Value Added in Mill Improvements Offering

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Abstract

This bachelor's thesis was initiated at the request of Metso Oy's Mill Improvements business unit as a result of exploration into organizational development needs. The subject of this thesis was the definition of added value generated by products and projects in customer processes and the utilization in pricing of knowledge gained by identifying and defining value added. The aim of this thesis was to investigate the concept of value added, find methods for identifying value generated for customers by Mill Improvements products and projects, find ways to implement value based pricing into the project life cycle and to design tools based on the findings made.

The thesis was executed by defining areas of research, then by conducting a literature and research paper survey into each area, analyzing findings and formulating a basis for the design process of value identification and pricing tools. The design process of the tools in question was based around a normal design project framework. A number of well documented sales projects were selected and used in the specification and initial testing phases of the identification and pricing tool.

The results of thesis were: 1) A usable tool for identifying value in projects and initial calibration and evaluation of offered solution to customer need, 2) A usable tool for assisting evaluation and decision making in value based pricing, 3) Process logic for use of aforementioned tools and insertion into project life cycle, 4) Recommendations regarding project life cycle from sales and engineer points of view as well as use of earnings models in conjunction with value based pricing. The thesis also proved earlier findings on the limitations of value based pricing and prerequisites on an organization for the successful implementation thereof.

Kevwords

Value added, value based pricing, service logic, value creation, value selling, maintenance business, services business, value added pricing tool, value identification tool.

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Tiivistelmä

Opinnäytetyö toteutettiin Metson Mill Improvements liiketoimintayksikön toimeksiannosta, kehitystarpeiden kartoituksen seurauksena. Työn aiheena oli määrittää tuotteiden ja projektien asiakkaan prosesseihin tuoma lisäarvo ja tutkia kuinka saatua tietoa voisi hyödyntää hinnoittelussa. Työn tavoitteina oli tutkia lisäarvon käsitettä, tutkia tapoja joilla asiakkaalle tuotettu lisäarvo on mahdollista tunnistaa, tutkia tapoja joilla lisäarvoperusteinen hinnoittelu voidaan ottaa käyttöön projektin elinkaaressa ja lopuksi suunnittella käytännön työkaluja löydöksien perusteella.

Opinnäytetyö toteutettiin määrittämällä ensin tutkittava alueet, hakemalla ja analysoimalla olevassa oleva kirjallinen- ja tutkimustieto ja sen jälkeen muodostamalla työkalujen suunnittelulle perusta johtopäätöksien pohjalta. Työkalujen suunnitteluprosessi eteni tavanomaisen suunnitteluprojektin viitekehyksien mukaan. Kehitys- ja testaustyössä käytettiin apuna valikoimaa dokumentoituja myyntiprojekteja.

Opinnäytetyön tuloksena syntyivät: 1) Käyttökelpoinen työkalu lisäarvon ja sitä tuottavien tekijöiden tunnistamiseen ja apuväline ratkaisun kalibrointiin asiakkaan tarpeeseen nähden, 2) Käyttökelpoinen työkalu lisäarvoperusteisen hinnan arviointiin ja päätöksentekoon, 3) Prosessilogiikka projektielinkaaren puitteissa työkalujen käyttöä varten ja 4) Suositukset projektielinkaaren kriittiselle analyysille ja eri ansaintamallien soveltamisen arvioinnille lisäarvoperusteisen hinnoittelun yhteydessä. Opinnäytetyö tarjosi tukea aiemmille löydöksille lisäarvoperusteisen hinnoittelun rajoituksista ja sen onnistumisen edellytyksistä.

Avainsanat (asiasanat)

Lisäarvo, lisäarvoperusteinen hinnoittelu, palvelulogiikka, kunnossapidon liiketoiminta, lisäarvon luonti, myynti. hinnoittelutyökalu.

Muut tiedot

Luottamuksellista tietoa poistettu julkisesta raportista.

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1 Introduction

Today, a business operating in a globally interwoven environment can no longer expect to succeed or even survive by sticking to traditional product led, supplier based thinking and strategy. In this environment, part of the reachable market is in a state of permanent, drastic structural change, another sizeable portion has potential for growth and all of it is contested for tooth and nail. As also stated by Kaario et al. (2003,15) with prices going down companies are forced to look for new ways to create revenue and profit. A decade later in an uncertain global economic climate this statement is especially true with customers unwilling to loosen their purse strings for investments.

Traditional thinking in industry no longer provides sufficient profitability and competitive edge in a fluid and constantly shifting market situation that requires agility and ability to proactively engage customers in order to secure business. These aspects are painfully evident by, for example, the woes of paper industry operators in the established markets of Europe and North America. These operators continue to struggle with overcapacity and apparent inability to innovate themselves past decreasing demand for certain paper grades. Making the situation worse, the management culture of the paper industry operators is often mentally stuck in the so-called €/ton era thinking typical of decades ago. Also stated by, among others, Kaario et al. (2003, 18) the following facts can be brought up: the demand on businesses to constantly cut costs, the problems arising from decreasing unit prices and the difficulty in being paid for value delivered or created for customers only further impairs operational capabilities. This statement, when combined with the nature of today's market environment, creates difficulties for a business seeking to profit from the value it creates for its customers. It is especially true for a business operating in an environment in which customers are notoriously unwilling to share the value created or completely undervalue, either through ignorance or on purpose, the gains and benefits attained from services.

Further exacerbating the situation is that the competition is resorting to cost competition in order to secure customers.

In recent decades, operators in varied areas of industry have examined various ways of operating in an effort to gain competitive edge, to improve profitability and to differentiate from the competition. As a result, substantially increased focus and transition to services business and logic have been placed in heavy industry to create value for stakeholders in a feverishly competitive environment. By compiling various sources Korhonen (2006, 4), stated that industrial services have become especially important in quickly changing business environments and that offering services is a way for compensating for decreased margins. By offering solutions that combine products and services, businesses seek to find ways of differentiating themselves from the competition and gain competitive advantage. According to Vähä et al. (2009, 3) the rising trend in the importance of services has long been central in guiding development in western business.

The shift towards what is known as service dominant logic is evident in corporate communications and operations development programs, in which terminology such as "creating/enhancing customer and shareholder value", "transform into a full life cycle solutions provider" and "customer closeness" crop up more and more frequently. Other corporate intent revealing items are the emphasis of system features such as adaptability and grand declarations of focusing on services and solutions. Most companies seek for transition from being merely product or equipment suppliers to being service-based full scope suppliers, providing solutions centered on their core competence to specific needs of specific customers. The concepts of service logic and value added, value based pricing and their adoption, are central to most, if not all contemporary industrial operations development projects seeking to improve competitiveness and profitability.

Essential to achieving sustained profitability is to know what a customer needs and values, then designing solutions to meet those needs, knowing how the

solution creates value for a customer and how much. Other essentials for success are having consistent pricing policies and reasonable guarantees as well as being able to convincingly demonstrate the value that is being promised.

This thesis aims to provide the background and simple tools to aid in the identification of value and pricing based on the concept of creating the most value for a customer and then capturing some of it as a profit. In addition to investigating the phenomena covered, the thesis examines the larger framework surrounding the need to allocate resources to investigating them. The phenomena covered are: what is value, how can the customer value in a practical manner be identified and measured or rather, effectively reverse engineered out of an existing product or service and how that information can then be used in its sales process.

1.1 Subject

The official working title of the thesis was originally:"Value Added: Definition in Mill Improvements products and projects". More specifically, the definition of the value added concept in a maintenance product and project as well as its utilization in pricing and sales. Due to the breadth of the subjects covered in the thesis and its intended goals the title was changed to a more suitable "Value added in Mill Improvements Offering". The area of study was established using the following criteria:

- There was a concrete need in the client's business profitability improvement program for the implementation of research and development into the area covered by the thesis
- The thesis supports industry development.
- The client profile, available information and competence resources were concluded to be the most suitable ones for a thesis of this type.

- The author's educational background, career and study plans, personal strengths and areas of interest. The thesis encompasses the author's degree composition and integral aspects of professional as well as long term career interests, namely machine design, maintenance and industrial economics.
- The subject could be formed into clear and defined research and development modules as well as practical applications.
- Prior targeted research into the subject at hand has not been carried out by the client. Prior, studies tangential to the subject at hand can be utilized to some extent.
- Successful execution of the thesis requires the full use of resources available to the author, thereby also meeting the requirements set for a bachelor's thesis with regard to exhibition of problem solving skills, practical application of theory and the ability to carry out research and independent goal oriented work (JAMK, 2012).
- The thesis lays the groundwork for further operations development.

1.2 Research questions

The purpose of the thesis was to focus, complement and develop. Based on this supposition, research questions tend to be descriptive and qualitative by nature (Leech et al. 2006, 480). The research problems were grounded in a situation where the value creating properties and their parameters of one's own offering in a customer's process were either unknown or grossly underutilized in among others, pricing. It was therefore essential to be able to identify and quantify the added value produced for a customer by a Mill Improvements product, service or project in order to capture some of it as a profit via a functional pricing model. The main research questions were:

1. What is value added, what value is being created for customers and how to identify the value created for a customer by a maintenance product or service?

- 2. How can value based pricing be utilized in product, service and project pricing?
- 3. What guidelines and practical tools should be designed and implemented in order to exploit the identified and measured added value and to assist in pricing decisions?

1.3 Objectives and scope

The objectives of the thesis were defined as follows: the creation of the pricing model/guidelines utilizing value added (a usable Excel-based pricing application) as well as a tool for value identification in the MIL-offering. The detailed task breakdown was as follows:

- Definition of value added according to the clients' frame of reference.
- Definition of what value added is to be identified in a Mill Improvements offering.
- Identification of usable methods for identifying the value created by impacting customer processes in a Mill Improvements offering.
- Development of a tool for value identification based on the determined usable methods.
- Definition of criteria for a sample group of Mill Improvements for use in the testing of the tools.
- Selection of a sample project group based on the prerequisite criteria and to define a pricing principle utilizing value added.
- Compilation of an Excel-based pricing tool summarizing the value added and applicable pricing strategies in an understandable, relevant form.
- Determining the process logic for the tools' use and points of use in a project's life cycle.

The definition of added value in the context of this thesis and its frame of reference was restricted to the viewpoint of value created for the customer,

thus value creating opportunities or potential within the providers' own processes were not included in the scope of this thesis. The value created to a customer had also primarily to be quantifiable in monetary terms (Ojala, 2013a). The focus on phases in the improvement of profitability through the implementation of the value based processes was placed on value identification and pricing. Creating and selling value were only to be described in detail sufficient enough to provide an adequate background for the processes in question. The development of earnings models as part of value pricing was also viewed to be outside the scope, due to the breadth and complexity of the subject when reflected on severe time limitations imposed on the project by surrounding circumstances. General grounds for the scope limitation were the time available and the prioritization of actions within a larger frame work according to allocable resources and operational conditions.

The basic selection criteria for the offering to be benchmarked were: the repeatability of the results, existing documentation, measured and quantifiable customer benefits meaning: the clearly calculable and understandable added value. The sample group created was to comprise a concise selection of, varying by value production type, material (improvement project, spare parts) and immaterial solutions (expert services) from within the Mill Improvements catalogue. A concise selection in this context means one to two per type of products or services differentiated by features. The selection criteria were later clarified to include requirements for being an actual sales project in which the existing investment value and payback calculators had been used as well as having a definable customer viewpoint. The concise selection was, in order to expedite proceedings, limited to three projects that met the expanded selection criteria. The primary reason for expanding the selection criteria was to ensure reliability in results by having verified data available that was relative to the critical functions of the tools.

The desired results of the thesis were by their composition expansive, impacting, explanatory and generative of new ideas. The objectives were descriptive, explanatory and validating. (Leech et al. 2006, 479-481). The

description of repeatable and applicable methods for identifying the added value created by an offering (product, service and project) as well as an Excelbased pricing and identification application. The results were evaluated by actual functionality in pricing and adaptability to products, services and projects beyond the sample group. The Excel-applications were also evaluated from the viewpoint of usability and clarity. The minimum requirements for success were set at a functional principle for pricing and a description of repeatable and applicable methods for identifying the added value created by a Mill Improvements offering.

1.4 Structure and methods

The thesis was executed as a research and development project. The project was broken down into processes and phased according to the estimated workload and logic gates operating on the basis of what processes had to be completed before a given process could be undertaken (Simple phasing in Appendix 1). The processes were:

- Preparations Defining of the subject, securing necessary resources, the recap of research and development methods, the recap of the thesis process.
- Scope limitation Preliminary research into the subject, preliminary information gathering, conceptualization (mind maps etc.), scope limitation, definition of the desired goals and results.
- Project planning Description of the subject, scope, goals and results, setting the research problems, the plan of information gathering, central concepts, determining the problem solving methods, phasing, the preliminary table of contents, correcting the plan.
- Research Literature and research survey, Data search, compilation, analysis, crosschecking of references, formulation of the basis for the thesis.

- Development and execution Forming and evaluation of the identification methods, compilation of the tool, forming of the pricing tool, selection of the sample projects.
- Evaluation of results The identification tool, pricing tool, theoretical basis, conclusions, recommendations.
- Reporting Compilation of the report, corrective procedures, finalization of the report.
- Post operational procedures Evaluation, debriefing and the seminar.

The methods utilized in processes were chosen to fit the task at hand. The research phase was carried out by executing an extensive literature study, data searches and tracking the key words, phrases and concepts. By surveying bibliographies of works in result groups and by carrying out reference searches, the author sought to find the most relevant constituents for forming a valid theoretical basis. To verify the quality and veracity of information, source material was compared, evaluated and crosschecked to find inconsistencies. Resources utilized in the information gathering process included the client's own databases and publications, internet search engines and educational resource portals. Databases and terminological indexes were used to correctly focus on the search terms and phrases. The bibliography used in this thesis was made up of various theses and dissertations, electronic publications, interviews, seminar papers, manuals and course material. Also the consideration was, due to the client operating environment, to ensure methodological, terminological and functional commonality in the designed tools and guidelines to save time in training and to prevent adding needless layers to a change resistant system. As a result, considerable time allocated for information gathering was spent in database searches of the client's systems to find and evaluate useful information, operating procedures and data.

The thesis involved a systematic effort to model phenomena and concepts and to develop constructs based on the existing data. The functionality and adaptability of the modeled construct was tested in a practical application to verify the results. The construction of practical applications was carried out by applying the basic principles and processes of product and user centered design. The development phase of the thesis project consisted of four main parts, adapted from Matilainen (2012, 12):

- Task analysis Comparison of theory, process and requirements.
 Assessment and analysis of content and features.
- Conceptual design Determining of functions and solutions to problems, developing concepts and variants and prototyping. Results are a functional structure, concept and specification.
- Development Design, optimization and completion of the concept into a final layout and functions. Proof of concept and testing for errors.
- Detail and final design Testing, detail design, implementation of functions and features. User testing and evaluation.

The development phase, execution and resulting tools are covered in detail from Chapter 4 onwards. The final testing, fine tuning and post-launch phases of the design process are to be undertaken after the publication of this report.

