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Lappeenranta University of Technology
School of Business and Management
Master's Thesis

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Development of modular roll service concepts

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ABSTRACT

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The goal of this study was to find and develop new or improved service concepts for rolls in a paper machine and secondary targets were to find out what the KPIs and values of the concepts are. Two methodologies were utilized in researching this problem; firstly sales personnel were interviewed about customer values and KPIs and a questionnaire about service modules were sent out to four BSI (basic sales item) responsible persons.

Throughout the research process differences in geographic regions were identified and several customer KPIs and values were discovered. The interviews showed that the main concern for customers is the cost of operations. The goal is to produce the same or in some cases more tons with smaller operating costs. The questionnaire standardized the data about service modules and made it possible to link these values, KPIs and concerns of customers to Valmet's service offering.

Eventually these service modules were used to create a service concepts that offer flexibility, cost savings, safety and peace of mind for the customers. With this new conceptual approach Valmet can more flexibly answer to customer quotations and modify the offering to better generate customer value and customer satisfaction. In addition a new BSI was defined and proposed for pilot projects.

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Tutkimuksen tavoitteena oli löytää ja kehittää uusia palvelukonsepteja paperikoneen teloille. Toinen tavoite oli löytää mittareita ja asiakkaan arvostamia asioita näistä konsepteista. Tutkimuksessa hyödynnettiin kahta eri metodologiaa; ensinnäkin myyntihenkilöitä Valmetilla haastateltiin asiakkaan arvoista ja mittareista liittyen teloihin ja liiketoimintaan. Tämän lisäksi ennalta määritellyistä palvelumoduleista lähetettiin erittäin kattava kyselylomake neljälle palvelumoduleista vastaaville henkilöille.

Tutkimusprosessin aikana eroavaisuuksia maantieteellisten alueiden välillä havaittiin ja monia asiakkaiden mittareita ja arvoja listattiin. Haastatteluiden perusteella asiakkaiden pääsääntöisenä huolenaiheena on kustannustehokkuus. Tavoitteena asiakkailla on tuottaa sama määrä paperia pienemmillä kustannuksilla. Kyselylomakkeilla data palvelumoduleista standardoitiin ja mahdollisti asiakkaiden ongelmien linkityksen eri palveluihin.

Lopulta edellä mainituista palvelumoduleista luotiin palvelukonsepteja, jotka tarjoavat joustavuutta, kustannustehokkuutta, turvallisuutta ja mielenrauhaa asiakkaille. Palvelukonseptien avulla Valmet pystyy vastaamaan asiakkaan tarpeisiin joustavammin ja modifioimaan tarjoomaa maksimoimaan asiakasarvoa ja -tyytyväisyyttä. Lisäksi eräs uusi palvelumoduli määriteltiin.

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LIST OF SYMBOLS AND ABBREVIATIONS

AMP	After Market Partnership
B2B	Business-to-business
BSI	Basic Sales Items, smallest component the service can be divided to.
BU	Business Unit.
CAP	Capital sales; sales of new machines, upgrades etc.
COP	Cover purchase agreement
CN	China
EMEA	Europe, Middle-East, Africa
HSE	Health, Safety and Environment
KPI	Key Performance Indicator.
LTIFR	Lost time injury frequency
MEP	Mechanical roll maintenance
MMO	Mill Maintenance Outsourcing
MTBF	Mean Time Between Failure
MTIFR	Medical treatment injury frequency
NA	North America
NSD	New Service Development
OEM	Original Equipment Manufacturer
Roll	Rolls are parts of paper with many different functions
SA	South America
SER	Service Business Line at Valmet
WS	Workshop
WTO	Way to operate
TRIFR	Total reported injury frequency
TRR	Total Roll Reliability

1 INTRODUCTION

Designing and delivering a service requires numerous actions and decisions at different levels of the company all the way from strategic level to the operational level. This causes the company to face a challenge of ensuring that decisions on different levels are made consistently and according to plan, in other words to meet customer needs. The service provider and customer might define the service differently and a service concept helps closing this gap. (Goldstein et al. 2002)

The background and reason for this study is that Valmet roll services has a large number of different products and services which has led to the fact that most of the times the offer is tailored to suit customers' needs. The goal is to simplify the offering portfolio by creating service modules and service concepts. The problem with complex offerings is that the process is slow and time and money consuming when it needs to be tailored to each situation. The goal is to create a new or improved service concept to generate a starting point and to add customer value. This is a common phenomenon in industrial markets since competition is harder in a global environment which pushes companies to differentiate via services.

Key drivers for this modularization and conceptualizing project are (Valmet 2015):

1. Offering simplification
2. Transformation from traditional product sales towards value added solutions
3. Improved understanding of customer's business and values
4. Improved sales tools
5. Improved cross-functionality within Valmet
6. Service development
7. Increased customer value

The project for modularization and conceptualizing services has been ongoing for over a year but due to other activities no one has had the time to concentrate enough on service concepts, which is why this thesis is being done. The project started with

defining the basic roll services and products and now with this thesis this data is collected and utilized when creating service concepts.

Many companies are struggling with the same problem and for example Cargotech has quite successfully conceptualized its service offering. Instead of having four “one size fits all” service packages, they modularized their offerings and created three concepts: Services On Land, Services In Port and Services At Sea. Each of these concepts has numerous options to choose on, but the basic structure is the same; the customer just chooses the modules they need. (Metso 2012)

1.1 Research problem

It is important for Valmet to be proactive in roll services instead of reactive since Valmet has several competitors and the goal is to be ahead of these competitors in order to increase customer value which will lead to increased sales. The specific goal of this thesis is to find customer value generating service concepts; one or more and these concepts are to be based on basic sales items as they will be called further on. Another goal is to find suitable key performance indicators (KPI) for these basic sales items and concepts that are understandable to the customer and can be easily reflected on in the future; how successful was the delivery of a service agreement. KPI's should be thought out so that it will illustrate the value that the customer will receive when choosing to partner with Valmet. The matter will be first researched based on theoretical frameworks, after which the research proceeds to case Valmet.

These goals will be sought out via three research questions:

RQ1. How are roll service concepts developed from a theoretical point of view?

RQ2. What roll service concepts can be found in Valmet and what are their KPIs and values?

RQ3. What are the development possibilities regarding offering portfolio and pricing logics for roll service concepts?

These factors haven't been focused on so deeply at Valmet and it will offer a fresh perspective and a possible way to link KPI's of services to customer's KPI's. The linkage between services and customers business realities would be an ideal situation. This way the evaluation of customer value and value of the concept for both Valmet and customer becomes significantly easier.

1.2 Limitations

In this thesis there were three major limitations. The research will be limited to roll services and roll service combined into capital sales will only be discussed shortly. The discussion will mainly concern differences between service and capital sales for future research purposes. Trying to create a linkage between roll services and capital sales is not possible due to time and resource limitations which are why the main concentration will be on roll services for existing mills already. Other factors that are left outside of research and discussion are the reasons behind regional differences. Regional differences are caused by different humanitarian reason including cultural factors and different stages of industrialization which are beyond the scope of this thesis. Other major factor that is not further researched is customers' decision making unit and purchase organization. There would be more than enough research to be done in those fields for several studies and due to time and resource limitations those fields have to be excluded.

1.3 Thesis structure

This thesis starts with a literature review after which it will proceed to methodology and the actual empirical section. In the empirical section the results and conclusions will be presented. The structure of the study will be illustrated next with picture 1.



Picture 1. Structure and flow of the study.

2 SERVICE CONCEPT, DESIGN AND MODULARITY

Services have been traditionally seen as add-ons that sales persons offer “free-of-charge” in order to close a deal on a physical product. However due to increasing competition companies are trying to offer more and more services and especially service-level-agreements to differentiate, to gain a competitive advantage, and to gain additional stable revenue. But one must first discuss about differences between goods and services and the characteristics of services before going further into servitization.

2.1 Characteristics of services and reasons for servitizing

Difference between goods and services

Zeithmal et al. (2006) have discussed the difference between goods and services at length and their findings will be presented next. Their findings are present in with the services IHIP (intangibility, heterogeneity, inseparability and perishability) – model.

Table 1. Difference between services and goods, IHIP (Zeithaml et al. 2006 p. 22)

Goods	Services	Conclusions
Tangible	Intangible	Services cannot be stored Services cannot be patented (except some IPR) Pricing is more difficult
Standardized (sometimes)	Heterogeneous	Service delivery is always unique on some level which leads to the fact that every service is a little different from another
Production and consumption separate	Production and consumption inseparable.	Service is usually an input to customers processes or operations, it is consumed at the same time it is produced
Nonperishable	Perishable	Services cannot be resold or returned like goods

Reasons for servitizing

Industrial companies are facing increasing competition every day due to many different factors and this is forcing the companies to diversify their offerings. (Kindström 2010) A popular way to diversify and increase revenue is to servitize.

More and more companies are offering services in addition to physical products and in some cases the services generate a larger part of the revenue than the products themselves. Also companies that have been able to move downstream the value chain, i.e. towards the customer, have managed to stay successful (Ojasalo & Ojasalo 2008).

Kone Oyj is a good example of a company that has increased its revenues by increasing the amount of services; at Kone Oyj the share of maintenance and modernization business lines were 32% and 13 % of total sales in 2014. This makes up to a total of 45% of total share of sales and the goal at Kone is to further increase the share of maintenance and service business. (Kone Financial Statements 2014)

One can see that service business is an opportunity for all companies and besides the fact that it might increase revenues from an installed base of products with a long life cycle, it also stabilizes cash flow and decreases the effect a recession might have on companies. (Oliva & Kallenberg 2003) Services also increase the competitiveness of the base product and offer a possibility to diversify from rival companies. One reason for servitizing originates from the customer base; customers want to concentrate more on their core businesses and are outsourcing non-core activities (e.g. maintenance). (Ojasalo & Ojasalo 2008)

The transition from products to services offer major challenges for traditional product focused companies; developing services require a lot of human resources where products require R&D. Thus services usually require less capital investments and also have better profit margins. (Kindström 2010; Ojasalo & Ojasalo 2008) However in some special cases services might need capital investment; e.g. machinery to produce the service. As a managerial advice companies should develop their ability to promote and explain service intensive value propositions. Also when selling services and especially via long term contracts companies must be able to build relationships with its customers. The companies also need to be more familiar with customers' processes and create a functioning service delivery infrastructure and change its revenue mechanisms toward a model where revenues

are based on customer operations and profitability. (Kindström 2010) When an industrial manufacturing company wants to increase the amount of services, it is important for them to remember that:

1. Services are not necessarily only services that are affiliated with physical products
2. There are other actors that deliver services as well, not only rival manufacturing companies
3. Customers can be found in different industries

(Ojasalo & Ojasalo 2008)

2.1.1 Industrial service offerings

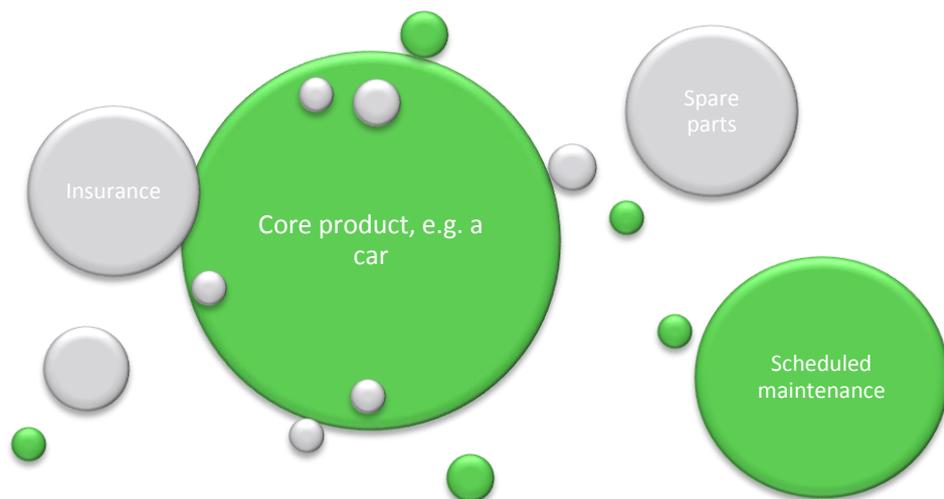
Industrial services can be classified in several different ways but in this thesis the most interesting approach is Oliva & Kallenberg's (2003) approach. In this classification they have classified different type of services in product-oriented services and end-user's process-oriented services. While end-user's process oriented services is a more sustainable approach product-oriented services cannot be forgotten especially in a producing industry which requires assets to produce the product and some of the services.

Table 2. Dimensions of services. (Oliva & Kallenberg 2003 p. 9)

	Product-oriented services	End-user's process-oriented services
Transaction-based services	<p><i>Basic installed services</i></p> <ul style="list-style-type: none"> Documentation Transport to client Installation/commissioning Product-oriented training Hot line/ help desk Repairs / spare parts Product updates/upgrades Refurbishing Recycling/ machine brokering 	<p><i>Professional services</i></p> <ul style="list-style-type: none"> Process-oriented engineering (tests, optimization, simulation) Process-oriented R&D Spare parts management Process-oriented training Business-oriented training Process-oriented consulting Business-oriented consulting
Relationship-based services	<p><i>Maintenance services</i></p> <ul style="list-style-type: none"> Preventive maintenance Condition monitoring Spare parts management Full maintenance contracts 	<p><i>Operational services</i></p> <ul style="list-style-type: none"> Managing maintenance function Managing operations

2.1.2 Hybrid offerings

One important aspect of service offering is hybrid offerings where a capital product and a service are sold together. Hybrid offerings or possibly solutions are combinations of goods and services that create greater value as one than sold separately. Hybrid offerings are defined as follows “one or more goods and one or more services, creating more customer benefits than if the good and service were available separately.” (Shankar et al. 2007 p.2) Goods and services combinations have become more popular in industrial markets since offering services around the core product offers the possibility of differentiation for companies. Besides services create more stable cash flow than physical products. Traditionally services have been offered as add-ons when selling the core product to close the deal, but nowadays companies are trying to add value added services around the core-product to generate customer value and more profits. Below we present a picture demonstrating a hybrid offering: (Shankar et al. 2007)



Picture 2. Demonstration of hybrid offerings.

In this picture the core product is the biggest bubble. This picture might be exaggerated and one should not think about the size of the bubbles as straight correlations to the importance of the product. The medium sized bubbles represent the possible services that can be added to the core offering and these can be for

example scheduled maintenance, break-down maintenance and spare parts service. The smallest bubbles can be simple individual tasks that can be thought of as services; for example consultation on a certain problem or visitation at the customer site and these might be free-of-charge add-ons.

2.1.3 Advantages of services

Developing these kinds of service offerings is not easy for companies and they have to change their revenue models and develop new service concepts to ensure that they are able to meet customer needs while getting acceptable level of revenue. Also, services are sometimes seen as “free” or that they come with the physical product (Ojasalo & Ojasalo 2008). This might be the case especially in different cultures and countries where the service business isn’t seen as a major source of income. For example training and installation services are sometimes seen as included and it might be hard to sell these kind of services. Benefits of services will be discussed from supplier and customer point-of-view. Benefits according to Ojasalo & Ojasalo (2008):

- Financial:
 - new sources of revenue
 - services require less capital investment than physical products
 - stabilized cash flow, during for example recession
- Advantages for marketing:
 - increased customer satisfaction and trust
 - long-term customer relationships
 - customers can concentrate on their core business
- Strategic advantages:
 - increased competitiveness and differentiation
 - more stable competitive advantage

From customer point of view the most relevant advantages would be as follows ((Modified from advantages of services based on Ojasalo & Ojasalo 2008) :

- Financial:
 - lower personnel costs with maintenance services
 - lower investment costs when there is no need to invest in e.g. own maintenance machinery
- Strategic
 - possibility to concentrate on core business
 - long-term partnerships with suppliers
- Operational
 - reliability of operations when concentrating on core business

2.2 Definition of the service concept

Service concept term is used frequently and is considered a loose term since one can understand the term in many ways. However there is relatively small amount of literature about the service concept itself. Most of research and literature concentrates on new service development and service design. A service concept is a part of service design and answers the questions how and what. Service concept also helps the company to balance its operations between customer needs and its strategy. Simply put the service concept “is the customer’s and provider’s expectation of what a service should do and the customer needs it fulfills” (Goldstein et al. 2002 p. 11) The idea of a service concept is to create a foundation for the actual service offering and despite the fact that the service concept might be standardized, the service offering is unique for every customer. The authors propose that the service concept could be a very important tool that helps service design decisions at all decision making levels. Authors also argue that it is necessary, even critical to define the service concept before and during the design and development of services.

