University of Strathclyde

Department of Marketing

Willingness to pay for customized solutions in a B2B environment
- *Evaluating different buying groups based on a maintenance case study* -

A thesis presented in fulfilment of the requirements for the degree of Doctor of Business Administration

Sven Dammann

2013

Statement of Academic Honesty

I declare that this dissertation is entirely my own original work.

I declare that, except where fully referenced direct quotations have been included, no aspect of this dissertation has been copied from any other source.

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I understand that any act of Academic Dishonesty such as plagiarism or collusion may result in the non-award of a DBA degree.

Signed:.....

Dated:.....04th February 2014.....

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Acknowledgement

At this point I would like to thank all the people who have supported me during these difficult times. A special thank-you goes out to all the people who have contributed to the finalization of this thesis. I hope this work will help marketing academics and practitioners.

My special thanks go to my girlfriend Dr Zuhal Kaya for being patient during the last year. Now there is more time for us.

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Furthermore I would like to thank the Zürich DBA cohort for their friendship and help in the last three years.

I am sure we will see each other again

Thanks to my family and specifically my dad. This is for you!

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Abstract

Profitability of customized solution has been an extensively discussed subject in recent years. Solution providers fail to recoup the benefit of their initial investments due to a misinterpretation of customer needs and misfits with internal objectives.

This thesis provides additional tools to solution provider to better understand customer value and their willingness to pay.

The objective of this study was to apply conjoint analysis to evaluate the willingness to pay for customized solutions under consideration of a specific maintenance case in the chemical industry. Different groups of buyers were evaluated concerning their preference regarding the solution composition, their price sensitivity and their potential to reduce costs.

The thesis is divided in different sections starting with exploratory research among marketing and purchasing professionals on the general terminology, the adaption of standard conjoint analysis as main analytical tool for the evaluation of the buying preferences and the application of the model to a relevant group of buyers within the chemical industry.

A hypothetical maintenance related case study was created in which the respondents had to consider themselves in the position of a professional purchaser and ranked different "solution offerings/price" combinations according to their personal preference. The solutions were based on a 2007 published process by Kapil R. Tuli and his colleagues.

The results indicate tendencies that different groups of respondents show a different willingness to pay in a specific buying situation (maintenance case) depending on their professional background.

Firstly commercial buyers tend to prefer a full profile solution giving away most of the in house control but likely to provide the greatest benefit on cost and risk reduction. Operational buyers which in our case were engineers and technicians like to maintain control on the machine operation and are less likely to take advantage of post deployment service offerings.

Secondly the consolidated price functions generated with the conjoint data show similar shapes for both groups but operational buyers seem to be less price sensitive which is reflected by the utilities of the price levels.

Thirdly conjoint analysis provides the means to detect potential areas for cost reduction for the solution provider. Operational managers put a high positive utility on solution which can already been realized with little efforts on the provider side.

Fourthly a modified price setting model is introduced combining 5 components which have been identified as relevant during the study. They are

1. *Relate value to the next best competitive alternative*
2. *Evaluate solution over its life time*
3. *Define cost reduction potential*
4. *Customize composition of solution selling process with respect to buyers preferences*
5. *Price sensitivity of the buyer*

The thesis ends with a critical reengagement into the literature. And suggestions for managers and further research

The findings indicate that conjoint analysis can help to optimize the profitability of solution by better understanding customer value with respect to different groups of buyers.

Introduction Section

1 Introduction

1.1 *Rationale for the study*

Customized solutions have been in the scope of academic research for some time. Due to an ever increasing global competition companies search for new ways to increase revenue and profitability. The term solution provider is excessively used in the B2B market but solution providers struggle to create profitable solution (Sharma, 2011, Bonnemeier, 2011). Various companies fall short in extracting value from their customers when offering a solution (Bonnemeier, 2011). It is not clear whether they are able to recoup the additional costs of customization, integration and organisational changes that are pre-requisites to success in solution selling (Sawhney, 2006, Sharma 2011). There are some successful examples for the solution approach in the B2B market. The cases of companies such as BASF offering a one stop paint solution for big car manufactures or Hewlett Packard offering printing solutions to big companies are examples which will be explained further in Appendix 1. The impact of pricing is considered to be one of the key issues and this thesis tries to qualitatively and quantitatively explore the willingness of customers to pay for customized solutions and the selling process involved. The data are evaluated with specific reference to buying groups of different backgrounds within a company.

To create a common understanding about solutions we take the latest definition by Evanschitzky et al. (2011, p 659) saying that: *"Solutions are an on-going relational process, in which the solution provider continuously satisfies a defined demand, which may be dynamically developing over time. It is crucial that provider and customer are in on-going communication to address changing solution needs."*

This definition indicates the most important points involved in creating solutions. They are an "on-going relational process", "continuous satisfaction", "dynamically developing over time" and "on-going communication". The successful implementation of a customized solution requires an understanding about these issues and a willingness to create a supportive atmosphere between a solution provider and a solution buyer. This is the base for the solution selling process suggested by Tuli et al. (2007) which comprises 4 phases:

1. Definition of customer requirements
2. Customization and integration of the solution
3. Deployment of the solution
4. Post deployment services to maintain and build up the relationship to the customer

To understand the difficulties of selling customized solution in a B2B environment it is important to consider the perspective of different professional buyers and their willingness to pay for these offerings. Furthermore a comparison of the perspective of technical and commercial buyers might provide interesting information on potential perception gaps on how buyers perceive the value of an offering. Additionally and in accordance with Evanschitzky's definition it is valuable to understand the willingness of buyers to enter a continuous relationship with their suppliers. Other crucial elements in the process are the on-going communication and information exchange, the acceptance of new pricing models such as value based pricing and the trade-off between different degrees of risk reduction a solution can provide.

The main objective of this thesis is to understand what purchasers are paying for. Therefore a maintenance case study is created which has a high relevance to the B2B market. It deals with the maintenance of a machine in a production company. The offering is divided into 4 phases which are in line with Tuli's (2007) solution selling process. A price tag is added to each of the offerings. After ranking the offerings according to the respondent's preference the data are evaluated by a traditional conjoint analysis leading to an understanding about the importance of each phase and the related levels assigned to the different buying groups.

Several authors mentioned that pricing is the least understood and researched concept in relation to customized solutions (Sharma (2011), Bonnemeier (2011)). This thesis should put more lights on that issue and open up areas for further research.

The pricing functions generated in the result section will help solution sellers trying to quantify the willingness to pay leading to a revision of the existing price finding models for solutions by Roegner et al. (2001).

1.2 *Research objective and contribution to knowledge*

The objective of the thesis is to provide guidance to solution sellers trying to offer customized solutions to the B2B market. By evaluating the view of different groups of professional purchasers the findings should help solution providers to understand what these groups really value in a customized solution. It also should provide guidance on which areas of the selling process can be neglected or optimized in order to reduce costs. The low profitability of solutions has been a challenge in the B2B industry (Bonnemeier, 2011). This thesis tries to indicate areas for cost savings as well as how different value propositions impact the customer's willingness to pay.

Additional insights should be generated on how to target the right processes within a customer's company and how solution providers should encounter existing mind sets on customized solutions and value based pricing which is currently the most applied pricing model for customized solutions (Sharma et al. (2011)

Pricing functions for different buying groups should be derived from the findings helping solution sellers to define what could be an appropriate price range for the solution with respect to the background of the buyer.

The basic assumption of this thesis is that solution providers have to understand and work on multiple levels when offering customized solutions but also understand where such an offering make. Additional qualitative data on related concepts will be generated to understand the different perception of the solution value and the willingness to pay for it.

Finally a modified pricing method will be derived from the results.

1.3 *Research approach*

To analyse the willingness to pay (WTP) of different buying groups it was necessary to apply a "mixed method approach" including

a) an *exploratory study* into the types of solutions being present in the B2B market conducted with marketing professionals from different industries,

b) a *pilot study* defining the method to measure the willingness to pay in a B2B environment and

c) the *main study* applying the derived method on target groups which posses a high likelihood to be exposed to .

The *exploratory study* was conducted through personal and telephone interviews in the year 2010. The respondents belonged to a wide range of industries including chemistry, logistics, marketing services and IT. The objective was to get a basic understanding in which industries solutions are offered to the market and what their benefits and constrains are.

The *pilot study* had the objective to investigate if conjoint analysis could be a useful tool to quantify differences in the WTP between different buying groups. The hypothetical maintenance case and the related solution offerings were building the base for this part the study. The data generation was conducted through an online survey distributed by e-mail or via social networking sites with a special focus on purchasing and marketing professionals. The main advantage of the online distribution is the

global reach of the technology. This was considered to be necessary as the complexity of the questionnaire presumably would lead to a low response rate. The questionnaire used different formats of questions. Demographic data were raised by multiple choice questions which allowed an easier graphical display of the results. The data generation for the attitude scales was executed by using a 5 point Likert scale. Other attitude data were generated by the use of open ended questions and preferences were measured with the help of ranking questions.

The following data evaluation was sub-divided into three areas namely the findings from descriptive statistics using simple methods of organizing the data through the application of different filters. The findings from the open ended questions were analysed by a method called tabular coding and then filtered by the profession of the respondent. The ranking question which provided the base for the case study was analysed by using conjoint analysis. The conjoint analyses led to the determination of the utility for each level of an attribute within the conjoint. Further details can be found in the methodology section.

These results should provide information on how the professional background of a buyer as well as certain attitudes towards surrounding concepts such as value based pricing influence the willingness to pay for a customized solution and the corresponding selling process.

During the course of the pilot study it became obvious that a further refinement of the respondents' profile would be necessary. In order to get meaningful results it became clear that only respondents who would be in the position to encounter such a buying decision of a maintenance service would be a relevant target group. Therefore a study was added in which 25 respondents were exposed to the maintenance case either working as commercial purchasers of maintenance services in the chemical industry or as technical buyers deciding on the implementation of such services. The profile of the respondents can be seen in the methodology section.

1.4 *Thesis structure*

The thesis starts with an extensive literature review covering the following research streams:

- Value to customer
- Solutions and solution selling
- Relationship between buyers and sellers in the B2B environment
- Pricing of services

- Pricing of solutions

The corresponding flow chart of the different literature streams looks as follows:

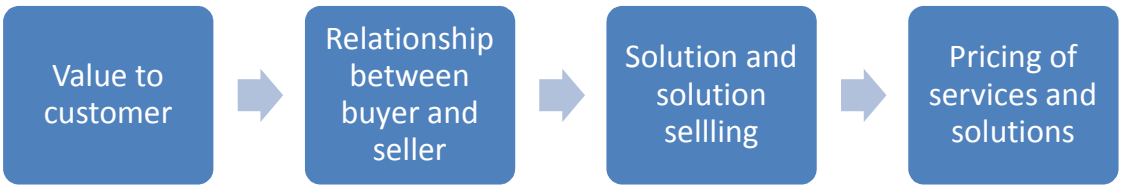


Figure 1: Literature stream

These areas of research build the base for our approach to answer the research questions. Value to customer and the impact of the relationship between buyer and seller can be considered as the base for understanding the willingness to pay for an offering. Following this chapter the review then focuses on the literature on solutions and the process of selling solutions. Finally there is a section on the pricing of solutions including the most common pricing methods and pricing models.

The literature review is followed by the introduction to the research questions and the methodology section comprising both the methodology of the exploratory research evaluating the general nature of a solution in the B2B environment and the pilot/main study testing conjoint analysis as method to estimate the willingness to pay and applying it on a group of professional buyers with different backgrounds.

The results section is divided into findings from descriptive statistics, the findings from the open ended questions and the findings from the general conjoint analysis based on the data generated form the online survey via the social networking sites linkedin.com and Xing.com . The maintenance case is finally

applied to the different buyer group in the chemical industry which have adequate positions within the company to be exposed to such a case in real life.

After answering the research question the discussion chapter provides a general discussion of the findings compared to the existing academic literature. Special emphasis will be put on the differences between different buying groups when identifying their favourite solution and the implications it has for the solution offering and its value proposition.

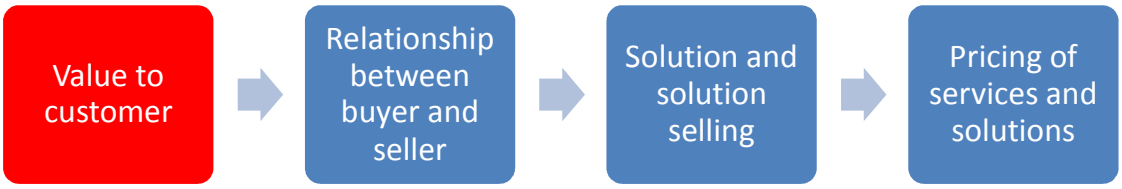
The conclusion chapter evaluates the impact of the findings on management of the solution provider with specific respect on how solution providers should position their offering to be successful and profitable. The chapter is concluded by discussing the limitation of the study and giving suggestions for further research. The “impact on academics”- section addresses the future perspective on solutions and how they should be approached and evaluated in the future.

Additional data will be collected in the appendix. These include a description of successful solution cases in B2B, the demographic data of the respondents and ranking results of all respondents participating in the survey.

Literature Section

2 Literature review: Value to the customer and “Solution Selling”

2.1 *The Concept of “value to the customer”*



The customer perception of value can be related to the prospect theory by Kahnemann and Tversky (1979). The theory is based on an empirical study on how people make decisions between alternatives that involve risk taking. It is visualized by an s-shaped curve comparing perceived gains and losses when making a decision. For any decision, individuals set reference points from which they consider lower outcomes as losses and higher outcomes as gains. The curve is asymmetric indicating that potential losses have a stronger impact on perceived value than potential gains.

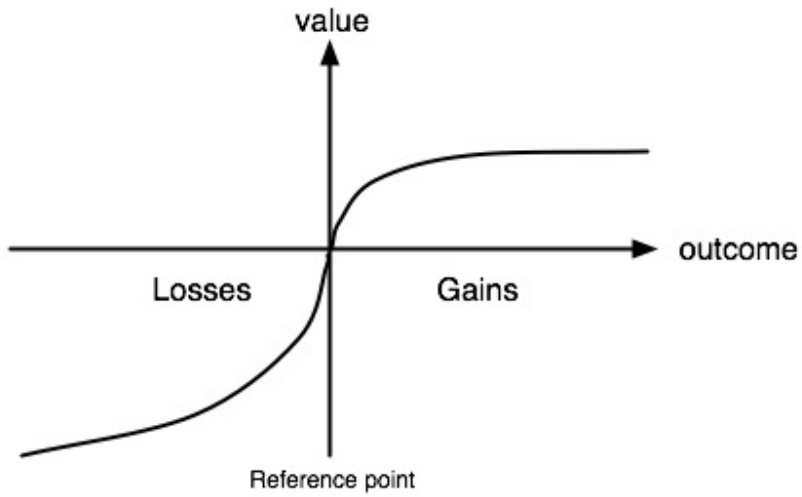


Figure 2: The prospect theory (Kahnemann et al. (1979))

Thaler (1985) proposed that the value perception of a transaction can be separated into a transaction utility and an acquisition utility. The acquisition utility depends on the value of the good compared to the outlay whereas the transaction utility depends solely on the merits of the deal. Utility in this respect can be defined as:

"The aggregated sum of satisfaction an individual gains from consuming a given amount of goods or services"

This definition was taken from the website investopedia.com.

Frequently value is considered to be a simple trade-off between quality/benefits and price/sacrifices (Vinson et. al., 1977; Clawson and Vinson, 1978; Rust and Oliver, 1994; Zeithaml and Bitner, 1996). Basically consumers try to maximize their personal perceived value of the deal (Lovelock 1991; Rust and Oliver, 1994, Chen and Dubinsky 2003). Beside the pure financial transaction, perceived sacrifices can be related to time and risk related to the offering (Zeithaml, 1988; Liljander and Strandvik, 1993; Bowman und Faulkner, 1994; Heskett et. al., 1994; Rust and Oliver, 1994; de Ruyter 1997 et al. and Sweeny 1998 et. al.) In the business to business context this could be "changeover" times or downtime costs (Toossi et al, 2011).

All papers considering value as a ratio of an output and an input date back to the equity theory by Adams (1963) proposing that people perceive something as an inequity when the "input/output"- ratio

of two persons in the same relationship is different. The theory implies that people are constantly comparing how their inputs to the transaction are rewarded by means of status, money, benefits of seniority etc. Interestingly Adams stated that the findings also indicated that a perceived over-payment resulted in a higher performance of the test person. Furthermore problems of inequity arose when only the possessor of an attribute considered it to be relevant to the exchange. Very often the possessor provided an attribute or skill which was expensive to create but which turned out to be non-relevant or only of marginal utility to the recipient.

Festinger (1957) suggested that inequity exists for individuals whenever his perceived job inputs and/or outcomes stand psychologically in an obverse relation to what he perceived were the input and outcomes of others.

According to Adams (1963) his findings were relevant to any social situation in which an exchange takes place. He argued that each individual has a different history of learning to the extent that he learns from people sharing similar values, culture and social norms. The larger the cultural group, the greater will be the number of individuals which perceive similarly and react similarly to a given set of relations between inputs and outputs.

Major customer value studies were conducted in the `80 and `90. Bolton and Drew (1991) found a positive causal relationship between service quality, perceived service value and behavioural intentions and actual behaviour. Within their study Bolton and Drew defined these terms following a publication by Zeithaml and Parasuraman.

According to Zeithaml and Parasuraman (1988) service quality was defined as the customer's assessment of the overall excellence of the service. It mainly depends on the gap between expectations and perceptions of actual performance levels. It is evaluated on five underlying dimensions which are tangibles, reliability, responsiveness, assurance and empathy.

