, and then suddenly expecting the customer to willingly pay for these services might later be difficult. Only 16 % of the turnover in the pulp and paper industry is from services, compared with 28 % for the manufacturing sector in general (Davidsson et al. 2009). The last financial crisis showed that capital equipment providers that charged separately for services continued to generate revenues when capital equipment sales declined. Meanwhile, firms providing free services continued to deliver them at no charge when capital equipment sales declined, resulting in no revenues, high costs and, consequently operating the business at a loss. They learned the lesson that allowing capital equipment be the only source of revenue independent of the costs they carry is risky. However, a fundamental problem with turning services for free into services for a fee is that customers are not prepared to pay for something they used to get for free (Brown et al. 2009; Witell and Löfgren 2013).

One capital equipment provider sold its equipment and included free services throughout the entire life cycle of the equipment. When the pace of investment slows, such a business model is difficult to uphold because a lack of new customers means that the company cannot cover the cost of providing free services to existing customers. One service manager noted that the services offered have always been more or less the same, '*but we haven't managed to charge for these services. Often, when someone has bought a machine from us, they believe that some services should be included*'. In 1999, the capital equipment provider decided to start charging for services—a painful change to its business model for both the company and its customers. Suddenly, sales staff who were not used to selling services were supposed to sell them to buyers who were not used to paying for them. However, since then, consumer demand for paper and the role of services in the studied capital equipment provider has changed significantly. Today, the service business accounts for approximately 40–45 % of turnover and growth in the service business during the past 10 years was approximately 400 %.

More capital equipment providers in the pulp and paper industry fully or partly charge their customers for services (78 %) than other manufacturing companies (65 %) (Davidsson et al. 2009). The most common business model is to base the price on the cost of performing the service. Most capital equipment providers also look at business models based on the value provided to the customer. The problem in the pulp and paper industry is that many production lines contain equipment from several capital equipment providers, making it difficult to identify the equipment responsible for providing the value. Therefore, business models that call for suppliers to assume customer risk and offer penalty/bonus agreements are rare. Moreover, different markets have different views on services and value. A manager expressed this view: '*in certain markets … it is all about price and when you buy capital equipment it is supposed to be cheap … make a buck today … I*

have no idea about what happens tomorrow'. The maturity of the role of services and the business model differs between different markets.

Instead of value-based business models, many capital equipment providers turn to maintenance contracts or service agreements. Selling service agreements ensures that the capital equipment gets the service it requires and facilitates a service business model. Capital equipment suppliers know from experience the services that are needed throughout their products' life cycles and that preventing problems before they occur avoids unnecessary and costly production downtime and a bad reputation from equipment breakdowns. A regular demand for services is an advantage for service providers because they can better plan available resources throughout the year. Service agreements also increase total turnover because close relationships with customers generate additional business. The paper mills were also positively inclined towards service agreements. Firstly, they can specify the maintenance staff they wish to deal with because the services are planned and troubleshooting is easier when an unexpected problem occurs. Next, service agreements facilitate the estimation of required service costs throughout a product's life cycle. Finally, customers who have service agreements are prioritised and, thus, collaboration is more intensive.

The most advanced business model is to stop selling capital equipment and sell output or guarantee a specific production volume of paper. Several providers discussed and even tested such alternative business models. However, given the large investment in capital equipment, the role of the service business is concerned with improving its production capacity over time. A manager explained: '*let us say that* [*capital equipment*] *is 20 million euro and then it provides service of 1 million euros a year … It's hard to convince anybody … to give this away, it's gonna take 20 years … or 40 years of revenue to pay … that i impossible*'.

9.2.3 The Role of the Offering

Homburg and Garbe (1999, p. 42) defined industrial services as 'services provided by a manufacturing company to organisational customers'. This definition includes pre-purchased services, services delivered at purchase and after-sales services. Sawhney et al. (2004) used the term customer-activity chain and argued that companies can identify business opportunities by adding new services to the chain, offering services previously performed by the customer or introducing new services in adjacent areas. By taking advantage of service opportunities throughout the entire product life cycle, manufacturing firms can move downstream in the supply chain towards the customer and secure more stable revenues (Davies 2003; Wise and Baumgartner 1999).

Given structural and cyclical changes and the long lifecycles of capital equipment, demand for new equipment decreases over time. The attention then turns to the large installed base. To shift the focus of attention, capital equipment providers in the pulp and paper industry not only need to adapt how they think about strategy and their business models (Wise and Baumgartner 1999).

Rethinking strategy includes defining activities performed by the customer when the equipment is being operated and maintained, and changing the business model is a way to take advantage of the service opportunities identified throughout the life cycle of the equipment. Capital equipment providers have several advantages because they sold the equipment, know their customers and possess knowledge of the equipment and its associated technology (Oliva and Kallenberg 2003).