Many scholars have presented their definitions for service concept but Edvardssons' and Olssons' (1996) is more easily understandable; they prefer to think of the service concept as a prototype for the service and define it as follows "description of what needs to be done for the customer and how will this be achieved. The authors Goldstein et al. (2002) also rely on this definition of service concept. Johnston & Clark (2001 p. 73) defines the service concept a little differently, but with the same basic idea "service concept is a picture or statement that encapsulates the nature of the service business and captures the value, form and function, experience, and outcomes of the service". According to Grönroos (2004) the service concept is a way for the company to imply its goals and intentions to solve a certain problem. The service concept tells the company what resources are used and what the company is about to do for certain customers.

Furthermore authors Clark et al. (2000), Johnston & Clark (2001) and Johnston & Clark (2005) present a more detailed definition for the service concept. They have divided the service process into four-five dimensions (four in the earlier research) and describe what the service concept means in each dimension.

Service concept is constructed as follows according to Johnston & Clark (2005 p. 40)

1. *The organizing idea:* The essence of the service bought, or used, by the customer
2. *The service experience:* The customer's direct experience of the service process, which concerns the way the service provider deals with the customer.
3. *The service outcome:* The result for the customer of the service.
4. *The service operation:* The way in which the service will be delivered.
5. *The value of the service:* The benefit that customers perceive to be inherent in the service weighed against the cost of that service.

The older version of Clark et al. (2000 p. 73) service concept is divided into four dimensions and terminologically speaking easier to understand. This older version:

1. *Value*: what consumers are willing to pay for?
2. *Form and function*: the overall shape of the service, how it is created, how it operates
3. *Experience*: the experience perceived by customers
4. *Outcomes*: the benefits, stated or assumed, that it provides the customer and the organization

In this thesis a combination of the two definitions of service concept is used. Main goals are to concentrate on value, experience and outcome dimensions. This concludes research question one (RQ1):

- *Value*: how value is measured
- *Operation*: Way in which the service will be delivered
- *Experience*: how customers experience the service
- *Outcomes*: what benefits does the service bring to the customer and how is the supplier able to assure the customer of these benefits

The above model will be utilized in data gathering for BSIs and for the conceptual presentation of service concepts.

By deconstructing the service into these pieces enables the research and development team to see the components of a service concept more clearly. The designers can develop and design services iteratively: firstly create the essence of the service, and then reflect back on the customers' viewpoint, results, delivery and results. The goal is to iteratively reflect between these dimensions and close the gap between the suppliers and the customers' idea of the service. This gap might be caused by poorly executed marketing, e.g. sales persons are not familiar with services that they are selling, or bad delivery of the service. However service concepts minimize these mistakes by informing sales personnel and by specifying sales delivery details.

2.3 Service innovation and design

Despite the fact that the goal of this thesis is not to develop new services it is necessary to discuss this matter from a theoretical point of view since service concepts are heavily linked to new service development (NSD). Since service offerings lack physical properties it can make demonstrating effectively the differentiating or value creating factors. Also the complexity of services makes selling and developing them more difficult; although sometimes the complexity is the outcome on purpose, for example when customizing to customer needs. (de Brentani 2001)

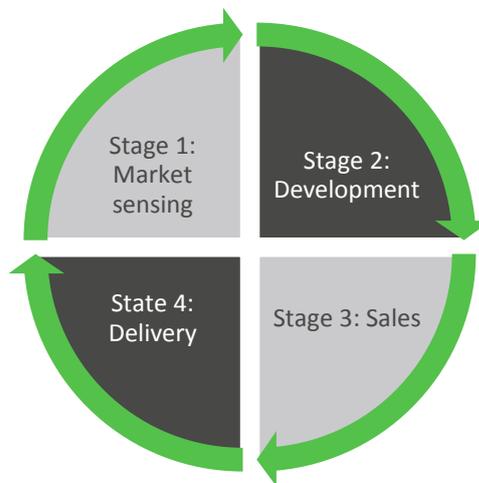
In this chapter processes like service design and how to successfully design services will be discussed at length and some of these frameworks will be evaluated from a service concept point of view. Especially when bundling services into new “service packages” service concepts gives the guidelines how to do this. In this chapter the process for creating new services is presented as well as some tools to help in the process.

Developing and designing services is a very complex and difficult task. (Brentani 1995) The real challenge comes when companies try to develop both products and services simultaneously. (John & Storey 1998) Service development becomes more complex in traditional manufacturing firms than pure service firms, since manufacturing firms often have the core products that have usually carried all the value. This product centricity is heavily embedded in the culture of manufacturing firms and companies need to overcome this transition if they want to succeed in developing new and highly competitive services. Overcoming this cultural challenge causes the effect that there will always be some level of tension between service and product organization in the company. (Kindström & Kowalkowski 2009)

One approach proposed by Ojasalo and Ojasalo (2008) is to take services into account in the development of products. The design and development of product

makes it possible to design modular services in different phases of the products life cycle. For example when examining factors like mean-time-between-failure (MTBF) or mean-time-to-repair (MTTR) while developing the product, it is easier to develop services accordingly. Different approaches to developing successful services will be discussed next.

Kindström and Kowalkowski (2009) have presented a four-stage framework for developing new services:



Picture 3. Four-stage frame work for service development. (Kindström & Kowalkoski 2009 p. 4)

The idea of the framework is that a company must follow these stages when developing new services (or existing ones) and reflect on previous stages when moving onto the next.

Different stages described in a more detailed manner from the framework (Kowalkowski & Kindström 2009):

1. *Market sensing*: In market sensing companies have the ability to identify opportunities, research the installed base equipment of customers, evaluate and analyze customer needs and see what competitors are doing. Market sensing should be continuous process.

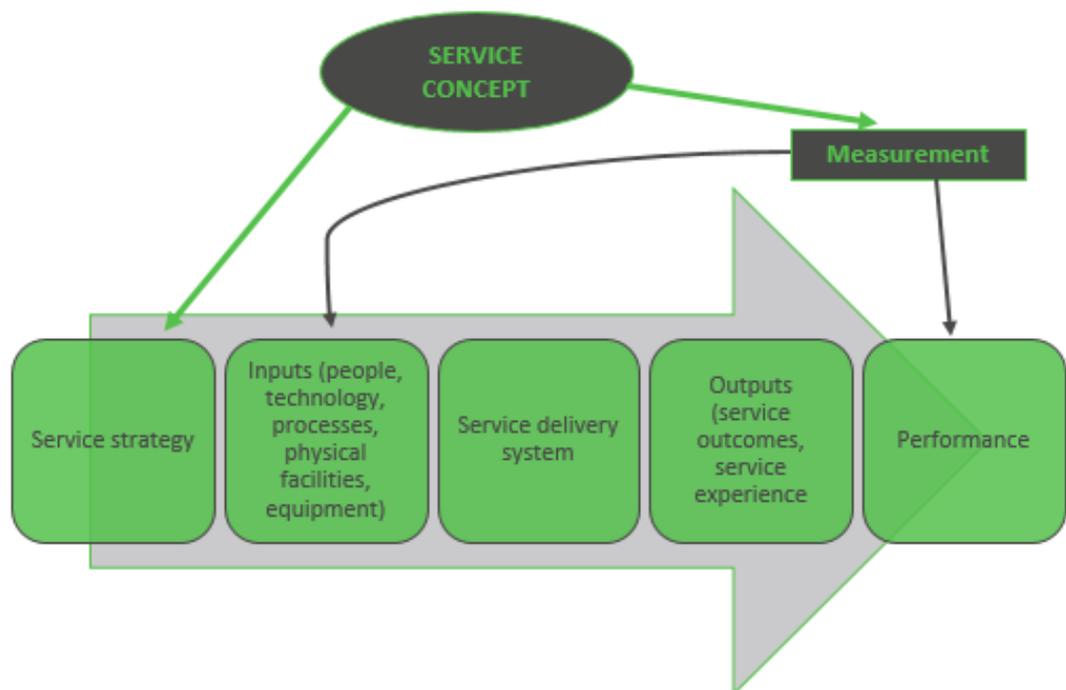
2. *Development*: The development of the offering is a crucial part: in this part companies should keep in mind what the markets want, and if the service is developed for certain customers, what the certain customer wants and needs. The development part affects sales and delivery operations: when developing a new or existing service the development process should discuss matters like how the service is to be sold. The development phase requires a lot of skills to manage the cross-functional operations and intraorganizational coordination.
3. *Sales*: Sales personnel often prefer product sales and lack the skills and knowledge necessary to sell service offerings. One aspect that hinders sales is the inexperience from both the supplier and buyer when it comes to understanding the value delivered; services are harder to price and often companies try to sell offerings based on the value created → sales personnel don't know how to justify the value created resulting in lost contracts.
4. *Delivery*: There are a lot of differences between services and products and these become evident during the delivery. Services are usually produced and consumed at the same time while physical products stay with the customer after the delivery. The goal of the delivery is to deliver the service as efficiently as possible and in order to do this, the supplier company must have its service organization sorted out: for example in a situation where the supplier has a maintenance contract with the customer, the goal is to minimize the down-time and return the equipment to full capacity for the customer in order to maximize the value "delivered".

(Kowalkowski & Kindström 2009)

Goldstein et al. (2002) propose a different model for developing new services. This model takes into account the service concept which defines the whole service strategy. The authors claim that designing and developing services require numerous decisions at different levels of the company; from major strategic decisions to minor operational decisions that have to be made every day. Even for

the simplest services require many decisions and development processes are usually ongoing processes in service organizations. Decision making or more accurately the ability to make the right decisions is an important asset for service organizations when the goal is to deliver maximized value via services. The service concept can be considered as a guideline that helps in these decisions when developing new services (Sasser et al. 1978; Chase & Aquilano 1989)

The service design model proposed next is modified from Goldstein et al. (2002) presented next.



Picture 4. Service design model. (Modified from Goldstein et al. 2002 p. 6)

In this model the service concept defines the way new services are developed. Service delivery system consists of the service organization, e.g. field personnel who are actually in contact with the customer throughout the service delivery. The field organization is also part of the inputs since they affect the outcome of the service. Outputs are the actual outcomes of the service; how the customer experiences the service, how much value the service brings to the customer and overall customer satisfaction and profitability of the service. The inputs, in this model people, technology, processes, physical facilities and equipment, are the

factors that affect success i.e. outcome of the service. These success factors can sometimes be measured easily like physical facilities or equipment but the amount of knowledge and skills possessed by people are not easy to measure and evaluate. The modification is the added measurement from performance, which is crucial when selling services based on promises. (Goldstein et al. 2002)

2.3.1 Factors affecting the success of service development

Several authors have discussed the factors affecting successful or unsuccessful service development. The majority of research have concentrated on determining what constitutes the success of service development and many discoveries have been made. For example Gebauer et al. (2008), Martin and Horne (1993) and de Brentani (2001) have identified several relevant factors that affect the outcome of the developed service, while Ulaga and Reinartz (2011) have studied the relevant resources that have an impact on the combination of goods and services. These factors will be discussed and analyzed in this chapter.

The findings of authors Martin and Horne (1993) about the success factors in service development are presented next. Although the source is old, the findings are still relevant today when companies are struggling with the development of services.

Table 3. Identified success factors according to Martin & Horne (1993).

Success factor	
Direct customer involvement	Direct customer involvement does have a significant impact on the success of the service; when developing new services, especially industrial one in business-to-business markets, the direct customer involvement enables the company identify customer needs and wants, thus making it possible to deliver more value added services.
Continuous customer information	Customers can be a part of the development process and it is crucial to maintain continuous contact with the customer throughout the process to gain maximal benefits from the service.
Business evaluation:	Business evaluation means the evaluation of company's business models and the applicability, profitability and suitability for the company. Certain services might not be worthwhile for the company due to the fact that they are out of their business zone (e.g. not their field) or too expensive/ large for the size of the company.
Marketing plan	Marketing plan is the plan that gives guidelines how to market the service. The marketing plan should also include the revenue generation model.
Involvement of senior management	Senior management should be involved in the development of services because they have authority to make business changing decisions. For example moving to different revenue generation models usually requires the approval of senior management.
Customer contact personnel	Customer contact personnel can be sales personnel or the field service organization (e.g. maintenance professionals, start-up engineers). These persons have the direct contact towards the customer and are the actual service deliverers.

The success factors constitutes the successful new service development plan that was identified as a key to success by de Brentani (2001). Martin and Horne's (1993) success factors are relevant for majority of manufacturing companies who struggle with service development. However senior management is rarely involved in the development of services if they do not affect the business model or interfere with firm's strategies. These success factors should be evaluated and identified when developing the service concept so that new services can be successful and will increase customer value while generating profit to the supplier company. One ironic discovery was made by Martin and Horne (1993); they claimed that the outcome of a new service development is a random event and based on intuition and luck. This might be the case when entering totally new markets and developing new services

for them, but one shouldn't generally base their business on luck since relevant and clear success factors have been identified by several different authors.

Gebauer et al. (2008) identified similar success factors as Martin and Horne (1993). They divided their factors into: involvement of frontline employees, information sharing, multifunctional teams, information technology, internal organization, funnel tools, and training and education. The involvement of frontline employees is very similar to Martin and Horne's *customer contact personnel*; the frontline employees are the persons that interact with the customer and gain information about the customer. The frontline employees are the key players in sharing the information with the customer, the supplier company and each other. (Gebauer et al. 2008)

Good information sharing requires well working multifunctional and cross-functional teams since development of industrial services require people from different departments; R&D, finance, sales and marketing and the field organization. These organizations have to work seamlessly throughout the development process and keep in contact with the customer. Information technology was seen as a major factor since it accelerates information sharing and success in all areas of business. (Gebauer et al. 2008)

de Brentani (2001) presents the success factors in different dimensions. These dimensions consist of similar factors as authors above have discussed only they have been divided as follows:

Table 4. Success factors according to de Brentani (2001).

Success factor	
Product related factors	Product related factors can be for example frontline expertise, service complexity/ cost, service quality evidence and improved service experience.
Market related factors	Market related factors refer to the things like market potential and customer needs analysis and evaluation. These factors should be studied so that the company is able to design and deliver value added services for its customers.
Company related factors	Company related factors are the company's strategies, goals, innovation culture and management. Each company has their own strategies, goals and way of achieving these and the service design shouldn't interfere with company strategies. Gebauer et al. (2008) and Martin and Horne (1993) discussed company-related factors as well when they concluded <i>business evaluation</i> and <i>internal organization</i> as success factors.
New service development factors	New service development factors include the evaluation and basic design of the service. These factors are variables that the company has developed over time and companies should evaluate their way of doing things from time to time; could something be done differently, i.e. better?