Perceived service value in this respect was defined as the overall customer assessment of the utility of the product based on perceptions of what is received and what is given. Furthermore it can be considered to involve a trade-off between a customer`s evaluation of the benefits of using a service and its cost.

Figure 2 displays the multistage model of the customer assessment of service quality and value by Bolton & Drew indicating the direct causal link between service quality and value on the buying intention and on the purchase itself.

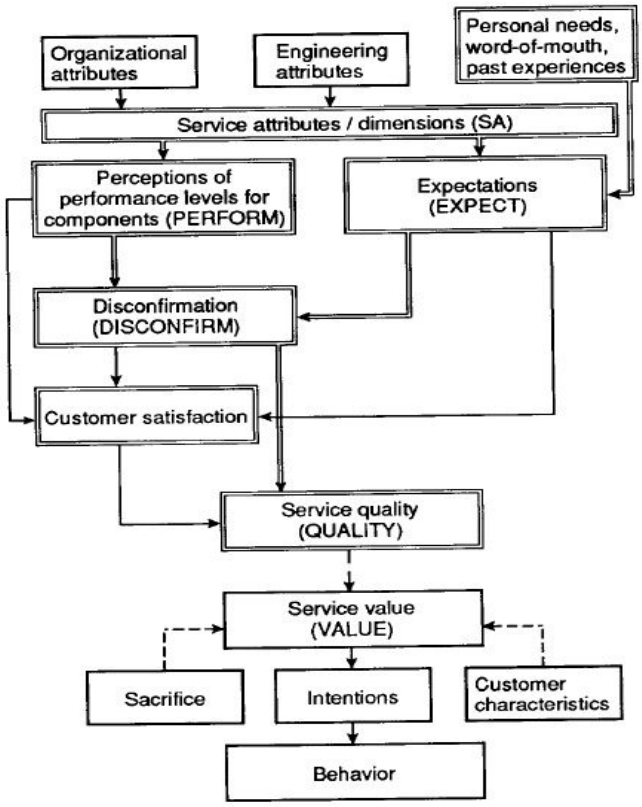


Figure 3: Model of Bolton & Drew on customer assessment on service quality (1991)

Furthermore the model stated that value is impacted by the perceived sacrifices in terms of personal involvement and the customer characteristics related to their personal and professional background. This hypothesis will be one of the main research areas of the upcoming comparison between the different sub groups.

Heskett et al. (1994) stated a positive causal effect relationship between service quality, value, loyalty and profits based on their introduction of the service profit chain. Customer loyalty in this respect was defined as a construct consisting of the long term retention of a customer leading to repeated purchasing transactions and recommending the service to other people at the same time.

Their model suggests the following correlation of the concepts:

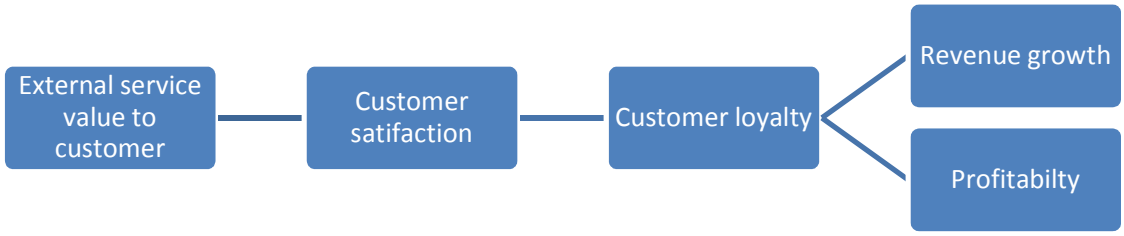


Figure 4: Right side of the service profit chain (Heskett et al. (1994))

This model suggests that if customer satisfaction leads in any case to a strong customer loyalty revenue growth and an increase in profitability are expected outcomes.

More detailed viewpoints on the value to customer were reflected by Zeithaml (1988) and Woodruff (1996). Zeithaml saw the value of a product or service as the outcome of the consumers' subjective judgement of the product or service offering. Woodruff et al. (1996) defined customer value as based on customer perception of what they want to happen in a specific "in use"-situation with the help of a product or service offering, in order to accomplish a desired purpose or goal.

Holbrook (1994) widened the view and suggested that the customer value perception is not limited to the use situation itself but also the pre and post purchase experience. In this statement Holbrook (1994) already prepared the ground for a wider view of a customer offering indicating that companies should also deal with pre and post-purchasing phases. This is reflected later in the introduction of the solution process in the next chapters of the literature review.

Rust (1999) described customer expectations as distribution curve which is based on the historical experience related to a service or a product. Based on the results by Bolton and Drew (1991) that

quality and value are positively co-related it might be worthwhile mentioning that the results found by Rust (1999) did question some of the common statements found in literature. His results indicated that it is not necessary to exceed customer expectation to increase preference. Furthermore receiving an expected bad level of service does not reduce preference. He argued that rational customers may choose service/goods with a lower expected value and that a stronger focus on loyal customers may sometimes be counterproductive.

This reveals an interesting counter position with respect to the value perception of services and products offered in B2B. These findings potentially challenge the findings of Heskett et al. (1994) about the general validity of the satisfaction, loyalty and profitability link.

Anderson and Narus (1998) considered value in business markets as the worth in monetary terms of the technical, economic, service and social benefits a customer company receives in exchange for the price it pays for a market offering. They argued that any market offering has two defined characteristics namely its value and its price. They also suggested that is has to be the objective of a supplier to persuade customers to focus on total costs rather than simply on acquisition price. A supplier must have an accurate understanding of what the customer values and would value to better sustain customer relationships. Ulaga (2003) summarizes the characteristics of value in business markets as follows: value is a subjective concept, a trade off between benefits and sacrifices, multidimensional, defined relative to competitors, segment specific and future oriented. In a qualitative study with 10 purchasing managers of US-based industrial companies Ulaga and Eggert (2006) identified six dimensions along which the supplier create benefits and three dimensions along which suppliers reduce costs for their customers.

The six benefits dimensions include: product quality, delivery performance, service support, personal interaction, supplier know how and time to market. Costs are subdivided into direct costs, acquisition costs and operation costs.

A sound understanding about customer values was seen as a competitive advantage about less knowledgeable competitors. Additionally price was not seen as a factor influencing the value perception of the customer but as an incentive to purchase the market offering (Anderson and Narus (1998)).

To create value on the customer-end Norman and Ramirez (1993) suggested co-producing offerings that mobilize customers. The view of customer involvement in the value creation process has been supported by Prahalad and Ramashwany (2000).

Lapierre (2000) suggested the following dimensions as perceived product/service related benefits.

- Available alternative offerings to the customer.
- Product/Service customization as a measure of how much the offerings fits their specific needs
- Product/Service quality as a direct influencer of the buying intention
- Responsiveness as a measure of addressing customer needs timely and constantly
- Flexibility of the offering and the provider to adapt the solution quickly to different conditions
- Reliability of the offering in terms of low maintenance needs and the provider in terms of delivering to promise.
- Technical competence of the provider to understand customers' needs and transfer them into outputs
- Suppliers image in terms of market reputation and references
- Trust between buyer and seller in terms of confidentiality
- Supplier solidarity with customers in terms of going the extra mile in making things happened

On the other hand sacrifices have been summarized as

- Price of the offering as the amount of money the customer has to pay in exchange of the service
- Time/effort/conflict a customer or consumer has to invest or endure to extract value from the offering
- The level of energy required in terms of physiological or psychological effort to buy the solution

Lapierre (2000) provided an excellent summary of trade-offs and sacrifices influencing customer's perceived value. It showed that the provider has a wider range of potential customer benefits available to create a relevant value proposition to customer. It will be interesting to see to what extend the implementation of these benefits comes with a sacrifice on the seller side. The listing indicates the aspects a purchaser should consider when deciding on the value of an offering,

Considering the different perspectives between buyer and seller it is important to understand how companies in a B2B environment value their customers. Companies often value their customers based on financial measures (Wright and Keegan 2007). Benefits generated from the customers are usually

- Sales growth rate
- Operating profit margin which is the amount of money left after deducting the cost of goods sold from the sales price
- Cash flow which reflects the willingness to pay timely and completely
- Working capital to sales the turnover of the product

Sacrifices for a company to achieve these benefits at their customers have been stated as

- Capital expenditure to sales which indicates the amount of upfront investment in terms of material and man power to fulfil the needs of the customer.
- Weighted average cost of capital which indicates the cost of money for the company

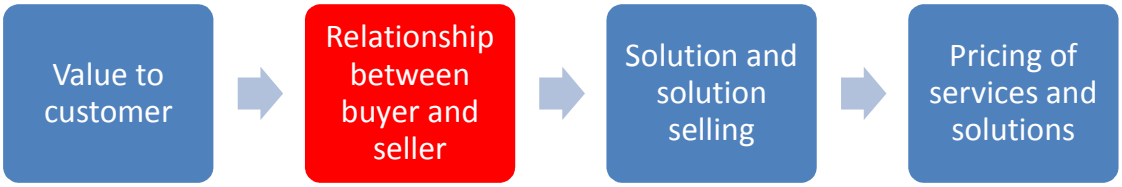
Related to the differences in value perception between buyers and sellers academic literature stated that buyers do tend to focus on their sentiment towards what they forgo for an offering whereas sellers tend to relate the value of the offering to what they lose when sacrificing it in terms of the opportunity costs (Carmon et al., 2000). This means that ones people own something they typically attach a higher value to it than another buyer would be willing to pay for it. This leads to different proposed buying and selling prices for the same offering and to the notion that both sides focus on different aspects of the transactional exchange. Usually suggested selling prices were higher than the willingness to pay. Carmon et al. (2000) found that the willingness to buy an offering increased by drawing the attention to its benefits before quoting the price whereas drawing the attention to alternative uses of the money influenced the selling price more than the buying price. Kahnemann et al. (1990) found that the price differences in such an experimental setting can be up to 100%. There are other parameters explaining such a pricing gap ranging from income effects, strategic situation of the company etc. but it can be noted that evoking the role of a buyer or a seller causes people to evaluate offerings in a different way (Carmon et al., 2000). Furthermore they suggested that reframing a “new purchase” as “replacement” can have a strong impact on the buying behaviour. A replacement can be related to something which the customer already knows which potentially reduces the perceived uncertainty of the purchase.

To summarize the key findings from this section it can be said that customer value is a relative construct related to the position of the customer and the alternative provided to fulfil his needs. It can be called a point of reference. To estimate the value of an offering customer conduct trade-offs between benefits and sacrifices. Each customer then tries to maximize their benefit based on the individual perception.

The perception of value is not only limited to the deployment but also the pre and post purchase experience.

Finally it is important to note that buyers and sellers can have different perceptions of value for the same offering which could impact the willingness to pay. As stated by Anderson and Narus (1998) many customers understand their own requirements but do not necessarily know what the fulfilling of those requirements is worth to them. This stands in slight contradiction to the finding of Macdonald et al. (2011). They found that customers in a B2B environment are capable to articulate their goals purposes and objectives, the extent to which they are co-created with the provider and the goal hierarchy by which this value-in-use derives from provider and customer process quality. Value- in-use in this respect was defined as a customer's outcome, purpose or objective that is achieved through service. They stated that customers perceive a casual chain between the service provided and the benefits received. They judge quality in terms of attributes contributing to their objectives.

2.2 *Relationship development and interaction between buyer and seller in B2B*



This section investigates some of the basic literature discussing the relationship of buyers and sellers and the factors influencing it.

In his paper "The development of buyer and seller relationships in industrial markets" from 1980 David Ford found that the development can be displayed in different stages which all inhibit different characteristics. In the pre relationship stage the buyer evaluates new potential suppliers initiated by

a. An existing episode in the buyer supplier relationship
b. The general evaluation of existing supplier performance
c. Efforts of a non-supplier

The evaluation in this stage is conditioned by

a. The experience with the previous suppliers
b. Uncertainty of the potential relationship
c. Distance to potential supplier in terms of the non-existing history

In the early stage of the relationship a few samples are exchanged between the parties. According to Ford (1980) at this point in time the experience and knowledge between the two parties is low. Therefore uncertainty tends to be perceived as high. Management has to invest a significant amount of time at this stage to overcome all problems. Still commitment to each other is perceived as low. At the development stage first contracts are signed reducing the uncertainty and increasing the commitment to each other. First cost savings at this stage can be expected. When the relationship reaches the long term stage the distance and the uncertainty has reached a minimum. The proceeding institutionalisation of the process leads to further cost savings and the alignment of the processes.

Hakansson et al. (1975) found that from the buyer's perspective uncertainties about needs, markets and the transaction lead to an increase or decrease in the interaction with their supplier. In case where the level of uncertainty is low and there are several suppliers in the market the buyer chooses the offering with the lowest price.

In case of an increase in uncertainty decision makers in the buying company are relatively more concerned with quality and functionality than with price. Furthermore they prefer to interact with suppliers from countries with a high cultural fit and which they have worked with together earlier. The buyer then forms more complex external communication structures which lead to an increase in information exchange but also in more time consuming discussion processes. In case of an increase in market uncertainties buyers tend to have contact to a bigger variety of suppliers. If the transaction uncertainty increases buyers often evaluate different suppliers for one offering and put a stronger focus on the delivery question (Hakansson et al. (1975).

From the selling company point of view the seller should be able to solve some of the problems of the buying company. Hakansson et al. (1975) stated that the ability concerns the degree the seller can satisfy the need of the buyer and how he transfers the solution to the buyer. The need solving ability is related to the function and the quality of the product as well as the services provided with the product.

Already in the 90`s publications indicated that customer move away from the traditional transactional relationship towards collaborative long term partnerships between manufacturing firms and suppliers (Kalwani and Narayandas, 1995). Borys and Jemison (1989) defined value creation as a process whereby the capabilities of the buyer and seller are combined to enhance the competitive advantage of one or both partner.

Heide and John (1990) defined the closeness of a relationship as degree of joint action, expected continuity and verification efforts. The proposal of “mutual expectations of continuity of a relationship” can be found in most definitions (Ganesan, 1994).

Suppliers considering themselves to be in a long term relationship signal dependence by investing in relationship specific assets (Anderson and Narus 1990, Anderson and Weitz, 1989) to become a “preferred or certified” supplier (Kalwani and Narayandas, 1995). Kotler and Armsstrong (1991) defined the key success factor of marketing as determining the needs and wants of customers and satisfying the needs more effectively than the competition, while looking at customer relations from the long term perspective.

Some research results on long term relationships with selected customers indicate that maintaining them does not come to the expense of profit growth. Even tough prices might come under pressure over time; suppliers can reduce costs over time through better inventory utilization and reducing their expenses such as selling, development and administrative overheads (Kalwani and Narayandas, 1995).

Other benefits of long term relationships are

- Higher sales and greater returns from resources invested in maintaining long term relationships through repeated sales and cross selling opportunities from their current customers compared to resources spent in attracting new customers (Kotler and Armsstrong (1991))
- Customers can be a potential of new product ideas, test sites for new product development and serve as showcase accounts (Jackson, 1985)
- Sales people are also known to use customers in a long term relationship as aides in attracting new business and acquiring business relevant information (Weitz, Castleberry and Tanner 1992)
- By effective product differentiation suppliers can look up customers which competitors might find difficult to overcome (Porter 1980).
- Competitors who would like to establish a closer relationship might need to make an up-front investment (Kotler and Armsstrong (1991))

On the other hand several papers discuss the downsides of a close customer-supplier interaction.

An increased dependence on a reduced customer base can be a risky strategy, especially when the customer faces reduced demand (Scott 1992).

Furthermore customer firms might force the supplier to consistently reduce prices which might over-compensate gains made by reducing the cost base (Cunningham 1986; Hutchins, 1986).

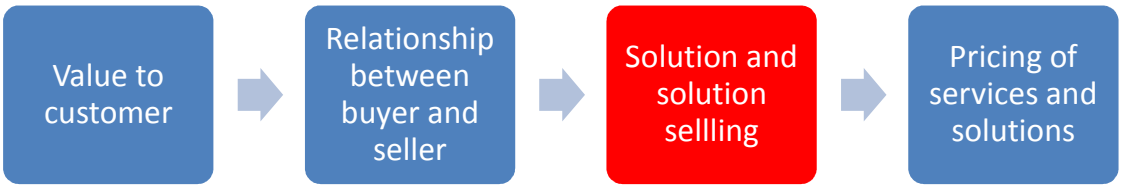
In recent years the focus on the buyer-seller relationship has shifted from a transactional to a cooperative and interactive perspective. Borys and Jemison (1989) noted that suppliers can become integrated in the buyer's production processes and can make valuable contributions to improving product quality. Hammervoll et al. (2009) stated that value-creation in transaction-based arrangements equates to cost-effectiveness whereas value –creation in an interaction relationship involves the joint effort producing a desired output or solving a mutual problem. Value- creation was also related to mutual learning and the continuous adjustment by both buyer and sellers and continuous adaptation to each other circumstances (Gulati and Singh, 1998).

Companies understand that they can achieve a significant competitive advantage by fostering buyer-seller relationships (Andersson et al., 1994, Wilson, 1995, Hammervoll et al. 2009). Managers now actively seek to generate value by initiating and managing external partnerships (Prahalad and Ramaswamy, 2000). The interaction perspective understands "cooperation" as the inclusion of productive resources to create mutual benefits (Hammervoll, 2005).