The design process of the tools intended for practical application, due to time constraints and the nature of the intended operating environment, faced certain restrictions and considerations. Time constraints precluded the tools from being code heavy or being entirely designed from scratch (as in for example, a web based cloud service) as there would be limited time for testing. Available time and resources also restricted what software environment the tools would be designed for to what was already being extensively used in the client organization. The intended operating environment is very resource restricted and the intended users hesitant to learn and adopt additional tools in to their work environment; therefore any additional tool would have to be as simple and non-interfering as possible through all the phases of its life cycle. The tools could not present any additional distracting layer unless absolutely necessary but instead complement the decision making process. The time required for learning how

to use the tools should be minimal and the actual use of the tools should take as little time as possible as not to create significant negative impact on time available for performing the core tasks or to cause any reluctance to use them. The tools should also be designed in such a manner that they direct and focus the user's attention to the most relevant information required for influencing a correct decision. The requirements and limitations described above dictated that principles of usability and user centered design would have to be applied in the tool design process.

1.4.1 Benefits and value generated

Benefits generated by the thesis project were to be personified in the pricing and identification applications. The tools were intended to aid in successful pricing decisions with which part of the value added generated for a customer could be directed into the providers' coffers, thus leading to improved profitability. Identifying and describing repeatable value generating features in a project would aid considerably among others, in the sales process of demonstrating the value and in doing so favorably influencing customer investment decisions as well as more precisely aiming solutions at customer needs. Additionally, the thesis functioned as a primer for the next phases in the profitability improvement program.

As far as the existing knowledge was concerned, the thesis gave new perspective and knowledge into how value based pricing actually works, how the theory of value and service logic can be applied in a practical setting and expanded on how the value created for a customer could in practice be identified in the existing offering. Also, the thesis sought to prove that unless certain conditions are met, value based pricing and selling should be used with caution when dealing with standardized solutions and certain types of customers. Finally, the thesis sought to verify that capturing value as a profit within a feasible price range is the most realistic way of approaching value based pricing pending the other requisite process improvements and change in organizational thinking. To the author's knowledge, the attempt of applying

the theory and abstractions covered in this thesis into concrete pricing assistance and project tools is a first, in the least at this scale and depth.

1.4.2 Timetable and available resources

The project timetable can be found in Appendix 1(with the realized plan in Appendix 2) and as a separate attachment to the original project plan. The initial deadline was determined to be 13 May 2013, by that date the thesis was to be in such a state of readiness that the remaining processes would be post operational i.e. evaluation, debriefing and the seminar.

Upon a successful completion of the thesis, the author would be awarded a nominal, subject- to-income-tax monetary sum. In addition, according to the standing client reward practices, a thesis worker could be nominated for an additional sum provided the thesis was especially significant to the client and evaluated by both the educational facility and the client to be of good grade (Metso, 2012c). The author was provided by the client with an office space, supplies, a computer and access to personnel and internal data systems relevant to the execution of the thesis.

1.4.3 Report structure

The report structure was broken down into topics by their context and the objectives of research. The main topics for the remainder of this report are in the following order:

- Description of the background Subject, methods used, the frame of reference, constituents, customers, profitability, industry environment and its trends and future.
- Central concepts Service logic, products and services, common pricing strategies, cost structures, pricing decisions, value added, customer value, value creation and systems, measuring and selling value, identifying and pricing value.
- Development of value tools Logic and methods. Description of development phase and execution. Tools developed for value

identification. Pricing tool developed. Benchmark projects – Selection and descriptions.

• Conclusions – Results, recommendations, evaluation and closing.

2 Background and framework

This chapter is intended to provide the context for the themes discussed in the thesis. The background is provided on the client's operations, organization, business environment, customers and the need to implement new methods to improve profitability.

2.1 Client

Metso Oyj is a global technology solutions and services supplier. Its clients are process industries operators in, among others mining, construction, recycling, pulp paper and power and oil and gas. In 2012, the net sales of Metso Corporation were 7,504 million Euros, a 13% increase from the previous year, with services making up 3,174 million Euros of the total. Net sales for 2012 were the highest in the history of the company. At the end of 2012, Metso employed 30 212 persons in over 50 countries. The main areas for market development and growth continue to be Asia Pacific with China in particular, India and South America. Emerging markets accounted for half of net sales in 2012. Established or mature market areas, Europe and North America either enjoyed slow growth or slight decline in net sales throughout Metsos' key business segments. (Metso 2013a, 10 -17).

The origins of Metso Oyj lie in the 1999 fusion of two Finnish companies, the paper- and board machine manufacturer Valmet and fiber, rock crushing and flow control specialized engineering firm called Rauma. Strategic acquisitions, mergers, sales and the focus on core business functions have enabled the firm to establish and solidify a global presence and gain advantage over rivals in certain areas. The firm's core businesses have been divided into three segments: mining and construction, automation and pulp, paper and power. The three segments have then been divided further into ten business lines. (Metso, 2009). In 2012, the division of net sales among core business was as follows: Mining and construction 46% (EUR 3,492 million), Automation 11%

(EUR 859 million), Pulp, Paper and Power 40%, 3 014 million Euros. Valmet automotive made up for 3% of total net sales. (Metso 2013a. 12-13).

On 25 March 2013 it was announced by the board of directors that a study into the possible demerger of Metso into two separate companies had been undertaken. In the event of a demerger, the mining and construction and automation segments would remain in the existing company; the PPP-segment would form a new entity. (Taloussanomat, 2013).

As described in the annual report for 2012, the ambition of Metso Oyj is to be the leading technology and service provider across the board in its business segments. The ambition is to be realized by the exploitation of megatrends, strengthening capabilities and leveraging established positions. The emphasis in corporate strategy is in the importance of the balance between competitiveness and growth (Metso 2013a, 4). Operating in a volatile and rapidly changing market environment also requires agility and adaptability in order to be consistently successful. The established business portfolio, existing market position and global presence provide, in the view of management, a good base for implementation of strategic guidelines.

Long term financial targets were decided on in November 2011. The target for annual average sales growth was set at over 10% with the emphasis on services business lines. Growth in the group level profitability was to exceed sales growth. EBITA margin targets for the three business segments were set and ROCE-% at 20%. (Metso, 2011).

Megatrends to be exploited and in the view of Metso, the main drivers of change in customer industries, have been identified as being demographic changes, a globalizing economy, the rise of emerging markets and sustainability and climate change. These megatrends play a large part in strategic thinking and direction of investments. (Metso 2013b, 7).

The common platform for management and development is formed by the vision, mission, values, leadership principles and so-called must-wins. The must-wins focus on and dictate the implementation of operational strategies. The thinking behind the strategy driven by must-wins is capturing opportunity for growth and creating value for shareholders. The five must-wins for strategy implementation at the group level and business areas (with localized focus) were deal mostly with providing the means for services business growth, investing in business opportunities in growth countries and maintaining technology leadership. (Metso 2013a, 7).

2.1.1 Services Business Line, PPP

The pulp, paper and power segment of Metso Oyj concentrates on the following: processes, machinery, equipment, services, paper machine clothing and filter fabrics for the pulp, paper and power industries (Metso, 2012). As seen in the annual report and financial statements for 2012, the PPP segment was the second largest business of Metso in terms of net sales with 3 014 million EUR and orders received at 36% of total. Services net sales made up 1 102 million EUR of the segment figures.

The services business line of the PPP-segment employs about 5000 people distributed among 76 service centers in 17 countries. Metso Paper Services portfolio can be divided into the following: life cycle solutions, improvement projects, and maintenance and production services. Metso's customer base in the pulp and paper industry consists of a varied collection of major regional or global as well as smaller local operators. (Metso, 2013a)

The general strategy for the pulp, paper and power segment for the years 2011 – 2015 is dictated by the corporate strategy outlines. Most challenging for business is the decreasing demand for newsprint etc. printed media and the potential for growth in board and paper. This is reflected in orders received where most of the large orders (new machine lines) come from China and countries where there is a growing demand for paper grades and in contrast

most Services orders received come from North America and Europe. (Metso, 2012)

2.1.2 Mill Improvements

The business unit offers life cycle solutions for achieving optimal machine line performance. The annual scope of operations covers approximately 5000 onsite projects and 11 maintenance outsourcing contracts. Mill improvements engage in what can be called installed base business. Its offering of solutions cover process improvement and production support services, process development, maintenance services and outsourcing, equipment and production line relocation and shutdown services (Metso, 2012). The business unit by default co-operates with the other business units within the PPP-segment.

The Mill Improvements business unit was created by merging the process solutions and field services organizations into a single unit consisting of field services, paper machine analyses and improvement projects. The current grouping is: Field services (on-site maintenance activity), Production and maintenance support (measuring and analysis services), Agreement based business (contract management) and Improvement projects (components and small improvements).

The main area of expertise in Metso's Järvenpää service center revolves around paper finishing technology. On offer there are expert (testing, analysis, training etc.) and maintenance services, spare parts services and roll services. (Metso, 2013c)

The Mill Improvements delivery process has been divided into six main component processes depending on what type of work is delivered, whether the process includes work and parts or components and what type of parts or components are involved (Huotari, 2013).

2.2 Customers

Most customers of Mill Improvements are paper and board mills of all sizes and of varying ownership type. The most simplified model one can provide how a paper or board manufacturer earns money is: a paper or board mill takes raw material such as wood and recycled fiber and through various complex processes, needing resources such as energy, water and chemicals along the way, manufactures paper or board of differing grades. How much money a manufacturer makes is by large determined by what grades, how well, how much of it and how efficiently it is produced. A typical indicator of profitability is the return on capital employed. ROCE is the operating profit divided by the capital employed (Huotari 2011, 16 -17). Typically the efficiency of a paper or board mill is measured with various key performance indicators: the capacity utilization rate, various downtime, production losses and quality rejects, speed and speed utilization rate, energy and resource efficiency as well as profitability (Huotari 2011, 17 -19).

Uronen (2010, 45) outlined the key pulp and paper industry characteristics and features as follows:

- Pulp, paper and packaging boards are typically intermediate products
- It is a highly diversified industry
- It is capital intensive.
- It is cyclical by nature
- Demand for its products is seasonal
- It is regional, meaning there is relatively little trade between the main producing areas
- Technology and knowhow can be transferred with little effort.
- Certain markets are in a state of persistent downturn.

In research into the profitability of the pulp and paper industry, Uronen (2010, 69) found that some manufacturers were able to significantly outperform their competition, company size did not really correlate well with profitability and

that the cost reduction and profit improvement programs undertaken had not provided significant improvements in profitability. The most critical issues facing the pulp and paper industry were determined by Uronen (2010, 138) to be the imbalance of supply and demand, increase in the production capacity in emerging markets, cost reduction and the need to invest in R & D.

According to Huotari (2011, 8) changes in the market situation have led paper manufacturers to focus investments in mature markets on improving efficiency through cost savings and in developing markets, leaving some potential for improvements through capacity increase and machine tuning. Also indicated is the trend towards investing in health, safety and environment improving solutions. In the wake of the global financial crisis, Huotari (2011, 60), collected views from experts about the trends in customer behavior, the most important views with regard to this thesis project were that the authority to make decisions on investments had moved to levels of upper management and the investment resources had been reduced, that a supplier must be able to demonstrate the performance and payback of solutions being offered and that the payback time in the customer base was less than a year.

2.3 Profitability

Sensitive information redacted from public release.

2.4 Industry environment

The view of Metso Oyj, as described in the 2012 financial statements and annual report is that the current uncertain global economic climate has had a negative effect on market activity, mainly in the form of customers delaying decisions on major projects. According to the board of director's report for financial statements 2012, there is some indication for positive development in the United States and China for customer industries in 2013 as well as stable capacity utilization rates and needs to increase operational efficiency

providing support for services business. Financial development for 2013 is expected to be at 2012 levels for EBITA and slightly below for net sales. (Metso 2013a, 2013b).

Examination of the annual report and financial statements for 2012 reveals that orders received for services business were up (+5% compared to 2011), order backlog and orders received were down 15% and 14% respectively when compared to 2011 (Metso 2013a, 2013b). The figures reflect well the existing challenging economic climate, with fewer big project orders and cutbacks in the customers' investment programs, but the capacity utilization rates are keeping up demand for services in spite of the growth market slowdown caused by global economic uncertainty.

From the viewpoint of a business intending to be a full scope service solution supplier, the customer environment can be viewed as anarchic. The global economic uncertainty, cultural differences and customers struggling to update their thinking into the 21st century in order to even survive, all these provide a significant challenge.

As far the competitive situation for Metso PPP Services and Mill Improvements is concerned, the current situation is that there are two operators depicting themselves as full scope life cycle suppliers, Metso and Voith as well as a number of small or medium sized equipment manufacturers or maintenance service operators whose primary means of competing is price.

In a recent interview for Heidenheimer Zeitung (2013, 11), Dr. Sollinger of Voith indicated that India is banning the importation of second hand paper machines on grounds of pollution and energy inefficiency compared to the new machinery available. This is perhaps indicative of a wider trend towards encroaching protectionist economic policy, already somewhat evident in the frustrations of foreign electronics industry operators in the country and government involvement in creating favorable operating conditions for domestic electronics manufacturers (Kauppalehti, 2013). In the same

interview for Heidenheimer Zeitung (2013, 11), Dr. Sollinger indicates that there is huge business potential in the decision of China to shut down outdated paper machines, the capacity of which will need to be replaced with new, greener machinery. Also, Dr. Sollinger points out the fact that Voith is expanding their services and solutions business to customers outside traditional segments, in this case offering technological solutions components to breweries and food industry. Voith considers the environmental solutions an attractive, but laborious prospect. Dr. Sollinger was confident that the structural change Voith is undertaking will help in providing services to new markets. This is perhaps indicative of a larger scale strategy envisioned to break reliance on a customer segment of industry with a very unstable and uncertain long term future in many key market areas and to create new business opportunities around core solutions.

2.4.1 Trends and future

The short-term outlook for market development concerning the pulp, paper and power segment from Metso's points of view, as outlined in the financial statements report for 2012, is that while the market for pulp mills for 2013 is expected to be satisfactory, the demand for papermaking lines is to remain weak. Services sectors for both are expected to have good pull, despite the decline in capacity utilization rates in the paper and board industry. The first quarter 2013 provided for some improvement with project orders; however, the prevalent industry trend of decreasing demand for new papermaking lines in mature markets with demand for board and tissue and satisfactory services demand and some pull for new machines in the growth areas. (Metso 2013b, 10).

From research done by VTT (2009, 5) on trends affecting all branches of industry, certain points still relevant to suppliers such as Metso are:

- Globalization and China
- Increasing energy consumption and financial availability
- Ecological concerns and climate change

Digitalization and opportunities presented by technology.

In the same research, VTT (2009, 38) identified the guiding phenomena for change in the industry segments Metso PPP operates in as being:

- Surplus capacity, the decreasing cost of paper, the need to develop new replacement products and services
- Increased demand for products in developing markets
- Increasing the use and significance of ICT, electronic media, resulting woes of printed media
- Increased demand for biomass and refined products
- Increase in the significance of hybrid products and packaging.