In this thesis the development process of service concepts will be evaluated with Martin & Horne's (1993) model. This model offers the possibility to objectively discuss the process and identify future research possibilities. The model will not be used to create any new service but rather as a work quality evaluation tool in the discussion section. The evaluation of created concepts and the process itself is necessary to better performance and outcome in the future.

2.3.2 Service modularity

Modularization is one way to develop services and Schilling (2000) present a general theory for modularity; modularity "is the degree to which the components of a system can be separated and recombined to create a variety of configurations without losing in functionality" (Pekkarinen & Ulkuniemi 2008 p. 4).

With industrial service offerings there are several problems which modularization could solve: complex services are usually not standardized, companies might not have the ability to handle service complexity, no way to "reuse" existing services

and poorly documented service catalogues. Modularity also offer the potential for a greater division of labor across firms (Böttcher & Klingner 2011; Rahikka et al. 2011)

The problems mentioned above can be minimized via service modularity. Service modularity is also important for service development since it simplifies the innovation and development process. (Ma et al. 2011) Other reasons for modularization is the increasing need for tailoring and modularization is one way to tailor with maintaining some level of standardization. Especially in heavy industry context competition is rising every year and customers seek diversity and are becoming more and more heterogeneous which requires tailoring to customer needs. (Carlborg & Kindström 2014)

Table 5. Aims and effects of service modularity. (Carlborg & Kindström 2014 p. 2)

AIM	EFFECT
Reduction of efforts	Using modularization when managing and allocating resources can reduce efforts
Configuration	A high degree of customization can be achieved from a limited number of standardized modules.
Improved transparency, reduced complexity	A structured portfolio will increase the transparency of services offered by the firm, and hence reducing complexity.
Enhancement and improvements	Improving service at a modular level is easier than the whole service, hence modularization can contribute to enhanced and improved services.
Reuse	Reuse of modules allows economies of scale and reduces efforts.

What these benefits actually mean from different perspectives are discussed next:

- Financial perspective: Based on reusability companies can benefit from economies of scale and modularization offers better control of human resources → work force should be divided with different service modules.
- Customer perspective: Service modules are more easily managed by the supplier and understood by the customer and defined inputs yield homogenous quality and higher reliability than complex customized offerings.
- Internal perspective: Certain group of people specialized with certain modules enable high quality modules, reuse of old modules, managing

service process and delivery is easier and documenting might help new service development and innovation.

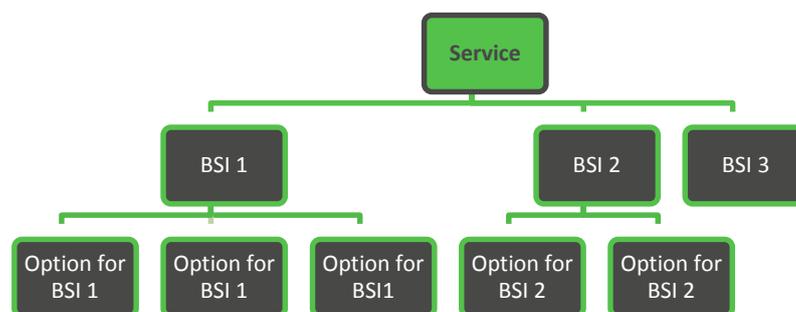
- Innovation and learning perspective: Modular structure decreases the time needed for development since the development team can develop single modules instead of a whole new service.

(Böttcher & Klingner 2011)

Few scholar have discussed service modularity and they often present a lot of benefits that come from modularity but the negative effects are discussed rarely. It seems that for example modularization is not always as beneficial as it seems for example with highly specific and complex services modularization might not be an option since the customer needs are so specific that a new service is always developed.

2.3.3 Modular service modules

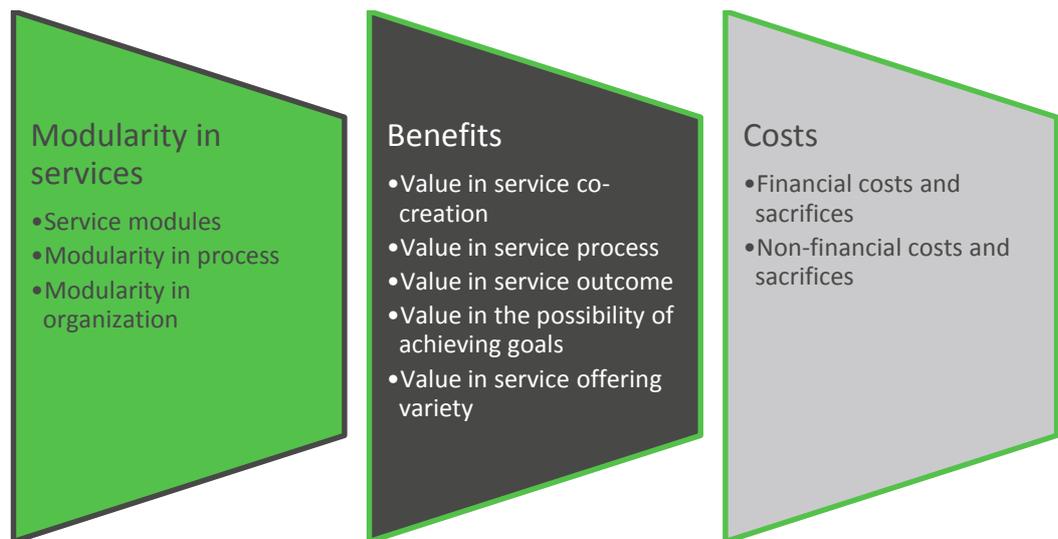
Modular services consist of individual modules or “basic-sales-items” as Storbacka and Pennanen (2014) call them in their book. They define basic sales items (BSIs) as “building blocks of solutions” (Storbacka & Pennanen 2014 p. 29). Basic sales items are the smallest individually functional components of a solution and with services these basic sales items are smallest modules of the service process. Basic sales items should be possible to sell to the customer separately so they cannot be so tightly coupled that they cannot function individually. (Voss & Hsuan 2009; Storbacka & Pennanen 2014) The picture below will illustrate the service modularity based on basic sales items.



Picture 5. Hierarchy for a modular service. (Modified from Storbacka & Pennanen 2014 p. 30)

In this picture the service consists of three modules: Basic sales items 1, 2 and 3. The basic sales item 3 is always the same and it has no options. Basic sales items 1 and 2 however have a few options from which the customer can choose or the supplier will choose the best one fitting to customer needs. An example of this kind of service could be online banking in Finland: The service is online banking and the first basic sales item is how you want your bills; electronic bill, direct debit or a traditional paper bill. The second basic sales item is for example how you want to save your money; a long-term treasury or stocks. The final basic sales item is how you pay the bills and it is not optional since you will always pay them with your credentials from your account. Together these three basic sales items create the service experience of online banking. This of course is a simplified example and especially in industrial services there are more basic sales items and more options available.

It is important for suppliers to understand how customer evaluate service, its elements and how the different elements will affect customer's processes and perceived value. (Ulaga 2003; Ulaga & Eggert 2006) The service modules makes the service flexible for the customer since they can choose those services around the core product that they need which manifests in cost savings and possibly greater created value. It is also easier for customers to detect the value potential in modular services where they can inspect the service modules individually and evaluate the suitability for their processes. (Rahikka et al. 2011) The next picture will illustrate the connection between service modularity and perceived customer value.



Picture 6. Service modularity's possible influence on the customer's perception of value → linkage between service modularity and customer value. (Rahikka et al. 2011 p. 5)

In the picture above it is argued that in order to successfully offer modular services modularity has to be found in three different levels: modularity in services, modularity of processes and modularity of organization. Modularity of processes means that the service delivery process is modular as well and organizational modularity means that different group of people develop different service modules. Of course these intraorganizational teams need to work seamlessly and in close proximity in order to create functional modular services. (Raahikka et al. 2011) Next will be discussed the most important benefits and costs based on the picture 5 (Rahikka et al. 2011):

- *Service outcome:* Customer generally value price and schedule with services but they also demand homogenous and high quality at the same time.
- *Value in the service process:* Value in the service process is the ease of operation and convenience of the everyday collaboration between the customer and the supplier.
- *Value in service co-creation:* In co-creation of services certain tasks are left for the customer and certain tasks are performed by the supplier. The customer might want to perform some tasks in order to ensure service's successful delivery and implementation.

- *Monetary & non-monetary costs and sacrifices:* Monetary costs are the price of the project which depends on the complexity and scope, sometimes customers insist on an all-inclusive price instead of billing by the hour. Non-monetary costs and sacrifices refer to time losses and sacrifices one have to make in co-operation.

3 CUSTOMER NEEDS ANALYSIS AND VALUE

Since customer needs and wants are a crucial part of service concepts and service design, especially in industrial services, it is important to discuss this matter from a theoretical point of view. Also the goal of this thesis is to approach the problem of developing new service concepts from customer value aspect which is heavily linked to customer needs analysis and evaluation.

Customer satisfaction or dissatisfaction is seen as one of the most important success factors for company's business. If the customer leaves the project without the feeling that his/her needs have been fulfilled it is likely that the customer will not return, at least to buy the same product/ service again. Also these bad references will influence business with other potential customers. When customers feel that their needs have been fulfilled or exceeded it might lead to more business and long-term relationships and contracts. To successfully answer to customer needs the company must be able to manage customer needs analysis. (Ojasalo & Ojasalo 2008) The ability identify customer needs and actually analyze these will require market research. And companies shouldn't just be able to identify customer needs but also understand the needs of each customer.

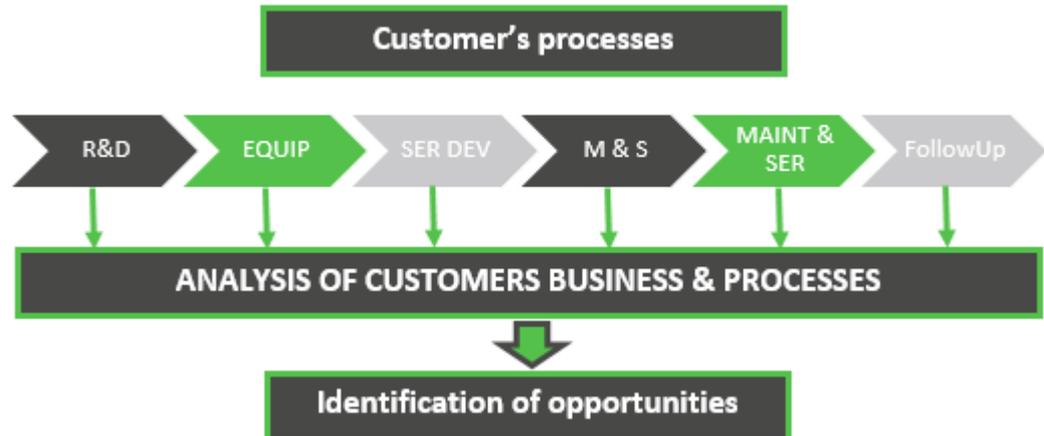
3.1 Customer value

Customer value usually refers to monetary value. However sometimes "customer value" is not always based on monetary benefits. This might especially be the case with services when the value is based on ease of use or convenience issues instead of direct monetary benefits. With physical products however the supplier usually have to find certain key performance indicators that will justify the monetary benefits for the customer, thus illustrating the value. With services the definition of value for a certain customer might be hard to define and especially hard to justify.

Table 6. Different definitions of customer value by several authors.

Author	Definition of value
Anderson et al. 1993 p. 3	Value in business markets is the perceived worth in monetary units of the set of economic, technical, service and social benefits received by a customer firm in exchange for the price paid for a product, taking into consideration the available suppliers.
Hinterhuber 2004 p. 5 (adapted from Nagle & Holden 1999)	Product's economic value is the price of the customer's best alternative – reference value – plus the value of whatever differentiates the offering from the alternative differentiation value.
Kotler 2000	Bundle of benefits customers expect from a given good/ service.

By customer value research the authors Storbacka and Pennanen (2014) mean analyzing customers' processes, concerns, business drivers and financial concerns. Proper research on customers will help companies identify sales opportunities and differentiate their offerings from competitors. The goal of customer value research is to discover what the customer value and what his/her problems are and how our company could help the customer. The picture 6 will illustrate the customer needs/ value research process.



Picture 7. Identifying sales/ value creation opportunities through customer value research. [R&D = research & development, EQUIP = manufacturing equipment, SER DEV = service development, M & S = marketing and sales, MAINT & SER = maintenance and services] (Modified from Storbacka & Pennanen 2014 p. 21)

The process presented above is important regarding services since services can be sold in different stages of a products life cycle and customer values should be researched throughout the process. Next will be presented a customer value research/ needs analysis process proposed by Storbacka and Pennanen (2014):

- *Defining customers' processes:* Firms often are familiar with their own processes and production and have optimized them in their best interest. However firms should be as familiar with the processes of their key customers, what they value, what is the functionality of their end product and think about what the customer's customer wants. It is important to understand their customers' business models and how they are selling their products/ services forward in order to provide them with solutions that fulfill their needs.
- *Analyzing the customer's business realities:* Companies need to understand what the key performance indicators (KPI) are for the customer and clarify how their products/ services/ solutions affect these KPI's.
- *Identifying relevant situations:* When a company have gained comprehensive understanding of customer's processes and business models they need to identify the relevant opportunities where their solutions could be useful for the customer. When the company identifies that a customer have a certain problem, they need to figure out what kind of solution could solve the problem a customer is having and how it will bring value to the customer.
- *Describing the situation and analyzing customer's challenges:* When the company has identified the relevant opportunities the firm needs to deconstruct them and analyze how the customer usually handles these situations or how the customer wants the situation to be handled.
- *Solving the challenge:* The steps presented above in value research or customer needs analysis should give the company enough information so that they can make propose a solution for the customer's problem. The sufficient knowledge that is gathered via the steps above enables the firm to offer accurate solutions that maximizes the value created for the customer.

(Storbacka & Pennanen 2014)

The process presented above starts from definition of customers' processes rather than going straight to creating propositions based on a problem a customer has. This kind of customer oriented approach will give more accurate information and understanding about the customers' business, processes and problems and enables greater customer satisfaction. However this process requires a lot of time and resources and with simple solutions this kind of thorough research process might not even be needed or is unprofitable.

Customer value might be easy to define but hard to achieve. Customer value is not to be confused with customer satisfaction; if the offering satisfies the customer it does not automatically mean that the offering brings added value. However if an offering brings added value the customer will most likely also be satisfied. Customer value will be approached from several theoretical frameworks starting from definitions, how value is created, who creates value (and co-creation), how value should be communicated convincingly, what are the affecting factors in customer value and what is value based pricing.