Considering the value assessment of sellers Macdonald et al. (2011) argued that customers assess the network quality of the provider in the context of functioning as both a resource provider and a resource integrator. The value assessment is considered to be vital for both the provider as it influences the design of the offering and for the customer as this might assist the "outsource vs. in-house" decisions. Furthermore they found that the assessment of the value-in-use takes place on corporate level as well as on the individual level. Managers should consider both the financial impact and the value-in-use on the factory floor level.

The following sections of chapter two will introduce "customized solutions" and the related selling process. Customized solutions are the main object of this thesis. These offerings have the objective to address the specific needs of customers by introducing and implementing customized and integrated processes or components and therefore generating significantly higher value then regular products or services. To understand the theoretical background of these offerings the following chapters provide a literature review on this topic.

2.3 *Introduction to customized solutions*



Selling solutions has been one of the latest trends in marketing. To understand the conception framework of solution selling it is appropriate to mention the latest developments in marketing literature.

Gummesson (1995) stated that “customers do not buy goods or services, they buy offerings. The shift in focus towards services is a shift from the producer perspective to the utilization and subsequently the customer perspective”. The theory supported the concept of “co-creation” where customers are considered as partners to co-produce individual services.

The shift from a product centric towards a service centric view of marketing has been discussed in recent publications by Lusch and Vargo (2004). They believed in a “new dominate logic” for marketing which moves away from the traditional exchange model of tangible goods towards an exchange of intangible, specialist skills, knowledge, relationship and processes, combining goods and services into one offer and the value of the offering is created during the customers usage. The following chapter provides a short summary about how the new business logic has contributed to the emergence of solution.

The service dominant logic (SDL) is a fundamental paradigm shift where companies develop their portfolio from a product centric towards a stronger focus on services and from the pure exchange of

goods towards an exchange of intangible resources to create additional values for their customers. Additionally Lusch and Vargo (2004) proposed a development away from the traditional transactional business relationship towards a relationship based market approach including a strong customer involvement in the process. The on-going interaction between customer and seller is crucial for the success of the company. Cova and Salle (2008) stated that this leads to the logical consequence of incorporating the seller into the value chain of the customer. It is crucial for the solution seller to identify a customer segment which can profit from his core competencies.

To compare the different marketing concepts Vargo and Lusch (2006) compared the three major concepts in the following table.

Goods dominate logic	Transitional concepts	Service dominate logic concepts
Goods	Services	Service
Products	Offerings	Experiences
Feature/Attributes	Benefits	Solution
Value added	Co-Production	Co creation of value
Profit maximisation	Financial engineering	Financial Feedback/Learning
Price	Value delivery	Value proposition
Equilibrium system	Dynamic systems	Complex adaptive systems
Supply chain	Value chain	Value creation network
Promotion	Integrated marketing communication	Dialogue
To market	Market to	Market with
Product orientation	Market orientation	Service orientation

Table 1: Goods dominate vs. service dominate logic (Vargo & Lusch (2006))

When discussing the evolution of a company from goods dominant towards a service dominant concept the meaning of pricing has to be seen under a different perspective. The preceding table suggests that price is mainly determined by the value proposition offered to the customer. Costs are not the primary driver for setting the price but the meaning and relevance of the value proposition to the customer. These findings should provide the base for a new pricing model trying to determine these value components.

The service dominate logic indicates a paradigm shift and solution providers should consider some of the major findings in this area. As a matter of fact the views of the SDL should be shared and embraced by both buyers and sellers. The concept of SDL has contributed to the emergence of customized solutions but it will not be used as the base for evaluating the results.

Nordin and Kowalkowski (2010) conducted a critical review of the literature on solution offerings. The findings indicate there is no uniform and rigours definition of solutions but rather a set of generic descriptions and statements meeting different offerings across different businesses. The review is divided into four areas namely

1. Definition of solutions
2. Antecedents of solutions
3. The solution process ➔ solving the customer problem
4. Outcome of solutions ➔ value to supplier/customer

Figure 5: Analysing solutions offerings (Nordin et al. (2010))

2.3.1 Definition and characteristics of solutions

There are different definitions of solutions in marketing literature. Some of them are considered from the provider's perspective others from the perspective of the buyer. From the perspective of a provider solutions are a bundle of products and services customized to the customer's needs (Stremesch et al, 2001). This view was widened by the addition of the close mutual exchange with customer, the transaction of specific instrument and the risk sharing between solution seller and customer (Cornet et

al. (2000)). Sharma et al. (2011) and Tuli et al. (2007) included the buyer's perspective into their definition indicating that the original definition felt short from the truth.

Summarizing the definitions from major articles there are certain constituents which they all have in common.

The aspect of "*combining different products and services"* is mentioned in all relevant literature as one of the bases for solution selling. Successful solution sellers in B2B understand that the offering should consist of a bundle of components. For example any home improvement solution will contain the raw materials as well as the work force being responsible for the implementation on site. But based on the definitions in the literature this is not sufficient. Other aspects are necessary to create a real solution.

The aspect of "*customisation"* is one of the basic cornerstones of a solution offering (Johansson et al. (2003)). They stated that customizing an offering according to customers' requirement increases the barrier for competition and protects the offering against other generic product and/ or service offerings. Additionally the idea of a "one stop"- solution reduces the efforts of customers by minimizing their time investment searching for alternatives and investigating the fit of different components. This leads to another important aspect of solution which is the integration of all the components into one offer and subsequently the smooth implementation into the customer's processes.

The aspect of "*integration"* should lead to an increase in efficiency on the customer side compared to the benefit realised through the individual components (Ahlert, Bentrop (2010)). This was also mentioned by Sawhney (2006): He stated that through integration and customisation of a solution the customer should be able to achieve higher value than through the sum of the individual parts.

Driven by globalisation business complexity is increasing. Maintaining IT systems and developing marketing communication strategies are just two examples from the B2B industry where corporate functions are outsourced to external providers. Marketing communication for example has to be adapted to different cultures and the demand for a superior and globally standardized design is increasing. On the other hand many companies have refocused on their core competencies in recent years driven by cost pressure. This has led to a lack of resources and know how within companies to deal with complex business challenges.

The aspect of solving complex customer problems is therefore another driver for the selling of solutions. As mentioned by Ahlert and Bentrop (2010) a solution can only be considered as such if the customer

does not have either the resources or the competencies to solve the problem. It can be expected that these needs increases with the complexity of the problem.

In B2B, solutions are often related to performance or output based contracts (Sharma et al. 2011). Performance based contracting is a novel approach in the B2B environment replacing traditional service procurement practices in capital intensive industries such as commercial airlines or defence industry (Kim et al. 2007). In 2005 the US department of defence stated that the essence of performance based contracts is buying performance outcomes, not individual parts and repair actions. The new focus is on buying a predetermined level of availability to meet the customer's objective. A typical example is the Rolls Royce approach "Power by the Hour" where they charge airlines by flying time. This offers the possibility of an accurate cost projection for the airline companies avoiding the costs associated with breakdowns related down times. In this business model the risk is obviously partially transferred to Rolls Royce. Both parties therefore have a deep interest in doing everything possible to keep the planes in the air. This alignment of goals is another driver for a successful solution partnership. In case the engines fail such in the case of the Airbus A 380 2011 in Singapore Rolls Royce is held reliable for the loss in revenue amounted to approximately 56 million £ according to the English Newspaper "The Guardian".

A critical element of performance based contracting is the clear separation between the customers expectation of service (the performance goal) and the way the supplier choses to fulfil the goal (Kim et al. (2007)).

In his study Kim found that the nature of a performance based contract between supplier and buyer depends on the level of risk aversion both parties have. Companies having a neutral attitude towards risk have the best premises to enter such a business relationship.

In general literature shows that aspects of risk sharing should be considered under the aspect of transferring risk from the customer to the solution provider and the willingness to pay a higher price for the solution. This is one of the aspects driving this thesis forward.

The aspect of "requirement definition with customer" was driven by the work of Day (2004) and Vargo and Lusch (2004) and put into a "state of the art"- process by Tuli et al. (2007). The step of "defining the customer requirements" has become an integral part of the process. In this context "definition with customer" means an active involvement of the customer in the value creation process of a solution by defining his specific needs and requirements before designing and implementing the offering. This

should not be mistaken with the term “co-creating value” defined by Prahalad (2004). He sees the co creation process as a joint effort of customer and provider to create value and to work together on solving a problem.

The following figure shows again the main characteristics of a solution which have been derived from marketing literature.

Figure 6: Characteristics of a solution (own figure)

In the following table 1 summarizes the main literature quotes on solution and their characteristics.

Source	Extract
Dunn and Thomas (1994)	*Partnership solution*: multiple business solutions linked across the corporation. *Business solution:* multiple product solution linked to a business problem. *Product solution:* product plus application and services
Srivastava et al. (1999)	A solution is customized to create and satisfy individual customers` needs. Physical products are only a part
Sharma/Molloy (1999)	Profitable solutions are made up of a combination of standardized and customized products that can be replicated for multiple customer relationships. It is only through the replication that the solution provider can fully leverage the knowledge and capabilities gained from the its custom efforts on behalf of its biggest and most complex customers.
Wise/Baumgartner (1999)	Integrated Solutions….is to combine products and services into a seamless offering that addresses a pressing customer need

	A wider offering of products and services that satisfies most if not all customer needs
Conet et. al (2000)	A solution is a supplier customized response to a customer's pressing business need typically developed as a combination of products services and knowledge.
Shepherd/Ahmend (2000)	A solution focused business model … leverage existing products and product development competencies, while simultaneously introducing higher margin services to integrate product components in a manner which resolves a customer's specific business, rather than technological need.
Stremersch et al. (2001)	A full service is a comprehensive bundle of products and/or services that fully satisfies the needs and wants of a customer related to a specific event or problem
Sharma (2002)	A real solution meets three criteria: 1. It is co-created by a customer and a supplier 2. It integrates products with services to meet essential customer needs 3. Supplier accept some of the risk, often through performance-based and or risk based contracts
Galbraith (2002)	Personalized packages of service, support, education and consulting. Solutions can be horizontal or vertical and they may differ in scale and scope, and degree of integration between their components
Miller et al. (2002)	Integrated combinations of products and/or services that are unusually tailored to create outcomes desired by specific clients
Johansson et al. (2003)	Degree of integration (both commercial integration, combining products and services, and technical integration, i.e. physical interoperability of components) and degree of customization
Davies (2004)	Product and service components are customized and priced according to a specific customer need: Two dimensions: scope of system integration (single and multi-vendor systems) and spread of industrial activities (vertical or horizontally integrated firms)
Windahl et. al. (2004)	Physical products and services are combined to provide a specific outcome fulfilling the customers need. Customization needs to be combined with well-defined modular structures to achieve economies of scale at the component level.
Brady et. al. (2005b)	Integrated solution: bringing together of products and services in order to address a customer's particular business or operational need.
Sawhney (2006)	Two key dimensions: degree of integration (market and operational) and degree of customization.
Davies et. al. (2007)	Developed standardized "solution ready" components that can be combined and recombined at much lower costs than solutions comprised of entirely customized components.
Ceci and Prencipe (2008)	Integrated solutions means the provision of bundled services and products . Customers with low level of sophistication require simple, low tech standardized solutions that are easy to maintain and use. In contrast, highly sophisticated customers have more complex needs that generally require high tech. customized solutions.

Matthyssens and Vandenbempt (2008)	Technical application integration and business process integration
Ahlert et al. (2008)	Customized offerings for complex customer problems, conceptualized jointly with customer and which components offer an integrated value add.
Evanschitzky H., et al. (2011)	An on-going relational process, in which the solution provider continuously satisfies a defined demand, which may be dynamically developing over time. It is crucial that provider and customer are in on-going communication to address changing solution needs.

Table 2: Literature review on "solution characteristics" (1994-2011)

Looking back at the literature on solutions in the last 20 years there is a clear change of perspective from the providers' point of view towards the customers´ perspective. As the decision of buying a solution is finally in the hand of the customer the customers view should be the perspective of choice to address the upcoming research questions.

Combining the definitions of Sawhney (2006), Tuli et al. (2007) and Evanschitzky et al. (2011) this would lead to the following definition of a solution:

"Solutions are on-going relational processes where solution providers continuously try to satisfy complex customer needs by offering pre-defined, customized and integrated products and services which create an added value beyond the sum of the components"

This definition sets the base for the upcoming investigation. The new perspective Evanschitzky et al. (2011) add to the discussion is the consideration of solutions as on-going relational process in which providers have to continuously meet the changing expectation of customers. The terms "customized" and "integrated" products have been already identified by Sharma et al. (1999), Davies (2002) and Sawhney (2006).

Evanschitzky`s et al. (2011) definition raises also an important question. Based on their definition "complex customer needs" might not only be related to complex customer problems such as technical issues but also to different needs of people involved in the decision making process on the customer side. Therefore the objective of this research is to consider and analyse the needs of different buyer types in the process such as purchasing and marketing professionals. Differences in their perspective might make it necessary for the solution provider to approach the target groups differently.

In other academic literature the term "solutions" often lacks a precise definition which separates them from other offerings.

To clearly differentiate solution selling from system selling and product bundling Ahlert and Bentrop (2008) designed the following table in their work "Pricing of solutions (2008)". Table 2 indicates that there is a thin line between the concepts of solution selling, system selling and product bundling. It is fair to assume that specifically the trade-off between the degree of customization and the degree of standardization is often one of the determining factors for the success of customized solutions. The ability to push the borderline between solution selling and system selling is therefore essential in B2B.

The success factors for the seller are another important finding by Ahlert and Bentrop (2008).

For solution sellers they consider that the success is mainly driven by the vision of a solution or latent need whereas the system seller sells a customized design based on standardized components. This distinction might be crucial for the profitability of the solution as lot of businesses see standardized mass production as source of their profitability. Furthermore solution providers have to compete against offerings based on standardized components and therefore might face a disadvantage considering their cost base.

	Solution Selling	**System Selling**	**Product Bundling**
Characteristics of the object	Customized solution to a problem or latent need that add value beyond the sum of the parts	Standardized product-service package that add value beyond the sum of the parts	Set of goods and services offered to a customer at a lower price than the sum of its parts
Products/Services	Both	Both	Both or only products
Integration	High degree	Flexible	No integration
Customization	High degree	Offered to multiple customers	Offered to multiple customers
Sellers role	Consultative role with high expertise	Flexible	Selling, informing
Focal Point	Customer latent need or problem (customer centric)	Customer needs with respect to customer production	Sellers ambition to sell high number of products
Success factors for sellers	Seller as consultative role with a vision of	System design by seller and standardized	Discount

	solution or latent need	components	

Table 3: Distinction of solution selling from other related concepts (Ahlert & Bentrop (2008))

Ahlert and Bentrop (2008) stated that the distinction of solution selling and mass customization is mainly marked by the degree of standardization and by the desire of companies to achieve cost leadership in the respective market environment.

2.3.2 Antecedents of becoming a solution provider

Vargo and Lusch (2004) pointed out that a service centred view leads to the customisation of offerings. They argue that the focus is shifting away from tangibles towards intangibles such as skills, information, and knowledge and from the producer to the consumer perspective. According to Sharma, Lucier and Molloy (2002) 63% of the fortune 100 firms consider themselves as "solution" provider. There is an extensive use of the term "solution" in promotional literature and on web sites. There is a pressing need to follow the route of transferring companies towards becoming solution providers or at least expanding the existing product/service portfolio. Table 3 summarizes the antecedents of becoming a solution provider.

According to the findings in the literature the primary driver for solution providers, specifically in a B2B environment is the on-going price pressure and the commoditization of product centric offerings. Price transparency due to the internet modern and other IT tools is high. Consequently profit margins are eroding forcing the producers to consider offering complex solutions. Additionally companies have to differentiate themselves to be recognized in the market. The provider's objective is to bind itself to the customer in such a way that the customized offering cannot be replaced easily. Furthermore getting insides into customer processes might open up new opportunities into other areas.

The benefit for the buyer is also significant. Buying the whole solution out of one hand reduces the exposure to too many suppliers. The buyer company can focus on their core competencies by outsourcing non-core parts to external providers (Stremesch et al. 2001). By doing this the buyer might not only reduce their costs but also their risk exposure. Outcome based contracts are an excellent example for it. The customer only pays for the agreed output based on the contract. The risk of e.g. production failure or supply chain problems is then partially shifted to the provider. Some examples will be illustrated in a following chapter. Additionally there is a demand for more individualised solutions taken into consideration the specific context of each customer.

Nordin and Kowalkowski (2010) mentioned that there is a lack of data in the literature about the question of whether customers demand solution to get more benefits for the same money or whether the pressure of reducing costs is the primary driver for implementation. Agndal et al. (2007) found that for many buyers it is too risky and costly to buy solutions which make them adjust their procurement practices towards a "transactional" rather than "relational" business model.

Another potential antecedent has recently been mentioned by Nordin (2009). He mentioned that many companies are driven by more non-economic values such as concern for the environment. By offering products which meet the need for both functionality and sustainability companies can be considered a solution provider for consumers who are concerned about nature.

The following figure summarizes the major drivers for becoming a solution provider.