The guiding phenomena described above are in line with what Metso has outlined in their annual report and financial statements.

To get an accurate picture of the factors influencing customer decision making, the most current information available is required. This is because of the effects of the current uncertain global economic climate and effects of the financial crisis and subsequent recession that begun in 2008.

In an interview study on customer investments undertaken in 2011 by Huotari, the overriding factors influencing a small improvement investment outcome were in order: Justification, technical specifications, payback time estimates, costs and the savings or improvement potential that comes from the investment. In short, cost efficiency and short payback times make for the primary criteria in the evaluation process. Also based on the interviews, customers valued energy savings and improved efficiency through savings over increased capacity or quality. This can be related to the limited potential for growth in the paper industry in mature markets, the trend is to reduce existing surplus capacity and that quality improvement has to be drastic in order to be profitable enough. Criticality analysis and estimates on how far the investment can be safely postponed dictate by large the decisions made on

investments affecting safety, mandated by legislation or being critical replacements. (Huotari 2011, 60 - 86). Another thing to consider is that in an economic downturn, the quality of content in a solution may take a backseat in the customer investment decision criteria and focus purely on the price, especially when choosing service providers. In such a situation the ability to demonstrate value to the customer becomes very important. (Arantola et al 2009, 11).

The ideas for solutions to counter problems and improvement potential that have been observed in production processes, according to the studies carried out by among others Huotari (2011, 98) come primarily from the equipment suppliers.

2.4.2 Observations

The changing industry climate and changes in customer behavior affect in particular to whom, what and how a supplier is selling. Crucial to success, especially in a service and value based logic oriented business model, are people and data. The prevalent direction of the idea flow as described above places emphasis on trust and a personal relationship between a customer and equipment supplier.

Particularly interesting is an observation on the challenges and development needs of the forest industry cluster mapped by VTT (2009, 41) that marketing services to customers whose thinking is dominated by product centricity and who are not used to paying for services is challenging. The observation continues to state that the same is true for the forest industry management and that in practice the role of services has been to support the sales of bulk products.

3 Concepts central to value added

In order to understand what added value entails, the concepts that are inextricably linked to it should be examined briefly. These are: service dominant logic, products and services. Then, the concepts relating to value, cost and pricing can be discussed.

As said in the introductory chapter and by among others, VTT (2009, 21), industry is moving more and more in the direction of service centered ways of doing business. Guiding this trend is the idea of a novel value creating mechanism that is not based solely on a physical product but immaterial capital. Central to this theme is the integration of the customer and supplier systems in order to create value networks. This is done to enable taking into account the needs of all participants in the value creating process.

3.1 Service logic

Service logic or service dominant logic is a business model in which services form the hub of transactions. In service dominant logic, goods (or products) are seen as a resource among others. Central to service logic is the notion of the customer being an active participant in the process and that service logic is the facilitation of processes by the supplier that support customer value creation; however the customer may be the sole party whose processes create value. (Grönroos 2006, 7). Service logic understands services to mean every aspect that involves intentional creation of value between the participating parties. Grönroos (1998, 52) states that in service logic, what constitutes services cannot be universally defined, but is always a process in which a series of at least partially immaterial functions are offered as a solution to the customer's needs. Seppinen (2009, 29) briefly touches on the concept of replacing service logic with customer dominant logic in which it is more important to know what goals the customer wishes to reach by using services and how well the service realizes these goals.

3.2 Products, services and solutions

VTT (2008, 23) defines the characteristics of a product: it has detailed specifications, it is produced in a planned and controlled process, the goal of production is uniformity, the customer is not involved in production, quality control is internal and the morale and skills of production workers are important. In Principles of Marketing, Philip Kotler came up with the concept of a successful product (or service) as having three levels. The first level is the core benefit or service, the second level is the actual product comprised of the core benefit and product and service features designed around it. The third level is the augmented product where the actual product has additional services latched onto it. (Kotler et al. 2012, 225 – 226).

Based on Huotari's (2001, 34) compilation of work done by Wallin & Ramirez, a product can be viewed as having these dimensions: physical content, services and human interactions. This categorization is a composition of Kotler's etc. definitions of what comprise the content of products.

- Physical content The core product, packaging, quality and reliability, options
- Services Delivery, technical support, problem solving, guarantees, trust issues (reputation, insurance, customer relations, management, invoicing)
- Human interactions Partnerships, trust, collaboration. (Huotari 2011, 34).

Table 1 Product and service structure comparison

Kotler	Wallin & Ramirez
Core benefit – Problem solving solution	Physical content – Core product, packaging,
	quality and reliability, options
Actual product – Product and service features,	Services – Delivery, technical support, problem
design, packaging, quality.	solving, guarantees, trust issues.
Augmented product - Delivery, installation, after	Human interactions - Partnerships, trust,
sales services, product support, warranty	collaboration

By examining Table 1 it can be concluded that a typical Mill Improvements offering structure of Core, Accessories and Site can be formed by adjusting the views of Kotler, Wallin and Ramirez. An illustration is provided in table 2.

Table 2 Typical Mill Improvements offering structure

Component:	Definitions:	Actual:
Core	Core benefit, physical content, actual product	Core solution, vital components, engineering
Accessories	Actual product, human interactions	Components, equipment required for installation or execution, additional
Site	Augmented product, services, human interactions	engineering Installation, start-up, training, project management, warranties
		etc.

Grönroos (1998, 53-54) defines services as usually being made up of a series of immaterial actions that as a process solve a given customer problem. He also states that a service is produced and consumed for the most part simultaneously. The customer is a participant in the production process in at least some capacity. VTT (2008, 23) defines the characteristics of services as:

- Contents are described and illustrated
- Services are performed
- The goal of performance is uniqueness
- The customer is involved

- Customers perform quality control and apply penalties if expectations are not met
- Morale and skills of the service providers are critical.

Laukkanen (2011, 6) describes services as being intangible products and a service being the application of competence by one party to the benefit of another.

Services enable customers to outsource functions viewed to be outside the areas of core competence and which a specialized service supplier can produce more efficiently with less total expenses to the customer (VTT, 2009, 21). Manufacturers tend to see industrial services as extensions to their product offering or as entirely separate from their traditional business area (VTT. 2008, 11). As an example of services, also offered by Metso and Mill Improvements, Korhonen (2006, 5) based on the work done by Goffin outlines the following types of typical industrial services:

- Installation and start-up Usually entail the installation of equipment or planning customer executed installation, training and documentation
- Life cycle services Maintenance activities, remote monitoring and diagnostics
- Shut down services Equipment shut down, dismantling and/or replacement with new components.

According to one definition provided by Kaario et al. (2003, 30) a solution consists of products, services and information combined in a manner that meet a specific customer need. It cannot be dissected by the customer and so has to be obtained from one source. Nor can a solution provide equal value to its constituent parts obtained separately, but superior value. Thus according to this definition, a project in which the customer can obtain accessories or site services from a source other than the provider cannot be called a solution.

3.3 Added value

"Think first about creating the most value, then how to capture some of it as profit." Kaario et al (2003, 105) propose that "the provider has both to create value for its customer and to capture value for itself (*profit*) by doing business with its customers. Within the framework of this thesis value added is understood as the value created by an offerings impact on the customer's costs and or sales. Then, by the definition for added value set by Martinsuo et al. (2010, 5): value added is the increase in the output (or positive effect on) of the customer processes in to the sub- processes of which the supplier has input value increasing components (products, services or solutions).

Generally added value is defined as being tangible or intangible. Tangible value can be calculated while intangible value is based on perceived benefits. Grönroos et al (2010) provide a simple framework for determining tangible value:

- 1. Identify and approximate value in customer and provider processes
- 2. Calculate money involved in process changes and calculate gain in productivity
- 3. Determine percentage of beneficial value
- 4. Determine gains versus investments for participants

A simplistic method for approximating the added value for a customer is to determine the value in use of a product. The value in use is what is left over in the customer process after all costs incurred by the customer have been subtracted from the gain in revenue (Grönroos et al, 2010; 1998, 82).

3.3.1 Customer value

According to Ahvennemi (2011, 24) based on the work of Woodruff (1997), customer value is the perceived preference and evaluation of attributes arising from the use of a product or service that either block or facilitate his reaching of a desired end state. Graf et al. (2008, 3) state that understanding how

customers judge the value is crucial when striving to gain competitive advantage. Graf et al (2008, 7) continue on to divide the customer value models into two main categories: perceived customer value and desired customer value. The perceived customer value is thought to be the tradeoff between benefits and sacrifices and focused performance while the desired customer value is part of the customer's value system and focused on abstractions of the value dimension and consequences. Harmon et al (n.d., 8) arrived at the conclusion that customer value is the overall benefit derived as the customer perceives it at the price he is willing to pay for it.

Ahvenniemi (2011, 34) concluded that there are differences between what suppliers think their customers value and what their customers say. This is in part confirmed by interviews made by Immonen (2013) for determining the customer value of analysis services and corroborates the issue of information asymmetry discussed elsewhere in this thesis. It goes without saying, that information asymmetry and differences in customer and supplier views of what value is increase the potential for errors at the supplier end when attempting to deliver solutions.

Harmon et al. (n.d., 14) also mention the need for a supplier to understand what the drivers for customer value are and to what extent they influence the investment decision. What drives customer value needs to be understood by the supplier before embarking on choosing the pricing policy. According to Harmon et al. (n.d, 14) these customer value drivers create the basis for differentiation and investment reasoning based on the customer's perception of the supplier and its products. The customer value drivers are the results from evaluating the product being offered, perceived credibility of the supplier and supplier brand. Again, the two main components that surface are people and information.

3.3.2 Value creation

The definition for value creation in the framework of this thesis is the development of products through customer value oriented R & D, the creation

of customer value oriented service and sales concepts and specifying project scopes by value created for a customer. Ojala (2003, 15) divides value creation models into two broad categories: competitive advantage and resource based. VTT (2008, 22) determined that suppliers who provide services may not use a single value creating model but use different models dependant on the service value creation logic with the prevalent being the value chain. The other approaches are the value shop and value network. The three value creation logics are discussed further in Chapter 4.2.3.

A project must be fit for the purpose to generate value for a customer. A customer oriented approach to designing products, services and project scopes is based on one thing: starting from the customer and working from what he needs or is willing to invest in provided the gains are substantial enough. Harmon et al. (n.d., 5) write on the use of differentiation based strategies to create products possessing unique dimensions that specific customers place value on. In the context described within the previous chapter, unique dimensions can be understood to mean delivering what the customer needs, within the exact scope the customer deems necessary and with value the competition cannot deliver.

How value for the customers is created, dependent on the logic used, is often such that the full scope of what is being offered creates tangible and intangible value over several facets of the customer's processes. Benefits combined can also create certain value, therefore it is important to be able to view the entire value creation process. Having an accurate picture of the overall value created by the solution being offered may give an indication as to how approach selling and pricing value on hand. An accurate picture also helps in demonstrating the differential value (see Chapter 4.6) to the customer and for example, the value of a complete package compared to what a competitor can deliver with a single component. Ahvenniemi (2008, 31) reminds that getting the customer involved is important to enable the satisfaction of personalized demands in order to gain competitive advantage over competitors also seeking to provide customized or tailored solutions.

3.3.3 Selling value

In the framework of this thesis, value selling is understood as the capability to present and articulate convincingly the value of an offering to a specific decision maker at a given time to make that person in the customer organization aware of the value available to them (Ojala, 2013b). Value selling is also understood as the capability to negotiate an agreeable price. This chapter is intended to provide some background, framework and conditions for approaching the presentation and articulation of the value to a customer.

Baron (2012) offers an intriguing insight into value based selling and marketing. The company in the example did not overwhelm the potential customer with information and data, for example technical details and specifications, but instead focused on the problem. The company then offered a solution, clearly stating how goals were to be achieved with a clear demonstration of the value for investment and an attractive and reasonable guarantee of performance and contingency. So, if the demonstrated value and return for investment is compelling enough a customer will buy it. In much the same way, Kaario et al. (2003, 54) provide a simplified version of a value sales process:

- 1. Understand the customer process
- 2. Innovate the process enhancement
- 3. Quantify the business impacts
- 4. Deliver and implement
- 5. Verify the business impact

The same basic logic can be found in how a typical well executed machine line improvement is planned and proposed. First, research the present situation extensively and find the areas of improvement, then find solutions that address the discovered needs, issues or problems. After the solutions have been found, calculate what effects the solutions being proposed have on the customer process as well as identify the effects of improvements on the entire process and provide benchmark compared to the customer's

competitors. Then, propose how the solution is to be implemented and calculate the best possible earnings model involving delivered business impact. (Kovanen, 2013).

The value-based sales strategy to be employed is also dependent on what level the contact is being influenced, the rule of thumb as described by Kovanen (2013), is that the higher up the contact is in the customer organization, the more important demonstration of monetary value is and the lower, the technical execution and performance improvements.

As identified by the investigation into the present situation for MIL30+, access to key persons is an issue, the key persons should be at the right level of decision making or as indicated by Kovanen (2013), the person in the customer organization who is willing to put forth investment ideas to management, when provided with the right information. The author would expand the issue of access to include speaking the same language as the customer i.e. knowing what performance reports the customer mill receives or produces, what the basis for directing operations is, how reports are handled, what is reported and how and what the follow up procedures are (Kovanen, 2013).

However, how value is sold is only part of the equation; Kaario et al (2003, 69) posit that the main challenge is what should be sold. This is partial to the declaration elsewhere of the importance to successful implementation of value based pricing: understanding what is being sold, how it creates value for a customer and then conveying the information about value being offered to a customer to influence investment decision. Kaario et al. (2003, 96) provide a summary:

- Illustrate deep understanding of the customer business and financials
- Demonstrate impacts of the proposed solution to the customer
- Identify the sales arguments relevant to the customer

- Establish a credible contact (to the senior management) and speak their financial language
- Provide important decision making material to the customer.

Also challenging towards selling value is shifting customer thinking beyond the traditional product volume mentality and *immediate return/effect* to consider the effects of solutions sold on the whole process. Kovanen (2013) suggests that, for example, speed utilization rates very often are overlooked and remain uninvestigated as to why a customer machine is only being run at a portion of full machine speed. Often attention is only being paid to production output and money per ton and as long as those indicators are sufficiently in the green, all is purported to be fine and the actual performance compared to for example, the competitor mills goes unnoticed (Kovanen, 2013).

If sales strategy is viewed from a customer perspective, then efforts should be placed on influencing what has been defined by Kaario et al (2003, 28) as self sufficient product purchasers or solution seekers to change into value seekers. Product purchasers by this definition have sufficient knowledge of processes, focus on costs incurred to them, keep suppliers at arm's length and are unwilling to share the value or information on business issues. Solution seekers acknowledge the supplier expertise on solutions, focus on total costs and are restrictive with regard to full supplier access and sharing of value.