3.2 Factors affecting value created

The value creation starts from understanding customer's business and processes. Deep understanding of these factors is crucial for creating value propositions; the supplier company is unable to maximize the delivered value how the offering will affect customer's processes, business, requirements and preferences. (Anderson et al. 2006) Companies should be able to identify different value elements for the offering. Anderson and Narus (1998) claim that value elements are anything that affect the costs and benefits of the offering in customers' business. These elements are technical, economic, service and social elements and these elements are presented through examples. According to Anderson & Narus (1998):

- Technical: better efficiency of a recovery boiler with higher steam parameters
- Economic: monthly fee or one-time transaction

- Services: Operations training and maintenance. Service elements can also be technical if a certain service increases the technical benefits (e.g. reliability) of an equipment.
- Social: Ease of doing business

An offering might affect all these different elements and the supplier should be able to identify all the benefits and present the relevant ones (what the customer value) to the customer. Value models also help improving and developing services; when the value elements have been identified and what elements certain group of customers value it is easier to develop value adding services. (Anderson & Narus 1998)

Some authors claim that the supplier can't actually create value. Grönroos and Ravald (2011) propose that the value is created in the customer's processes by the customer based on the supplier's propositions. The popular expressions "value co-creation" and that "the customer is always a co-creator of value" are misleading since the supplier is unable to create value. A more useful approach is "value is created by the user for the user" (Grönroos 2011 p. 10) since referring to co-creation might lead to wrong practical actions and managerial decisions. In this approach the supplier makes value propositions and the customer creates value for itself in his/her own processes. The supplier of the offering acts as a facilitator for value and customer is the creator. Co-creation however is possible when the supplier partakes in customer's processes. As Grönroos (2008 p. 11) states the suppliers role in value creation is "value facilitator by providing customers with a foundation for their value creation in the form of resources (goods, services, information and other resources)". Especially in services the supplier on some level participates in the co-creation of value. Co-creation of value offers several opportunities and can be beneficial for both parties. Co-creation of value might lead to technological breakthroughs, changes in industry logic and new learning about customer's preferences. (Payne et al. 2008)

3.3 Value-based sales and value communication

Value-based pricing have received little academic literature since it is a relatively new phenomena. Pricing have long been a neglected tool in industrial marketing and several companies have problems with their understanding about pricing and the mechanics and tools for pricing. According to Clancy and Shulman (1993) less than 15% of companies do systematic research on pricing. Of course, nowadays companies concentrate more on pricing but this figure illustrates that pricing have been neglected. (Hinterhuber 2004) Hinterhuber (2004) presents a framework for pricing:

- Define pricing objectives (Shipley & Jobber 2001): What are the objectives of pricing; increased market share or elimination of competitors?
- Key elements of pricing decisions: competitors reactions, profits, value of the offering to different customers
- Economic value analysis: a tool to comprehend and quantify the sources of value of a product for certain customers

One major consideration with value based pricing is the economic value analysis: to what key performance indicator or what value adding factor should the company tie the price? This might vary between customers since different customers value different things which will result in fluctuated profits depending on the customer. Value-based pricing will be discussed next.

Manufacturers have often no problems in communicating and illustrating the value of physical products. However, with services both the supplier and the customer run into problems and the value is harder to identify; communicating and understanding the value of services is more complex due to for example intangibility of services (Kindström et al. 2012; Mittal 1999; Hill et al. 2004) A few author have presented different tools and approaches for communicating value. Anderson et al. (2006) present three different strategies for communicating value:

- Supplier lists all benefits of their proposal → the customer might not see this as a very useful tool since they are only interested how it will affect their processes.
- Points-of-difference: These points will illustrate how the offering differs from alternatives in the market.
- Supplier tries to communicate those benefits that the customer actually appreciates → requires a lot of knowledge about customers processes and problems. This is probably the most appealing approach to the customer.

Other popular tools to communicate value are documentation and representation. Documentation for example of previous implementation of similar services helps the supplier to see how the service have affected other customers. Representation of these results can be very assuring to new customers since customers generally require some level of reference cases when considering a new supplier. (Anderson & et al. 2007)

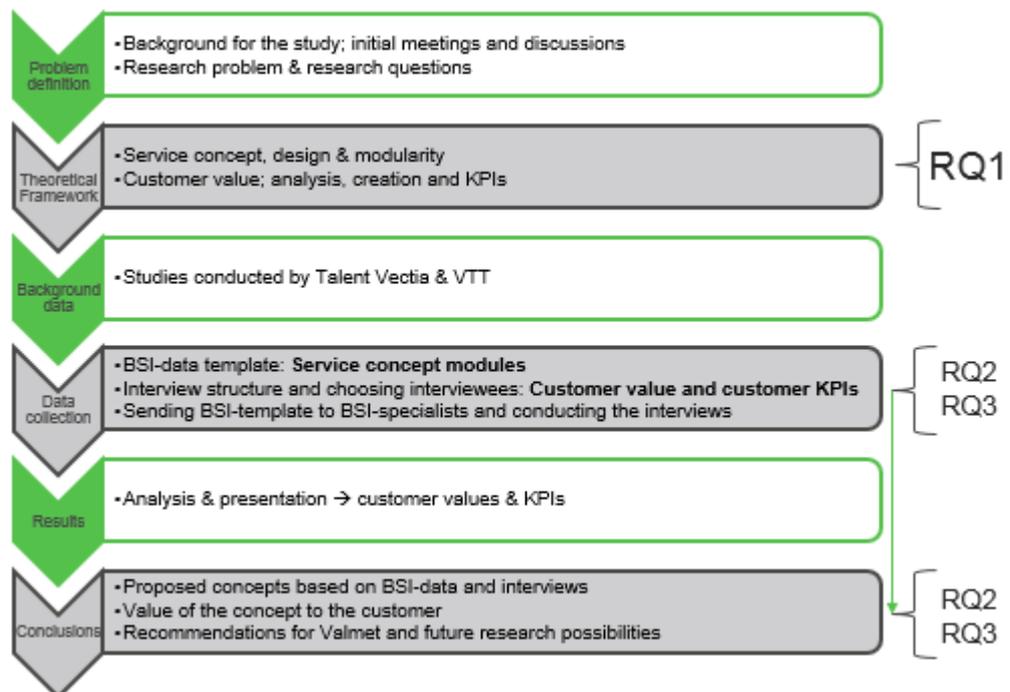
In this thesis from customer-value point of view especially customer value evaluation, factors affecting value created and value-based sales will be discussed. Like mentioned earlier the key in value-based sales is communication, which why the value has to be tied to a certain factor or a key performance indicator to ease the communication of value. The approach of communication will be that supplier will communicate those benefits that the customer actually appreciates. This will result more appealing to the customer and the customer will feel that he/she is understood and taken seriously, which is extremely important in B2B-markets.

The situation in this thesis will be evaluated based on Storbacka & Pennonen (2014) approach and especially the first one will be analyzed; *analyzing the customers' business realities*. The first aspect “*defining customer's processes*” is also an important factor but less relevant in this study since customer's processes are already relatively known to the case company. These are important to understand in order to better communicate the value and find the most relevant factors for a

certain customer. In addition the factors affecting value created will be further discussed from customer point of view based on Andersons' and Narus' approach excluding the "services" category.

4 METHODOLOGY

This study was a single-case study where Valmet was the case company. According to Gerring (2004 p. 1) as case study is “an intensive study of a single unit with an aim to generalize across a larger set of units”. This study has case study characteristics but the aim was not to generalize to larger set of units. There are also ethnographic characteristics to this study since the researcher worked in the company for six months while conducting this study. Ethnography is an approach in social research and it involves observation and interviewing, recording and filing data and data analysis and research report writing. (Hammersley & Atkinson 2007) Low-level ethnography term can be used since the researcher could have a strong impact on the process and research rather than staying only as an observant. However this study is meant to be utilized at Valmet and Valmet only which is why transferability or extrapolation to other business lines, industries or other was not the priority. The process for this study will be illustrated with a picture next.



Picture 8. Research process for this study.

4.1 Data collection

Several data collection methods were used to conduct the research. The data for general information about the company and rolls and roll services were found from several internal and public documents. The actual research was conducted with different methods including interviews, email data collection and going through internal documents.

Firstly the data for Basic Sales Items was collected by creating two Excel files. The first excel file can be found in Appendix I. The second Excel file consists of exactly the same elements but with different terminology, which is more familiar with scholars and researchers. The second excel file can be found in Appendix II. The first excel file with Valmet terminology was sent out to four persons who are responsible for their respected BSI(s). After the persons responsible for their BSIs had responded with the information the data was gathered under to a single excel file and used as a starting point for service concepts. Some of the BSI data was gathered in workshops with several persons. These BSIs with specifications will be the modules for service packages and concepts. If needed the BSIs can be modified in case it doesn't suit the proposed concept as it is. Possibilities for creating new BSIs were also considered.

In addition to internal documents and the Basic Sales Item questionnaire 4 interviews were conducted with people who work in close proximity with the customer. In the interviews the respondents were asked to identify opportunities to improve the customer's process, development ideas, customer's challenges and general ideas for improvement were concluded from these results. The interviews were partly unstructured and partly semi-structured. Questions were also modified accordingly since not all interviewees understand a question the same way (Berg 1998). The semi-structurality provided general guidelines for the study in order to keep the interviews within topic. (Qu & Dumay 2011) In these interviews some questions required answering but the general guideline was to keep the discussion open since this will offer more insight to the matter and doesn't limit out possible

important factors. These persons were from mill sales, capital sales and agreement managing. The interview lengths varied between 45-75 minutes and the questions were not predefined but rather meant as discussion topics. For validity and a broader spectrum the interviewed persons were chosen from different geographical locations; NA (North America), CN (China) and EMEA (Europe, Middle-East, and Africa). One of the interviewed persons was chosen from capital sales instead of service sales in order to identify differences in capital and service sales and possibly identify success factors for selling services alongside capital products. The different regions were chosen because one service concept doesn't necessarily work on every continent because the customer base values different things. Two of the interviews were conducted via Skype and two were conducted face-to-face. The goal of the interviews was to figure out what customers value and what are their KPI's and what they have been dissatisfied with. The template for interviews can be found in Appendix III. When the results were gathered and analyzed one additional interview was conducted. The need for this information arose after the initial interviews and was important for the development of a new BSI.

In addition to the questionnaire and interviews, previous studies and hundreds of pages of internal documents were utilized mainly as background data. These documents were sales presentations, expired or on-going customer service agreements and documents about previous service concepts. Previous service concepts as an example were seen as crucial information regarding future possibilities in order to map out what could be done better.

Previously conducted interviews were also used as background data in this thesis. VTT and Talent Vectia had already conducted interviews about customer needs and their methodology will be presented next. VTT used semi-structured interviews and interviewed eight sales professionals from Valmet in total. Five of these were face-to-face interviews and three were conducted via telephone or Skype. Talent Vectia conducted two more comprehensive studies. Talent Vectias studies discussed and analyzed customer needs as well as business development opportunities in roll services. They interviewed six customer representatives and six Valmet experts

about service offerings and customer needs. Talent Vectia used semi-structured interviews as well. Talent Vectia also sent out questionnaires to multiple persons and got a 67% response rate with 72 respondents. The questionnaire was divided into sections and the respondents were asked to identify the most important factors in the section. This questionnaire was used to gather info what the respondents see as important and less important factors.

4.2 Trustworthiness of the research and evaluation of the research project

The trustworthiness of the research will be evaluated in the following table.

Table 7. Reliability, objectivity and validity of the study.

Criteria	Method
Reliability (“degree to which measures are free from error” (Tahanasegaran 2009 p. 1))	<ul style="list-style-type: none"> • The research process can be seen while reading the study • Research process is accurately described. • Triangulation: two different methodologies were utilized in data collection as well as previous studies. • Interviewees were from different regions which broadens the spectrum.
Objectivity (“extent to which the findings reflect the focus of the enquiry” (Lincoln & Guba 1985))	<ul style="list-style-type: none"> • Valmet provided feedback was utilized • Triangulation: two different methodologies were utilized in data collection as well as previous studies.
Internal validity (“the extent to which a test measures what it claims to measure” (Gregory 1992 p. 117))	<ul style="list-style-type: none"> • The researcher were involved with the case company for six months. • Triangulation: two different methodologies were utilized in data collection as well as previous studies.
External validity (“degree to which results can be extrapolated” (Petty et al. 2012))	<ul style="list-style-type: none"> • This is a qualitative study and does not aim to generalize findings (Petty et al. 2012 p. 6) • The goal of this study is not to be transferrable to different companies. This is a Valmet situation only. • The results need not to be scalable to different services or different business units and this matter will not be further discussed.

The research project as a whole will be evaluated with Martin & Horne’s (1993) new service development success factors –model. The model is made as a guideline to developing new services but it works as a tool when evaluating this study.

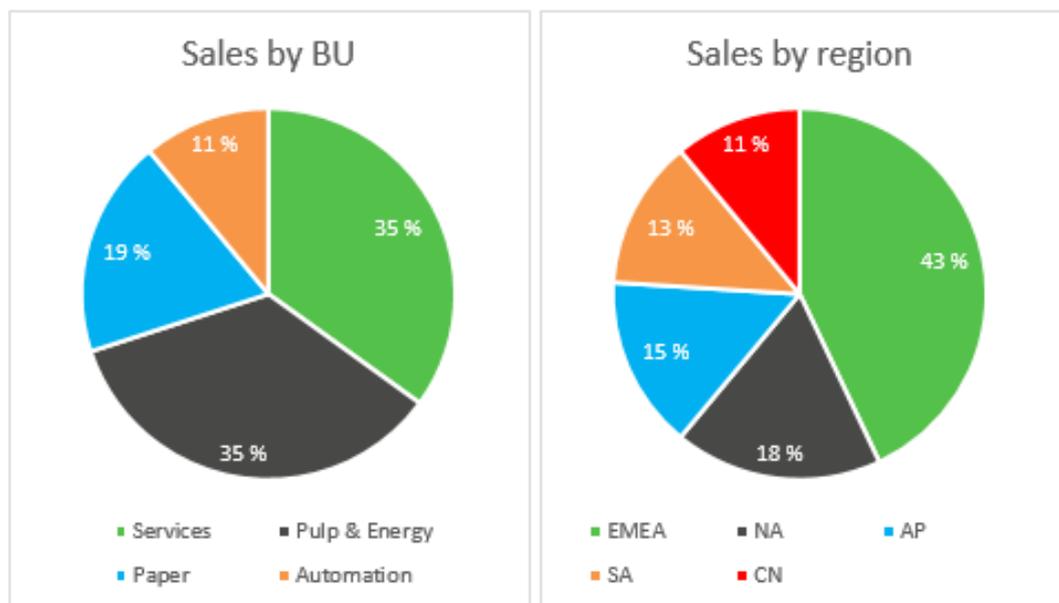
Table 8. Project criticism and evaluation. Based on Martin & Horne's (1993) identified success factors in new service development.

Success factor	
Direct customer involvement	In this project direct customer involvement would have been ideal but due to time and resource limitations it was not possible to include customers from each business region. Thus it was important to reach out for people with direct contact with customers. Direct involvement of customers would probably have given deeper insight into customer's problems and challenges since Valmet employees will still always have Valmet on their mind. On the other hand Valmet's sales personnel have interacted with numerous customers which will yield broader spectrum of insight. Purely customer interviews will only give insight to processes, KPIs and values of a certain customer.
Continuous customer information during the idea generation	The data that was gathered throughout the project could be considered continuous customer information since it is the latest info that sales personnel from Valmet had. And since service deliveries and service concepts are very long projects in roll business the absolute latest customer info is not as crucial as in some other industries. Service concepts in this project are also some level prototypes and customer info will be needed in pilot implementations. Utilization of a case customer would have been interesting, but out of reach of resources.
Business evaluation:	Valmet and customer was the point of interests in this project. The service and service concepts developed in this thesis coincide directly with Valmet's strategies. Health concerns are increasingly important for Valmet and customers and the service offering simplification and implementation for different markets is part of the strategy.
Marketing plan	Revenue generation models are suggested in this thesis, however the marketing of this concept is not studied due to time limitations. The marketing of the concept is timely when the offering is finalized and approved by management.
Involvement of senior management	Senior management should be involved in the implementation of pilot projects since new revenue models are suggested. During this project senior management had no direct involvement, which is why the service concepts can't be sold or utilized as is.
Customer contact personnel	Customer contact personnel should be utilized in pilot projects. Since this was a thesis project time was limited which is why a pilot project was not possible to start.

5 COMPANY OVERVIEW

Valmet is a leading global developer and supplier of technologies, automation and services with total sales of 2.5 billion euros and 12 000 employees in 2014. Valmet's customers are primarily in the pulp, paper and energy industries as well as other process industries. Valmet's offerings cover the entire life cycle of industrial processes starting from new machines and plants and continuing to rebuilds, process control and services. Valmet's core products are paper machines, tissue machines, equipment for pulp and energy industry and automation systems for these equipment. The division of business will be presented with picture 8. (Valmet 2015)

Valmet's business and regions divided in 2014 in the following way:



Picture 9. Share of different businesses and regions in percentages in 2014. (Valmet Strategy Communications 2015).