Figure 7: Drivers to become a solution provider (own figure)

Source	Extract
Shepard and Ahmed (2000)	Decreasing technology and product life cycles , tightening margins and increasing commoditization of product components
Hax and Wilde (2001)	Companies seek an intimate and deep customer understanding and relationship and to develop an integrated supply chain that links them with key suppliers and customers

Stremesch et. al. (2001)	Industrial firms increasingly demand “turnkey” solutions to problems
Miller et al. (2002)	Pressure of declining margins from manufactured products, and demands from powerful customers wanting to outsource and focus on core competencies. The attractiveness of solution growth and profit opportunities and profit margin.
Davies (2004)	Strong East Asian competition in high volume manufacturing, stagnating product demand and a growing installed base of products. Liberalization and privatization of former state controlled sectors such as telecoms and railways
Windahl et al. (2004)	Slow growth and declining margin, changes in markets and customers, IT based technologies offering new opportunities
Windahl and Lakemond (2006)	Firms that have traditionally focused on selling products, spare parts and services face difficulties with increasing competition and declining margins.
Sturm/Bading/Schubert (2007)	Six success factors to become a solution provider: 1. Market potential 2. Knowledge about the customer 3. Competitive advantages 4. Flexible offerings 5. Integrative solution development 6. Organization and employers
Matthyssens and Vandenbempt (2008)	Commoditization erodes the competitive differentiation of companies and often leads to profit squeeze
Ahlerts et al. (2008)	Increasing customer demands for tailored solution saving time and efforts as well as reducing complexity. Strong desire of providers to achieve long term customer relationships and to enter new business areas to differentiate from competition

Table 4: Literature review on “Antecedents of solutions” (2000-2008)

Summarizing the findings of Table 3 it is obvious that there are two driving forces behind the trend towards customized solutions. One is the external force of declining margins and profits initiated by trends towards commoditization forcing companies to think about and implement new ways of selling and income generation. On the other hand Ahlerts et al. (2008) recognized trends towards tailored solution reducing time and complexity and Stremesch (2001) saw an increasing demand for turnkey solutions in the industry. These forces represent a threat and opportunity at the same time. This summary raises the question about whether there is a real cause and effect relationship. Does the external pressure of reduced margin and profits resulting from globalization and commoditization automatically led to a need for turnkey customized solutions? It is simple math to understand that a successful solution should be able to work on both the top and bottom line of the customer’s financials generating higher profits and revenue for the solution provider at the same time as they are exposed to

the same pressure and the same opportunities. This question addresses the basic business philosophy of a business professional and how this is shaped by his position and the corresponding objectives.

As Nordin and Kowalewski (2010) mentioned there is a lack of data to understand the real driver for a business customer to buy customized solutions. Is it revenue or profit? This might be related to the position and business objective of the decision maker and should therefore being evaluated in this research.

2.3.3 The "Solution Selling"- process

The current marketing literature emphasizes a strong interaction between the solution provider and the potential buyer as a pre-requirement to start the solution process. Sawhney et al. (2006) saw the process starting with the analysis of the customer problem and ending with the combination of products and services to solve the entire problem of the customer. Brady et al. (2005) stated that the "solution selling"- process should be preceded by informal discussions with customers to understand their business needs and priorities. They defined four phases of a linear solution process including strategic engagement, value proposition, system integration and operational service. Bonney and Williams (2009) argued that the process starts with a significant investment of time and effort for the solution provider to understand the problem of the customer before it can be addressed. According to Nordin and Kowalkowski (2010) this stage was often influenced by customer being not able to articulate their problems or holding back relevant information making it difficult for the solution provider to identify the key issue and work on the solution. On the contrary McDonald et al. (2011) stated that industrial buyers are capable of describing their needs and being capable of expressing them to providers.

More recent literature discussing the solution process emphasizes the iterative nature of the process with frequent interactions and long term relationship building. Tuli et al. (2007) pointed out that customer have often problems to define their most suppressing business needs. They argued that it needs a deeper understanding of the broader customer requirements, its internal operating processes, its labour requirements and its business model. They defined the following iterative process consisting of four steps which will define the base for the methodology of this DBA thesis.

The Solution Process by Tuli et al. (2007)

Figure 8: The process of "Solution selling" (Tuli et al. (2007)

Ahlert and Kawohl (2008) determined the critical success factors and barriers for each of the four phases of the solution process by Tuli et al. (2007). For this purpose they organized a Delphi Panel of 39 experts from the areas of banking, trading companies, internet providers, producers and professional services. The respondents were high ranking corporate managers and marketing and sales experts.

The process consisted of four stages which will be shortly described in the following.

Customer requirement definition

In the first phase of the process the solution provider defines the requirements together with the customer. According to Tuli et al. (2007) asking the right questions is important to uncover unmet needs which the customer is unable to articulate. Additionally a deeper understanding of the customers' business model and a positive relationship will facilitate the effort to achieve a "lock in" which presumably leads to a competitive advantage against competition. As customers' requirements change over time it is important to define potential future needs to adjust the solution accordingly.

For phase one of the process Ahlert and Kawohl (2008) determined that customers put a high level of importance on information and communication skills of the solution provider. Listening to the needs of the customer was ranked first among the critical success factors for phase one. Additionally a supportive organizational structure including good knowledge management and innovative information systems was considered to be important. These findings showed a strong correlation to the findings of Tuli et al. (2007).

Customization and integration

This process step includes the selection design and customization of the solution to meet customer requirements. The different components of a solution have to be compatible and integrated into the customer's processes. To reduce the long term costs of permanent customization data sharing is a crucial aspect of the relationship. This minimizes the risk of repetitive failures. Finding the right balance between customization and standardization is a big challenge for a solution provider and has to be addressed early on.

For the customization/integration part of the process Ahlert and Kawohl (2008) found that meeting customer requirements, product properties and the organizational structure are the most important success factors.

Deployment process

The deployment process is the process of embedding the solution into the customer processes. The solution provider has to ensure that the components of the solution are connected and integrated into the customer processes. Potential gaps or misfits have to be identified and subsequently modified. The installation of complex solution might require the use of external experts which have the required skills. Internal staff can be trained in the use of the solution. The training is provided by the solution provider.

According to Ahlert and Kawohl (2008) the critical success factors of the deployment phase can be divided into two groups. The first group contains the organizational structure of the solution provider and the qualification of its employees. The second group contains the success factors of meeting customer requirements, product properties and delivery as well as customer management. The authors state that a professional processing of the implementation is of uttermost importance. This includes an optimized internal information flow, a consistent project management, innovation power and sufficient resources.

Tuli et al. (2007) proposed that as part of a professional processing the solution provider should provide competent personnel to train the customers.

Post deployment process

The basic intention of the implementation of a post deployment process is to create a long term project with the customer. This phase goes beyond the traditional maintenance service and includes the development of new components based on changing customer requirements (Tuli et al. (2007)). Additionally the solution provider could offer services leading to a continuous improvement of the implemented solutions (e.g. cost savings, minimize waste, market intelligence, "value-in-use" analysis).

The most important factor in the final phase of the process is the customer support. Based on the findings of Ahlert and Kawohl (2008) it should include the features of frequent personal support, self-explaining products, on-site services, free support hotline, after sales and service capacities, fixed contact partners and "happiness" before costs.

Summarizing the findings by Ahlert and Kawohl (2008) it can be said that looking on the solution process from the customer perspective the four step process by Tuli is the most relevant theoretical construct. Successful solution providers should develop capabilities in all four phases of the process. Especially a focus on phase 1 and 4 will enable providers to achieve a competitive advantage. It is suggested that an inclusion of all four phases enlarges the spectrum of potential offerings to the customer. This might increase the customer's willingness to pay (Ahlert and Kawohl 2008).

2.3.4 The Impact of the buying centre on the solution selling process

Töllner et al. (2011) analysed the impact of the buying centre on the value perception of solutions. They found that two additional process steps are necessary to describe solutions in the capital goods industry. On top of Tuli`s four step process they found that "signalling" activities are necessary to increase the value perception in a buying centre. Signalling activities are about demonstrating experience, competence, references and commitment to reduce customer's perceived purchasing risk. They found that presenting a "customer-focused"- concept in the signalling phase increases the chances of selling the total solution in the end. The "inter-process management"–phase refers to a process of integrating the remaining processes. It can be divided into four sub processes related to

- Coordination
- Time management
- Incorporation and improvement
- Proactive support

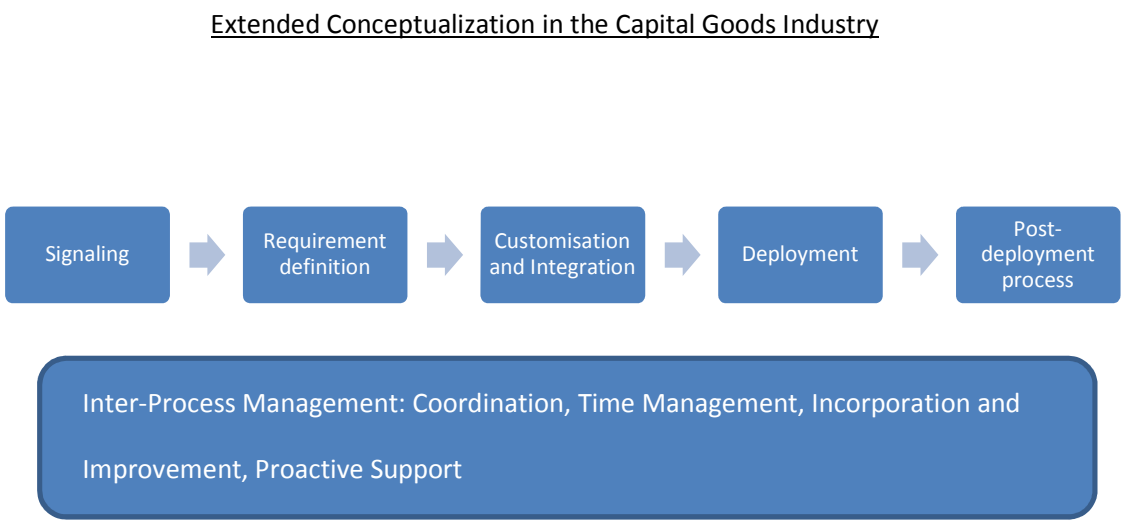


Figure 9: Conceptualization of customer solutions in the capital good industry (Töllner et al. (2011))

The perceived importance of each step depends on the position of the member of the buying centre. Töllner et al. (2011) distinguished between buyers, users and deciders. They found that users of the solution are mainly interested in the customization and integration step. Deciders favour the "customization and integration"-phase as well as the "inter process management"-phase but are less interested in the customization and deployment phase. The buyers in the end put their focus on the signalling and inter-process management step. This calls for a differentiated approach of the solution provider. As buyers are usually the first point of contact the solution provider should focus their effort on an excellent performance during the bidding phase to convince the buyer. This should include a detailed plan about the inter process management during the solution selling process. According to Töllner et al. (2011) deciders trusted the experience of the buyer and therefore only considered providers who convinced the buyer before.

Figure 10 shows the decision process according to Töllner et al. (2011) and the relevant process steps for each member of the buying centre:

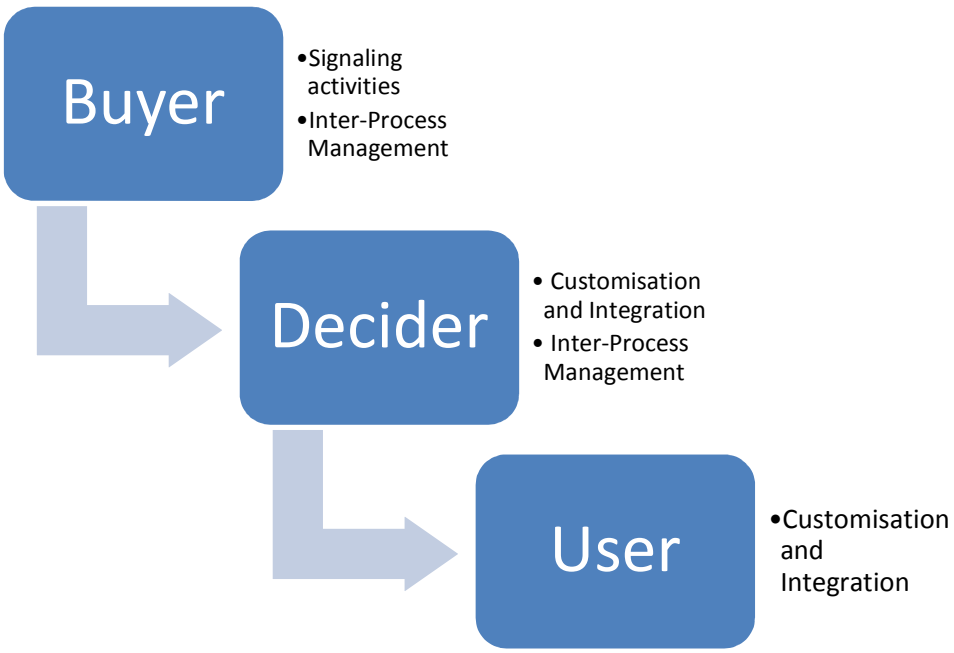


Figure 10: Decision process in a buying centre

In the following table summarizes the main literature quotes on the solution-selling process.

Source	Extract
Srivastava et al. (1999)	It emphasis the coordination and integration of supply chain tasks and activities to facilitate design, deployment and delivery of solutions rather than just the procurement and transmission of material, supplies, components and finished goods
Shepard and Ahmed (2000)	Companies have to focus on user processes and operations, instead of their own products and spare parts.
Foote et al. (2001) (2001)	Managers need to start not with the product but with a desired outcome for a customer
Miller et al. (2002))	Client-capability tensions require on-going and intense interaction between strong, client facing front end units and strong, capability facing back-end units
Davies (2004)	Buyers of capital goods are entering into long term partnerships with their suppliers. Suppliers have to control the channel to the customer
Brady et al. (2005a)	A four stage process: 1. Strategic engagement phase: pre-bid activities 2. Value proposition phase: bid or offer activities 3. Systems integration phase: project execution activities 4. Operational service phase: post project activities
Kurz/Gut (2005)	Solution selling is an end to end selling process consisting of the following components 1. A customer centric philosophy

	2. A model of the sales process 3. A methodology (to support the sales organisation) 4. A adequate Sales –Management System
Sawhney (2006)	Solution design (begins with an analysis of a customer problem and ends with an identification of products and services that will be needed to solve the entire problem) and market integration
Davies et al. (2007)	Solutions selling: 1. Provide an in-depth analysis of a customer`s business 2. Identify and diagnose problems in a customer's organization 3. Offer solution based on its experience of working with a number of customers facing similar situations 4. Coordinate the integration of components into a solution
Tuli et al. (2007)	A solution is an on-going, relational process of defining, meeting, and supporting a customer's evolving need, or a set of customer-supplier relational processes comprising: 1. Customer requirement definition 2. Customization and integration of goods and/or services 3. Their deployment 4. Post deployment customer support all of which are aimed at meeting customers' business need
Töllner et al. (2011)	Customer solutions in the capital goods industry: Examining the impact of the buying centre The 4 phase model of Tuli et al. (2007) should be extant and relevance differs across members (users, buyers and deciders) 1. Customer requirement definition 2. Customization and integration of goods and services 3. Their deployment 4. Post-deployment support 5. Signalling activities 6. Inter process management

Table 5: Literature review on the "solution selling process" (1999-2011)

Tuli's 4-phase model of the solution selling process set the baseline for the willingness to pay analysis within this thesis. It is a well-accepted model which has been tested in different environments. Nevertheless the buying centre plays a vital role in the buying decision of a company. Therefore Töllner et al. (2011) findings might have some significance for the upcoming interpretation. He distinguished between buyers, deciders and users and found that the priorities between these three groups were different. If signalling activities are most important to buyers and they are the first point of contact then this should be included in the strategy of approaching the customer. The upcoming evaluation should therefore include a suggestion on how to address the different levels of decision makers and their needs.

2.3.5 The outcomes of solutions

The anticipated outcomes of solutions are mentioned in table 5. Measuring the outcomes seem to be far from easy depending on how well defined and structured the original problems was (Nordin and Kowalkowski (2010)). If the problem was defined with less accuracy the evaluation of the outcome might leave considerable room for interpretation. Miller et al. (2002) and Tuli et al. (2007) stated it generic terms saying “Solutions are about outcomes that make life easier or better for the clients by taking over operations or integrating product and services” and “Solutions are about satisfying customer needs”. Johannsson et al. (2003) saw it in the B2B context as “total business value delivered”.

From the providers perspective the increase of profit margins might be the most favourable outcome of the solution process.

Tuli et al. (2007) also stated that the outcome was not only the end result of the process but the on-going value created in the customer’s usage throughout the process. This means that another area of potential benefit for the solution seller is the deeper understanding of the customer business which might enable them to identify new areas for future revenues.

With respect to the effectiveness of a solution offering Sawhney (2006) and Tulli et al. (2007) suggested that customer variables play an important role in the implementation.

Important customer variables are:

- Customer adaptation of internal routines and processes to suppliers goods and services
- Political counselling to inform suppliers on internal political developments within the customers company.
- Operational counselling to inform supplier about internal operational processes

Getting access to this level of information will require a multi-level approach towards the customer including a strong relationship to management. Once the supplier gets familiar with the customers internal processes he can align incentives within it organisation with the customer’s key requirements.

The following figure indicates the four main outcomes expected from a solution. It has to be mentioned that two of the outcomes are seen from the position of a potential buyer and two from the perspective of the seller.

Brady et al. (2005) notes that the necessary pre-conditions for solutions is the positive balance between information given by the firm and received by the customer and the necessity to share responsibilities among providers, customers and other possible resource integrators. This view is supported by studies of asymmetric information exchange by Mascarenhas et al. (2008) which highlighted the danger of an imbalance between information given and information received. This finding is also confirmed by the inequity theory of J Adams (1963).

Figure 11: The outcome of solutions

The following table summarizes again the finding from the literature on outcomes on solutions.