Selling value in projects and in fact, projects themselves should be grounded in the strengths Metso has: the ability to be a full scope life cycle supplier, vast resources of expertise, analytical capability, technical know-how etc. instead of endlessly trying to compete in piece-meal projects with competitors who can deliver something at lower price and faster. Metso should offer and demonstrate value on investment (also compared to the customer's competition) and benefits of long term, larger scale commitment, all built on an ability to deliver beyond some competitors abilities of simply delivering cheap

components (Kovanen, 2013). This principle in the author's view would perhaps be also applicable on a smaller scale.

3.3.4 Value systems and logic

A value system was defined by Ojala (2003, 9) based on Parolini (2000) as being a set of activities that create value for customers. The activities are executed by using resources (human, tangible and intangible) and are linked by material, information, financial and influence flows. The activities were categorized by Ojala (2003, 10) as being either related to the realization of products and services, supporting activities or management of external transactions and also divided supporting activities by the range of support in the value creation system.

The concept of the value net is seen by among others Parolini (1999) as a more practical tool for understanding how value is created in a modern business environment than the value chain presented by Porter. This is due to value being created in a system where the supplier, customer and internal constituent responsibilities, actions, relations etc. are interwoven. A networked way of depicting value creation systems is particularly useful for solutions (products and services) or products that do not have physical properties but create measurable results. Particularly important the way in which processes are examined is when determining the monetary value of information (Huotari 2011, 38). Martinsuo et al. (2010, 11) suggest that value networks instead of chains should be used to describe processes where a business actively networks with competitors, legislators and other partners in addition to its own customers and suppliers.

The value systems, value creation logic or value configurations can be divided into three types: Value chain, shop or network. Fjelstad et al (1998, 415) provide a comparative overview which is shown in Table 3.

Table 3 Value creation logics (adapted from Fjelstad et al. 1998, 415)

	Value Chain	Value Shop	Value Network
Value creation logic	Transformation of	Solving customer	Linking customers
	inputs into products	problems	
Primary technology	Long-linked	Intensive	Mediating
Primary activity	In & outbound	Problem finding and	Network promotion,
categories	logistics, operations,	acquisition, problem	contract
	marketing, service	solving, choice,	management,
		execution,	service positioning,
		control/evaluation	infrastructure
			operation
Main interaction	Sequential	Cyclical, spiraling	Simultaneous,
relationship			parallel
Primary activity	Pooled, sequential	Pooled, sequential,	Pooled, reciprocal
independence		reciprocal	
Business value	Interlinked chains	Referred shops	Layered and
system structure			interconnected
			networks

On the basis of the definition for the value systems described above, it can be seen that the Mill Improvements value system is in reality a hybrid, possessing characteristics of all three, largely depending on what delivery process underway and even then, the horizontal overlap is evident:

- Value creation logic Solving customer problems, linking internal and external customers
- Primary technology Long-linked, intensive and mediating
- Primary activity categories In and outbound logistics, operations, marketing, service, problem finding, acquisition and solving, choice execution, control/evaluation, contract management, service positioning
- Main interaction relationship Pooled, simultaneous, parallel
- Primary activity independence Pooled, sequential, reciprocal
- Business value system structure Layered and interconnected networks.

3.4 Value Identification

According to the original project brief, value created for the customer by products, services or projects needed to be identified. As the desired categories of value added to be created in the customer processes are known, this thesis project deals with creating the tools for determining the desired value added an offering creates in the customer's processes. When dealing with selling, identifying and pricing value, the use of common and defined tools and process descriptions enhance the understanding of customers within the supplier organization's value creation system. Laukkanen (2011, 10) adds that, identifying value creating features helps the supplier focus on core competencies and brings the potential competitive advantages to the participant's attention. Also, combining the results of value mapping with for example, customer benchmarking data may help in identifying potential customers and so assist in building customer relations and develop customized value propositions. Identifying and mapping value also go well with integrating deeper into the customer processes and enable the mutual exploitation of resources and the avoidance of pitfalls of partial optimization (VTT, 2009, 21).

It is important to note that, value mapping should also be examined from the point of view of the whole process and not be restricted to merely technical process improvements, but also the improvement and rationalization of customer operations gained from the project (and long term benefits included there in). This is because often the value creating components, the benefits they create and customer needs they address often overlap or as a combination create additional value. Using Figure 1 as an example, one can visualize whether the supplier's solution impact the customer's material resources (machines, technical systems etc.), immaterial resources (personnel, image, brand etc.) or aspects of both as discussed earlier.

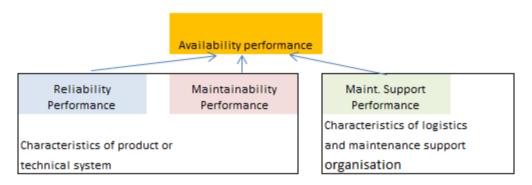


Figure 1 System availability performance adapted from IEC 60050 (VTT 2008, XX)

In order for a customer to remain profitable, the customer must either increase profits or decrease costs (Huotari 2011, 28). The two conditions can be reached by various means and by providing solutions or means to reach the above conditions will create value for the customer. The varied offerings of Mill Improvements seek to provide these means for a customer to reach their goals by impacting certain parts of the customer processes. Within the definition of value added (see Chapter 2.1), value being created for a customer by impacting costs and or/sales by:

- Reducing customer production and/or maintenance costs
- Increasing customer capacity or product quality
- Positively affecting customer health, safety and environment (HSE).
 (Ojala, 2013a).

3.4.1 Supplier resources

Huotari (2011, 38) determined that resources available to a supplier are commodities for determining the value creation for a customer and opportunities to react to value creating possibilities. For process improvements, Huotari posited that resources in the supplier value creation system are: patents and R&D know-how, quality, sales networks, unique expertise and knowledge about customer machines and processes, abilities and skills.

Supplier resources and competences, i.e. the components that make a solution should be in line with the identified customer needs. This alignment justifies the existence of the solution in that, then it or a combination of solutions meets a specific customer need. It is useful to recall what constitutes core competence and competitive advantage at a general level in the provider's processes, for example by using logic similar to that provided by Korhonen (Figure 2).

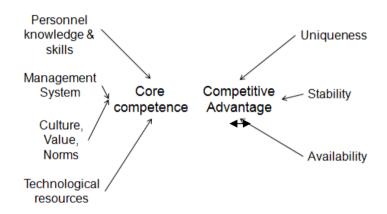


Figure 2 Sourcing core competence and competitive advantage (Korhonen 2006, 30)

3.4.2 Classification

In the concept of Value Driven Maintenance, Haarman (2002) defined the value drivers in maintenance as being asset utilization (increasing availability), HSE, cost control (lower maintenance costs) and resource allocation(maintenance). These terms are utilizable for the purposes of this thesis and for identifying and quantifying value added created in a customer process and generally the terms are in line with what benefits and value is being created for a customer by a Mill Improvements offering. Kaario et al. (2003, 100) divide the financial benefits of solutions to customers into three categories: More generated revenue (increased volume or higher prices), decreased direct or indirect costs or decreased tied-up capital (current or fixed assets). Korhonen (2006, 7) compiled general customer benefits of industrial services as being: economy, generation of new business, reduction of suppliers.

Table 4 Value drivers and benefits

Haarman et al.	Kaario et al.	Korhonen
Asset utilization	Revenue	New business
HSE	Decreased capital	Economic
Cost control	Decreased costs	Reduction of suppliers

When compared to each other, the categorizations can be linked together with the overlap in definitions and scope.

From the customer viewpoint a simple breakdown of the total customer needs made by Korhonen (2006, 25), can also be applied to assist the process of determining value drivers and what impact in the customer process is desired by the provider solution (Figure 3). When comparing the value drivers and benefits of Table 4 with the goals to be enabled in Figure 3, we can see that asset utilization correlates to performance and reliability, cost control to reliability and efficiency and HSE to all three goals. This observation then lines up with how the Mill Improvements offering is intended to create value for a customer.

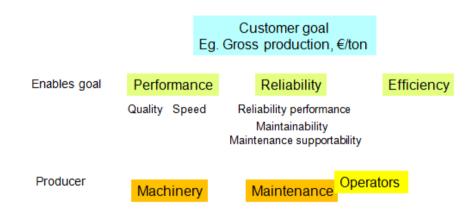


Figure 3 Customer need, adapted from Korhonen (2006, 25)

The areas of effect on a customer's process where impact is measured as described before were specified as cost control, asset utilization and HSE and were deemed suitable for the purposes of the intended use in this instance.

Cost control encompasses reduction in the customer's production and or maintenance costs, asset utilization increases in the customer's capacity or product quality and HSE has positive effects on customer health, safety and environment (Figure 4).

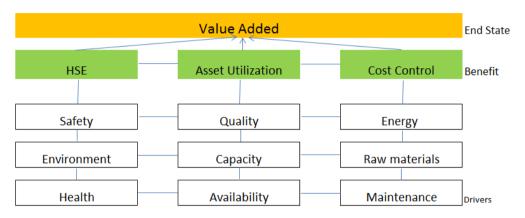


Figure 4 Simplified depiction of value added from customer point of view

To determine what benefit a given component of a product contributes to, input-output logic similar to that outlined by Martinsuo et al. (2010, 13) for defining core processes and their descriptions can be utilized (Figure 5).

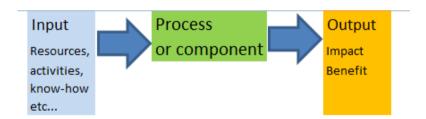


Figure 5 Determining component benefits to customer, adapted from Martinsuo et al. (2010, 13)

3.4.3 Methods and means

There are several methods that can be applied to the dissection of a solution into value creating processes and then determining how the processes create benefits for the customer that result in added value. From the provider's processes, the core support and additional processes, the input resources and competences must be identified, followed by their impact on the customer process and what benefits and value the customer receives as a result.

A series of five questions, adapted from Jaakkola et al. (2009, 18) can be used for focusing on the content and value added of an offering:

- 1. What are the benefits for the customer and how are they delivered?
- 2. What are the core, accessories and additional services?
- 3. Who is your main competitor?
- 4. Describe how the benefits and value for the customer are generated; what processes and resources are required?
- 5. What is the customer's participatory role?

As the value mapping and check listing methods were to be used in an extremely resource restricted environment, as per Chapter 2.7, the tools designed and principles utilized should be as familiar as possible and the existing framework utilized where applicable. The techniques developed for identifying the value in existing projects are essentially an amalgamation of the questions presented by Jaakkola, the method developed by Huotari for identifying and categorizing customer benefits in improvement projects and applied FMEA. The main considerations in design were simplicity, use with the aid of minimal instructions and unobtrusiveness into main user tasks. The aim was to create a so-called quick and dirty, simple to use tool for identifying the value created for created for the customer by an existing offering, to match the offering to the customer needs and to provide a starting point for calculating and pricing the value in question. The tool is not intended to be used in a *value based design role*.

In essence, the process of value identification in this context can be simplified to mean the marriage of value, benefit and impact in the customer process to the competences and resources that help create it in the provider's process. A description of the tool that was developed can be found in Chapter 5.1.

3.4.3.1 Productization and modularization

The usual process for the development of services business through productization is described by Jaakkola et al. (2009, 5) as a series of processes starting with the desired end states, development targets, means of

development and results. This simple frame can be incorporated into mapping value; the desired end state of value added as the starting point, then defining what needs to be done in the customer process to achieve the end state, what components from the supplier are needed, and what the resulting benefits are.

3.4.3.2 Payback-tool and PAPSER customer benefit classification. To determine customer benefits in improvement project components, Huotari (2011, 87-88) developed a very simple classification table. First, five categories of benefits were identified: Safety, maintainability, production, resource performance and quality. A component's impact on each category would then be assessed and rated and the explanation of how benefits were accomplished would be provided. An example is provided in Figure 6.

The classification table was later expanded and implemented in a product catalogue application to provide sales with a quick guide to the magnitudes of the customer benefits provided by a product or service with brief explanations of how it would be accomplished. Another built-in purpose of implementing the classification table into a catalogue of this type was to force the product managers into a more customer need, solution and customer value oriented mindset as well as to actually put more thought into why the product exists from the customer's point of view and how, in the complete picture of the customer process, the customer actually benefits from the product or service and by what magnitude.

Component	Kategory	Rating	Explanation
Component	Safety		
у	Maintainability	+	Requires minimum main- tenance (self-cleaning)
	Production	+++	Increases dry-matter con- tent on dryer section
	Resource performance	++	Decreases breaks on press section
	Quality	+	Creates even moisture profile

Figure 6 Component classification (Huotari 2011, 88)

3.4.3.3 FMEA applied

Failure mode and effects analysis (FMEA) is a tool that can be used to analyze failures in critical systems. The analysis determined by its name can be used to identify functional failures, failure modes and root causes but also it is possible determine the effects of the failure, local or system wide. The chosen approach can be either component or function oriented. The function oriented approach is intended for complex systems, can be started from the top or bottom and is the definition of system functions and their failure modes. (Tuukkanen, 2011).

With regard to mapping or identifying value, the relevant parts of FMEA, as laid out by Tuukkanen (2011) are:

- Define the target of analysis All functional states, performance requirements, system limits and failure descriptions.
- 2. Identify potential failures and determine effects.
- 3. Investigate the worst possible failure effects.
- 4. Identify the means of detection and prevention.
- 5. Identify corrective measures and their effects.
- 6. Document.

FMEA can be applied to identifying the value in existing products, services and projects by using a top down approach by starting at the customer end. So, what was said in Chapter 4.3.2, on the design of offerings with a customer oriented approach applies here as well: start from the customer and work backwards from there. Instead of functions, failure modes and effects the analysis is done on processes, value and impact. A framework can be formulated as follows:

- Define the customer Who, what, where?
- Define the customer need(s) or problem(s).
- Break down the customer need / problem Most vital, what benefits
 are realized if a solution is provided, what value do the benefits create,

what resources in addition to the solution offered does the customer need to satisfy the need?

- Identify customer considerations.
- Break down solution being offered What, resources required, how does it help solve the problem or need?
- Compare your own and the competitor's solution Do they correspond, scope is adequate, assess differential value, differentiation and competitive advantage.

3.5 Value pricing

To understand value and price structure, the concepts of gross value, net value and cost need to be examined. In an extremely simplistic model adapted from Ojala (2003, 9) the customer value is comprised as illustrated by Figure 7. In it, the net value for a customer is the difference between gross value and costs; the price is made up of costs incurred by the provider to produce the value and the net value acquired by the provider value creation system (VCS).

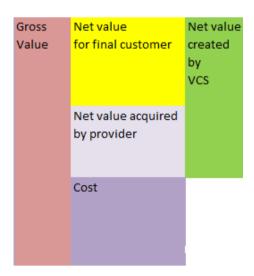


Figure 7 Simple depiction of gross value, adapted from Ojala (2003, XX)

However, the gross value for a customer can be understood to involve more than simply the cost of purchase (net value acquired by a provider + cost).

Among others life cycle and various risk costs, contingencies and additional costs to the customer from incorporating the product or service into its processes have to be taken into account. Then, the customer value starts to look more like the one presented in Figure 8.