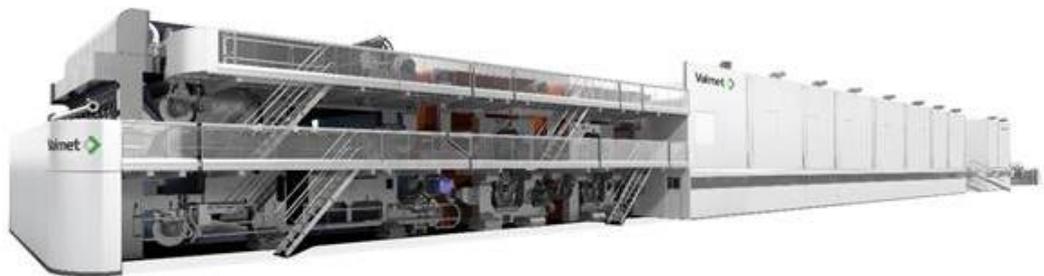
The sales by BU chart strengthens the belief that service business will continue to thrive and its importance will rise in a cyclically sensitive business. It will generate stability and sustainable business for Valmet.

5.1 History and different business lines

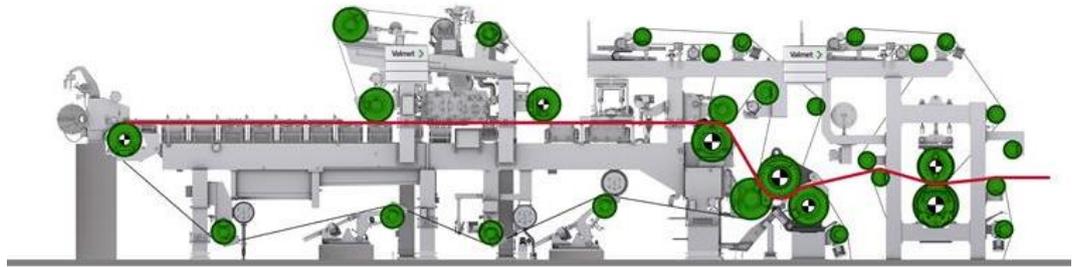
Valmet's history starts back in the 1750s when a shipyard was established on the islands outside Helsinki. Several other different companies were established in the 1800th and 1900th century which all lead to the establishment of Valtion Metallitehtaat (the State Metal Works); Valmet. Through a merger in 1999 by Valmet Corporation and Rauma Corporation Metso was established which was eventually divided into two companies, Valmet and Metso in 2013. Mining and Construction and Automation remained under the name Metso and Pulp, Paper and Power business was transferred to the new company; Valmet Corporation. This was considered as the rebirth of Valmet. Automation business was purchased to be a part of Valmet again in 2015. (Valmet 2015)

Paper and Service Business Lines

Paper business line focuses on paper machines starting from stock preparation and head box and continuing to the end product, paper. Paper business line is further divided into Paper Mills business unit and Tissue Mills business unit. (Valmet 2015)



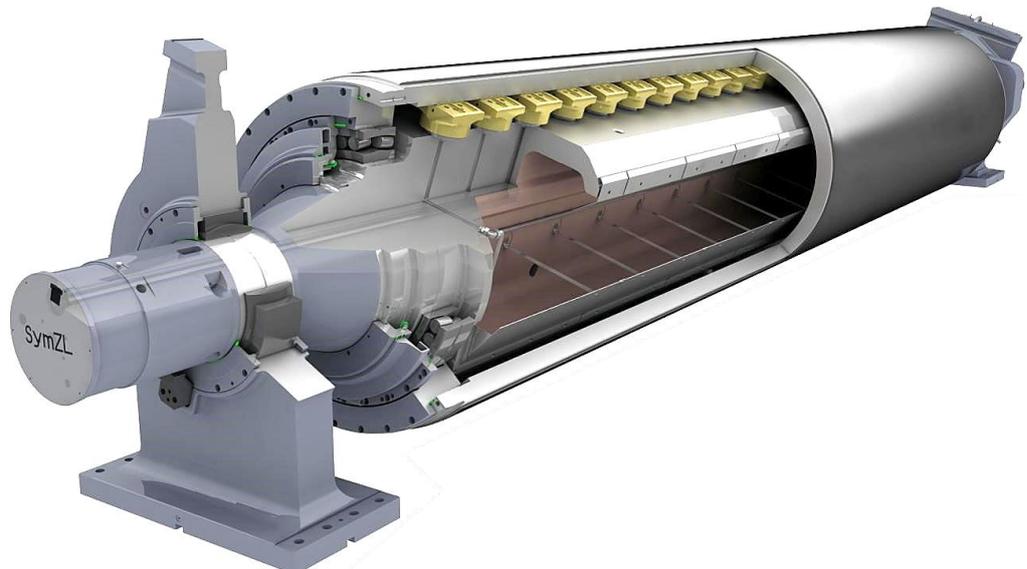
Picture 10. Opticoncept M paper machine (Valmet 2015)



Picture 11. Paper machine picture with former and press section (drying section missing). Green parts are rolls and the red line is the paper sheet. (Valmet 2015)

Valmet also offers services and Valmet is trying to increase the amount of services sold. Valmet offers services for power generation, fiber processing, paper, and board and tissue production line as well as for automation. Around 35% of Valmet's revenue comes from services and even larger amount if Automation is taken into account. (Valmet 2015)

Rolls account for as much as 60% of the value of a paper machine which is why the Rolls services is an important part of service business line at Valmet. Rolls services consist of roll covers, rolls, and roll maintenance. (Valmet 2015) The picture below is a deflection-shoe press roll as an example.



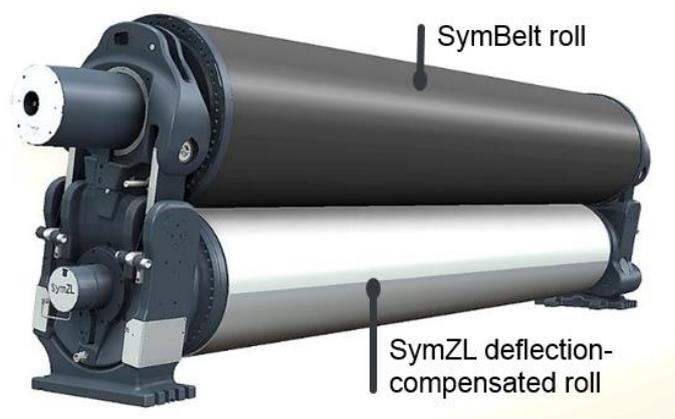
Picture 12. Valmet SymZL roll design for press section. (Valmet 2015)

5.2 Function of rolls in a paper machine

Rolls have several different functions in a paper machine. Most of the rolls don't have a straight affect to processes or special functions and work as lead rolls. Lead rolls for example keep the wire straight. Some rolls however have parts to play when considering the process, runnability and quality of the end product.

There are several types of rolls and most common type is a lead roll to paper web, wires, felts and belts. They are used to lead the paper web, wire, felt or belt and they are also used in tension control for optimal fabrics handling and operation. Actual process rolls are suction rolls, press rolls, calender rolls, spreader rolls and deflection control rolls among other special rolls. Suction rolls are used to apply a vacuum to the roll circumference to dewater the paper web and transfer. (Valmet 2014, Paper Academy)

In the press section rolls have a significant role in dewatering the paper web. At press section the paper web moves forward on a felt. The paper web is then pressed one or multiple times between press rolls and the press rolls form a loaded press nip for mechanical dewatering. Usually the pressure or more accurately "nip-load" that is used on press rolls varies between 500-1200 kN/m (in a Shoe Press). (Valmet 2015) The picture below will illustrate the setup of a typical press solution called shoe press. (Paper Academy)



Picture 131. SymBelt roll and SymZL roll form a press solution. Paper web will go through the two rolls and water is removed from web. (Valmet 2015)

In the dryer section the paper web dried and after this it goes to the finishing line. In the dryer section the type of rolls depend on the drying technology. Despite the technology used for drying in the dryer section will have at least lead rolls and possibly vac or uno rolls (according to Valmet terminology). Vac or uno rolls are basically suction rolls, but they have a function of holding the paper web on the roll instead of dewatering. In paper machines the drying is typically done with steam heated cylinders. (Paper Academy, Valmet 2015, Interview 1)

In addition to guide, suction and press rolls there are several types of special rolls that vary depending on the end product. Some paper qualities require certain finishes for the product and finishing section could have sizer, coater and calender section depending on the end product. Sizer and coater rolls ensure even coating. Calender rolls have an impact on the gloss, roughness, bulk and thickness of the paper. Other special rolls are spreader rolls, reel spools and reel drums. Spreader rolls keeps the paper web and wire from creasing and reel spools are the rolls that the paper is eventually rolled on. Reel drum supports the reel spools as the paper is rolled on the spools.

5.3 Results from previous studies

The studies conducted by VTT and Talent Vectia concerned customer needs and business development possibilities as well as possibilities to improve customer's processes. VTT's study was more simple and basic study which gives guidelines while Talent Vectias study was more comprehensive and in depth with its two methodologies.

VTT presented several basic guidelines as result. They offered two different possibilities for modularization; customer modularization and service modularization. Customer modularization means creating modules from customer's machine configuration and paper grade. This however requires a lot of knowledge about customer's machinery and excellent documentation about current situation at

customer's sites. When sales personnel have good knowledge about customer's equipment, processes and values sales can be executed accordingly.

Service modularization is probably easier approach for a company like Valmet, where there is a lot of diversity among customers and their machinery. Customers have lot of different machinery from different eras and different manufacturers so pure customer modularization requires too much effort and resources. VTT proposed creating different service categories which would range from Premium to Economy level services. To succeed in service modularization the products and services need to be classified and divided into product families. This is being done at Valmet already with BSI-level classification and these BSIs (Basic Sales Items) will eventually be the modules for services.

One of the problems VTT identified from the interviews is that different customer representatives have different knowhow and value different things. The customer representatives also have different targets depending on his/her position and responsibility.

- Maintenance organization: Customer representatives from maintenance organization value quality of components and lower maintenance costs.
- Operations: Operations see the process as a whole and the quality and quantity is important to them.
- Buying organization: Buying organization are interested in economic issues such as pay-back time and price and are not interested in technology or process improvements. They operate within the given budget.

This obviously creates a challenge for the supplier, Valmet, because depending on the customer organization the sales process has to be modified accordingly.

6 ROLL SERVICES AND SERVICE CONCEPTS AT VALMET

Valmet has a comprehensive service offering regarding rolls at the moment. The challenge seems to be standardization and a large and complex service offering portfolio. Solutions and agreements form different types of service concepts. The agreement activities have also a lot of variation between different regions. In addition to different regions Valmet has capital sales which consists of selling new machines, parts of machines, optimization packages and many other solutions. Services sold alongside capital products is a different business environment compared to service sales to existing older mills. These differences will be discussed and evaluated next.

6.1 Regional differences at Valmet in Roll Service activities

Europe and Finland has a lot of paper mills and in general they are older machines. Finland is especially known for its forest industry. Older mills have different maintenance strategies and there usually is more maintenance business with older machines. In terms of industrialization Europe is similar to USA but the level of agreement based services is different; market for agreements is more mature in North America than in Europe. Customers in North-America are more willing and open to roll service agreements. It seems that the reason to this is that the customers in North-America have been focusing on the total costs instead of costs of single activities. This is a matter that has changed in the past few years and will probably be an even greater opportunity for Valmet.

As in Europe, also in North-America customers have their own maintenance crews or partners that they are operating with and they prefer to keep some of the roll maintenance know-how inside their company. In North-America this has been solved by creating agreements where the amount of roll business is divided between the customer and Valmet. This offers customer flexibility and the percentage of roll business that Valmet receives is agreed on case-by-case. The agreements in North America are usually classified as TRR (Total Roll Reliability) or AMP (After

Market Partnership) depending on the commitment level of the customer. If the customer commits to Valmet with over 75% share the agreement is classified as TRR and if the commitment level is over 90% it is called an AMP agreement.

European and possibly Asian markets could benefit from North-Americas roll agreement models. Customer deals their own part in a way that fits them best; their own maintenance crew or a subcontractor. In long-term relationships Valmet can give greater incentives and discounts compared to a single transaction based business. Valmet can also give better OEM (original equipment manufacturer) – level guarantees for rolls in a situation where Valmet is responsible for the functioning of the rolls.

Customers in China and Asia are not as willing to make roll service agreements as in North-America for example. The machines are usually newer in Asia than in North America and Europe and the economic development as well as industrialization are in different phases. Valmet has not been able to present the benefits of agreements to Chinese customers which is why agreements are not so common in China. Service agreements are usually pricelist agreements with discounts from market basket prices and even these pricelist agreements are not the norm. One reason for low roll service sales in China is also the local competition; in China there are a lot of local operators specialized in mechanical maintenance and roll covers which puts a lot of price pressure on Valmet. Valmet's approach should be on the corporate level to avoid the local competition. In addition the Chinese government has an ongoing program which supports and promotes the competitiveness of Chinese companies. This in turn makes it more challenging for Valmet to compete with local organizations. However at the moment local competition lacks the assets to compete in service agreement which gives Valmet an opportunity to convince customers of the benefits of agreement based partnerships.

Capital sales brings their own share of variety to the table. It would be ideal if Valmet could sell service agreements as early in the sales project of a machine as

possible. This however is a different process than to sell services in the regular way when the machine has already been operational for some time. The capital sales project requires a lot of work and negotiation about the scope of the machine concept and this will be the number one priority. Other important factor is that the person from customer organization who negotiates about the purchase of a new machine will probably not be the same person that negotiates about service agreements thus making it harder to approach service agreements in capital sales phase. Valmet has also separate people selling capital products and service offerings. Capital sales people lack the support and tools to sell roll service agreements due to the complexity of roll services. The optimal situation would be that capital sales managers had sales tools for services and later in the negotiations service sales personnel would come along and start discussing the possible service agreements.