Source	Extract
Matthyssens and Vandenbempt (1998)	Superior customer value: explicit service quality, proactive, total solution, and timely, emphatic design and new services
Hax and Wilde (2001)	Improve customer economics and horizontal linkages in the components firm
Miller et al. (2002)	Solutions are about outcomes that make life easier or better for clients
Stremesch et al. (2001)	…offering full service contracts will reduce competition due to the lower level of price transparency in the market leading to higher margins

Johansson et al. (2003)	Total business value delivered
Brady et al (2005a)	Providing combinations of products and services that create unique benefits to each customer, and developing new ways of components to work together as an integrated whole to increase the overall value
Sawhney et al (2006)	To solve end to end customer problems
Tuli et al. (2007)	The purpose of a solution is to satisfy customer needs
Ceci and Prencipe (2008)	From the firms point of view, offering a solution means solving a customer's problem; from customers point of view, buying an integrated solution represents outsourcing some activities and thereby focusing their own resources on their core business
Matthyssens and Vandenbempt (2008)	To achieve non price based customer value addition

Table 6: Literature review on outcomes of solutions (1998-2008)

What makes a solution a successful offering strongly depends on its outcomes. Satisfying customer needs is only one side of the coin. How can the provider make sure that satisfying customer needs will lead to a profitable business? Ceci and Prencipe (2008) stated that the solution provider should try to solve the pain of the customer whereas the buyer tries to outsource non-core activities and focus their activities on its core functions. The benefit is then analysed by the total business value delivered (Johansson et al. (2003)) or the total cost of ownership which should lead to improved performance on the customer side. Achieving this objective means that the solution should provide unique benefits to the customer by customizing and integrating the components into the customers processes. Matthyssens and Vandempt (2008) even stated that the preferred outcome should be a non-priced based value addition to the customer's business. On the other hand price is a measure for value in B2B as it makes comparison between different offerings easier for the buyer

This summary gives a good indication of what could influence the willingness to pay for a solution in B2B. If outsourcing is one of the major drivers for the implementation of customized solutions then the perception towards outsourcing and the benefits involved should be investigated. The outcomes of solutions are also important for the creation of a pricing model. According to academic literature outcomes based pricing models are strongly related to value based pricing which is generally considered to be the best pricing method for customized solutions (Sharma, 2011). The attitude towards value based pricing will be discussed in the pricing chapter.

2.3.6 **Potential benefits and risks related to "Solution Selling"**

The most commonly mentioned reason for selling solutions is the prospect of charging a premium for solutions comprising configurations of products/services rather than the individual product themselves (Cichelli, 2005). Wise and Baumgartner (1999) stated that only by serving or maintaining an installed base offering the revenues could be 10 to 30 times of the new product sales. Being closely involved in all steps of the solution process suppliers have the chance to create unique outputs which are nearly impossible to copy and which might yield benefits in the years to come (Tuli, 2007).

There was some evidence in the academic literature that supplying profitable solutions is difficult (Bonnemeier, 2011). 50% of solution providers only achieve modest profits, whereas 25% even lose money on it (Stanley and Wojcik 2005, Johansson at al. 2005). The consultancy firm "Sales Performance International" (2006) found that 69% of sales managers surveyed describe moving to a solution seller is the most difficult transition.

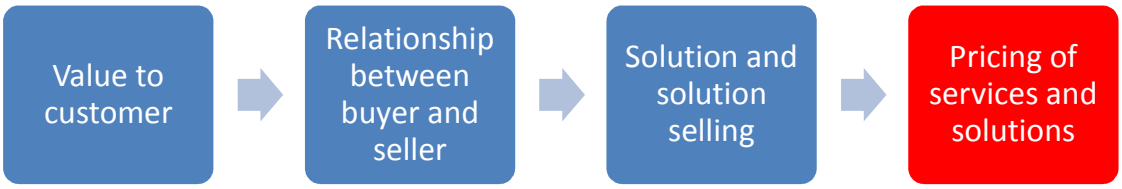
This statement raises the issue that if "Solution Selling" is a profitable marketing approach, why do so many companies struggle to make it profitable?

As mentioned before there is still a gap between the supplier and the customer view on solutions. It could be argued that by overcoming this gap the likelihood of making it a sustainable and profitable tool should increase.

Sharmer et al. (2008) raised the issue that it requires a change in organisation culture to become a successful solution provider. It needed a fundamental shift in focus from the supply to the demand side. The approach might require that the sales person changes from being an advocate of the firm to become a consultant for the buying company (Hannan 1995; Liu&Leach, 2001).

Furthermore the transition might require changes in established ways of doing things, including new product development and a focus on operations and production strategies at the supplier firm (Sharmer et al., 2008)

2.4 *Literature Review: "Pricing of services and solutions"*



2.4.1 **Pricing of industrial services**

Pricing of industrial products has received some attention in marketing literature whereas the pricing of services has been neglected. Hoffman et al. (2002) stated that "pricing has been the least researched and mastered area of marketing".

Several authors pointed out the importance of effective pricing on the long term survival of a company. Nagle and Holden (1995) stated that when effective product development, promotion and distribution are the seed of business success, effective pricing is the harvest. Although effective pricing can never compensate for poor execution of the first three elements, ineffective pricing can prevent those efforts from resulting in financial success. Finch at el (1998), Potter (2000) and O'Connor (2003) pointed out that pricing is the only element of the marketing mix that generates revenue for the firm while others are associated with costs.

According to Shipley and Jobber (2001) price management is a critical element in marketing and corporate strategies and a key determinant of performance. Price is a measure by which industrial and commercial customers judge the value of an offering, and it strongly impacts the brand selection among competing alternatives. In the same paper they stated that the complexity that characterized pricing decision forces many companies to apply cost based when levying prices.

Yeoman and McMahon-Beattie (2004) argued that pricing is vital in attracting and capturing demand. Furthermore pricing is fundamental in optimizing the products true value in the market place.

Indounas (2008) described a research construct for industrial pricing practices consisting of

1. Pricing objectives
2. Pricing methods
3. Pricing policies
4. Pricing information

Pricing objectives provide direction when setting prices. Objectives might change over time due to environmental and organisational conditions (Shipley and Jobber, 2001). Pricing objectives might be compatible with each other (e.g. market share increase and sales increase) or mutually exclusive (e.g. sales vs. profit maximisation) (Myers et al., 2002). Several authors indicated that there is a certain hierarchy of pricing objectives where the fulfilment of qualitative objectives leads to the fulfilment of quantitative objectives (e.g. achieving satisfactory profits). Indounas (2008) found most of the existing pricing objectives used in a service environment reflect the implementation of a customer relationship management system. “Maintenance of existing customers”, “Attraction of new customers”, “Service quality leadership” and “Cost coverage“ scored highest in the survey, whereas “Return on Investment“ and “Return on assets” scored lowest.

Pricing methods depend on certain formulas used to set prices. Diamantopoulos (1991) argued that due to the complexity of pricing methods, pricing decisions are often based on more than one method. Eight common pricing methods were combined in three larger categories which are cost based (e.g. cost-plus methods), competition based (setting prices relative to competition) and customer based pricing (e.g. perceived value pricing, value pricing). The customer based approach lead to prices that the customers are willing to pay for the perceived value of the offering. This approach inherits the difficulty to estimate the value of a service (Zeithaml et al. 2006).

In his study “Successful industrial service pricing” Indounas (2008) found that the “cost plus method” is the most commonly used followed by the “pricing similar to competition”-approach. Value based pricing followed in midfield range where pricing higher or lower against competition became last. The study was conducted in 129 transportation and 48 information technology companies.

Literature does further differentiate between *pricing policies* which define the procedures needed to reach the final price (Oxenfeldt, 1983) and *pricing information* which represent the organisational and environmental conditions that should be taken into consideration when setting prices (Tzokas et al., 2000).

Avlonitis and Indounas (2006) summarized the current pricing policies in services. The long list of policies displays in table 8 gives marketing professionals the choice between different pricing options. Grouping these pricing policies leads to different clusters namely discounts, bundling, customer segmentation and cost -based approaches. For discounts customer receive benefits when meeting certain volume, payment and promotional objectives. These objectives have to be predefined and should therefore be beneficial to both sides. Pricing policies based on customer segmentation require a deep understanding of the target customers. The seller should have inside knowledge about end uses, profitability, importance of image as well as relationship and barriers to change. This knowledge will put him in a favourable negotiation position.

In a yield management pricing approach sellers sell to the person who is willing to pay the most. This policy is particularly interesting in case of an unbalanced supply and demand situation where only a couple of companies supply a growing market.

Bundling policies differ by the composition of the bundle. This policy has the potential benefit that customers perceive to have made a deal even though they purchased more than they originally intended. Sellers on the other hand have the benefit of increasing revenues and achieve higher utilisation of their production.

Finally a cost driven approach forces the supplier to continuously reduce their cost to achieve cost leadership in the market to offer at the lowest possible price. This can help to prevent competition stepping into the market and assures the buyer the best price.

Pricing policy	Characteristics
List pricing	Set pricing without differentiation to different market segments
Differentiated pricing	Different prices for different customers based on criteria such as time and place of purchase, consumption and “personal characteristics”

Geographical pricing	Different prices that are located in different geographical locations
Negotiated pricing	Prices are determined on the basis of individual agreements between customer and supplier
Quantity discounts	For customers purchasing large companies
Cash discounts	Discounts for those customers paying their total amount in a pre-determined time period
Trade discounts	Discounts to distributors or agents to promote or support a product or service
Loss leader pricing	Service is offered at a low price in order to attract customers that will be offered other more profitable and high priced services
Image pricing	Setting a high price in order to convey the exclusivity of the image
Pure bundling	Two services which cannot be purchased independently are offered at a reduced price
Mixed bundling	Services that can be purchased independently are offered at a reduced price
Relationship pricing	Aims at developing a long term relationship with customer, understanding their needs and pricing according to these needs
Yield management	Managing the companies capacities by monitoring the different market segments demand and charging maximum prices to segments that they are willing to pay
Efficiency pricing	Reducing company costs to a minimum level that will continuously permit the determination of low prices to those customers who are price sensitive

Table 7: Pricing policies in services (Avlonitis & Indounas (2006))

In general it should be noted that a couple of pricing methods focus on a mutual benefit such as bundling or discounting. Other methods are based on the knowledge that the willingness to pay for a product is heterogeneous depending on the profile of the potential buyer or the supply and demand

situation in the market. This heterogeneity is exploited with a potential benefit for the supplier. Loss leader pricing specifically focuses on systems which consist of several constituencies such as printers having different ink capsules or coffee machines using patented pads or capsules. The original hardware or machine is offered at a low price whereas the software or raw material is offered exclusively and at a high price.

Only three studies focused on the pricing policies adopted by service organisations (Morris and Fuller, 1989; Tilson, 1994, Avlonitis and Indounas 2006) while only one study dealt with the collection of information which was related to physical goods (Tzokas et al., 2000).

Morris and Fuller (1989) found that US accounting companies use differentiating pricing in relation to the total turnover and the time period of their collaboration with the customer. Tilson (1994) found that 70% of the studied libraries use differentiating pricing based on the type of service and the user's characteristics.

Avlonitis and Indounas (2006) stated that "list pricing" is the only policy which is adopted by the majority of the surveyed companies whereas Indounas (2008) found that negotiated and differentiated pricing were the most popular pricing policies in the studied industry setting.

When discussing the collection of *pricing information* Smith (1995) mentioned three major categories:

- Information related to costs, profits, production and sales
- Information associated with competitors
- Information related to customers

Indounas (2008) found the following dimension relevant when collecting pricing information.

- Customer-based
- Competition-based
- Profit margin based
- Cost based

The only study investigating the collection of pricing information referred to physical products was conducted by Tzokas et al. (2000). According to their findings the most important information was "Gross profit margin", "Contribution margin" and "Competitor prices" followed by "variable and fixed

costs". This indicated a strong focus on inward looking information. The least important information seemed to be related to sales in "different periods" and "different markets" and the "competitor's market share".

Ingenbleek et al. (2003) found that the success of pricing practices is contingent upon the relative product advantage and competitive intensity and there is no general rule for best and bad practice. He suggested that cost based pricing is best practice if competitive intensity is high. Competition based pricing can give a better understanding of the price ceiling when a new product has similar characteristics to competition products. Similar to competition based pricing, value based pricing gives an indication on the price ceiling. This is even more the case when the relative product advantage is high.

With respect to services Avlonitis and Indournas (2006) found a stronger focus on market based information related to customers and competitors. "Competitors current prices" and "Corporate objectives" were the single most important pieces of information.

"Customer based information" was positively associated with the policies of "cash discounts" while "competition based information" with "differentiated pricing" and "cash discounts". Furthermore "cost based information" is positively associated with "cash discounts" and "efficiency pricing" and negatively associated with the "loss leader pricing" policy.

They argued that a balanced market orientated and situation specific approach should be used when setting prices. As the study was limited to 170 service companies in Greece the generalisation of the results could be questioned.

Indournas (2008) stated that information based on a companies fixed cost are also important when setting prices.

The literature review shows that most information necessary for the pricing in industrial companies are based on internal knowledge of cost, competition and required profit margin within the company or industry. Even though value based pricing has been recognized as superior method to set prices it seems not to be widely used.

Davidson and Simonetto (2005) summarized the most common pricing options in the high tech industry stating that the complexity of the pricing models is increasing. The following table gives a summary of their findings:

Named user pricing	**Each user in the organisation pays a price based on usage. Over different time periods the company may change the number and types of users that it licenses, making comparison difficult. Users might be "read only users", "developer users", "administrative users" etc.**
Tiered pricing	Price per user depends on the number of users
Hybrid pricing	A combination of a fixed and variable cost for usage of the product
Concurrent user pricing	Pricing is based upon the number of users actually connected to the server at any one time
Bundled pricing	The firm offers a lower price for a bundle of products
Upgrade pricing	A price on the upgrade from one generation of software to another
Site license pricing	A price the customer has negotiated for an overall enterprise license for the use of the software
CPU pricing	Software pricing is tied to the number of computers on which it is running.

Table 8: Pricing models in the high tech industry (Davidsson & Simonetto (2005))

Davidsson & Simonetto (2005) stated that considering the level of complexity in their pricing model high tech companies have difficulties in understanding the following issues:

- What is the price elasticity for their various products?
- Where money is left on the table and where they are overcharging?
- Where successful product bundles are created that fit into the available budget of the customer and create high customer satisfaction?
- Where pre-bundling of options might simplify customers buying decisions and locks in the customer relationship?
- The potential impact of new pricing approaches such as subscription and usage based pricing.

This shows the dilemma of pricing models in the IT and knowledge industry. To get the most out of digitalized data the high tech industry has created extremely complex pricing models which try to prevent customers from exchanging data or restrict the access of users from different departments of the company. This complexity has itself let to a reduced transparency making it difficult for sellers to understand the real value of their products.

Summary

At this point the thesis will look at the pricing literature which has been evaluated so far. The findings indicate that pricing methods and policies are depending on environmental factors such as competitive state of the industry influencing the pricing objectives of the selling company, the pricing information available to the seller and the nature of the products/services sold. Value based pricing methods is rarely used in the industry (Ingenbleek, 2003). Certain pricing policies in industrial services such as discounts or bundles have the objective to create mutual benefits. As mentioned during the review the possibility to apply" value based pricing"- methods depend on the competitive environment and the unique benefit of the offering. Market intelligence on pricing information is crucial to understand customer constrains but the boundaries have to be managed well and keeping the balance is the crucial part. Based on the quality of information certain pricing policies can be applied. Cash discounts seem to be a favourable policy leading to the question if the incentive of regaining parts of the money back does lead to a favourable perception and subsequently to a favourable outcome for a seller.

The example from the high tech industry shows the problem of the product itself. Dealing with digital data leads to different pricing methods charging either depending on user profile, time, size of company, quality of data etc... This is assumed to create a lack of transparency which might have a negative value perception of the buyer.

For the further study it is important to remember that the pricing objective of a B2B company is driven by financial targets. The pricing method is strongly depending on the competiveness of the industry and "value based"- pricing can be an option when pricing products and services with a unique benefit. The pricing policies applied in industrial services tend to either favour the seller or look for mutual benefits. Cash discounts seem to be a favourable option which is widely used. Transparency of the pricing models is an key issue. Coupled with the attitude towards risk a lack of transparency can create certain resentments.

Going back to Indounas (2008) research structure for the pricing in industrial services the findings can also be summarized as follows:

Pricing objective	Services: Maintaining customers/Generating new customers Physical goods: Gross profit margin
Pricing method	Competitive environment: cost plus method Significant competitive advantage: value based method
Pricing policy	Cash discounts/differentiated pricing or list pricing in industrial settings Bundled/consumption based pricing for services
Pricing information	Mixture of Customer/Competition/Profit and cost information

Table 9: Summary pricing in industrial settings (Indounas, (2008))

In the upcoming chapters the thesis focuses on the literature dedicated to the pricing of solutions. As mentioned before the literature on pricing for solution is sparse. But in recent years more academic papers deal with this topic.

2.4.2 Pricing of solutions

The emergence of solutions based on the new service dominant logic has posed new challenges to pricing methods. Various companies fall short in extracting value from their customers when offering solutions (Bonnemeier, 2011). It is not clear whether they are able to recoup the additional costs of customization, integration and organisational changes that are pre-requisites to the success in solution selling (Sawhney, 2006, Sharma 2011). Rogner et al (2001) agreed that companies often fail to realize moderate prices for their solutions. Pricing is the part of the marketing mix which determines the revenue and profitability of a product or service. Price setting and price adaptation have an immediate impact on the behaviour of competition leading to a direct impact on the financial key performance indicators (Ahlert and Bentrop, 2008)

A McKinsey and Company study reported that around 75% of all companies having embraced solution selling failing to recover the costs of their investment as they targeted the wrong customer segments or failing to offer competitively superior solutions (Apollo, 2012).