Figure 8 Customer viewpoint, adapted from Ojala (2003, XX)

Ojala (2003, 42 - 43) defined the factors that determine the price of a product: it must cover the costs of production (base price), competitor prices can be used as benchmarks and the maximum price is defined by gross value to the customer. However, as also noted by Huotari (2011, 35), a customer can shop around for prices or consider alternative solutions, in which case differential value and ability to demonstrate it becomes more important than gross value. The differential value in this context is defined as the difference between the gross value to the customer of your product (see Figure 3) and that of your main competitor. Figure 9, adapted from Ojala (2003, 43), provides an illustration towards the theoretical price range of products.



Figure 9 Theoretical price range, adapted from Ojala (2003, 43)

Figure 10 provides an illustration towards what in actuality is the feasible price range set by the competing prices (see Figure 9) and what constitutes the differential value.



Figure 10 Feasible product price range and differential value, adapted from Ojala (2003, 43)

In addition to being able to formulate the differential value between your product or service and that of your main competitor, the actual value creation performance between the two should also be taken into consideration (see Figure 11). This is to be able to demonstrate the superior performance and total benefits and if needed, to guide the discussion away from the price.

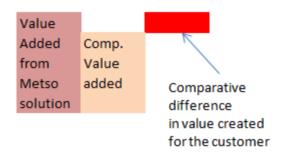


Figure 11 Actual value performance

3.5.1 Cost structure

Within the practical application of this thesis, the cost structures are dealt with in simple terms. Base costs for the supplier consist of the core equipment (the product, components, engineering costs etc.), accessories (components and equipment required for installation or execution, additional engineering costs) and site services (installation, project management, start-up, in-use services). Once the base costs have been determined, warranty costs, contingencies (project risks, additional resources, so called dirty rebuilds etc.) and other costs (agent fees) are included to form the total supplier cost, which also forms the base in this case for the value added price. Adding a profit margin gives the cost based supplier price or quoted price, the negotiating margin in turn gives the discount price. An example is provided in Figure 12.

Metso price and costs		Basic costs	Total cost	СВР	VAP
Discount price	k€			153	157,5
Quotation total	k€	90	107	204	210
Core equipment	k€	60	71	136	142
Accessories	k€	20	24	45	45
Site services	k€	10	12	23	23
Warranty cost	%	7			
Contingency cost	%	5			
Other costs	%	5			
Metso margins					
Product margin	%	30		30	32
Negotiation margin	%	25			

Figure 12 Example of simplified price structure

Once costs for the supplier have been determined, the total cost of acquisition to the customer can then be evaluated. Acquisition costs to the customer include project risks (lost production due to shutdowns, costs incurred due to installation problems or failed start-ups etc.) and turnkey costs (resources required from the customer for installation and start up, equipment etc. The costs incurred to the customer by shopping for alternate solutions can be included here). An example of the evaluated total customer costs is provided in Figure 13.

Customer Costs - Evaluation Comp Alt. CBP VAP Customer total cost k€ 390 354 360 204 210 Quotation price k€ 200 Turn key costs k€ 40 50 50 150 Project risk costs k€ 100 100

Figure 13 Simplified customer cost evaluation

3.5.2 Value based pricing introduction

In the intended pricing system, price targets for certain products are based on the average expected amount of value added produced for a customer. The products, services and projects offering involved have been divided into three main categories based on the customer investment behavior (Ojala, 2013b):

- Investment decision based on added value only (i.e. benefits and advantages gained): energy, raw material and savings in operating costs, increased paper price, increase in production, less broke.
 Customer decision was based on the added value total and/or added value in comparison to the main competitor.
- Investment decision has to be made: the machine is broken, regular maintenance, control & safety upgrade and so on. The customer decision is based on added value in comparison to the main competitor.
- Other projects with potential to reach higher margins (.i.e. emergency repairs, OEM-parts required, safety upgrades, no competing, limited intelligence on the customer etc.): Mandatory investments where added

value cannot be calculated or is irrelevant or there is no alternative to the original supplier.

These projects also differ by the area, country and customer. Potential to capture created value, influence decisions etc. can be exploited in projects related to emergency repairs, safety upgrades, OEM-parts and no competition environments, depending on the circumstances. (Ojala, 2013b)

Baron (2012) offers a view on the circumstances where a high value based price works: appropriate guarantee, urgent customer need, rewards gained from the investment far outweigh the risk, the potential value and results are clear as well as measurable, demonstrable with quick return on investment. In this case the perceived customer value and the *actual value* corresponded well enough with each other to justify what in other circumstances would be an exorbitant price. In VTT Symposium for service science (2008, 81-82), the concept of cost of damage was discussed. The cost of damage is the result of specific actions not taking place. The cost of damage if demonstrated can very well justify the price of an offering.

With reference to Mathieu, Korhonen (2006, 7) presents the problem of businesses pricing services in a manner that for one, customers would be willing to pay for and that not knowing accurately enough the costs involved in producing a service create problems in profitable pricing. Grönroos (2001,152) outlines the reasons for customer undervaluing of services and unwillingness to pay for them, these reasons can also be applied to, for example the evaluation of success or failure in value based pricing:

- The supplier has not been able convincingly to demonstrate the benefits to the customer
- The supplier has not been able to demonstrate that the long term financial impacts offered by the solution are more important investment criteria than the price

- The solution offered does not stem from customer needs and do not offer benefits the customer seeks
- The customer is not interested in add-ons or services despite the added value available from them but instead wants the core solution at the lowest possible price.

The last point also relates to factors that should be taken into account during the pricing process itself.

3.5.3 Common pricing strategies

Choosing how offering is priced is one of the most vital management decisions as it determines short and long term profitability. Prerequisites for sustainable growth are product quality and sensible pricing policies (Laitinen, 1990, 11). When determining how an offering is priced, aside from quality, marketing etc. issues, a supplier must base his decision among others, on cost structures, how profit is to be extracted, and what the competition is doing as well as what the supplier's market position is. Pricing strategies were determined by Porter (1985, 11) to be cost leadership, differentiation and focus.

3.5.3.1 Cost-based pricing

Cost-based pricing is the traditional and still most prevalent method of pricing in heavy industry. This is a simple method, which, however severely limits the ability to increase profit. Cost-based pricing is based on the cost incurred to produce the products and services being offered and then adding a percentage of markups as a profit. Ojala (2003, 44) offers target return pricing as a variant, in which the margin is set by desired return on investment divided by the unit sales per desired period. The definition offered by Korhonen et al. (2011, 30) is that cost-based pricing starts from a service causing certain costs to its producer and when a profit margin is added, the price is worked out.

3.5.3.2 Market based pricing

This is also known as the pricing equivalent of plagiarism. Based on determining the price according to demand and supply and how the competition has set the price for their offering. Market based pricing is also affected by regulations: taxation, laws etc. The base is set by costs incurred from producing the offering and the theoretical upper limit by the market prices and demand. Often the competition and utilization of cost leadership strategies leads to pressures to lower prices. (Sipilä 2003, 58). Typically market based pricing works by calculating the median or average price and adjusting the price of one's own solution up or down, taking the aforementioned points into account (Raatikainen, 2008, 154). Korhonen et al (2011, 30) define market based pricing as starting from the competitors offering on a similar service at certain price then superior qualities of the company's own services raise and the inferior qualities lower the resulting price.

3.5.3.3 Value based pricing

Value based pricing is a strategy based on value created by the provider to the customer. Being able to quantify the value and being in a position unique to the competition are prerequisites (Kaario et al. 2003, 106). This pricing strategy has the potential for significantly higher profit margins than the preceding pricing methods. The theoretical upper limit is set by the maximum customer perceived value. In practice, differential value and competitor prices dictate the feasible price range (Ojala, 2003). Kaario et al. (2003, 107) among others, suggest that value based pricing cannot be applied for standard solutions as the competition will catch up. Value based pricing in theory sets prices to match the value produced for customers as compared to the pricing strategies described earlier (Persson et al 2010, 105). Hinterhuber (2008, 41-42), sets the essentials for value based pricing as being:

- Understand what creates value for customers
- Set prices as a function of value
- Have consistent pricing policies

Design your solutions so they meet what the customer expects.

The author posits that value based pricing can, to some extent i.e. in a feasible price range, be utilized with standard solutions as long as the solution offered is differentiated enough from the competition and responds to an exact customer need. Kaario et al (2003, 96-97) suggest that being able to quantify the value is also a good way to shift the focus of discussion from prices to the value being generated for the customer and that value calculated does not have to be exact. This structural inaccuracy is resultant of the nature of value; even when tangible it is still often based on an assumption. Measuring the value created for the customer requires understanding of their current situation (Kaario et al. 2003, 99). A primary weakness of value based pricing is in the nature of customer value; namely the measuring and communicating thereof, when done improperly it may lead to high prices and long term profitability under scrutiny (Hinterhuber 2008, 42). The consistency of pricing policies is touched on by Korhonen et al (2011, 31) and the conclusion is that a customer who feels treated unfairly on pricing is not a satisfied customer no matter how great the benefits received are.

Harmon et al (n.d., 20) speak of the importance of price and value communication and conclude that customers need to be fully aware of the difference in value a solution creates for them compared to other customers. The position described ties the concept of differential value discussed earlier and an aspect described by Kovanen (2013) and in this way an investment can be better justified when the value gained by a customer compared to their competition can credibly be demonstrated. So, estimation and demonstration of the value created for the customer, the value created compared to the competition and the value created compared to the customer's competitors should be taken into account.

3.5.4 Challenges and consideration

With regard to guidelines it is important to know where the added value to be captured is inserted into the price as with many products or services, factors

that make up a price can be determined by the customer with a high degree of accuracy, thereby making it very difficult for the supplier to justify their pricing policies, even with demonstrable results of added value created to the customer. Therefore the intended amount of captured value has to be set in the element of the core offering price structure i.e. where the critical supplier know-how lies. It is also vital to have the accurate cost information for all parts of the pricing equation: bad information leads to bad decisions and strategy (Cooper et al. 1988). Pricing policies must be uniform; customers have access to about the same pricing information (off the shelf components, labor costs, transportation etc.) you do and will become alienated should they feel unjustly treated compared to others who invested in the same solution.

Significant challenges towards the implementation of value based pricing, as stated by Ojala (2003, 71) and still persistent as detailed by as-is situation into MIL30+ (see Chapter 3.3) arise from equipment suppliers giving away maintenance and consultation services for free to gain references. Also, some of the customers consider themselves irreplaceable to the suppliers and so do not have to share any value gained from services. Customers are also unwilling to pay premium prices for the work that in their arcane mindset cannot be seen or touched. Reluctance by customers to share value was also covered by Korhonen et al (2011, 30) who discovered that the challenge in arriving at a compromise in sharing value is caused by the customer not wanting the supplier to benefit too much and that despite how much value is created, the customer has their perception of what is fair and what is not.

Another aspect affecting value based pricing in particular was outlined by Ojala (2003, 38) in the analysis of uncertainties relating to costs and gross value. This aspect is information asymmetry. In this context it means the difference in perception between the supplier and customer, usually with the customer underestimating gross value and overestimating cost uncertainty (Ojala, 2003, 38). One method for reducing the asymmetry is for the supplier to understand and being able to measure the cost and created value

accurately enough to provide convincing and calming evidence to the customer.

Olli (2007,18) based on Anttila et al. (1999) determined that the freedom in pricing services was largely dependent on the ability of the customer to change suppliers quickly and the degree of differentiation of the service being offered. As applied from Raatikainen (2008, 151) pricing freedom is also restricted by the competitive situation and added value to the customer, the less competition and the more value created for the customer, the higher the theoretical upper limit to the price. Combined, the aforementioned issues are applicable in particular to the value based pricing of Mill Improvements projects, when differentiation (and justifiable higher profit margin) may be difficult because of conditions also described elsewhere in this thesis: The customer only wants the core solution, is unwilling to pay for services or can simply change suppliers if they are not absolutely satisfied with the solution they are receiving, are suspicious of pricing details or are considering whether a competitor can deliver the same specific solution at a lower cost. Then the freedom of choosing how much of the value is to be captured as profit becomes severely limited. This freedom is also severely limited in the face of a customer who is able to approximate the supplier costs with reasonable accuracy down to minute details (Ojala, 2013e).

3.5.4.1 Observations

The optimal method then would be to combine the three common pricing strategies described above into a model where the base, benchmark and potential levels of a price can be readily seen. This model would have the least amount of involved guesswork and provide the most accurate results and realistic profits gained. In actuality the pricing method is determined by far along the lines of what has been described in Chapter 3.5 with regard to the feasible price ranges and differential value.

Kaario et al. (2003, 107) summarize value capturing or value based pricing and when combined with the work of Ojala (2003) the pricing model arrived is: Quantifying the value created, assessing competences, risks and costs of

investments (supplier and customer), defining a minimum price (determined by costs plus minimum margin), establishing principles for value based pricing (solution, earnings logic, competitor prices, differential value) and determining the actual price. Laukkanen et al (2012, 4) based on Dolan (1995) delve into the matter of customer considerations and point out that costs are incurred to the customer from looking into alternatives, that the time of purchase and delivery are significant (authors note: as are response times), whether the customer has the freedom to switch without incurring extra costs and finally, the customer is free to compare offerings and evaluate differentiation, reputation and intangible factors.

It is the view of the author that that value added pricing is also often dependent on the earning model and on whether immediate returns or value is intended to be captured over a longer period.

Laukkanen et al.(2012, 2) summarize successful pricing as follows: Assess the value customers place on a product or service, look for variation in the way they value the product or service, assess the customer's price sensitivity, identify an optimal pricing structure, consider competitor reactions. After these actions it is important to monitor what price is realized, how the customers responds and determine whether profits gained were worth the costs incurred from serving the customer (Laukkanen, 2012, 2).

4 Development of value tools

In this chapter the development and execution phase of the thesis project is covered and the results described in detail. The development phase overlapped the research phase to some extent (see Appendix 2) because it was possible to do so with the research done and the information available at the time. The order in which this phase of the thesis project was completed was as follows:

- Forming of the process logic for using the value identification and pricing tools.
- Design and development of the pricing tool, selection of benchmark projects and acquisition of data for testing and evaluation.
- Design and development of the identification tool.

The development processes of the pricing and identification tool were in their latter stages concurrent as development work done on the former could be applied to the latter. The processes for selecting the benchmark projects and acquiring the data are described in Chapter 4.3.

The process logic for using the tools was formed by comparing relevant theory and the Mill Improvements project life cycle and sales process descriptions. By doing so, the process phases in which the tools would be used and by whom were determined and finalized. Comparison and analysis of the theory, processes, users and the phases of use assisted in forming the picture of the content and data sources required for the tools. The process of using the value identification and pricing tools within a project life cycle is described in Figure 14. The value identification tool can also be used independent of a project context in the start-up phase of identifying value in existing Mill Improvements solutions.