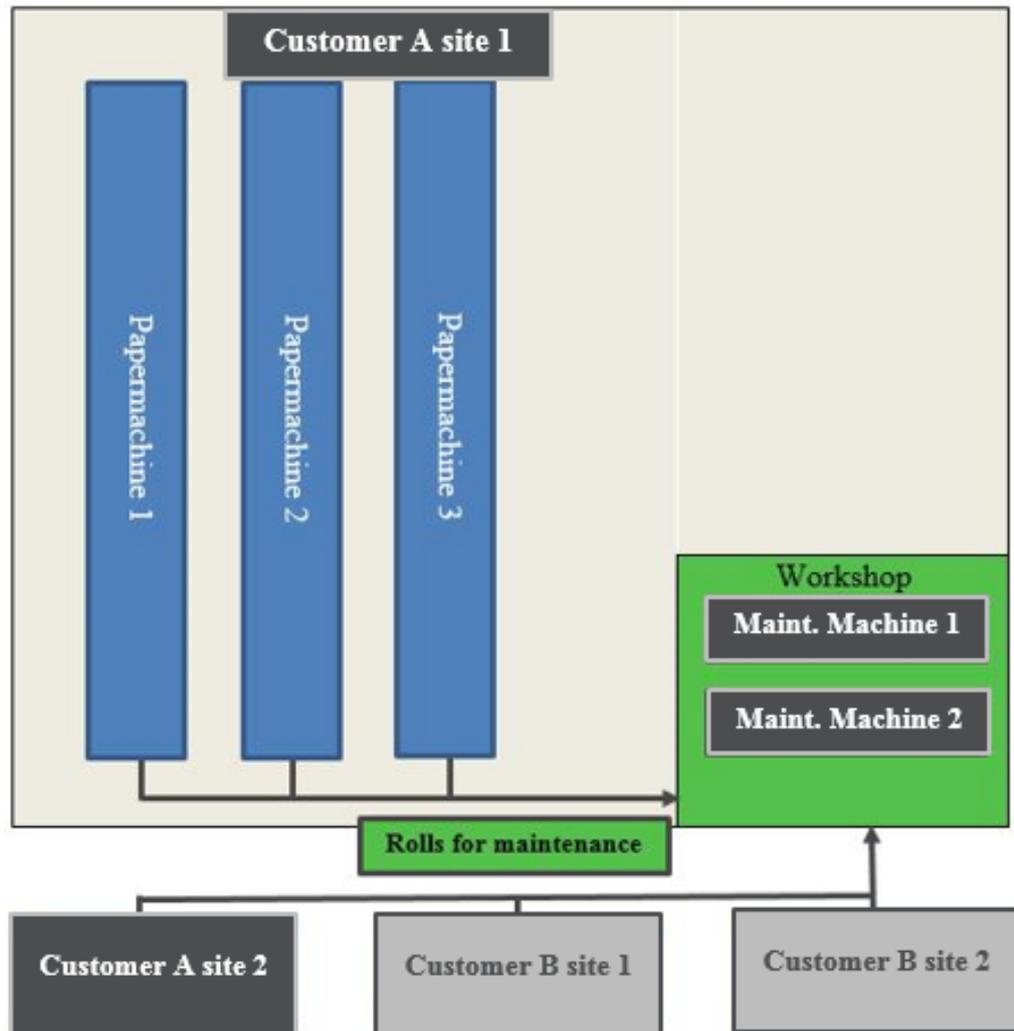
6.2 Current service concepts at Valmet

Valmet has several service concepts for different situations. Most of these service concepts have been created as a solution for a customer problem at the moment. In this part some of the major roll service concepts will be presented with simplified examples. The concepts that will be presented are Roll Satellite, Roll Maintenance Outsourcing, mix of loosely defined concepts, Pricelist Agreement, MMO (Mill Maintenance Outsourcing)-type of concept and a Subcontracting concept.

Roll Satellite

Roll Satellite has been recently created and implementation at some customer sites are in progress. Roll satellite includes different modules like roll maintenance, roll recovering, reconditioning etc. It is an agreement based service concept where the goal of Valmet is to take over the operation of customer's workshop and start maintaining customer's rolls at their facilities. Next an example of implementation of Roll Satellite will be presented: The customer has their workshop at a certain paper mill. Their workshop has overcapacity which could be utilized for maintenance of other mills' rolls. In this kind of situation Valmet's proposal is that

Valmet will take over the workshop operations at customer's site and start maintaining all of customer's rolls including the ones from nearby paper mills (other companies' mills as well) . Valmet will build their own maintenance crew with Valmet knowledge and possibly invest in machinery or infrastructure if needed. The picture presented next will illustrate the idea of a Roll Satellite implementation.



Picture 14. Picture illustrating the implementation of Roll Satellite. Valmet will operate in customers' facilities and take over their workshop; Valmet will maintain customer's rolls and rolls from other customer sites. In the case of overcapacity Valmet will maintain other customer's rolls as well at these facilities.

Possible challenge with Roll Satellite type of concept is that it requires a lot of trust from the customer and many customers aren't ready for this kind of solution. The concept requires a lot of prework and confidential information from customer and Valmet. Other paper mills must also be in reasonable logistic distance so that

maintaining these rolls is cost effective. The upside of Roll Satellite is that it is a relationship-based service and both the supplier and the customer commits to it; this will eventually create more trust and partnership between two companies. It will also free the customer to concentrate on its core business and will probably lower labor costs since they don't have to keep their own workshop crew. The challenge however with overtaking the customer's roll workshop is that the customer might be afraid that they lose the know-how of the rolls. Know-how is an important asset for many companies. This seems to be the challenge especially in the North-American continent.

Roll Maintenance Outsourcing

In the Outsourcing concept the customer will outsource some or all of its roll maintenance activities. There are case examples where customer has outsourced all or most of its roll maintenance activities. This includes scheduled maintenances, and break down maintenances as well as recovering. This is a traditional type of service concept and is simply called outsourcing because that's what it is. This is a beneficial situation for Valmet and the customer, since the customer don't have to worry about the rolls at and can keep a minimal maintenance crew. For successful and cost efficient service the customer site has to be relatively close to Valmet's workshop since the rolls are to be delivered to Valmet's site for maintenance. This limits the number of possible customers since rolls in a paper machine can weigh up to 100 tons and be 12 meters long which causes transportation challenges.

Recovering and Mechanical Maintenance Agreements

In addition to Roll Satellite and Outsourcing Valmet has many loosely defined and flexible service concepts. Two of these are COP (recovering agreement) and MEP (mechanical maintenance agreement) agreements. In a COP agreement the customer commits to purchase all roll covers from Valmet. COP agreement can include different components as well depending on the situation. In a MEP agreement a maintenance agreement is created for a certain part or parts of the machine. One other loosely defined agreement is a frame agreement.

Pricelist Agreement

Pricelist agreements are lowest level agreements or service concepts which haven't been standardized so well. In a pricelist agreement the customer and Valmet agrees on a list of prices for needed services and the customer commits to buying from Valmet. The problem with this concept is that even though it is a low level agreement there is no guarantee of customer's commitment. Also the customer doesn't receive maximal benefits from this kind of agreement since customer itself decides what maintenance or spares to buy and doesn't necessarily benefit from Valmet's expertise and development propositions. Pricelist agreements are implemented in China, which is not as mature a market as North America for example. Chinese culture and its level of development affects the customer's preferences. In China there are also several smaller competitors and the price competition is harsh. One possibility to avoid local competition is to approach the corporation instead of single mills; by creating corporate level frame agreements Valmet can negotiate which mills will be included in the agreement and which mills can't participate in this agreement.

Mill Maintenance Outsourcing

The general idea is almost the same as in Roll Maintenance Outsourcing concept but with an MMO concept Valmet is fully responsible of all maintenance activities, not only rolls. Valmet will guarantee the functioning and condition of all components included in the agreement. The earning logic varies in this type of concept but it is a possibility to tie the profits to produced tons at the mill. The MMO concept is comprehensive service concept and will probably not be the norm since very few customers are ready for this level of commitment.

Subcontracting

The core idea of this concept is that a third party will maintain a certain share of customer's rolls. Customer will maintain an agreed amount of rolls and Valmet will maintain the remaining amount with the help of a 3rd party. The third party is a local maintenance organization that Valmet will find and create a partnership with said party. The roll services will be divided between Valmet and the customer and

Valmet will utilize 3rd party partners existing maintenance capacity. Valmet will train the 3rd party to maintain the rolls according to Valmet standards.

What can be concluded from previous service concepts is that the idealized situation for Valmet would be a concept that is as comprehensive as possible (i.e. MMO / Roll Satellite type of agreement) and for the customer the ideal situation would be flexibility of the concept and especially in a way that would let them decrease total costs at the mill.

6.3 Basic Sales Items

The basic sales items used in this thesis were originally defined for the Roll Satellite concept. However, the data has not been collected or standardized. These basic sales items will be utilized in creating new service concepts since they cover the whole offering portfolio roll services has to offer. Some of the BSIs were singled out on purpose since their definition and standardization is not crucial for this project. However they will be the focus of future research. The basic sales items and key data collected from them will be presented next with a table for each BSI. In the upper row is the name of the BSI and key information is presented from operational, experience, outcome and values point of view.

Table 1. Workshop Audit.

Workshop Audit	
Operation	<ol style="list-style-type: none"> 1. Roll expert & financial expert visit 2. Maintenance management interviews 3. WTO (way-to-operate)- analysis (roll WS layout & machinery) 4. Personnel & logistics setup 5. Reporting & recommendations
Experience	- Technical evaluation of existing Roll Workshop: Layout, capacity, machinery, condition, potential for improvements,. Financial: investment needs, efficiency, logistics, roll maintenance cost efficiency
Outcome	- Technical and financial evaluation of papermill roll workshop capability
Values & KPIs	<ul style="list-style-type: none"> - Improvement potential for technical capability & cost efficiency - Reporting time

Table 2. Roll Audit.

Roll Audit	
Operation	1. Agreement and management alignment on audit targets 2. Mill to submit documentation for Valmet 3. Valmet analysis 4. Valmet audit report
Experience	- Roll audits based on current documentation
Outcome	- Roll and roll services current state description to reveal performance potential
Values & KPIs	-

Table 3. RunSpan Optimization.

RunSpan Optimization	
Operation	- Current state analysis and preparing for the proposal - All rolls and fabrics positions studied and their change intervals are studied → compared to desired levels
Experience	- No downtime needed, can be executed in normal shutdown - One week in total for delivery
Outcome	- Optimized rolls and fabrics run times - Roll cover and fabric upgrades / recommendations are made
Values & KPIs	- Secured maintenance intervals - Less unplanned downtime - Guaranteed running time accuracy

Table 12. Roll Data.

Roll Data Management	
Operation	1. Establishment of Roll tracer/Mill tracer 2. Roll data collection from existing systems 3. Data input to system 4. Roll maintenance planning 5. Maintenance instructions 6. Training 7. Implementation 8. Upkeeping
Experience	- Valmet will take care of roll data collection: starts with roll lists, service history, planning & instructing
Outcome	- Systematic approach for roll maintenance based on real documented roll data
Values & KPIs	- Number of unplanned shutdowns due to roll failures

Table 13. Roll Maintenance Plan.

Roll Maintenance Plan	
Operation	1. Agreement and management alignment on audit targets 2. Mill to submit documentation for Valmet 3. Valmet analysis & negotiations 4. Valmet audit report
Experience	- Mill specific tailored plan and recommendations
Outcome	- Valmet support with setting up roll services and roll maintenance
Values & KPIs	- Overall roll related performance

Table 14. Roll Maintenance.

Roll Maintenance	
Operation	<ul style="list-style-type: none"> - Follow-up during roll in run in the machine - Roll outage, transportation, preparations - Maintenance and testing - Transportation, ready for run - Installation
Experience	<ul style="list-style-type: none"> - Depends on the roll position - Roll change only approx. 4-12 h
Outcome	<ul style="list-style-type: none"> - Preventive maintenance to service and test the roll - Normal runspan
Values & KPIs	<ul style="list-style-type: none"> - Ensure runnability in normal conditions - Roll uptime

Table 15. Roll Cover Upgrade.

Roll Cover Upgrade	
Operation	<ul style="list-style-type: none"> - Base line study and cover optimization - Cover manufacturing - Start-up service - Value verification
Experience	<ul style="list-style-type: none"> - Base line evaluation to analyze customer's challenge and current process parameters - Investigating and simulation of potential roll covering solutions - Roll recover manufacturing - Start-up assistance and training - Start-up documentation - Follow-up and value verification - Installation time: 4-12 hours (roll change)
Outcome	<ul style="list-style-type: none"> - Measurable improvements in operational costs, operational reliability and maintenance costs through upgrading roll cover with latest technology.
Values & KPIs	<ul style="list-style-type: none"> - Energy saving (drive power/ steam consumption) - Dryness after press - Regrinding intervals - Less breaks/day - Paper bulkiness

Table 16. Roll Cover Expert Service.

Roll Cover Expert Service	
Operation	<ul style="list-style-type: none"> - Baseline study based on customer data - Start-up service and operator training - Value verification and start-up documentation
Experience	<ul style="list-style-type: none"> - Materials collection for baseline study and participation in start-up and training 1,5 days in total
Outcome	<ul style="list-style-type: none"> - Shorter time to results and securing benefit realization of roll cover upgrade through cover selection, start-up support and operator training. Valmet roll cover expert secures right cover selection for the optimal nip behaviour. Valmet roll cover expert is also supporting roll cover start-up and giving needed operator training.
Values & KPIs	<ul style="list-style-type: none"> - Faster time gaining the benefits - Securing benefits through right cover selection - Improved customer competences to run and maintain new cover

Table 17. Roll Reconditioning.

Roll Reconditioning	
Operation	-
Experience	- Complete disassembly, inspection and reassembly - Testing the roll
Outcome	- Preventive/predictive maintenance guarantee roll performance
Values & KPIs	- Roll condition as good as new after reconditioning - Roll performance & uptime & life expectancy, reliability

Table 18. Roll Modernization.

Roll Modernization	
Operation	-
Experience	- Engineering and design for upgrades - Construction - Downtime depends on position, roll change only approx. 4-12 h
Outcome	- Improved process performance & reliability and reduce operational costs through latest roll technology
Values & KPIs	1. Lower maintenance costs through longer maintenance interval 2. Lower operational costs through water and energy cost reduction 3. More sellable production through improved reliability, less downtime and increased production speed - KPIs e.g.: Number of breaks, energy savings, Water savings, roll lifetime expectation, performance

Table 19. Roll Transportation.

Roll Transportation	
Operation	1. Valmet chooses contact person 2. Agreement of drop zone at the mill 3. Customer notification of roll ready for transportation 4. Transportation agreements with logistics companies by transportation contact person
Experience	- Transportation of rolls from customer drop site to Valmet WS and returning the rolls to agreed place and forwarding
Outcome	- Door-to-door service for rolls
Values & KPIs	- Lead time, total costs of transportation

Table 20. Roll Warehousing.

Roll Warehousing	
Operation	1. Roll to be transported to agreed warehouse 2. Roll stores under right conditions 3. If special storing procedures need to be taken into account as an add-on service 4. Transportation to final destination
Experience	- Roll storing in decent circumstances in external warehouses
Outcome	- Roll warehousing and delivery to mill when needed
Values & KPIs	- Warehousing costs, transportation costs, free space at customer site

Table 21. Roll Change.

Roll Change	
Operation	<ol style="list-style-type: none"> 1. Preparations & scheduling for roll change 2. Individual procedure and tools for each roll 3. Lifting tools and personnel setup 4. Actual roll change 5. Replaced to maintenance
Experience	- Establishing systematic detailed roll change procedures and setting up roll change tools and accessories. Actual roll changes
Outcome	- Systematic approach to roll change
Values & KPIs	- Efficiency, Cost savings, Safety, Roll change time

Table 22. Paper Technology Support.

Paper Technology Support	
Operation	<ul style="list-style-type: none"> - Help customer understand current situation of the process - Recognize bottlenecks → find out process improvements - Presence of a specialist at the mill for agreed time period - Tech support from Valmet organization
Experience	<ul style="list-style-type: none"> - Aims to ensure successful operations in operational challenges, development projects or other special events - Monitoring and studying the machine line and define recommendations for daily operations
Outcome	- Shorter time to results, efficiency improvement and securing benefit realization through world class paper technology expertise
Values & KPIs	- Start-up time, reporting time, other project target indicators

Table 23. Improved Spare Roll.