Sharma et al. (2011) stated that literature offer little guidance on pricing strategies that solution provider could use or how prices affect customer's perceptions of solutions. So pricing remains the last challenge only a few firms seem to have mastered to make their solutions profitable.

In their paper they summarize the pricing imperatives for solutions selling from the provider's perspective.

Solution selling imperative	Pricing challenges	Pricing imperative
Ascertain customer value	Research how solution provides incremental value to customer	Solution price must provide savings in transaction and other costs for the customer; it should be lower than the cost of customer acquisition of necessary skills
Design and develop the solution	Ascertain and apportion costs of technical and commercial integration	Solution price must recover the incremental costs of integration incurred by the provider
Transformation of organisational structure and processes	Consider costs of structural changes, different sales training and longer sales cycles	Solution price must capture costs over duration of the solution
Create a solution factory	Evaluated economies obtained from replicated solutions	Solution price can be set for a pre-determined integration

Table 10: Pricing from the solution providers perspective (Sharma et al. (2011))

Based on these results they argued that the pre requisite for a successful pricing of a solution is a high degree of technical and commercial integration. Despite a high degree of commercial integration a low degree of technical integration would enable the customer to unbundle the solution and purchasers would try to negotiate a discount. On the other hand in case of a high degree of technical but a low degree of commercial integration customers would view the solution as a product bundle.

In a review on "Pricing solutions" Sharma et al. (2011) argued that traditional pricing approaches appear to have less relevance for solutions. Table 12 summarizes his findings:

Type of pricing policy	Details	Applicability for solutions
Differential pricing	Customer heterogeneity allows multiple pricing	
- **Second market**	Differential pricing based on markets – need little inter market transfer	Only in applicable in limited markets when: Larger accounts can be charged lower prices when compared to smaller accounts.
- **Periodic discounting**	Demand pattern lead to reducing prices – off season discounts.	Only in limited circumstances when the solution is standardized and there are temporal demand groups
- **Random discounting**	Search costs. Targets non shoppers with higher prices and comparison shoppers with discounts	Very limited use
Competitive pricing	Pricing based on competitive position	
- **Penetration pricing**	Lower prices to increase size of the market	Since service capacity is typically constrained this might not work
- **Experience curve**	Prices are reduced as firms reduce costs with experience	Not a major factor, unless experience curve helps services
- **Price signalling**	Signalling quality of pricing	Low buyer knowledge will make this strategy less relevant
- **Geographic pricing**	Pricing based on geography and competition	Limited as selling firm is not selling standardized products and services
Product line	Pricing related products to	

	maximize financial goals	
- **Price bundling**	Used for heterogeneity of demand for no substitutable perishable products	Not very relevant except as a strategy to increase share of customers business
- **Premium pricing**	Creating products to charge different prices for different segments	Not relevant
- **Image pricing**	Different pricing for different perceived quality	Not relevant
- **Complementary pricing**	Pricing one product at a lower price so that the second product can be priced at higher margins	Not relevant except when converting to "service in use"

Table 11: Pricing policies and their relevance for solutions (Sharma et al. (2011))

Sharma et al. (2011) stated that integrated solutions require a paradigm shift in pricing strategies as the integration process requires a variety of capabilities for which costs cannot easily be pre-determined on a "per solution" or "per transaction"- base. Beyond that traditional pricing methods assume mass production and were therefore contradictory to the definition of solutions. Sharma et al. (2011) found value based pricing model to be highly relevant for solutions but prices were rarely evaluated in terms of outcomes and quantities. The definition of value based pricing was stated by Shapiro & Varian as follows:

***"Value based pricing**, or Value optimized pricing is a business strategy. It sets selling prices primarily, but not exclusively, on the perceived value to the customer, rather than on the actual cost of the product, the market price, competitors prices, or the historical price." (*Shapiro and Varian, 1998).

Summarizing the findings of Sharma and his colleagues related to the industries of power generation and business process outsourcing, it can be said that Tuli et al. (2007) findings about the disparity in perception between solution providers and buyers were confirmed. Suppliers were quite products centric whereas customers where focussed on the relational process. Suppliers still believed they were selling solution even though the technical integration was low making it easy for buyers to unbundle the solution. They found that in the power generation industry providers were not successful in implementing any other pricing approach than fixed prices. Major reason was the capability of

purchasers in the customers firm to unbundle the offerings and then relating their findings to the fixed price given for a solution. As discovered in the exploratory pre study todays purchasers are working highly professionally always seeking to unbundle the offering and benchmark each individual component of the solution trying to reduce its price. Figure 12 shows the value based pricing model for solution based on the outcomes and quantities.

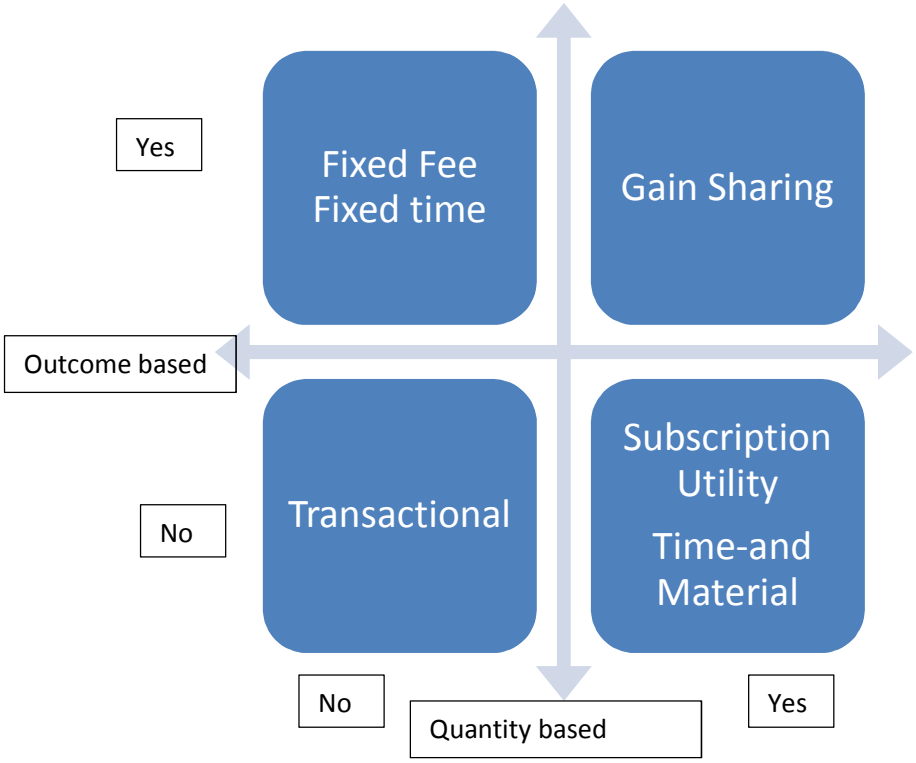


Figure 12: Value based pricing approach for solutions according to Sharma et al. (2011)

Nevertheless as mentioned by Andersson and Wynstra (2010) true solution prices should be negotiated through understanding each other's evaluation of the solution and coming to terms at price levels acceptable to both parties. Assuming that solutions are driven by the need for greater value for the customer and greater margin for the provider it will be interesting to see how future research will put more light on the issue. Additionally Sharma et al. (2011) questioned whether customers of solution in competitive or B2B markets do value integration as it is assumed in earlier publications. If the process steps of integration prevent purchasers unbundling solutions then how do purchasers value solutions in general. These questions should be addressed later in this study.

In their paper "Pricing of Solutions" Ahlert and Bentrop (2008) stated that the optimal price of solutions should be close to the maximum price the customer is willing to pay for the overall benefit the solution

offers. This price had to be below the price constituted of the buyers cost necessary to acquire the skills needed to solve the problem. It should include material and labour costs, research and development cost, capital costs other overheads.
Especially complex customized solutions provide the opportunity to maximize the customer related profit by defining their preferences before the customisation phase.

Defining the customer segments and their individual preferences towards the solution is highly important. Kumar (2004) stated: “Obviously, people prefer solutions rather than products - but not everyone is willing to pay for them […] a company aspiring to sell solutions must be meticulous in defining the value of the solution for a customer”.

Therefore not every customer was willing to pay for the added value provided by a solution. Determining the right solution for the right customer at the right price is the decisive factor for the successful pricing of a solution. The results of the thesis should provide some guidelines and support on this issue.

Literature suggests that solution providers should aim to realize higher margins by setting the price of a solution based on the value created for the customer (Cornet et al (2000); Gebauer and Friedli (2005), Bonnemeier (2011)). Complex pricing decisions required a systematic process that examined and integrated the full range of forces which impact pricing effectiveness (Shipley and Jobber (2001), Hinterhuber (2004), Bonnemeier (2011)).

The shift from a product dominant to a service dominant view required a fundamental re-orientation of customer interaction. A stronger focus should be put on the relational aspects of solution selling (Tuli et al. (2007)). Pricing in this context should not be about optimizing transactional prices but on the value generated within the customer processes. Solutions usually account for long term relationships with customers, which require an accommodation of pricing practices to the duration and intensity of the relationship (Cornet, 2000). Additionally Sawhney (2006) stated that in case of operational services the solution provider takes over the responsibilities for activities previously performed by the customer and ownership of assets previously owned by customer. This involves a transfer of risk to supplier which needs to be incorporated in the price of a solution.

Bonnemeier (2011) argued that revenue models for solutions can be grouped into traditional revenue models and innovative approaches. Concerning traditional revenue models the value proposition is based on the product or service offered by the provider. In contrast, innovative approaches focus on the

input or outputs of the customer according to the service dominant logic of marketing postulated by Vargo and Lusch (2004).

As mentioned before the pricing of a solution should be based on the value it creates for customers. Therefore we will follow Bonnemeiers (2011) taxonomy and look into innovative approaches which are already used in the market place. He stated that from the supplier perspective, basically three different elements impact the decision making bin traditional pricing models

- Competition
- Customers willingness to purchase
- Costs

Bonnemeier (2011) argued that the role of costs for the supplier changes considerably when adapting innovative approaches. Variables are no longer related to internal supplier variables but to the performance of the solution in the customers' business environment. Bonnemeier followed Norman's (2001) concept of customer value as it relates pricing measures directly to the customer's internal and external efficiency.

In case the value proposition of a solution targeted an input of the customers production process Bonnemeier (2011) suggested a usage based model. In this model the client paid a pre negotiated fee to the solution provider depending on the client's utilisation of the solution within a given period of time (Hünerberg and Hüttmann 2003; Harmon et al. 2005). Time or intensity of machine use, web server or phone systems are examples found in the market place.

If the suppliers value propositions addressed an output of the customer processes then two additional pricing approaches are the `performance based model` and the `value based model`. In case of a performance based pricing approach the provider guaranteed a certain performance level to the customer (Nagle and Hogan, 2006). If the solution delivered the agreed performance the client has to pay a pre-negotiated price. On the other hand the supplier can be held reliable in case the performance is not according to their expectations. Most common examples for the performance based model are guaranteed response times for support services or assured quality levels (x-per cent of output) (Bonnemeier 2011).

The second example of an output dependent pricing approach is a `value based- model`. In that model the solution provider focuses on the internal processes and delivers `optimisation' and productivity.

Sawhney (2006) named the cost saving generated by employing the solution as the most important example from the market. Assessing the benefit generated for the customer is not easy. Analysing the total cost of ownership meaning the total costs for the company including purchasing, usage and maintenance of the offering are most suitable (Toossi, 2010).

Bonnemeier (2011) stated that costs are still an important factor in setting the prices. According to his perception the provider has to ensure that the solution can generate profit. But cost is not considered as the most important parameter for price setting. The aspect of competition is still of comparable importance. The intensity of competition constrains the solution provider in setting the height of the price parameter to benefit from customer cost savings or turnover increases. In terms of customers willingness to purchase innovative revenue models they have been shown to provide enormous cost efficiencies to customers as the firm and the provider objectives become more aligned (Ng et al., 2009).

Additionally literature showed that there are more equitably aligned risks and incentives between provider and customer in innovative models than in traditional ones (Kim et al. 2007). Based on this statement Bonnemeier (2011) argued that new pricing approaches are potentially useful to increase customer's willingness to purchase, if the solution provider makes their advantages sufficiently transparent to the customer. The issue of constant communication should not be neglected in setting or changes pricing over the life time of the solution. Solution providers need routines and resources to know when a price best matches customer value.

Lancioni (2005) assumed that innovative pricing models make internal pricing decisions more complex and call for a set of strict pricing objectives, precise courses of action, an operational strategy, and a set of control and review procedures. Other aspects which could prevent the implementation of value based pricing include difficulties in objectively measuring the value created for the customer or the resistance of the customer to accept new approaches to pricing. This puts additional importance on a proper communication process to achieve customer agreement.

From a pricing process perspective Bonnemeier (2011) identified six generic process steps and analysed the impact of pricing solutions on every step.

Figure 13: Pricing process according to Bonnemeier (2011)

According to the process setting the right pricing strategy is the vital first step. Solution providers have to put additional efforts on pricing product and service components of their integrated customized offerings. The filed research conducted by Bonnemeier (2011) also indicated the need for long term price planning and the adaptation for customer life cycle pricing concepts. He suggested a mixed calculation for price components relevant at different times of the customer cycle or annual total cost of ownership assessments to align value based pricing parameters. Mentioned by several respondents in his study the pricing strategy has to recognize the positioning of the company compared to competition. Therefore they suggested the definition of a price corridor instead of a single fixed price to give the more flexibility to react to environmental changes.

Looking at the analytical part of the pricing process Bonnemeier (2011) stressed the necessity to gather and analyse prices from competitors, customer's willingness to pay and internal costs. This information has to be made accessible company wide. Additionally the solution provider has to conduct a customer value analysis determining the added value potential realized by the customized solution.

Bonnemeier (2011) suggested that when defining the prices easy-to- communicate parameters such as "price per port" or "price per hour of use" facilitate the acceptance as they help customers to easily estimate ownership costs. Additionally he argued that price setting in teams is essential as this helps to overcome major challenges in B2B pricing such as uncertainty and coordination. Solution providers specifically should implement a concept of continuous price adjustments.

Bonnemeier (2011) summarized that a lot of work still has to be done in the area of pricing solutions. The lack of acceptance for innovative pricing model was already addressed by Hinterhuber (2004). He argued that value assessment and value communication are the two most commonly stated obstacles when implementing value based pricing strategies.

2.4.3 Current theoretical pricing model for "Solution Selling"

Literature is very limited when looking for pricing solutions. The only model in literature was developed by Roegner, Seifert and Swinford (2001) in their paper "Putting a Price on Solutions". This process is based on Monroe's model (1990) to determine the initial price discretion of an offering. It is based on customer perception of value in the sellers offering. The maximum value is determined by the life time value of the solution to the customer and the minimum value is related to the costs generated by the solution of the buyer side. This model integrates costs and market variables into the calculation.

Roegner, et al. (2001) asked the all-important questions: "How can suppliers figure out the right premium and pricing model that suit their customers?" They stated that solution providers should be able to achieve the largest possible premium because they create a new way of components to work together to enhance the solutions overall functionality beyond that of the best alternative. Beyond that providers might take over some of the customers risk by guaranteeing responsibility for a part of the business.

To set the right price Roegner et al. (2001) proposed a five step process.

1. Development of a broad price range based on a standard configuration that would meet average customer needs and also identify the maximum and the minimum price level for the solution.
2. The maximum price is set by taking the net present value (NPV) derived from functional, process and relationship benefits that would add up over the life time of the solution and then compared to the value of the existing system. The calculation should include operational and capital cost savings as well as increased revenues. Incremental operating and capital costs should be subtracted.
3. Compare the offering with the competitors next best alternative

   ➔ Combining the value offered by the solution itself and the incremental value it promised over the competition solution sets the maximum price.

4. The minimum price is derived from a bottom up analysis adding up actual costs of delivering the solution including R&D, recovery of allocated overheads and costs of capital.

5. To decide on the final price the range has to be narrowed down. Therefore additional factors have to be considered. Market penetration strategies and perceived customer risk adopting the new technology could be considered as factors to reduce the maximum price whereas focus on reputation and the impact of proprietary components might elevate the minimum price.