Figure 14 Value identification and pricing tool process logic

In the initial phase of value identification, the tool designed is used for evaluating and comparing the customer need, value generated, other customer aspects (considerations, resources other than or in addition to what is being delivered are required for solving the problem/need) provider and competitor solutions. After the value identification is complete, calculations with tools intended for that purpose (Payback, Value Investment, Boost) are done to quantify the value. Once the value has been quantified, the information available is used to assess a value added price with the aid of the value added pricing tool. After the value added price has been defined, the final pricing decision is made. Within a project's process life cycle, the identification and pricing tools would be used, for example in the initial phases between receiving the information on a customer need and communicating the proposed solution and quotation to the customer to initiate the negotiations proper.

4.1 Value pricing tool

In this chapter, the pricing tool developed, background and design principles are discussed. Also provided is the framework and considerations regarding pricing decisions.

4.1.1 Pricing decision

Regarding the use of value quantifying tools, such as payback, boost or investment value calculators Kovanen (2013), Hartikainen (2013) and Kaario et al(2003, 100) all state that it is important to involve the customer in the process of using such tools to verify the results. Customer verification of

results leads to an analysis that is useful to both parties. Also, Kaario et al. (2003, 100) suggest that using such tools to demonstrate the value in conjunction with active customer involvement may help in guiding the discussion away from the price to the actual benefits on hand. Another justification for involving the customer in the value, ROI or payback calculation process is the alleviation of the information asymmetry discussed earlier.

Upon involving a value added pricing tool, the decision process only involves the tool to an extent, the decision itself must include a more complete picture of how much and with what earnings logic the value added is to be captured as a profit. A pricing tool only gives an indication of what is on offer. What this means in everyday terms is for example: if it is a onetime price involving only part of the total value created for a customer (as with perhaps a simple, heavily contested component delivery not including add-on services) or a longer term performance guarantee and bonus model based price. Kaario et al. (2003, 107) provide certain corroborating considerations applicable to value based pricing decisions:

- How can a share of profits or revenues over a certain period be attained by the provider?
- How would it be possible to get paid for taking over parts of the customer assets?

Ojala (2003, 46) summarized the major factors that need to be taken into account in pricing and these factors are applicable to the use of pricing tools constructed for this thesis. The applied summary is depicted in Figure 15.

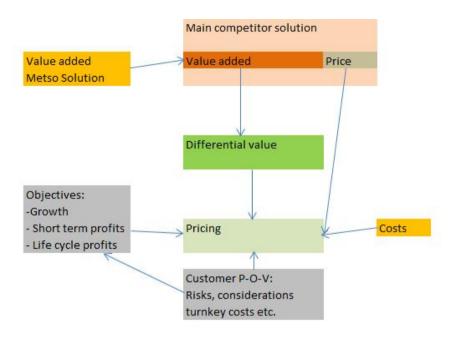


Figure 15 Pricing factors, adapted from Ojala (2003, 46)

The addition of the customer point of view is justified because in value based pricing, the kind of operating environment and the kind of customers Mill Improvements dealt with provide for certain challenges described elsewhere in this thesis. Therefore the customer has to be taken into account when considering your own objectives and pricing, namely where to insert the value capture as a profit into the price. As stated elsewhere, the point of insertion is where the resources, components and know-how that create the main impact on customer processes are. After a decision has been made, the remaining components and processes should be priced reasonably. For example, off the shelf components, work or services the customer can obtain themselves or estimate the value of with great accuracy should be priced reasonably to avoid, for example placing the entire price structure under suspicion and making the customer feel that he is being treated unfairly.

The way in which a pricing or decision aiding tool is injected into the decision making process can influence a positive outcome in many ways. However, its user must internalize that a pricing tool is just that, one part of a complex network of instruments dependent on the quality of groundwork and information available and only as good as the user's ability to interpret and

utilize the information presented. When used correctly, a pricing tool will provide data accurate enough to be used in selling a concept as being worthwhile to invest resources in, to constituents on both the customer and provider sides of a value network. How the data output from a pricing tool should be presented is dependent on who is being targeted. The aim of a pricing tool is to provide correct, manageable and meaningful data for pricing decisions. Then, information contained in a pricing summary tool has to provide data for quantifying the value created, assessing competences risks and costs, minimum price, principles for value based price and aid in determining the actual price level.

4.1.2 Design principles

In order to be able to exploit the established pricing model, a tool was designed for its practical implementation. For reasons of uniformity, prevalence in office environments and familiarity, Microsoft Excel was chosen as the platform and format for executing this phase of the thesis. The original project briefs outlined certain conditions for the design of the pricing tool: Product costs and other pricing information would come from the tools specifically designed for those tasks (Ojala, 2013e). Payback, ROI (Return on investment) and value estimates would also be calculated with the tools created for specifically for those purposes and so, this tool was to be a summary or cover sheet containing the necessary information for evaluating the conditions for value added pricing and assist in the next stages of decision making. Since the pricing tool was intended to be a so-called "cover sheet" it would be in fact a collection of relevant data from various sources presented as a concise and clear package. Some calculation features were programmed into the tool, but only what was determined through testing and evaluation to be absolutely necessary.

Due to the intended use of the tool, design requirements differ slightly from a basic calculation tool and more emphasis should be placed on simplicity, non-interference of functions on the user's primary actions. In this case the primary actions constitute making a decision based on information presented on-

screen. Thus as a simple a user interface as possible, minimalistic design and the use of subtle, minimal visual effects to ease visual acquisition of the most important portions of information are the central requirements. Functions must have minimal delay, all information has to be located quickly and instinctively so as not to interrupt or disturb the main thought processes of the user and that all information vital to the decision being influenced has to be viewable for processing by the user at a glance.

The design process and principles then followed the SFS standard humansystem interaction and human centered design for interactive systems as well as the design process outlined by Matilainen (2012). Usability as defined by Siistonen (2012) is the capability of a product to be used by humans easily and effectively. The SFS-EN ISO 9241-210 standard states:

A product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use.

So, a pricing summary tool is to be used by sales or project managers to successfully determine the conditions for a value added price with minimal interruption and added work-load to the sales process. The ISO 9241 standard also provides the following principles for design:

- Suitability for the task The tool contains necessary information in as minimalistic a manner as possible.
- Self-descriptiveness The user knows what part of the tool he is in and what actions can be taken.
- Conformity with the user expectation It is a pricing tool for aiding
 decision making, it is simple to use, there is little room for errors or
 confusion and relevant information can be fitted onto a single A4-sheet.
- Suitability for learning The user only has a limited amount of clearly marked buttons he can push and places he can input data.

- Controllability Point, click, type or use tabulator to move between editable cells. Checkpoints in place for critical functions that delete information
- Error tolerance Editing is password protected, remaining sheets are hidden.
- Suitability for individualization The user can add or remove input fields of his choice by ticking the boxes and clicking a button.

Siistonen (2012) provides extra pointers for designing usability: recognize rather than recall (meaning that finding something is intuitive and does not require a conscious effort), it is flexible and efficient to use, it is aesthetic and of minimal design (simple visual cues can then be used to draw attention to relevant details) and consistency (that the interface design and terminology used has commonality and is consistent with the user environment). In closing, the resultant tools would have to meet the requirements for ease of use and minimal intervention or they would risk not being adopted by the assigned users as intended.

4.1.3 Design process

In addition to the design principles and requirements described above and in Chapter 1.4, there were certain desired features dictated by ease of use and minimal intervention. The features were: to enable as much so-called point-and-click function to what would be otherwise time consuming and tedious affairs, such as adding, deleting or clearing input fields, the prevention of accidental deletion of information and the prevention of tampering. The desired features would be implemented in the pricing and identification tools with ActiveX components and Visual Basic.

As listed in Chapter 1.4, the phases of the design process for both the pricing and identification tools followed the same structure. The pricing tool went through a total of eight development cycles between the conceptual and detail/final design phases, the value identification tool has gone through four cycles (as it is at the time of writing only entering the testing and detail/final

design phase). The design process for the pricing tool is described below and the corresponding process for the value identification tool is described in Chapter 4.2.

4.1.4 Pricing tool development

The additional task analysis consisted of discerning the information required for a value based pricing decision and classifying the information into meaningful entities. Once the analysis was complete the conceptual design could be begun. After the variants and layouts made during the conceptual design phase had been evaluated and areas of development mapped, the actual design phase was started. During the design phase, the data from benchmark projects was used to verify and test the concepts being developed and the information gained as a result was used to initiate the final, detail design phase. A summary of the development cycles undertaken so far by the pricing tool is provided in Figure 16.

Concep	t			Develo	pment	Detail	and Final	Release
0.1a	0.1b	0.2a	0.2b	0.2c	0.6	0.9	0.9b	1.0
0.14	0.10	0.24	0.3	0.5				

Figure 16 Pricing tool development cycles

The conceptual design phase of the pricing tool comprised of three initial development cycles and a fourth cycle of designing concept variants. The cycles were as follows:

- Ideation and drafting of the task analysis results by relevance, relationships and groups into visualization by using an A3-sized paper, Post-It notes and markers (version 0.1a).
- 2. Transfer of version 0.1a into the Excel environment. Forming of content grouping (Version 0.1b, see Appendix 8).
- 3. Forming of base concept and content (Version 0.2a, see Appendix 9).

4. Ideation and conceptualization of variants and features (Version 0.2b and 0.3, see Appendices 10 and 11).

During the 0.2b/0.3 development cycle, the process of tracking down, acquiring and analyzing benchmark project data was begun. The development cycles then involved using the available data to test the layout and information as well as map usability issues etc. The development and detail design phase cycles were as follows:

- Development and evaluation of variants 0.2b and 0.5. The elimination of version 0.5 due to usability issues discovered during testing.
 Finalization of general layout, structure and content based on 0.2b.
- Development of the layout and visual effects, conceptualization of desired features. Implementation of protective and tamper proofing features (locked cells, hidden calculation formulas). Testing of layout and visual effects. (Version 0.2c, see Appendix 12).
- Testing of layout and user interface, visual cues and verification of formulas. Design of control features. Finalization of user inputs.
 Finalization of control feature placements. (Version 0.6, See Appendix 13).
- Finalization of controls, interface and layout. Coding of ActiveX and Visual Basic elements. Conceptualization of user instructions. (Version 0.9, see Appendix 3 and 4).
- Planning of user testing, execution of testing, feedback analysis and implementation of discoveries. Finalization of user instructions.
 Continuous development (Version 0.9b and 1.0).

The process of continuous development from version 1.0 onwards is based on the concept of a main user. Once the pricing and identification tools have been disseminated into the relevant locations and organizations it is important to have a clear flow of information between the user and the developer so that the changes and modifications made to the tools correspond with what the user requires. A main user is to have working knowledge of both the tool and

the local operating environment in order to be able to provide feedback from the users that has been filtered for relevance and accuracy. The main users act as communications bridge and gate keepers.

4.1.5 Description

The visual representations of the pricing tool version 0.9 can be found in Appendices 3 and 4. The functionality programmed into the pricing tool is as follows; the user can choose the following options: save, print or clear the worksheet by clicking the command buttons. The user can also, by using command buttons, collapse or expand the worksheet and add or remove text field sections to certain parts of the worksheet. The brief description of information contained in the pricing tool can be found in appendix 5.

The functions of the pricing and identification tools were programmed with ActiveX elements and Visual Basic. The functions were intended to help the user execute actions that would otherwise be time consuming or tedious. The pricing tool control layout is illustrated in Figure 17.



Figure 17 Pricing tool user controls.

The top section (see Figure 17 and Appendix 3) is visible at all times by using the freeze panes feature in Excel, but the section has been excluded from the print area of the worksheet. Although the save, print, exit and the expand-or-collapse-sections functions are present in Excel itself, the operation of some features in Excel can be unknown to some users and it is easier for the user to have them as point and click command buttons close to the main area of operation. The functions of the user controls are as follows:

- Save Activates the "Save As" function in Excel. Enables saving individual scenarios separately and retain the original worksheet as a blank.
- Print Activates the "Quick print" function in Excel.
- Exit Closes Excel. The button also activates a verification prompt in order to prevent accidental closing and loss of information
- Add/Remove Section Enables the user to add or remove blocks of input fields in select parts of the tool. When the button is activated a menu appears (see Appendix 4) where the user can choose what section of the tool the blocks are to be added to or removed from.
- Clear Deletes all data input by the user into the tool and reverts to the tool into a blank state.
- Collapse/Expand All Executes the function controlled by the 1 and 2 buttons (see Figure 17) in an Excel worksheet that has ranges of cells/rows grouped together into sections. Enables the user to expand or collapse all of the sections in the work sheet. Use of this command button does not prevent the user from expanding or collapsing sections individually by using the +/- button (see Figure 18).



Figure 18 Default Excel data group/section controls

The content of the pricing tool was divided into sections. The sections were: basic information, project summary, customer decision considerations, customer value added, customer costs, Metso price and costs and Metso margins. The content of each section is detailed below.

- Basic Information The customer, customer facility and contact person. The machine section(s) the solution is intended for, the name of the solution and the code used to track the solution in the ERPsystem. Basic information about the author.
- Project Summary Brief descriptions of customer problem and subsection describing benefit gained by solving the problem. One input block consists of a problem and benefit section. Brief description of the scope of delivery.
- Customer decision considerations Brief descriptions of factors that affect the customer's investment decision. One input block consists of one line of text.
- Customer value added Brief descriptions of what creates the
 customer value and how much in what unit. One input block consists of
 a description, amount and unit input field. The total value added
 created for the customer by the solution, the main competitor and the
 value added created compared to the competitor's solution (differential
 value).
- Customer costs The evaluation of customer costs broken down by
 the competitor and Metso's cost based and value added prices. Project
 turn-key costs (additional costs incurred by the customer from the
 execution of the project) and project risk costs (shutdown costs,
 equipment failures, accidents etc.).
- Metso price and costs The basic cost structure with the total quotation and discount prices. Included are base costs, total costs (include warranties, contingencies and other costs), the cost based price (total costs with product margin) and value added price. The contingency costs in this context mean things such as additional parts,

- dirty rebuilds, additional engineering and the other costs means things such as agent fees.
- Metso margins The intended product margin (determines cost based price) and negotiation margins (determines discount price).

After the user has filled in all the information necessary, the decision making process can begin. At this stage in the latest, the user will also consider the pricing targets described in Chapter 3.5.2. The way information is presented and emphasized to the user ties in with the factors determined to affect pricing decisions (see Chapter 4.1.1).

4.2 Value identification tool

In the original project brief, the tool for identifying the value in a project was to be a simple mapping tool or checklist of variables. The resultant tool was compiled by combining the usable methods for value identification examined in Chapter 3.4 with the pricing tool design principles covered in Chapter 4.1. The visual presentations of the identification tool can be found in Appendices 6 and 7. The aim and intended use of the tool is for the user to compile information for analysis, evaluation and comparison. Based on the conclusions, the user can then begin to do calculations and formulate arguments in favor of investment.

The design process for the value identification tool was carried out in two phases. The first phase consisted of an initial ideation map in Excel. After the map was complete, the design process of the pricing tool was started and the identification tool was put on hold. The second phase of the design process was started once the pricing tool development process was at cycle 0.6 (see Figure 16).