Improved Spare Roll	
Operation	<ul style="list-style-type: none"> - Customer needs evaluation - Quotation based on customer needs - Spare roll or shell delivery - Start-up assistance - Value verification
Experience	<ul style="list-style-type: none"> - Evaluation of customer needs - Spare roll quotation based on customer needs - Improved spare roll or shell delivery - Start-up assistance for getting targeted results - Verification of achieved results
Outcome	- Better performance with a spare roll utilizing latest technology innovations
Values & KPIs	<ul style="list-style-type: none"> - Maintenance interval and cost - Drive power consumption - Sheet dryness & even dryness

Table 24. iRoll.

iRoll	
Operation	- Censored press roll
Experience	- Installation time: 8 hours for tuning + roll change
Outcome	- Reliable on-line process parameter measurement
Values & KPIs	- Real time measurement of process parameters

7 VALMET'S CUSTOMERS AND THEIR VALUES

Factors that Valmet's customers value depend on the geographic region. For example North America and Europe are much further in economic development and industrialization compared to Asia. Industrial revolution started much earlier in these "old" continents which has led to higher labor costs and investment costs. In Asia customers are not necessarily so interested in savings in human resources since workforce is significantly cheaper there. However, for example in China, labor cost is rising every year and the situation will eventually change towards European and American situation. There is also variation inside the same continent and even inside the same corporation; a corporation usually has several paper mills and these mills have usually an autonomous rule of their operations along with strategic guidelines coming from corporate level. This leads to the fact that it is hard to find a roll service or solution to satisfy every customer.

7.1 Factors valued by Valmet's customers

The factors valued by Valmet's customers will be divided into three categories: technical, economic, and social according to Anderson & Narus (1998) classification.

Technical:

- *Reliability:* Roll maintenance and roll services in general cover around 1% of total costs of operations and this is why customers want that rolls cause as minimal amount of problems as possible. Despite the small fraction of total costs rolls can cause a lot of trouble in machines if they are not maintained properly. Cost estimate for a shutdown of paper machine is tens of thousands of euros per hour which is why customers don't want that the machine has to be stopped unexpectedly.
- *Performance:* Customers expect and want the rolls to perform at the level they are designed. Durability of the roll cover could also be counted into performance section since the wear down of the roll cover affects performance.

Economic:

- *Total costs:* Especially in the North-American markets customers have started to keep an eye on total costs instead of the costs of single transactions in roll maintenance. The customers realize that even though the cost of roll maintenance or service might be higher, it will still result in lower total costs. This is an area that should be studied further in China and Asia, since customers have not yet realized this fact and customers in that continent are more concerned about the costs of single maintenance activities.
- *Predictability of costs:* There is variance between customers. For example in Europe some customers would be ready for a fixed fee but the problem is how large should the fixed fee be in order to cover all the costs (from Valmet point-of-view) but still small enough to be a competitive price. On the other hand, customers in North-American and Asian markets seem to prefer a pricelist agreement where Valmet has listed prices for all services and maintenance activities and customer will order them on a needs basis.

Social:

- *Partnerships:* In North-America service agreements are more popular than in Asian or European markets and customers value a partnership approach. They appreciate that Valmet takes care of their rolls and help their mills operate at optimal capacities without surprises. Partnership approach also makes it easier for Valmet to present new products and services.
- *Peace of mind:* Especially the customers in North-America and Europe want that they don't have to worry or think about rolls. This attitude is more common in North-America where the customers are not so price sensitive to achieve this "piece of mind" –state. Some customers are willing to pay to avoid surprises and unexpected shutdowns which will make the customer lose money.

7.2 Customers' KPIs and business realities

The research for customer value and customer key performance indicators (KPI) is not done systematically on all regions that Valmet operates in. Due to the relatively difficult situation in paper industry compared to the situation 20 years ago almost exclusively all customers have cost efficiency as one of their KPIs. Next some typical customer KPIs are presented.

Table 25. Typical customer KPIs.

KPI	Information
Cost efficiency	This KPI appears on almost every customer but different customers emphasize cost efficiency differently. For example in the North-American markets the production is pretty much maximized and customers are not seeking extra tons but want to produce the same tons with a cheaper prize. However in Asia, customers are more open to increased production alongside cost efficiency.
Efficiency	This efficiency means machine efficiency which comes from roll runnability. It is crucial to ensure that the rolls don't interfere with runnability and also that the mean-time-between-failure (MTBF) is optimal. Valmet should be able to map out how much of efficiency does the rolls eat up and this way communicate value Valmet will provide.
Quality	Customers want to produce the quality that their customers require but quality costs money which is why they don't want to make over quality unless their customer is willing to pay for it.
Safety	Safety is a KPI that almost all factories are emphasizing at least in North-America. This could be utilized for Valmet's advantage since Valmet has a lot of sophisticated methods for e.g. changing the rolls which reduces the amount of customer employee risk when heavy objects are being lifted.

Some of the customers are not willing to share their KPIs. It is unclear whether it is because Valmet's personnel can't ask the right questions or if the customers just want to keep certain facts as secret. Customers have also corporate level and mill level KPIs. Usually annually corporate will emphasize certain KPIs and then the individual mills will have their own goals. What some customers don't seem to understand is that it will benefit both Valmet and the customer if Valmet knows exactly what the customer is looking for. The roll agreements will work even if the customer is not as cooperative as Valmet wishes but it will be significantly harder.

Valmet should initiate more communication with the customers especially in the Asian markets. There is lack of emphasis in understanding customers business and

KPIs in Asia. Customer value and KPIs are not studied or researched systematically in all areas which might affect the service agreements.

7.3 Communication with customers at Valmet

Communication is the key to succeed in roll service agreements at Valmet. Many of the sales personnel that was interviewed mentioned that the most successful service deliveries and agreements were so successful because of the mutual interest from Valmet's and customers' side to negotiate and discuss. When discussing about communication it is not necessarily only about value communication between Valmet and its customers; the communication itself will create value for the customer and Valmet when Valmet can better understand customer's problems and concerns.

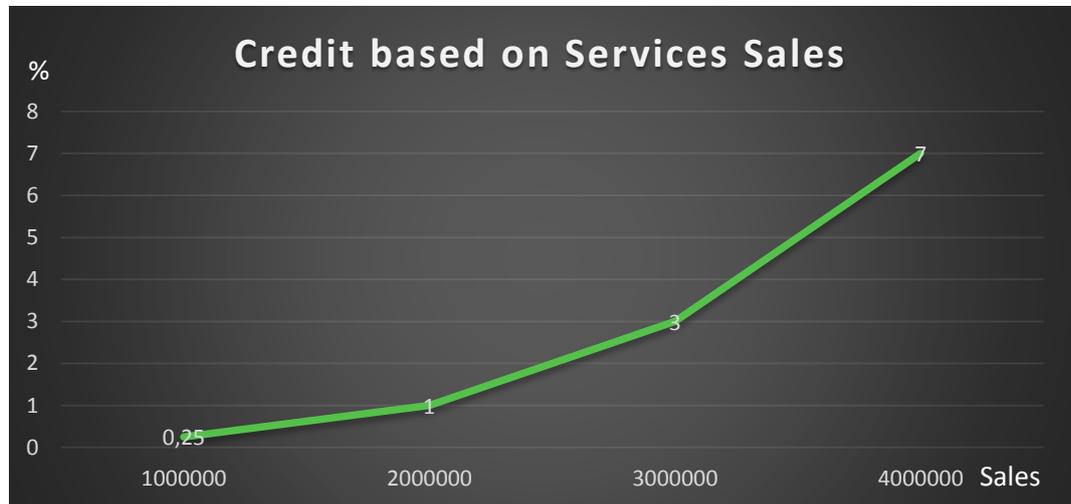
In the initial negotiations the Valmet's approach is that Valmet presents only those factors that interest this customer. But in order to do this, the customer has to be studied and researched to find out their KPIs and values. This communication approach in the initial phase is the optimal because the customer will feel more appreciated and understood which is extremely important in industrial B2B markets. In long-term agreements and partnerships Valmet prefers to have regular communication and negotiations with the customer in order to perform better in the future. The negotiations are opportunities for the customer to point-out unsatisfactory elements and also gives Valmet the opportunity to present new ideas and products. Sometimes the importance of communication is not realized and misunderstandings regarding KPIs and values arise. This causes a lot of challenges for both Valmet and the customer. Valmet will not be able to answer to customers' demands and values as effectively and the customer might be unsatisfied. An example situation is presented next: One proposition was that in the case of volume credit based agreement Valmet should put in a clausal that the volume credit will only be realized after Valmet and the customer have had their scheduled meetings. In these meetings the success of Valmet and the agreement will be discussed and Valmet has an opportunity to present new ideas, products and services.

7.4 Pricing logics preferred by customers

In general customers prefer to have a pricelist with discounts calculated from market basket prices. The market basket price is calculated with cost plus mentality. This pricelist is a part of the agreement and the customer order roll services and products with these prices. In Finland and Europe some customers would like to have a fixed fee for roll services that cover all the elements of the agreement. Fixed fee would improve customer's risk management since they can forecast expenditures more accurately. Risk management thinking is more North-American and European approach and some customers would probably be ready for a fixed fee agreement, if the price is right. This however is extremely hard to execute since normally the starting point of an agreement is that Valmet doesn't exactly know what rolls the customer has, what covers they have, when the rolls have been maintained and who have maintained them. Rolls and especially process rolls are "individual" and they wear out and perform differently; humidity, temperature and other factors vary depending on the position of the roll. This is why the pricelists are popular on all continents and the customer agrees to these prices and depending on the agreement customer purchases certain amount of roll services from Valmet each year. Customers appreciate predictability in costs but since the industry is price sensitive the customers are not willing to pay premium only for the certainty of knowing how much roll maintenance will cost them. Usually there is not enough history information about rolls and roll maintenance costs at customer to make a fixed fee agreement with a competitive price, since the goal is not to make charity with roll service business.

In North-America Valmet has started moving away from the discount-policy and towards a "volume credit" type of approach which will be presented with a picture. In picture 14 is illustrated how the volume credit system works. The more sales Valmet receives from the customer, the greater the credit i.e. at the end of the year the amount of credit will be calculated based on customer's expenditure and Valmet

will return x amount of money to the customer (Not to be assimilated to any of Valmet's customers, example calculation only).



Picture 15. Volume credit approach.

8 CONCLUSIONS

Throughout the process several ideas and conclusions arose but some unity could be found from all these results. Customers appreciate flexibility, cost efficiency and predictability since their business is sensitive to economic fluctuations thus making Valmet vulnerable to the same phenomena. From the results gathered in this thesis suggestions are made regarding existing service concepts as they cover Valmet's offering portfolio and they will be presented in a conceptual manner. A new smaller roll service concept regarding roll covers will also be presented.

8.1 RQ 2. Summary of different roll service concepts

The concentration will be on the larger and more comprehensive concepts since they can further be deconstructed into smaller entities. MMO-concept is left without further consideration since it is a special situation that regards other equipment in addition to rolls.

Table 26. Roll Satellite summary.

Roll Satellite	
Operation	<ul style="list-style-type: none"> - Analysis of current situation: roll & roll service study - Benchmarking - Feasibility study & Financial study & Investment needs
Experience	<ul style="list-style-type: none"> - Analysis of current state and evaluation of best practices - Negotiations about the scope & roll specialist visits - Establishment of Valmet operations at customer site - Recruitment of workshop personnel, training - Launch of Valmet workshop operations at customer site
Outcome	<ul style="list-style-type: none"> - Reliable and structured maintenance plan - Roll uptime and lifetime expectancy optimal - Operational guarantees - Statistical analysis and future estimation - Decreased roll maintenance costs in long-term agreements
Values & KPIs	<ul style="list-style-type: none"> - Cost efficiency → workshop capacity maximized, minimal maintenance crew - Maintenance quality according to Valmet standards - Direct financial values from reliability and runnability - Roll maintenance always available - Peace of mind: rolls will function as promised
Core BSIs	<ul style="list-style-type: none"> - Workshop & Roll Audit - Roll data management - Roll maintenance plan - Roll maintenance - Roll reconditioning
Customer benefits	<ul style="list-style-type: none"> - Minimal maintenance crew - Utilization of the existing machinery with optimal capacity - OEM-level maintenance
Valmet benefits	<ul style="list-style-type: none"> - Utilization of existing machinery at customer site - Reasonable investments - Closer relationship with customer
Valmet risks	<ul style="list-style-type: none"> - Possible investments - Maximizing the workshop capacity without taking business away from other Valmet sites - Losing know-how to customer

Table 27. Roll Maintenance Outsourcing concept summary.

Roll Maintenance Outsourcing	
Operation	- Analysis of the current state of rolls
Experience	- Negotiations about the scope - Roll specialist visits : Roll documentation and roll history gathering - Logistic plans for roll transportation to Valmet workshop - Maintenance plans for customer rolls, capacity planning at Valmet - Outsourcing agreement
Outcome	- Reliable and structured maintenance plan - Roll uptime and lifetime expectancy optimal - Operational guarantees - Statistical analysis and future estimation - Decreased roll maintenance costs in long-term agreements
Values & KPIs	- Cost efficiency → no own maintenance crew - Better predictability - Lead time - Maintenance quality according to Valmet standards - Direct financial values from reliability and runnability - Peace of mind: rolls will function as promised - Safety: if HSE Audit chosen
Core BSIs	- Roll audit - Roll data management - Roll maintenance plan - Roll maintenance - Roll reconditioning
Customer benefits	- Minimal maintenance crew - OEM-level maintenance □ Quality
Valmet benefits	- Full responsibility of customers roll maintenance - Stable business □ Maintenance is done according to maintenance plans and Valmet is able to better plan production and shorten lead time - Continuous customer relationship
Valmet risks	- Logistics

Table 28. MEP-agreement concept summary.

MEP-agreement Concept	
Operation	- Analysis of the current state of rolls
Experience	- Negotiations about the scope - Decision of maintenance target: e.g certain position on a machine
Outcome	- Reliable and structured maintenance plan & maintenance for certain part/ position of the machine
Values & KPIs	- Better predictability - Maintenance quality according to Valmet standards - Direct financial values from reliability and runnability
Core BSIs	- Roll maintenance plan - Roll maintenance - Roll reconditioning
Customer benefits	- OEM-level maintenance
Valmet benefits	- No strategic level decisions on customer or Valmet side - No investment needs
Valmet risks	- Not as close relationship with the customer as with an outsourcing situation

Table 29. Subcontracting concept summary.

Subcontracting concept	
Operation	<ul style="list-style-type: none"> - Analysis of current situation: roll maintenance load in area - Benchmarking - Feasibility study & Financial study
Experience	<ul style="list-style-type: none"> - Analysis of customer rolls - 3rd party partner workshop study - Negotiations about the scope; division of roll business - Partnership decision - Training of 3rd party partner - Launch of maintenance at partner site
Outcome	<ul style="list-style-type: none"> - Reliable and structured maintenance plan - Roll uptime and lifetime expectancy optimal - Quantity and quality stabile - Operational guarantees - Statistical analysis and future estimation
Values & KPIs	<ul style="list-style-type: none"> - Reliability & runnability → cost efficiency & overall efficiency - Direct financial values from reliability and runnability - Peace of mind: rolls will function as promised
Core BSIs	<ul style="list-style-type: none"> - Workshop Audit for 3rd party partner site - Roll audit - Roll data management - Roll maintenance plan - Roll maintenance (3rd party) - Roll reconditioning
Customer benefits	<ul style="list-style-type: none"> - Local OEM-level maintenance
Valmet benefits	<ul style="list-style-type: none"> - Minimal investments → utilization of maintenance partners existing machinery
Valmet risks	<ul style="list-style-type: none"> - How can Valmet protect intellectual property rights when a 3rd party is trained to maintain rolls according to Valmet standards

Table 30. COP-agreement Concept summary.