Theoretical Pricing model for Solutions

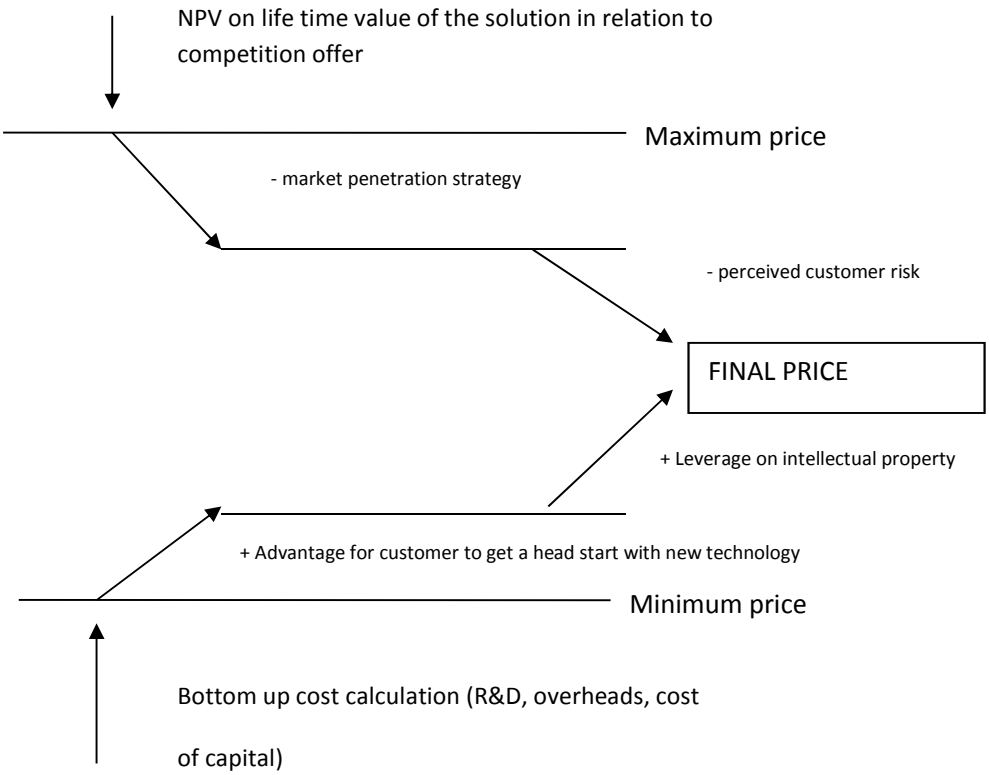


Figure 14: The current perspective on pricing a solution (Roegner et al. (2001))

The model reflects a combination of value based methods to determine the maximum price of the solution and a cost plus method for the minimum price. The benefit of this model is that both sides of the transaction are covered and it requires the practitioner to recognize pricing as a process which differs depending on the individual business situation. Nevertheless a practical benefit is doubtful as the model does not include any standardized approach to measure and evaluate the value for the customer. The model is based on assumptions related to the perspective of the customer but mainly considering

the seller's perception of customer value. With respect to the maximum price the model should be modified according to the value proposition to different buyer groups. Only then the calculation on the net present value (NPV) should be initiated.

In recent literature value based pricing was recognized as superior to all other pricing strategies for solutions (Sharma et al., 2011). Furthermore he found that customer value based pricing is positively related to new product success. Monroe (2002) stated that the profit potential for conducting a value orientated pricing strategy is far greater than any other pricing approach.

There is a general recognition among academics and practitioners that the key to sustainable profitability lies in the essential features of customer value-based pricing, including understanding the meaning of value for customers; designing products, services, and solutions that meet customers` needs; setting prices as a function of value and implementing consistent pricing policies (Hinterhuber, 2008).

Nevertheless the implementation of value-based pricing methods has played a relatively minor role in the industry. Hinterhuber (2008) identified several obstacles preventing a widespread implementation. He argued that the availability of reliable data still favours "cost based" and "competition based"-pricing against the value based approach. He considered the value assessment as the biggest challenge to the supplier firm. He raised the question: "If the company itself does not know the value of its products or services to customers, how does it know what to charge customers for value?" According to Hinterhuber the second most common difficulty was the deficit in the communication of value to customer. He suggested three levels of sophistication starting from the communication of product features to the communication of benefits finally leading to the communication of benefits according to customer needs. The third difficulty was the issue of market segmentation based on customer needs. Finally Hinterhuber mentioned the difficulties of senior management to set the right targets for a successful implementation of the pricing method.

To summarize the previous chapter it can be said that different pricing methods have been suggested for services which can be classified in three groups. These groups are customer based pricing methods, cost based pricing methods and competition based pricing methods. Ingenbleek et al. (2003) found that cost based methods are best practice when competitive intensity is high whereas value based pricing methods give an indication on the price ceiling. The perspective of an upper and lower price ceiling has been included in the price finding model for solutions by Roegner et al. (2001).

With respect to customized solutions Sharma et al. (2011) found value based pricing based on shared gains to be the only reasonable pricing method for customized solutions. They even stated that integrated solutions require a paradigm shift in pricing strategies as the integration process requires a variety of capabilities for which costs cannot easily be pre-determined on a per solution or per transaction base. Additionally he argued that traditional pricing methods assumed mass production and were therefore contradictory to the definition of solutions.
On the contrary the acceptance of value based pricing models has been low (Hinterhuber, (2008)). He found that solution providers often

- lack understanding of the value of their products
- are therefore unable to communicate the value
- lack a proper market segmentation based on customer needs
- lack senior management support including an appropriate target setting.

The following chapter should now build the bridge between the gaps identified in the literature review and the conceptual model derived from these gaps.

Research Questions

3 Research questions and conceptual model

This section highlights again the main literature sources building the foundation for the research questions.

Conclusions from literature on the "concept of value"

The concept of value to customer is strongly related to the prospect theory by Kahnemann and Tversky (1979) and the equity theory by Adams (1963). Kahnemann and Tversky described the value assessment as trade-off between gains and losses whereas potential losses have a stronger impact on the value assessment than potential gains. Adams (1963) equity theory proposed that people perceive something as an inequity when the "input/output"- ratio for two persons for the same relationship is different. Lapierre (2000) defined the dimensions of potential trade-offs a buyer has to consider when buying a product or service. Among other points he mentioned the available alternatives to the customer, the product/service customization as a measure of how much the offerings fits the buyers specific needs and the product/service quality as a direct influencer of the buying intention.

Anderson and Narus (1998) considered value in business markets as the worth in monetary terms of the technical, economic, service and social benefits a customer company receives in exchange for the price it pays for the offering.

Considering the impact of other concepts on the value assessment two studies should be mentioned Bolton and Drew (1991) stated a positive causal relationship between service quality, service value, buying intention and finally buying behaviour and Heskett et al. (1994) which postulated a causal relationship between service quality, loyalty and profitability.

The review showed that the nature of value assessment, its dimensions and the impact on the buying behaviour have been analysed in some detail. During the thesis it will be a main objective to see if this is also valid for the value perception of customized solutions with respect to different group of buyers.

Conclusions from literature on the relationship between buyer and seller

In the mid 70's Hakansson et al. (1975) stated that from the buyer's perspective market uncertainty drives the relationship to their suppliers. In case of need uncertainty are more concerned with quality and functionality than with price. In the 90's the perspective of the academic community shifted from a purely transactional relationship towards a collaboration or partnership. Sellers were able to foster the

benefit of long term collaboration through the optimisation of internal processes even when prices became under pressure over time.

In recent years the literature has further adapted the perspective of a relationship with mutual benefit. Managers now actively seek to generate value by initiating and managing external partnerships (Prahalad and Ramaswamy, 2000). The interaction perspective understands “cooperation” as the inclusion of productive resources to create mutual benefits (Hammervoll, 2005). Hammervoll et al. (2009) stated that value-creation in transaction-based arrangements equates to cost-effectiveness whereas value –creation in an interaction relationship involves the joint effort producing a desired output or solving a mutual problem. Value- creation was also related to mutual learning and the continuous adjustment by both buyer and sellers and continuous adaptation to each other circumstances (Gulati and Singh, 1998).

Macdonald et al. (2011) argued that customers assess the network quality of the provider in the context of functioning as both a resource provider and a resource integrator. The value assessment is considered to be vital for both the provider as it influences the design of the offering and for the customer as this might assist the “outsource vs. in-house” decisions.

Conclusions from literature on the introduction to customized solutions

Besides all the details mentioned in the review it is necessary to recall the main findings from the solution chapter.

The latest definition for customized solutions is provided by *Evanschitzky et al. (2011).*

They defined Solutions as on-going relational processes where solution providers continuously try to satisfy complex customer needs by offering pre-defined, customized and integrated products and services which create an added value beyond the sum of the components

The solution selling process model was created by Tulli et al. (2007) and contains 4 phases essential to meet the requirements of a solution buyer.

Tulis process (2007)

Töllner (2011) extended Tulis model with special focus on the capital goods industry. He added two process steps which are “signalling activities” preceding the “requirement definition”- phase and the “inter-process management” which accompanies all process steps. Töllner (2011) stated that buyers from buying centres focus on the signalling phase and the inter process management.

Solution selling often relies on identifying the performance-related objectives of the customer. They also stated that customer goals change at different stages of the relationship affecting the perception of value. This could mean that the need for meeting prevention goals at the beginning of a relationship could develop into the need for more innovative promotional solution as time develops.

Considering the desired outcome of a solution different statements were found in academic literature. Ceci and Prencipe (2008) showed the relevance of outsourcing for solutions in the B2B environment. They stated that from the firm’s point of view, offering a solution means solving a customer’s problem; from customer’s point of view, buying an integrated solution represents outsourcing some activities and thereby focusing their own resources on their core business. This statement related the benefits of buying customized solutions to the concept of outsourcing. This is the base for including this research stream in the literature review on solutions. Outsourcing has been a trend in recent years and the literature review indicated that a lot of learning on the pros and cons of the concept have been generated. Outsourcing has been related to solutions and product service systems such as maintenance by Toosi et al. (2010) which builds the base for the upcoming case study.

Conclusions from the “pricing of solutions” chapter

Focussing on pricing of solutions the next chapter summarizes the current theoretical framework available in academic literature. It is a complex matter and trade-offs have to be considered in the process.

As mentioned by Sharma (2011) “value based”- pricing is highly relevant for solutions and other pricing methods fail to extract sufficient value for the solution. Hinterhuber (2004) and Monroe (2002) considered value based pricing in general as superior to cost plus pricing.

Furthermore Hinterhuber (2008) stated that the key to sustainable profitability lies in the essential features of customer value-based pricing, including understanding the sources of value for customers, designing products, services, and solutions that meet customers` needs; setting prices as a function of value.

With respect to the pricing of solutions four major contributors were identified in the literature review. In general Ingenbleek (2003) stated that the success of pricing practices depends on the relative product advantage and the competitiveness of the industry. This indicates the importance of the value proposition and to what extent the buyers see a relative advantage in the offering compared to what they are currently using.

With regard to solution pricing Sharma (2011) found that it is not clear whether solution providers are able to recoup the additional costs for customization, integration and the organisational changes required in the process of becoming a solution provider. The solution selling process should therefore be analysed for potential cost saving opportunities and the parameters they depend on.

Sawhney (2006) found that in the case of operational services the solution provider takes over the responsibilities for activities previously performed by the customer and ownership of assets previously owned by customer. This statement links the selling of solutions directly to the outsourcing of business processes and therefore to the solution case in the survey. The case represents a classical trade-off scenario of an” in-house” versus outsource decision. The methodology of the thesis will take this into consideration.

Bonnemeier (2011) suggested a usage based pricing model for customized solutions. In this model the client paid a pre-negotiated fee to the solution provider depending on the client’s utilisation of the solution within a given period of time. He proposed the definition of a price corridor instead of a single fixed price to provide more flexibility to react to environmental changes. Even though the willingness to pay will be displayed by a single price the cost related to potential scenarios will lead to different levels of profit. These findings could be displayed in the definition of upper and lower limits in the pricing function.

The only pricing model for solutions was postulated by Roegner et al. (2001) in a McKenzie report. It described how a price range can be identified by estimating a maximum and minimum price for the solution. Overall academic literature on solution pricing is limited. Value based pricing has been the method of choice to derive sufficient value from the solution offering and Roegner`s model helps to define a price range. If customers are not willing to pay for solutions it should be investigated whether value based pricing is actually accepted in the B2B environment. One of the objectives of this thesis is to put some light on that issue.

Based on findings from literature the following model can be considers as the current perspective on the evolution of customized solution.

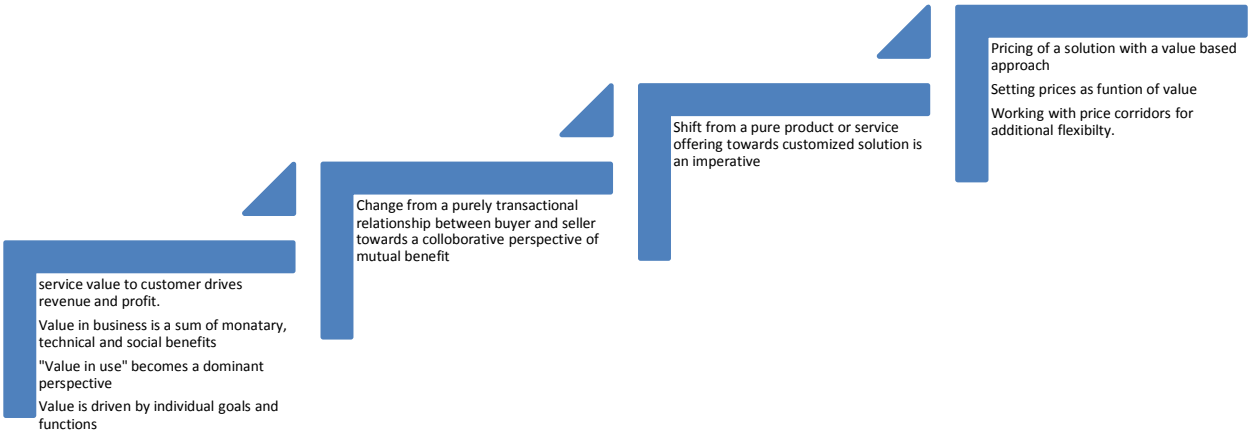


Figure 15: The evolution of the current perspective on pricing solutions.

3.1 *Introduction to the research questions and the conceptual model*

The literature review indicates that literature on pricing of solution is sparse. Several authors such as Sharma et al. (2011), Bonnemeier et al. (2011) mentioned the need to further investigate the setting of prices for customized solutions to generate higher margin for the provider and increasing benefits for the buyer at the same time. This thesis aims to contribute significantly to this gap in the academic literature.

The selling of solutions is based on Tuli's model from 2007 dividing the selling of solutions in the 4 phases mentioned namely "definition requirement", "customization and integration", "implementation" and "post deployment services". In a B2B environment decision makers in a buying centre for a buying decision can have different functions such as commercial buyers or technical users (Töllner, 2011). Macdonald et al. (2011) confirmed that value-in-use may have individual components in B2B. They stated that decision making units consist of value seeking individuals seeking the achievements of individual and corporate goals. Multiple respondents are needed to assess value-in-use at individual level as well as organisational level. Further studies with different context are suggested (Macdonald et al., 2011).

The following conceptual model highlights the links which this thesis would like to shed some light on.

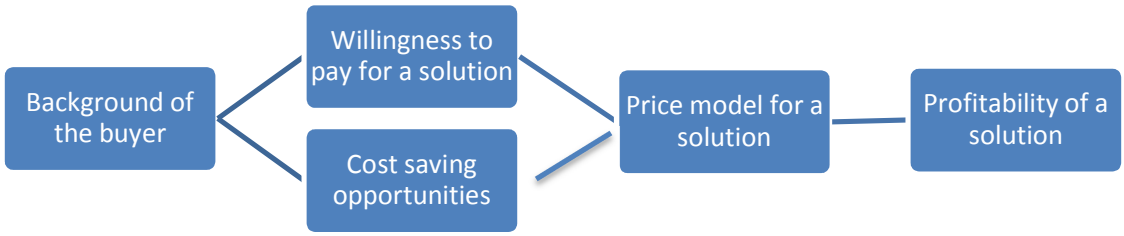


Figure 16: Conceptual model

With respect to the solution provider Sharma et al. (2011) argued that it is unclear whether the solution provider can recoup expenses for customization and integration phases of the process. With a specific focus on a "business to business" maintenance solution the following research question should help to understand the relationship within the model.

1. ***Depending on their professional background (commercial or operation) how do the different levels of each phase of the solution offering influence the buyer's willingness to pay?***

The first question evaluates the impact of the different levels within each phase of the solution selling process on the willingness to pay. This will support the identification of phases which are actually of importance to different types of buyers.
In order to address the general challenge to provide profitable solutions it is not only important to understand the value of each phase but also the price sensitivity of buyers depending on their professional background. Therefore the second question investigates the impact of an increasing price on different groups of buyers.

2. ***How does an increasing price impact the value perception of different groups of buyers?***

It is crucial to understand what drives the potential differences in the value perception of the buyer. Do different groups of buyers exhibit different attitudes towards risks and can this be related to the willingness to pay for a solution. As mentioned by Kim et al. (2007) the nature of a performance based contract between supplier and buyer depends on the level of risk aversion both parties have. Companies having a neutral attitude towards risk have the best premises to enter such a business relationship.

Academic literature shows that it is unclear that sellers can regain the additional investments to become a solution provider (sharma et al. (2011)). Following the findings from research question 1 and 2 it should be evaluated to discover if costs can be optimised or even saved by addressing different buyer groups and their specific needs. The research question therefore could be

3. **With respect to the maintenance case what could be cost saving opportunities in the solution selling process in order to make a customized solution more profitable?**

Finally this thesis will propose a pricing model for customized solutions including the willingness to pay of different buying groups (operational and commercial) and potential cost savings. This leads to research question number 4.

4. **What are the components of a pricing setting model to improve the profitability of customized solutions in a B2B market?**

Methodology Section

4 Methodology

4.1 *Philosophical background of the researcher*

4.1.1 The theoretical background of critical realism

Critical realism (CR) is one of the more recent approaches to the philosophy of science challenging established views such as empiricism and positivism but also offers a distinctive alternative to social constructionism and post modernism.

CR has its origins in the writings of Roy Bhaskar at the end of the 1970`s and Margaret S. Archer in the 1990`s.