The additional task analysis for the value identification tool consisted of reflecting on the established theoretical basis for identifying value and the

general design requirements. The analysis involved determining all the information needed to identify the customer value in an offering and categorizing the information into meaningful entities. Once the analysis was completed the conceptual design phase was started by mapping the information into an Excel worksheet (see Appendix 14). Because the design process was halted at one point, the conceptual design phase was continued by evaluating on paper what features and layout from the pricing tool could be utilized in the identification tool. The paper version was also used to determine the relationships, groups and relevance of the intended content of the tool. Based on the evaluation of the paper version, the content was transferred into the Excel environment using a layout and visuals based on the pricing tool version 0.5. Once the concept had been evaluated and the areas of development mapped, the design phase was started. The design phase was intended to comprise a cycle with benchmarking, limited testing and evaluation. Based on the findings made a pre-release version will be made during the final design phase where the layout, content and functions will be locked. A summary of the development process is illustrated in Figure 19. Visual presentations of the development cycles can be found in Appendices 6, 7. 14 and 15.

Concept		Development		Detail and Final	Release	
0.1	0.2	0.3	0.5	0.7	0.9	1.0

Figure 19 Value identification tool development cycles

The main point of interest in the design process for the identification tool was that the multiple sheet development version 0.3 was evaluated to be too complicated with overlaps and non-vital input fields. Thus the finalized concept was simplified and the overlaps removed. The resulting version 0.5 incorporated the finalized two worksheet layout and relevant user controls imported from version 0.9 of the pricing tool. Version 0.1 then was the initial

ideation of content (see Appendix 14) and version 0.2 the revised paper and post it map.

4.2.1 Description

The visual representations of the value identification tool version 0.5 can be found in Appendices 6 and 7. The user functions of the pricing tool were imported into this tool with minor modifications. One user function to be implemented in version 0.9 is the ability to navigate between the two worksheets with the use of command buttons. The command buttons are intended to help the user execute actions that would otherwise be time consuming or distracting. The primary difference in command button functions compared to the pricing tool is that the print command button executes differently. This is because the user input fields are form textboxes into which it is possible to input more text than is viewable at one time (enter key behavior changed, multiline and vertical scrollbar enabled). The print command button then executes in such a way that all the text input into the textboxes is printed. The other difference that has been implemented so far is that the intended textbox content descriptions are hardcoded into the form, so a blank document will always show what the input content into each section should be. This feature will be imported into the pricing tool where needed to prevent needless layers of user instructions. The top section, as in the pricing tool, is visible at all times. This was done by using the freeze panes feature in Excel but the top section has been excluded from the print area of the worksheet.

The content of the identification tool is divided into two sheets; the customer and solution and the competitor comparison sheets. A description of content is provided below:

- Basic information The same as in the pricing tool.
- Customer need / problem Brief description of core customer needs,
 problems that need to be addressed, improvement opportunities.

- Metso solution Brief description of how and with what means a
 precise solution is to be provided for the customer.
- Benefits gained How the customer will benefit from solving the problem etc. Estimation of impact size.
- Value added to customer What concrete value is created for the customer
- Customer considerations Brief description and consideration of risks to the customers and for example what alternative solutions are there from the customer's point of view and what are the consequences of leaving the problem unsolved.
- Additional customer resources required A brief description of what the customer needs, other than the supplied solution(s), to solve the problem.
- Metso solution Brief description of scope, evaluation of scope compared to the competitor offering and customer need and expectation.
- Competitor solution Competitor name. Brief description of customer solution and scope if known.
- Metso advantage Description of benefits and value compared to the competitor. Consideration of solutions and value that Metso can deliver but the competition cannot, within the limits of what the customer is prepared to pay for.

4.3 Benchmark projects

To assist in the laying out and testing of the theory, selection criteria and specifications it was decided that the best course of action would be to use actual sales projects. The benchmark projects were chosen on the basis of the following (also discussed in Chapter 2.3): at least one of the payback or value investment calculators had been used in the sales process or the subsequent sales project data was available for the analysis. The product or service had to have a main competitor for comparison and adequate

documentation. The use of well documented projects would help in determining what information was central to the tools and how the information should be presented in them. All selected projects had proper payback calculations, price quotations and calculations, customer consideration and other documentation available.

The reasoning behind the requirement for the use of payback or value investment tools was that as the amount of quantifiable value added created for a customer is central to the operating principle of the pricing tool, the data used to test that portion of the tool should be actual data and not guesswork.

The process for finding and acquiring benchmark project data contained two main phases: the task analysis and search and retrieve. The task analysis consisted of evaluating of what benchmarking data had to be accurate to ensure reliable benchmarking and test results and what data, if not readily available, could be estimates and would not affect the test results negatively. As most projects have available at minimum the customer inquiry, quotation calculations and quotation sent to the customer as well as competitor information and some form of technical specifications and sales material, the reasoning described above becomes quite apparent.

Armed with the expanded selection criteria, the search and retrieve phase could then be begun. To find benchmark projects for which payback or investment value calculations had been made, the starting point was determined as being the people in the organization who had knowledge of the calculation tools' use. Once those persons were found, the information of or leads on who had used the tools in question and where could be extracted. Based on the information and leads gathered, the users were then tracked down, interviewed and the project data requested.

4.3.1 Case 1, Coating station quick stop

Case description redacted from public release.

4.3.2 Case 2, OptiCleaner Pro

Case description redacted from public release.

4.3.3 Case 3, Tail threading solution

Case description redacted from public release.

5 Conclusions

In this chapter the results (and key findings) are recapped as well as observations and recommendations are made. The thesis project is evaluated and some closing words also provided for the reader.

5.1 Results

As stated in the introductory chapter, the results of this thesis project were personified in the value pricing and identification tools. The other main results were the definition and theoretical basis for the pricing model, the process logic for the use of the pricing tools and recognition of additional factors that affect a pricing decision (see Figure 15).

Some key findings made during the research phase of the thesis project, listed below for the reader's convenience were:

- The two main aspects that influence the degree of success in value based processes are people and information: Knowledge and competence and the quality and type of information available.
- The structure of a Mill Improvements offering is in line with accepted theories (see Tables 1 and 2).
- The definition and value generation of a solution. The value generated by a solution must be superior to that of its components acquired separately.
- The importance of viewing the effects of the provider's inputs in the customer's processes over the whole system.
- The importance of starting from what the customer needs and is ready to pay for.
- Speaking the same financial language as the customer when making sales and investment arguments.
- The importance to successful implementation of value based pricing: understanding what is being sold, how it creates value for a customer

- and then conveying the information about value being offered to a customer to influence investment decision.
- The challenge of shifting the customer's and your own organization's thinking beyond traditional product and volume mentality, immediate return and effect.
- Grounding projects in your own organization's strengths delivers value the competition cannot.
- Identifying value creating features helps the supplier focus on core competencies and brings the potential competitive advantages to the participant's attention.
- Combining the results of value mapping with for example, customer benchmarking data may help in identifying potential customers and so assist in building customer relations and develop customized value propositions.
- The feasible price range (see Figure 10) and the importance of being able to demonstrate the differential value. The knowledge and demonstration of the actual value performance (Figure 12). Knowledge of customer total costs (see Figure 14) and their effect on customer investment behavior and the effect often ignored contingency costs on the supplier's price structure.
- Insight into why a customer may be unwilling to share value (for example Chapter 3.5.4).
- Value based pricing is dependent on so many abstractions, intangibles
 and human factors that even with a vast amount of data and suitable
 software to analyze it and then make calculations based on the
 conclusions of the analysis, the result would still only be an educated
 guess. At the current stage of Big Data development and computing
 power.
- The link between consistent pricing policies and how a value added price should be structured. The importance of accurate cost information to all parts of the equation.
- The alleviating effect on information asymmetry of the accurate measuring of costs and created value.

5.2 Observations

During the design and testing phase, the hypothesis made by Ojala regarding a feasible price range was confirmed to apply to value based pricing in the current study. The *intangibility* or reliance on intuition rather than formulas and calculations of capturing value as profit was also confirmed, as was the effect of accurate information on customers on the accuracy of value based pricing.

Careful consideration is required when determining a value added price, it should be noted that as long as certain conditions are not met, the potential to be gained is severely limited. Value selling and value networks, the profitability improvement program itself may share with the goals of customer resource management. The goals are to find, attract, win new customers, service and retain existing and entice former customers to return. This can be achieved partly through methods described in this thesis: Promise and convincingly demonstrate the value, engage customers in a collaborative relationship to maximize the profits for involved parties in the value network and reward loyalty, disseminate information through references.

One of the primary conclusions arrived at by testing the pricing tool is that value added pricing provides great potential for improving gross profit margins, as it provides the person making the pricing decision a concise and clear picture of the essential value for the customer, cost structures, customer considerations etc. However, it is essential that the people making the pricing decision, doing the selling and engineering have the right skills, mindsets and are armed with the right information for themselves and the customer (who should also participate in some capacity) to get it done right.

Customer interviews done by Immonen (2013) for his thesis on the customer value in expert analyses confirm the findings detailed in this thesis and the preliminary investigation for MIL30+ that the customer needs and expectations are not being met with the current offering. Sales and marketing are unaware of what creates value for customers in the offering and how customers

perceive said value and with what priorities or preferences. The findings also complement foundations for the pricing model laid out and findings on challenges with value based pricing. A significant finding, detailed in the preceding chapter, is that at the current state of technology it is virtually impossible to make an absolutely accurate formula to calculate a value added price, but that it is a very intuitive, knowledge and expertise intensive process.

With regard to the themes of this thesis it is important not only to collect benchmark information about typical customer cost structures but also performance benchmarking data is essential to have, with correct analysis tools, which are very powerful tools for sales (Kovanen, 2013; Kaario et al. 2003, 105).

5.3 Recommendations

It is recommended that the value pricing and identification tools undertake further user testing and once the tools are released into general use the concept of main users be implemented. This is to ensure usability, reliability in results and so on. To reduce the actions required in using the tools and the amount of user-system interfaces (means having to open and toggle between multiple worksheets), integrating the tools into one entity should be examined. It is also recommended that the value identification tool be tested independently of a project life cycle. It is also recommended that procedures and metrics are determined to analyze and evaluate the pricing and identification results once the tools have been adopted in use beyond the testing scope.

It is the author's view that the Mill Improvements organization and processes should be investigated from inside out to identify the improvement opportunities, possibilities to streamline processes and to identify among others, bottlenecks and problems that negatively affect the ability to conduct business.

Another recommendation, based on findings made during the research stage of this thesis project is that more emphasis should be placed on making sure that the scope of solutions being offered meets the actual customer need and realized results have met the customer expectations. If the customer problem can be expediently solved with A, B and C, then why offer the standard heavy solution of A through F?

One possible method to improve GP and the success rate of value added sales, also recommended by Huotari (2011, 7), is to seriously examine the potential of utilizing pricing models recommended by Ojala (2003) in smaller projects. Implementing a bonus or a leasing based pricing model to capture the value first decided on with a pricing tool can provide a way, provided other prerequisites have been met, to actually reach or surpass the intended profit margin. The way in which by implementing a bonus model can assist in reaching or surpassing margins or even securing a deal is by 1) directing discussion away from the price to the value being promised, 2) committing both parties to achieving at least the level of value agreed upon and 3) to some extent alleviate the scrutiny of price vs. competitors. A leasing model for a product provided it includes a full scope of installation, maintenance, replacement and disposal services could prove attractive to a customer in that there is the promise of value from the performance of the product(s), the additional value in that the customer can simply concentrate on their own operations and not have to concern themselves with anything else and have differentiation relying on provider core strengths.

5.4 Evaluation

At the time of writing, the pricing and identification tool design processes were still in progress so the actual performance could not yet be verified. Also, the user instructions for both the pricing and identification tools were incomplete at the time of writing. The tools at their current stage of development are already usable as such and the process logic is solid and works in theory. The thesis project achieved the requirements for success and all the objectives set for it. In retrospect the scope of the thesis was too wide considering the overlapping work commitments and an extremely compressed schedule. In fact, one can hypothesize that for a bachelor's thesis, research and development of the pricing tool alone would have been more than sufficient. As a result of cramming roughly twice the amount of research and development into what in reality amounted to even less time than the normal allotted space for a bachelor's thesis, parts of the thesis report merely skims the subject at hand in an attempt to have some brevity and part of the design process could not be completed before the report deadline (however the design process will be complete by the client deadline).

Knowing full well how much the project planning affects the eventual results, the author took great care in ensuring that the subject was chosen well, it was defined clearly, the research questions set and desired results defined as straight forward as possible. The research and development methods the author chose fit the problem solving need as well as they could. Where he deemed necessary, the author streamlined or adapted the processes accordingly. The main problem the author faced during the literature survey was the sheer amount of research and literature available for some of the areas of the theory covered in this thesis. The process for evaluating sources and information consumed more time than was originally planned and then caused pressure in the latter stages of the project. The author was given a great deal of freedom to pursue the project as he deemed fit. The project was realized independently, with guidance where necessary and with a "results by deadline or fail" approach.

Based on initial testing, the results of the thesis work and give reliable results. The results will be adopted by the client into use in the Mill Improvements business units.

The thesis report gives some indication of the knowledge gained by the author in the research phase of the project and to the expertise gained by executing the development phase. The thesis report in the author's view is much too long and goes into too much detail in some places and not enough in others. The language, while mostly correct in terms grammar and structure, is in places too complicated to communicate its intended content effectively.

5.5 Closing

Considering that the author had a rudimentary knowledge at best into the theory surrounding the subject of this thesis project it all went rather well. The author gained a vast amount of knowledge in the field of business and industrial economics. To the author's knowledge, as stated in the introductory chapter, no one has attempted to create tools like this before. In a way it is not that surprising considering the abstract nature of the phenomena involved. The subject proved to be a worthy opponent. Although it may not be entirely in line with the author's area of study it required all of his research, analytical, evaluation, project planning and design skills. What the author gained from reading and analyzing several thousand pages worth of literature, papers and research materials was a working knowledge into this area of economic theory and the application thereof into for example, maintenance business. During the thesis project the author gained a picture of how the hip and trendy concepts of big data and knowledge management work at a small scale and just how important data and its proper interpretation and processing into information is. The author gained expertise in project planning, the design process of software tools and usability as well as working knowledge into the services and maintenance business.

The general impression the author got from the research into the subject of value added and in particular the application to practice and everyday use of the concept in pricing is along the lines of Ojala (2003, 1). The concept of value creation for customers, has been explored in literature at great length,

as well as how to market and sell value, but the actual capturing of value as a profit by the supplier and the ways in which offerings generate profit are another matter entirely.

The initial feeling the author had when beginning to compile the research material and literature for this thesis and looking into the subject of value identification and value added pricing was that of looking at a version of the underpants gnomes' business plan. In an episode of South Park, a group of gnomes have formulated a business plan based around stealing underwear: 1) Collect underpants, 2)???, 3) Profit! When questioned about how they arrive at profits from phase one, the gnomes cannot provide an answer. In reference to the viewpoint outlined by, among others, Carden (2012) in an article for Forbes on political economy, where he uses the same example to underline the importance of understanding and seeing what happens between the stages; whether what is being considered in phase one leads to the desired outcome. Most of the work associated with the thesis went into trying to understand what actually happens in phase two and how it should be done to reach the desired end state of phase three. However, what is seemingly very murky and absurdly complicated can at its core be reduced to people, information and the judicious use of both: who you are selling to, why you are selling it to him, what you are actually selling, why he should buy it, why he should by it from you instead of someone else, how you are trying to sell something and how your customer buys things. Getting some credible answers to these questions provides a good start.