COP-agreement Concept	
Operation	<ul style="list-style-type: none"> - Analysis of current roll covers in different positions - Analysis of the condition of roll covers
Experience	<ul style="list-style-type: none"> - Detailed list of roll covers - Roll cover expert analysis → Updating old/insufficient roll covers
Outcome	<ul style="list-style-type: none"> - Reliable high performing roll covers for each position - Stable quality and wear & tear
Values & KPIs	<ul style="list-style-type: none"> - Quality → stable paper quality - Dry matter content and runnability → - Durability of covers → cost savings on long term
Core BSIs	<ul style="list-style-type: none"> - Roll recoverings - Roll cover expert service - Roll cover upgrade
Customer benefits	<ul style="list-style-type: none"> - High-performing reliable roll covers - Cost-efficient roll covers for each position
Valmet benefits	<ul style="list-style-type: none"> - Promoting and launching high-end roll cover solutions
Valmet risks	<ul style="list-style-type: none"> - Customers are not willing to pay for “too good” roll covers

8.1.1 Summary of core BSIs

The concepts share a lot of same core BSIs which is why they are explained further below. Core BSIs are modules that are essential for the functionality of the concepts. The core BSIs could be described as a backbone for the service concept; without it the concept falls apart and everything needs to be discussed separately with the customer.

- *Roll Audit*: With Roll Audit Valmet will study and clarify the situation and condition of rolls.
- *Roll Data Management*: Valmet establishes a systematic way to upkeep all roll related information. Roll data provides also history information about the rolls and their wear which improves predictability and maintenance planning.
- *Roll Maintenance Plan*: Valmet creates an ideal roll maintenance program for each roll.
- *Maintenance*: Roll maintenance is the actual maintenance that will be executed according to roll maintenance plan.
- *Roll reconditioning*: In roll reconditioning the roll is disassembled and all worn out parts are fixed or replaced with new parts. Roll reconditioning restores the roll to a new like condition.
- *Optional BSIs*: Optional BSIs are all value-adding services. They are not essential to make an agreement functional but will increase Valmet's profits and customer value.

8.1.2 Suggestions regarding service concepts

Roll satellite and Roll Maintenance Outsourcing would be the logical approaches to be used at Valmet. They cover a wide array of scenarios regarding roll services and can be deconstructed to smaller agreements. Roll satellite is a relatively risk free choice for Valmet, especially if customer's roll workshop doesn't require significant investments. It offers Valmet the opportunity to serve customer at their own facilities enabling short lead times for roll maintenance. For the Roll Satellite

to work the customer site has to have sufficient machinery and enough potential capacity nearby to fill the excess capacity of the workshop.

The Roll Maintenance Outsourcing concept offers more flexibility for Valmet but requires roll transportations from customer mill to Valmet workshop. The base of an extensive Roll Maintenance Outsourcing is a proper roll maintenance plan. This enables Valmet to better plan resources and capacity at their own workshops. For the customer, the transition to Roll Maintenance Outsourcing might be challenging; customers usually have their own maintenance crew and in a situation where roll maintenance is outsourced they'd have to reassign or lay off some of their personnel. Another possibility for this kind of situation is that the roll maintenance will be divided between the customer and Valmet (MEP-agreement concept). One possible approach for outsourcing would be that when a roll is changed, the roll is shipped out to Valmet's facilities to storage and the customer will use the spare roll until next change. Valmet and the customer agrees of a "home-call" date when the roll is at the latest maintained and the maintenance is billed after the home call. This enables Valmet to better plan production and capacity and gives the customer the opportunity to use money at the latest possible moment. This ties up Valmet's money to the roll for a while, but the storage period should also be billed to cover the risk from tying working capital to the rolls.

With the subcontracting concept Valmet could potentially receive the profits of an Outsourcing concept while the customer receives OEM-level maintenance but Valmet will risk losing intellectual property rights. This is why the utilization of a subcontracting concept has to be limited and a detailed risk analysis done case-by-case. To minimize the risk Valmet has to be the middleman between the customer and the 3rd party. The contract between Valmet and the 3rd party should be long-term to prevent the 3rd party from becoming a competitor.

More holistic approach to developing service concepts would have to start from the customer screening and customer value research. Market sensing could start from corporate or country level with key customers first. The goal of market sensing is

not to sell something, but discover unity between customer needs and modify offering portfolio and service agreements accordingly. This would help Valmet to create region specific or industry specific (pulp, paper, tissue and board) service agreements and solutions. There might even be need to develop new service modules or deconstruct existing ones to better suit the offering portfolio for different regions and customers.

8.2 RQ 3. New basic sales item: HSE Audit

Based on the results from interviews there is interest from customer side for HSE-matters (Health, Safety & Environment). In North America safety is a common KPI and customers are improving their operating methods regarding employee health and safety and environmental impact. This is why a new BSI is suggested for Valmet; HSE Audit. The idea of the HSE Audit is to work together with the customer to find best practices regarding safety. The HSE Audit will be presented with a table to simplify the offer.

Table 31. HSE Audit.

HSE Audit	
Operation	<ul style="list-style-type: none"> - Base line study of customer's HSE situation - Benchmarking to similar mills - Risk assessment - Safety & environmental impact study - Value verification
Experience	<ul style="list-style-type: none"> - Analysis of current situation - Analysis of current work methods and work instructions - Observation of the mill and operational activities - Identification of potential points of improvement - Implementation to be determined, no downtime for customer
Outcome	<ul style="list-style-type: none"> - Improvements in employee health & safety - Improvements in environmental impacts - Risk of injuries/accidents smaller
Values & KPIs	<ul style="list-style-type: none"> - Employee safety - Environmental factors - LTIFR (Lost time injury frequency) - TRIFR (Total reported injury frequency) - MTIFR (Medical treatment injury frequency)

8.3 RQ 3. Suggestions and development of pricing logics

Discount approach with list prices could be replaced with “volume credit” approach. However the volume credit approach works best in service agreements where prices and maintenance activities concerning rolls are agreed upon in advance. The volume credit will also benefit the customer in the case of large expenditure since the relative credit can be larger than in case of regular discount percentage. This will lower the customer’s maintenance costs and possibly yield more business for Valmet. Volume credit combined with CI (continuous improvements) –program can be utilized in almost all agreements. In a CI-program Valmet commits to finding improvements for the customer. Valmet can then make offerings regarding these improvements and further improve customer’s profitability, safety and process among other things.

Benefits of Volume credit

- Customers commitment level
- Customers total expenditure for roll maintenance is smaller

Challenges of Volume credit

- Decisions about volume credit levels
- How will the credit be realized

Benefits of CI-program

- Customers process and business is constantly monitored to find improvements
- Valmet has the opportunity to present new offers and solutions → utilization of improvements as credit notes instead of giving money back to the customer

Challenges of CI-program

- What is considered improvement, and what is the point where no cost efficient improvements can be found
- Is the customer open for continuous improvements → is it worth the effort to come up with propositions if the customer is not willing to invest

Development possibilities for pricing models would be “value- or performance-based” models. Value-based models are challenging to make work with regular

process rolls since there are too many variables affecting production, process conditions, and quality; rolls are only a part of this entity. It is difficult to find some roll related KPI and tie it with customers produced tons. With newer technologies the product/ service could be given to the customer with a cost price and after Valmet achieves the jointly set goals Valmet starts receiving payment based on e.g. extra tons or energy savings. In order to any kind of value-based pricing model to succeed, is that the targets and KPIs are jointly set.

Based on the results a potential pricing model would be a mix of cost-plus and value-based pricing. The most relevant and easy KPI that the value could be tied in is the break-downs or shutdowns caused by rolls. Unexpected shutdowns results in lost production. It is easy to determine if the shutdown was caused or prolonged because of rolls. The idea of this pricing logic is demonstrated via an example.

Table 32. Variables for pricing example (values might be exaggerated).

Variables	Value
Roll related failures/year	6
Roll failures / year after Valmet's actions caused by rolls	3
Example of downtime before improvements	12hours
Example of downtime after improvements	8 hours
Cost of downtime	40 000€/h (example only)
Valmet's share of profits	50%

Table 33. Calculations for costs.

	€
Original shutdown cost	$12 * 40\ 000 = 480\ 000$
Shutdown cost after improvements	$8 * 40\ 000 = 320\ 000$
Original annual costs	$6 * 480\ 000 = 2\ 880\ 000$
Annual costs after improvements	$3 * 320 = 960\ 000$

Table 34. Annual savings and benefits.

€	
Annual savings after improvements	$2\,880\,000 - 960\,000 = \mathbf{1\,920\,000}$
Valmet's share	$1\,920\,000 * 0,50 = \mathbf{960\,000}$

In the example above the values are estimated and should not be affiliated with any real life situation, however given that they are close to real numbers. In this model Valmet will sell the services with a basic fee price. Customer and Valmet have to have mutual trust to give the necessary information. In the list below are presented the information needed for the success of value-based models, and benefits and challenges of the model.

Information needed:

- Cost structures
- Customers current situation costs from roll related shutdowns
- Deep understanding of customers process and business

Benefits of shared value models:

- Minimal customer risk
- Value is shared based on the KPI

Challenges of value based models:

- Finding the right KPIs
- Target setting

8.4 Summary and future research possibilities

Valmet as a market leader has the resources and possibilities to transform the business which is why Valmet should further develop its service offering to stabilize its own business and better serve the customer. Results and conclusions received from this project will offer Valmet a new perspective but the service offering cannot be considered complete. There is still a lot of work to do with BSIs

make them applicable. To further broaden the spectrum of this and other service concepts the rest of undefined BSIs, which were singled out of the scope of this thesis, should be taken under consideration and implemented into existing and new service concepts. In addition some of the BSIs are too large to be considered smallest individually functional objects and they might be too large modules for less comprehensive service concepts. Another factor that was left without further research was the combination of capital sales and roll service agreements. This is a potential future research possibility since it will offer Valmet long term partnerships with new mills and machines which will further increase the aftermarket revenue. Customers in turn will receive OEM-level maintenance from the beginning of the life cycle. Successful combination of capital sales and roll services requires the development of sales tools for capital sales personnel should be taken under consideration.

The new pricing models should also be the point of interest in the future. Value-based models will minimize the risks of customer but they require a lot of work from Valmet and customer side and with current knowledge of customers and Valmet's own processes the implementation is challenging. With research and cooperation with a pilot customer the implementation of value-based or at least partly value-based models are possible.

Future research projects:

- Defining rest of the BSIs and implementing them into service offering
- Development of sales tools for roll services and capital sales personnel → successful combination of capital sales and roll services
- Development of area specific service agreement strategies → what are the key business drivers in those specific areas?
- Discussion and research of value-based pricing logics with people involved with pricing and risk management

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INTERVIEWS

Discussion 1. Karioja, Mikko. Global Sales Manager, Roll Agreements. SER Rolls & Workshop Services BU. Discussion about previous service concepts at Valmet on September 1st 2015.

Discussion 2. Nousiainen Petteri. Global HSE Manager, SER Operational Development. Valmet Technologies Inc. Discussion about health, safety and environmental factors at customer sites on October 16th 2015.

Interview 1. Karonen, Timo. Global Technology Manager, Roll Services. Rolls Business Unit. Service Business Line. Valmet Technologies, Inc. Interview about technology and function of rolls in paper machines on July 22nd 2015.

Interview 2. Harden, Peter. Senior Mill Sales Manager, EMEA Finland Sales. Valmet Technologies, Inc. Interview about customer value, customer KPI's and service concepts on September 2nd 2015.

Interview 3. Zhang, Yanchuan. Senior Manager, MIL Application, CN Mill Improvement Projects CN. Valmet Technologies, Inc. Interview about customer value, customer KPI's and service concepts on September 7th 2015.

Interview 3. Jernberg, Pekka. Senio Sales Manager, PAP PM S&M Asia Pacific FI. Valmet Technologies Inc. Interview about customer value, customer KPI's, service concepts and capital sales on September 16th 2015.

Interview 4. Viljamaa Mikko. Director, Service Agreements, NA SER Agreements US. Valmet Technologies Inc. Interview about customer value, customer KPI's, service concepts and service agreements on September 18th 2015.

APPENDIX I

Excel file for gathering information about the Basic Sales Items.

BSI	Guide
Core promise	What does Valmet promise as a result
Service description	Description of the service, what is being done
Customer benefits	List of customer benefits from the service
Guarantees & mechanical warranty	What does Valmet guarantee; mechanical warranty, performance guarantee?
KPIs	List of KPI's, what and how is the service/ product result measured?
Typical customer challenge / situation	Typical challenges/ problems that this service can solve
Service scope (inclusions, exclusions and share of responsibility)	What is normally included in the service and what is to be excluded; delivery interface
Value calculation & pricing logic & price range	How should it be priced? Cost + profit / value-based?
Resources required (customer)	What should the customer provide for a successful service delivery
Installation time / downtime for customer	How much shutdowntime is needed for successful deliveryE.g. Roll change time 4-12h
Sales instructions	Sales arguments; why should customer buy this product/ service? Sales presentations, application instructions etc.
Options	What Options does the customer have with this product/ service
Connectivity: Combining with other BSIs	What other BSI's can this product/ service be combined with
Frequently asked questions	FAQ by the customer
References	Reference cases
Process description	Process description of the service
Work instructions	General instructions for the delivery of the service
Technical contents	Technical specifications
Resource requirements	Resources required; personnel, manufacturing, traveling, housing etc.
Schedule	Delivery schedule
Service data (BSI BOM)	Basic sales item bill of material
Costing structure	Cost calculation
Production units	What Valmet unit will produce/ deliver
Safety and Environmental precautions	Personnel safety and environmental impact etc.
Inspection documentation & checklists	Documentation about inspection and checklists? List about things that need to be taken into account
Instructions and manuals	Instruction and manuals if exists
Customer documentation	E.g. Covering reports etc.
Quality requirements & tolerances	Quality requirements & tolerances if any
Application instructions	Application instructions if any
Customer communication (content and process)	Customer contacts, interviews, reporting etc.
Customer satisfaction verification	E.g. Review of KPI's, questionnaires, follow-up, measurement
Invoicing instructions	Depends on payment terms and earning logic
Possible add-on work	If any

APPENDIX II

Second excel file that was used for data gathering when the initial data was received from the BSI specialists.

BSI	BSI
The organizing idea & service outcome (Core promise)	
Service experience & service outcome (Service description)	
The value of the service to the customer (Customer benefits)	
Guarantees & mechanical warranty	
The value of the service to the customer, the service outcome (KPIs)	
Typical customer challenge / situation	
Service scope (inclusions, exclusions and share of responsibility)	
The value of the service to the customer (Value calculation & pricing logic & price range)	
Resources required (customer)	
The service experience (Installation time / downtime for customer)	
Sales instructions	
Options	
Connectivity: Combining with other BSIs	
Frequently asked questions	
References	
The service operation (Process description)	
The service operation (Work instructions)	
Technical contents	
Resource requirements	
Schedule	
Service data (BSI BOM)	
Costing structure	
Production units	
Safety and Environmental precautions	
Inspection documentation & checklists	
Instructions and manuals	
Customer documentation	
Quality requirements & tolerances	
Application instructions	
Customer communication (content and process)	
Customer satisfaction verification	
Invoicing instructions	
Possible add-on work	

APPENDIX III

Interview template for sales personnel: questions are only discussion topics.

1. What do customers value on roll services? Why? Reference cases?
2. What has caused most problems/challenges in roll services/agreements? What have the customers seen as failures? Why have customers been dissatisfied? Examples?
3. What kind of pricing models do the customers prefer? In what direction should the pricing models be developed to? Is there any difference between different services? Would the customer's be ready for value-based pricing?
4. What kind of problems/challenges have occurred with current service concepts? From customer point-of-view and sales personnel point-of-view?
5. What level of understanding does Valmet's sales personnel have of customer's business? How are customer's customer's values taken into account? What are the customer's typical KPIs'? Regarding both business and processes. How are these KPI's linked to roll services? How should they be linked to roll services? How is understanding customer's customers being emphasized?
6. What kind of customer value quantification studies have been conducted? If yes, are they being done systematically? If not why? Example cases?
7. What would be an ideal service concept? What would be an ideal situation regarding; 1. the customer 2. Valmet? Why?