The opportunities identified could be classified as services that support the product and services that support the customer (Mathieu 2001). Services that support the product, such as ensuring its functioning, have become common, and capital equipment providers also need to focus on services that support the customer to stay competitive, such as enhancing the productivity of customer processes (Markeset and Kumar 2003; Mathieu 2001). This shift implies that strategic consultancy advice becomes important in the capital equipment provider's offer to analyse a customer's business, identify problems in the customer's organisation, offer solutions based on knowledge gained from experience and coordinate components into a solution (Davies et al. 2007). These services are based on a productivity-enhancing logic; that is, the service concept should suggest improvements to enhance customers' productivity and can only be provided as long as potential exists for improvement.

In the pulp and paper industry, services such as maintenance are often performed by the paper mill or by pure service providers, although the number of services performed by capital equipment providers since the 1990s has increased. These services are based on capital equipment providers' own products given their knowledge advantages, even though competitors' products may be included in certain services. These services strengthen the relationship with paper mills, increase a supplier's credibility and enhance the possibilities for future business. '*So that is what we are looking for from service, but also want from service is that the customer again sees that if your able to provide him service he can trust you with the capital, so if you do a good job on service he can then trust you with the capital equipment. So those are the two main things we look for in service, that provide stability to the business so that you can continue your capital business and provide you with opportunities to get more capital more of this capital business*'.

The distinction between products and services within an offering seems to become more blurred after the manufacturer offers services for a while. A customer need is identified and satisfied through the activities and physical goods required, and the distinction between services and products becomes less important: '*…when we perform services and replace spare parts, we call that a product too.* […] *So, at the end of the day, everything is probably products, as we see it, which consist of services and things and components and … services*'. Competitive pressure seems to increase to continuously develop offerings, identify business opportunities and level out the structural and cyclical changes in the pulp and paper industry. '*What we try to do with service is to balance out the peaks and valleys of the capital business and it does it in two ways; revenue and also profitability*'.

9.2.4 The Role of the Organisation

Servitization demands that changes in the service strategy or offering are accompanied by changes in the organisation (Gebauer et al. 2010). In the short term, successfully providing services without changing the organisation is possible; however, long-term changes in offerings and the business model must be accompanied by the right organisation for the service provision. Examples of changes in the organisation are increased customer contact and customer responsiveness and efforts to foster a service-related climate and culture. In the organisational change, the interpersonal skills of frontline staff should be evaluated and the company should attempt to achieve customer involvement in design, production, delivery and consumption (Bowen et al. 1989). Most research contends that organisational changes are necessary for manufacturing companies to succeed in services. However, disagreement exists over the changes that should be made. Oliva and Kallenberg (2003) suggested that separate organisational units should be created, whereas Neu and Brown (2005) argued that managers need to integrate business unit responsibilities and foster intra-firm collaboration in the servitization of their businesses.

One problem for these organisational units is in initiating a cultural change through the creation of service norms and values (Bowen et al. 1989). Previous studies on capital equipment providers suggested that engineers who designed a multimillion-dollar equipment and who work at capital equipment providers with an engineering tradition have difficulty getting excited about a contract worth $10,000 to repair the equipment (Oliva and Kallenberg 2003). This phenomenon suggests the need for a cultural change that is more profound than a change within an individual business unit. Gebauer et al. (2010) suggested that creating a match between the capital equipment provider's service strategy and the design of its organisation that provides services is needed. However, this fit is difficult to achieve in practice. The CEO of a capital equipment provider suggested that his organisation went back and forth three times in 6 years on whether service provision should be a separate business unit.

9.2.5 The Role of the Network

In a recent study, Kowalkowski et al. (2013) identified the critical role of the external network in service provision. In particular, small manufacturing firms need to adopt different value constellations to acquire the right competence and resources for service provision. Altogether, Kowalkowski et al. (2013) identified nine different value constellations: (1) systems integration, (2) customer-to-customer intermediary, (3) competence co-location, (4) specialist externality, (5) shared service platform, (6) dual customer contact partnership, (7) horizontal collaboration, (8) integration co-location and (9) competence acquisition (Kowalkowski et al. 2013).

Most capital equipment providers in the pulp and paper industry provide many of the services using their internal resources. The following section discusses the value constellations that our studies on capital equipment providers in the pulp and paper industry identified. The three value constellations used to build service competence and capacity for service provision are as follows:

- Horizontal collaboration
- Competence co-location
- Competence acquisition.

Capital equipment providers lacking the full range of products and services use horizontal collaboration. One partner may participate in horizontal collaboration because customers asked the firm to provide a wider range of spare parts and installation services. By widening the range of its offering through close, informal relationships, the firm attracted orders for maintenance plans and training services that it would not otherwise receive. The key is the horizontal collaboration that makes firms more appealing as potential partners for customers who want to reduce their number of suppliers. In this value constellation, partners tend to take the same horizontal position in the business network and their cooperation is rather informal and consistent with customer service, after-sales service or a development partner strategy.

One organisational change for service provision is to establish a new business unit or organisation for this purpose at customers' locations. Kowalkowski et al. (2013) viewed it as competence co-location for service provision. A capital equipment provider took over its customer's maintenance organisation, which involved only low capacity utilisation and was not economically feasible for the customer to keep in-house. The capital equipment provider achieved higher service productivity in turn by offering such services to external customers. The key to success is the ability to coordinate work across several locations with limited resources, and the key competitive advantage is proximity to customers.