Possibly due to the apparent bias in material available on value creation, marketing and selling as opposed to practical value based pricing, one could be forgiven for thinking that of identification or pricing, the latter would be more difficult to accomplish. As it turned out, at least in this thesis, figuring out a practical method for value identification and assembling the basis for it proved far more exasperating.

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Interviews & meetings

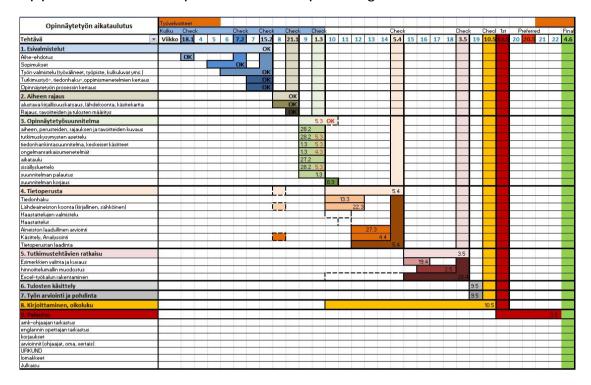
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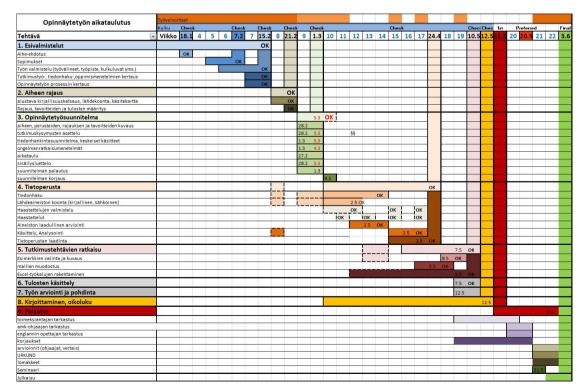
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Appendices

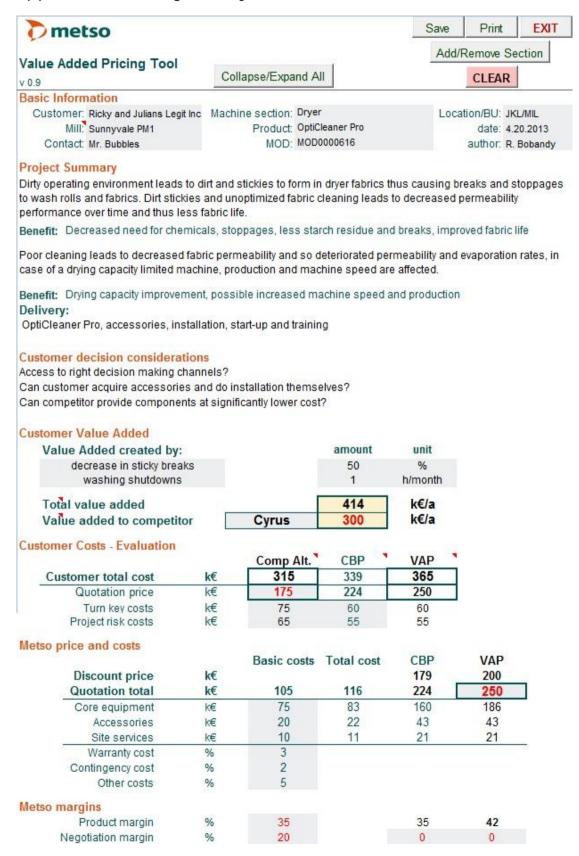
Appendix 1. Thesis processes and phasing 5.3.2013



Appendix 2. Thesis processes and phasing, actual 10.5.2013



Appendix 3. Pricing tool layout



Appendix 4. Pricing tool section control box



Appendix 5. Pricing tool content

Category	Description	User Input	
Basic Information			
Customer, mill, contact person	Customer organization, location,	YES	
	contact level		
Machine section, product, MOD	Target, product name, MOD-code	YES	
Location/BU, date, author	Process location, date, author name	YES	
Project summary			
Description, benefits, delivery	Customer need/problem, benefits	YES	
	gained, scope of delivery		
Customer Decision			
considerations			
Description	Factors influencing customer	YES	
	decision		
Customer value added			
Value added created by	Customer benefit and amount	YES	
Total value added	Quantifiable value added created by	YES	
	benefits		
Value added to competitor	main competitor and Differential	YES	
	value		
Customer costs			
Quotation price	Main competitor, own cost based	YES/NO/NO	
	and value added prices		
Turn-key costs	Additional costs to the customer for	YES/YES/NO	
	implementation of project		
Project risk costs	Loss of production, quality costs etc.	YES/YES/NO	
Metso price and costs			
Discount price	Cost based and value added price	NO/NO	
	with negotiation margin		
Quotation total: core equipment,	Calculated into basic costs, total	YES/NO/NO/NO/YES	
accessories, site services	costs (w/ other costs), Cost based		
	price(Profit margin), Value added		
	price		
Other costs	Warranties, contingencies, other	YES	
	costs.		
Metso margins			
Product margins	Targeted GP, GP for Cost based	YES/NO/NO	
	and value added price		
Negotiation margins		YES	

Appendix 6. Value identification tool sheet 1 contents

metso			Save	Print	EXIT
			Add/R	emove Se	ction
Value Identification tool		CLEAR			
lasic Information					
Customer: nn	Machine section:	n	Locati	on/BU: nn	
Mill: nn	Product:	nn		date: nn	
Contact: nn	MOD:	nn	- 4	author: nn	
ustomer need / problem:					
Description of customer need, prob	olem, improvement o	pportunity etc.			
Metso solution: Description of how and with what N	/lets o intends to provi	de a precis es olution	to the cus tom	er's need.	
enefits gained from solving Description of benefits to the custo impaction customer (see PAPSER	mer from solving pro	blem etc. tangible an	d in tangible. E	stimation c	fsize o
mpacon addition (See 1 At Gent	oraz zi sostony.				
alue Added to customer:					
What value added results from ber Value added compared to competi		ing s hutdowns h/mo	nth, es timation	ofs avings	€/a.
Customer considerations:					
Eg. Risks, reliability in results, alter	rnatives, delivery time	e, consequences of n	ot s olving prob	lem.	
additional customer resource	es required:				

Appendix 7. Value identification tool sheet 2 contents

metso	Save	Print	EXIT
	Add/F	Remove Se	ction
Value Identification tool v0.5			
Metso solution:			
Description of solution, scope. Evaluation of scope Metso vs. Customer vs. Competitor			
Competitor solution: Competitor name Description of customer solution, scope.			
Metso advantage:			
Benefits and value compared to competitor. Solutions and value Metso car within limits of what the customer wants.	n deliver that the	competitor	can't

Appendix 8. Pricing tool version 0.1b

Meta Data —	Unit	Date
Customer Product	Project	Quotation
Added value Value to customer: from payback etc. Target value capture %:	Market Competitor 1 Competitor 2 Mean market price:	Base price Core price Support Additional Quoted Price Max. Discount Minimal profit margin Adjusted price :
Summary Price composition breakdown i Total price Gross profit Operating profit Captured added value	n (primarily) graphic form	

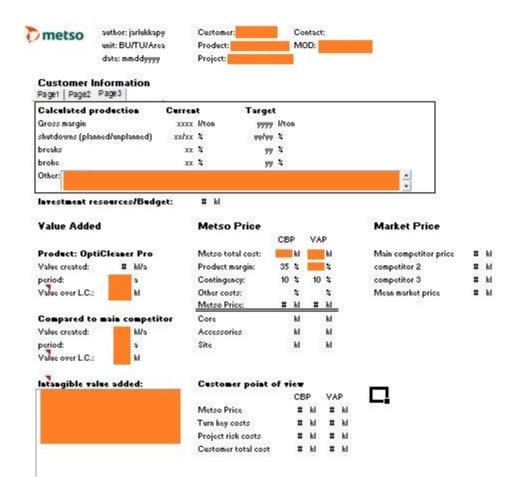
Appendix 9. Pricing tool version 0.2a

Unit BUT/TU/Ara-	a>]	Product	Obeikan Cant OptiCleaner MOD	
2000000	0			
Date ddmmyyyy		Project	636/	
Customer Informa	tion -			
Inquirysummary+nood			Investment resources / B	udqot
			CURRENT	TARGET or GOAL
			calculated production? grow margin?	production increase margin?
			shutdouns, broaks, HSE k	(Plr? loss brako, haw much?
			777	227
		20.0		
/alue Adder			Project B	rief
Value created for curtom	or:	213	kl/a Description o Value creatin	of offered Care, Accessories and Site
Value created by main co	mpotitor		Value creatin	od Leaznier
Value added compared to	м.с. Г	100	kita	
<u>Intanqiblo Valuo drivors (I</u> Hoalth, Safoty improvom			7	
lmaqo (Environmont, rosp	paraibility)			
And the state of t	afite.			
lang torm partnorship bor	1000000			
lang torm partnorship bor 	00.000			
		etition can't		
		etition can't		
 alra, uhat ue can pravide		ootition can't		
		22	Market E	
 alra, uhat ue can pravide		etition can't	Main Compe	kitarprice 150 kl
 alra, uhat ue can pravide		22	0.000	kitarprice 150 kl
 alra, uhat uo can pravido etso Cos Motra Cart	that the comp		Main Compol Compotitora	kitarprice 150 kl
alra, uhat ue can pravide etso Cos Metra Cart Warranty	that the comp 120 k 3×		Main Compol Compotitor 3 Compotitor 3	titarprice 150 kl
 alra, uhat uo can pravido etso Cos Motra Cart	that the comp 120 k 3× 6×		Main Compol Compotitora	titarprice 150 kl
alra, uhat ue can pravide etso Cos Motra Cart Warranty Cantingoncy (Rirkr etc.)	that the comp 120 k 3× 6×		Main Compol Compotitor 3 Compotitor 3	titarprice 150 kl
alra, uhatue can pravide etso Cos Motra Cart Warranty Cantingency (Rirkr etc.) Other cartr (Agent feer e	120 k 32 62 62		Main Compol Compotitor 3 Compotitor 3	titarprice 150 kl
alra, uhatue can pravide etso Cos Motra Cart Warranty Cantingency (Rirkr etc.) Other cartr (Agent feer e	120 k 32 62 62		Main Compol Compotitor 3 Compotitor 3	titarprice 150 kl
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alra, uhat uo can pravido etso Cos Metra Cart Warranty Cantingency (Rirkr etc.) Other cartr (Agent foor o Motra Tatal Cart Metra Tatal Cart Praduct marqin	120 k 3 x 6 x tc) 0 x 131 k CBP V 131 35 x	AP 131 kl	Main Campot Campotitar 2 Campotitar 3 Moan markot Moan markot Mospotyskal sart	titar prico 150 kl 2 1 1 1 1 1 1 1 1 1
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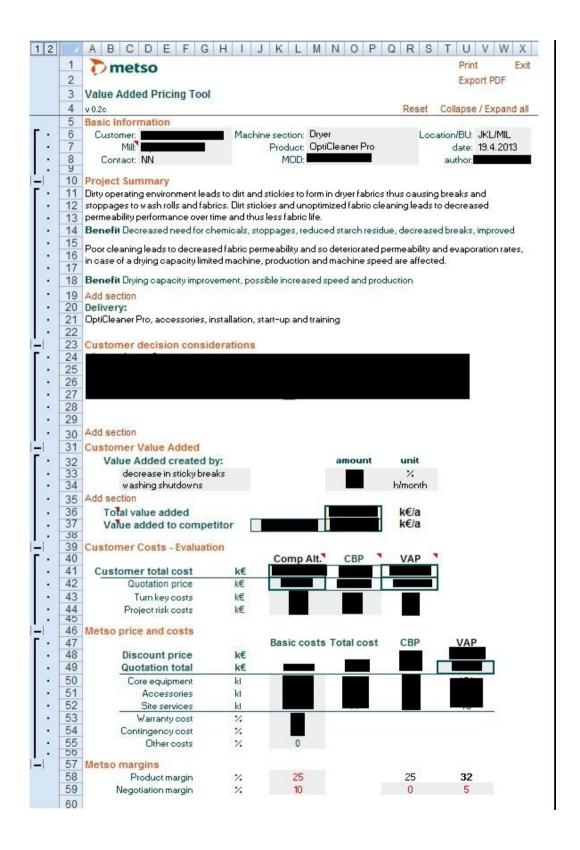
Appendix 10. Pricing tool version 0.2b

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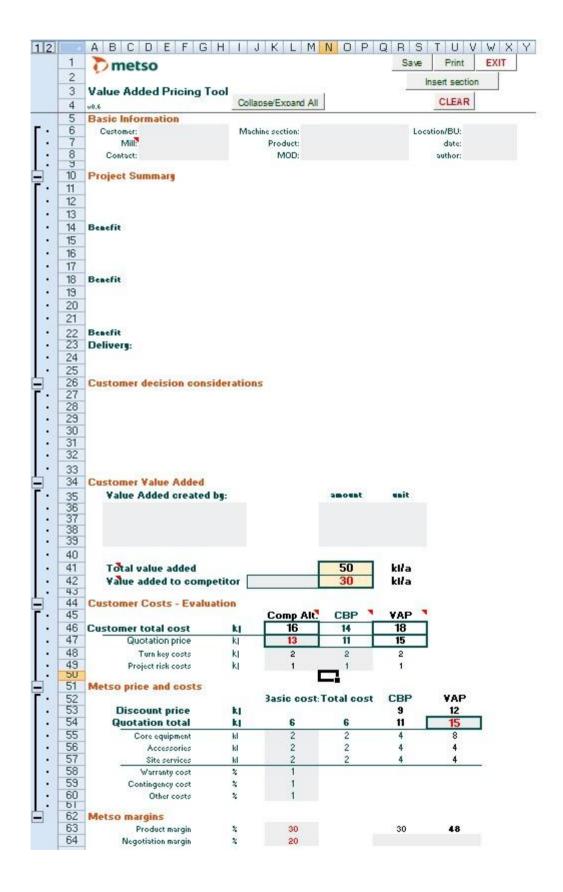
Appendix 11. Pricing tool version 0.3



Appendix 12. Pricing tool version 0.2c



Appendix 13. Pricing tool version 0.6



Appendix 14. Identification tool version 0.1

PRODUCT/SERVICE/PROJECT						
Core, support, additional components	Component attribute	Impact	Benefit to customer	Value to customer	Potential value	Competition
Contents of product or service eg.						
Technical features						
Delivery						
VALUE ATTRIBUTE	Explanation definition					
eg. Availability						

Appendix 15. Identification tool version 0.3