Finally, in competence acquisition, a capital equipment provider chooses to internalise a SME to access its specific manufacturing, services, or marketing competences. Unlike the other value constellations, the nature of the relationship is formal and greater adaptation is needed to make the acquisition profitable. Integration can be horizontal or vertical. In one case, acquiring an engineering workshop provided process improvement capabilities that enabled it to offer calculation services and a better estimate of the cost of higher quality service offerings. In addition, manufacturing capability provided a vertical extension of the firm in the supply chain.

9.3 Servitization in the Pulp and Paper Industry: How Far Has it Come?

Returning to the basic question of the changes needed for servitization to succeed in the pulp and paper industry, the suggestion is that servitization in this industry is being driven by changes in technology (see Fig. 9.2). These coordinated changes

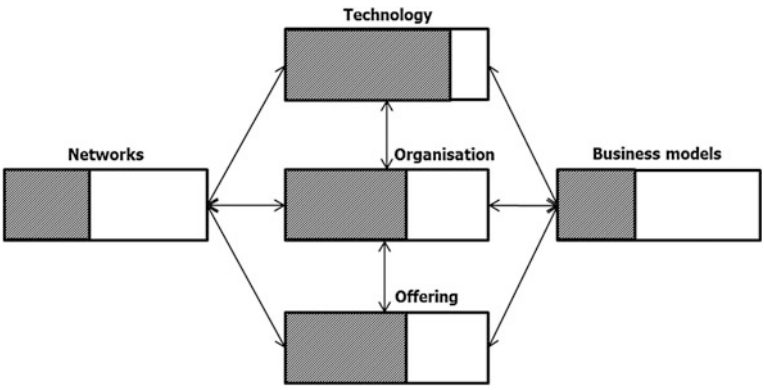

Fig. 9.2 Overview of how servitized capital equipment providers in the pulp are

are followed by changes in the offering and the organisation, and mismatches are resolved and followed by new reorganisations and introductions of new offerings. Networks and business models also receive interest from capital equipment providers, but the industry's progress in these areas is limited. Many firms attempt new business models and setting up networks for service innovation and service provision; however, to date, these attempts to change the business relationships between capital equipment providers and paper mills have not replaced the traditional way of doing business.

The decreased employment level in the pulp and paper industry influences the technical capabilities of the paper mills. Fewer people are employed who can perform services and preventive maintenance. This situation represents the potential for capital equipment providers because they are experts in capital equipment, the production process and their customers' businesses. Embedded or smart services can be used for remote monitoring of the production process, but such development faces barriers. The lower demand for paper force paper mills to close down or lower production volumes, which lead to lower investments in capital equipment. Another barrier is convincing both sales personnel and customers to see the added value of an investment in smart services. Finally, the service provider needs to ensure that smart services create value-in-use for the customer.

Offerings from capital equipment providers often use technology as the starting point and are developed to provide a large service component. Given lower investments in new production capacity, the service potential lies in maintenance and production improvements. At large capital equipment providers, more than 40 % of the turnover comes from services. Ideas for new services are numerous; the challenge is to develop services that focus on value-in-use for the customer. To provide such services, a change in the service strategy and offerings needs to be

accompanied by a change in the organisation (Gebauer et al. 2010). The design of a capital equipment provider's organisation for service provision must match its service strategy. A cultural change is often needed, and is accomplished by creating service norms and values. Service providers often miss the fact that the quality of the service provision needs to be the same as the quality of the capital equipment.

A traditional focus on transactions and sales of capital equipment that include services for free is a barrier when developing new business models built on service provision. To begin to pay for something that was once provided for free is difficult for both sales personnel and customers. The cultural change from service for free to service for a fee is one that many capital equipment providers accomplished successfully. However, a remaining challenge is to become a professional service provider and develop the services over time to ensure a sustainable business. Service supporting the customer rather than service supporting the product seems to be a successful strategy. Service becomes a perspective on value creation (Edvardsson et al. 2005). This requires both structural and cultural changes and new ways to capture value. Thus new or changed business models are needed. A barrier is the complexity of the production processes, the long-term investment engagements in the pulp and paper industry and the fact that equipment most often comes from several capital equipment providers. This makes it difficult to identify the equipment that creates the most favourable business for the customer, i.e. value in use. The potential to develop new business models is found in the development of maintenance contracts, service agreements and outcome based contracting. These services strive to optimise operations throughout the life cycle of the capital equipment, prevent unnecessary repairs and avoid costly production downtime.

A barrier that service providers need to overcome is building the right competence for service provision, which is not always possible within an existing service organisation. The key to overcoming this barrier is to use external networks for service provision. Capital equipment providers may use several different value constellations to infuse the needed service provision capabilities and competences into their organisations. Critical to achieving success is the ability to coordinate service provision across several locations with limited resources and using proximity to customers as a competitive advantage.

A final word on servitization of capital equipment providers in the pulp and paper industry concerns that a key to success is to identify the value in use for the customer. If the value for the customers comes first for the capital equipment provider, then technology can be used to drive the servitization of the business. Based on new technology, new business models can be developed that enables capital equipment providers to charge for services that previous were provided for free.

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