Bhaskar challenged the attempt of both empiricist and positivist to apply procedures and discoveries from natural science on social science problems. He claimed that the purpose of science is not only study what we can empirically experience but to uncover the hidden structures and objects which have the causal power to trigger outcomes (Bhaskar, 1989). He also argued that a simple cause and effect relation based on observed events is neither sufficient nor necessary to claim a causal relationship.

One of the basic features of realism philosophy is the argument that ontology (theory of being) is distinctive from epistemology (theory of knowledge) which leads to the assumption that there is a mind independent reality. This creates a distinctive pole to empiricism (experience of the senses is the only source of knowledge) and idealism (theory that the object of external perception, in itself or as perceived, consists of ideas).

As proposed by Archer (1995) social theory is based on the existence of real social structures and systems which are entities operating independently of our conception of them, conditioning – but never determining - intentional human activity, being nonetheless subject to change by human activity.

Wikgren (2005) stated that CR philosophy assumes that reality is stratified composed of different levels such as a biological, a social and a cultural level which cannot be reduced to one another.

Therefore CR claims that a close system approach such as in positivism denies the impact of mechanisms which are not immediately visible to the person conducting the research.

Archer`s analytical framework known as “Morphogenic approach” tries to provide a base to examine the interrelationship between agency, structure and culture. Each system has a relative autonomy but also powers to form constrains and opportunities for the other systems. Deriving from this all structures should be analysed separately with a focus on their logical relations (Archer 1995, 1996, 2000).

Nevertheless critical realists accept that causal relationships within social science is given by the process mechanism → context → outcome and can be addressed by adequate quantitative methods but at the same time recognizing the strength of hermeneutic research methods in uncovering contextual implications.
Critical realists therefore are suggesting guidelines for a "fit for task"-methodology proposing a multi-methodological approach to research combining methods form both qualitative and quantitative research.
Critics of CR argue that results produced by realist analysis lack of empirical evidence and will therefore be subject to constant criticism and questioning. Among critical realists this view is widely challenged by the perception that to gain knowledge on mind independent realities it is necessary and even unavoidable to constantly question prevailing theories (Wikgren, 2005).

4.1.2 The alternative paradigm – a positivist approach

Due to the researcher's first academic degree in natural science, there is a certain awareness of positivism and its contribution to natural science.

In the case of adopting this ontological position in his research it would have a direct impact on his view of the validity of existing knowledge. The researcher would only consider data which would have been generated under a controlled experimental setting with a clear causal relationship. Reductionism is strongly related to positivism. As a positivist the researcher would embrace the possibility that entities can be reduced to one another and that for example "value" itself can be measured by the means of numbers and decision processes in business can be reduced to chemical processes happening in the human body. The researcher would consider science as predominately transcultural. Results coming out of science would be independent from the social position of the researcher and the respondent.

The overall research objective would be a universal methodology to determine the willingness to pay for solution offerings which can be applied, tested and finally verified or falsified if reality proves to produce a different outcome.

The scope of the research would be broader in terms of the investigated business relations. To build a valid model the investigated sample has to have a certain size to conduct a statistical analysis of the data.

Interviews with marketing and purchasing professionals would be considered as a valid starting point to improve a questionnaire or gain additional insides on a topic but the researcher would not go beyond

this point to gain information on other stakeholders and entities as his ontological position assumes that other concepts would not significantly impact his results. Therefore there would be no section in the questionnaire dedicated to the evaluation of other concepts than those related to the system in question.

A researcher following a strict positivistic approach would rely strongly on existing data already generated by a close system analysis which would determine his basic understanding of the value perception of solutions offerings and the use of deductive reasoning to evaluate the data.

Similar to the critical realist approach the data generation would be based on different number scales or the ranking of statements. The sampling method would follow a convenience sampling approach addressing the most accessible members of the population. The final evaluation would be related to statistical methods similarly to those of a critical realist approach.

Even though pure positivism is a very straight forward way of conducting research it is a limited perspective research. It is important to fulfil a researcher's ambition to produce objective results but it should be distinguished between valuable results which represent a serious contribution to knowledge and results which hardly do more than confirming common sense. Both can be achieved by objective means but their academic value is different. This is one of the main issues when following the positivist route. Marketing has a strong social science component to it as it deals with transactions between human beings and those cannot and should not be reduced to law like statements.

From the researchers perspective positivism proclaims a universal truth which is not an adequate reflection of reality. It claims that social systems can be reduced to relationships between humans meaning that social systems can be studied on a basis of causal relationships. It also implies that given a constant environment the outcome of a social experiment will be predictable. Working in the B2B marketing domain and applying the same concepts to similar types of customers it became evident that the outcome is hardly foreseeable. By dealing with different cultures, both in a company and social context the researcher recognized that decisions are often influenced by them. So claiming that marketing science is basically transcultural does deny the observable reality. Therefore the researcher considers critical realism as a more sensible approach for his research addressing the underlying but not always recognizable issues which are vital to explain outcomes.

4.2 *Philosophical assumption of the research approach*

The focus of the research will be the willingness to pay for customized solutions in a B2B business context and how different groups of buyers value the same offering. The results should help solution providers to understand how to position their offerings and to uncover potential areas for cost savings.

There is a trend in business to move away from the general pricing models such as “cost plus” towards those models containing a strong value based component. Currently it can be assumed that the available pricing models do not adequately address solution offerings as companies fail to generate a profit for their solutions (Sharma, 2011). The research questions focus on different perception of value in B2B transactions and lead to a method assessing the willingness to pay of business purchasers.

The researcher has a background in natural science and did his first master degree in chemistry. He conducted his research based on close system experiments analysing outcomes by changing one variable in the system and keeping the others constant. This, to a certain degree, has shaped his ontological position and therefore strongly influenced his work. During his professional career the researcher recognized the limitation of traditional positivism and the strong linkage between marketing and social science. He considers objectivity and the desire to find the “truth out there” as one of the major driving forces for conducting research and he is aware of the strong contextual component to fully understand and appreciate the research results. Therefore the researcher considers his ontological position in the area of critical realism.

Critical realism argues that there is a mind independent reality which impacts the outcomes of an experiment. If the perception of value can be considered as simple mathematical equation subtracting perceived sacrifices from perceived benefits there should be no other systems or concepts having a significant impact on a purchasing decision. A stakeholder analysis during exploratory interviews might provide an indication on potential entities which can execute powers to affect final outcomes.

The ontological assumption will have a direct impact on the researchers stand on epistemology. It will determine how the researcher will analyse the available knowledge and how he will rank it concerning its validity. The researcher considers empirical derived knowledge as a valid source of information but only if the contextual setting has been clarified during the process. Being aware of the stratified construction of reality the purpose of the research is to uncover these entities which finally influence the willingness to pay. Depending on what knowledge on the subject will be available it might be

necessary to make assumption based on intuition to push the research forward. This is a rationalist approach which has to be supported by proper arguments.

With regard to the upcoming result and conclusion section a critical realist approach can be viewed as appropriate because the researcher considers values as being influenced by systems such as culture or profession. Following this approach might limit the empirical applicability of a final method but within the given context the result might achieve a better fit with reality.

Adapting a critical realist approach implies that a model or method might be challenged by positivist for its contextual limitations. Empirical applicability will not be claimed because this is uncommon in social science. Nevertheless the depth of the model should inspire further discussions and lead to new areas for academic research.

One of the gurus of critical realism is Karl Popper (1972). He postulated a three step approach to academic research. The starting point is the problem. To overcome these problems researchers try to apply solutions in the form of theories. They realize that often theories previously considered as truth do not apply and can therefore be eliminated. This critical review of common academic knowledge should drive our efforts towards the objective “truth”. Popper considered every challenge or criticism towards a theory as an attempt to falsify it. As long as the theory holds against the falsification attempts it should be considered as valid. Every attempt to save a theory from falsification is regarded as a dogmatic attitude which he considered to be out-dated.

Considering the implications for the methodological approach of this thesis the researcher should look at a mixture of qualitative and quantitative methods in order to collect the data which will finally determine a new pricing model. Personal interviews with purchasing decision makers and marketing managers will build the exploratory framework of the research. The results should help the researcher to define the scope in which causal relations can be determined and analysed. Before any quantitative research can take place the researcher should make sure that there is a common understanding on the terms used in the questionnaire. Does the concept of solution mean the same for everybody or are there different perceptions of value? The methodological approach should fit the research objective and not the other way round. There are different perception of meaning out there and any approach not trying to uncover them before starting to measure potential outcomes will result in a serious lack of accountability.

With respect to the generated data a certain amount will be based on number scales and the ranking of statements but in contrast to a strict positivist view the researcher will include data which will help to

understand the impact of the other concepts. These data could consist of e.g. questions on the impact of value based pricing and the limitation of the information exchange between buyer and seller.

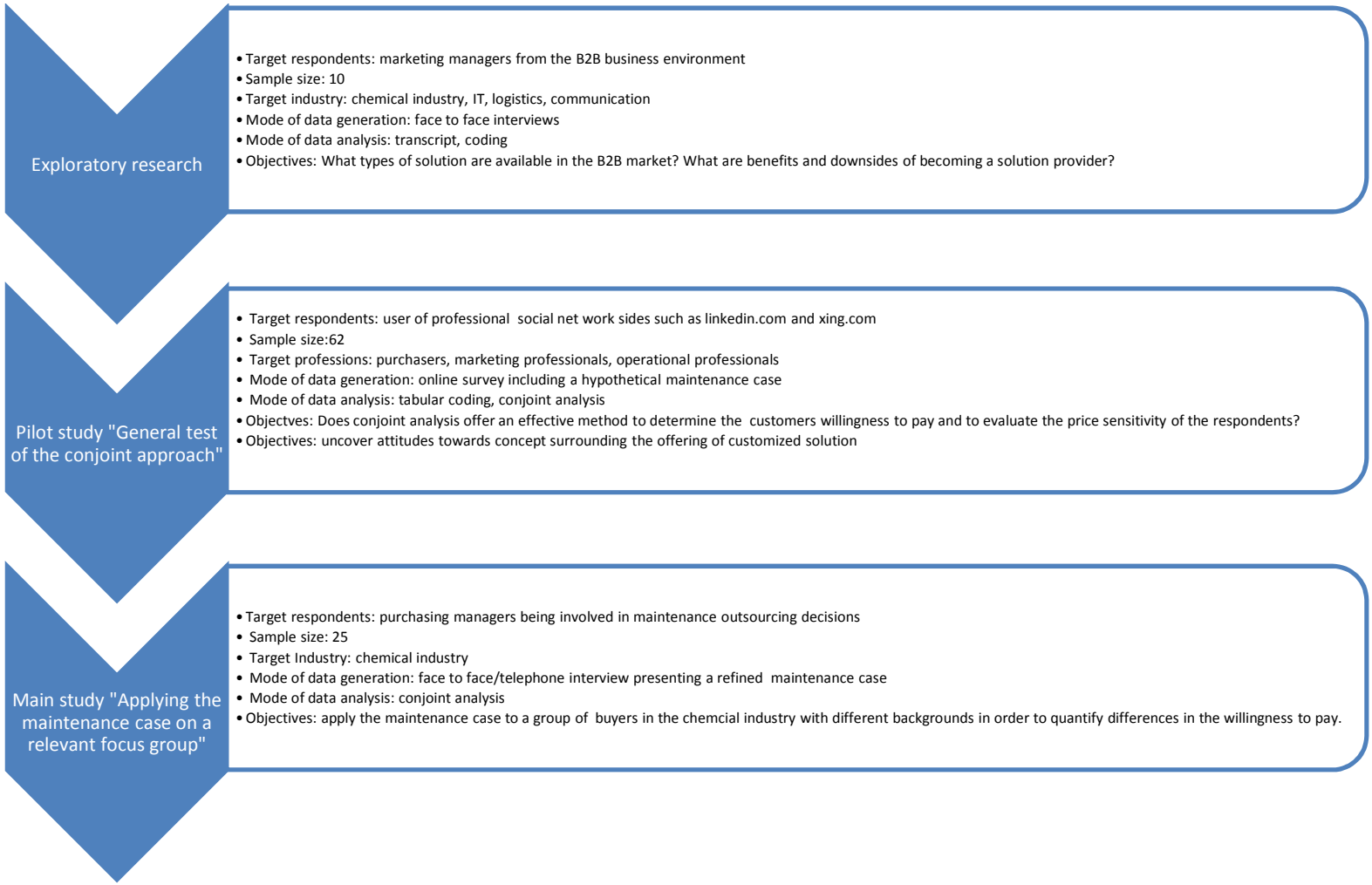
In the pilot study the researcher used a mixture of open ended questions on the attitude towards potentially interfering concepts and scaling questions ranking different benefits of an offering with respect to their perceived value. This questionnaire was send to a wide range of industrial purchasers and marketing experts by means of an online survey. The results of the questionnaire were then analysed by using statistical methods such as descriptive statistics and conjoint analysis. Finally the outcomes were evaluated under consideration of the involved concepts. The cause and effect relationship had to be analysed on basis of mechanisms working between the different concepts rather than on a level of constant conjunctions.

In the main part of the analysis the refined maintenance case was given to a group of 25 buyers with an either commercial or operational background. The profile of the respondent provided that he or she could be exposed to such kind of offering in real life. This limitation was not set during the pilot study. The respondents all came from the chemical industry and were either part of a company buying centre for indirect spend or working in the factory as engineer.

Finally the proposed pricing model for solution possibly contains variables which are dependent on these constructs and the mechanisms between them such as the professional background of the buyer and the underlying attitudes towards risk on the willingness to pay for customized solutions.

At the end the results do reflect a specific case in a specific setting and can only be related to a certain group of respondents. The findings are not generalizable but they offer interesting insights in how different buying groups do value the offering of a specific case.

4.3 *The roadmap of the methodology*



4.4 *Exploratory research*

4.4.1 Purpose and statements from exploratory primary research

In preparation of the main thesis 10 “face to face”- and phone-based interviews were conducted with professional buyers and sellers being exposed to solution offerings in a B2B environment. The main objective of the exploratory study was to overcome a lack of understanding on what types of solutions are offered in a B2B environment, what were the perceived benefits and risks of them and what components should be included in a pricing model for customized solutions.

The following questions were discussed during the interviews:

1. What kinds of solutions are really offered in a B 2 B market place?
2. What are the benefits and downsides of providing solution?
3. What could be potential components of a pricing model for solutions to develop a Pricing model for solutions?

The respondents had the following profile

Interviewee 1 (seller): German marketing professional in a multinational chemical company responsible for personal care chemicals for over 15 years. Born and raised in South America. He worked in the Middle East and Europe.

Interviewee 2(buyer): German Head of Procurement of a multinational chemicals company, chemist with MBA. He was working in US and Europe for a big consulting company.

Interviewee 3(seller): Chinese marketing professional working in different position and industries including logistics, stationary and interior design and also in different cultural settings such as Asia, Middle East and Europe.

Interviewee 4(seller): German CEO of a marketing and brand agency. He founded the company during his studies. They offer exhibition settings, support in brand and image building and marketing communication.

Interviewee 5(seller): German technical marketing for business innovation software and lean management solutions. Company is a small start up which tries to change themselves from being

a sole provider of innovation software to a broader provider of idea management solutions including open innovation community etc.
Interviewee 6(buyer): English born head of marketing communication in a big multinational chemical company. Having worked in the sectors of food, agriculture, environment and health chemicals
Interviewee 7(seller): English born chemist with MBA with 20 years of professional marketing experience and international assignments in the oil service area.
Interviewee 8 (buyer): German professional purchaser of supply chain solutions for a big multinational chemical company. 15 years of professional experience with a diploma in economics.
Interviewee 9 (seller): Lebanese born marketing and tender manager for a global logistic company. Responsible for business development
Interviewee 10 (buyer): Swiss born purchaser of facility solutions for a big multinational chemicals company. She is responsible for buying external service providers such as cleaning contractors, craftsmen and moving companies etc.

Being asked for different types of solutions in the B2B market the respondents mentioned offerings such as maintenance outsourcing, cleaning services in production facilities, supply chain solutions based on customer's specific requirements and marketing communication solutions such as exhibitions services including both layout and the design and printing of promotional material. Information technology solutions were also mentioned providing customized software packages. Not all cases showed the characteristic of a full scale solution based on Tuli's process but most of them included at least three of the four phases.

The second driver to conduct the exploratory investigation among managers from different industries was the need to clarify the benefits and downsides of a solution approach.
As benefits the interviewees clearly indicated that the presumed benefits were driven by the objective to achieve higher profits and a more sustainable business by "locking in" customers and capturing additional value. Furthermore new insights into customer processes would improve the understanding and the internal know-how. Solution providers would also like to differentiate and protect themselves from low cost competition coming from emerging markets. At the same time the customer benefits were defined as time savings and a single point of contact with clear roles and responsibilities.

Additionally the exploratory study revealed that customized solutions bear high risks to both providers and buyers which are related to its specific unique nature. Additionally time, cost and resources for the implementation were mentioned as constraining factors. One of the potential issues raised by the respondents was that the ever evolving technology change will set new standards making the technology used obsolete. Losing one customer could have a strong impact on the solution provider as due to customization there would be no alternative outlets for the solution. The quality of the solution seller staff had to be higher and would be usually more expensive to keep in the company.

The downsides of becoming a solution provider would come with a risk and potentially higher costs. Some of the respondents indicated that customers might be reluctant to openly exchange information with suppliers as they fear to lose know how.

According to the interviewees in B2B markets a precise evaluation of suppliers is considered to be an essential task of a professional buyer. Therefore understanding the purchaser's perspective on customized solution is an important piece of the puzzle to make a solution profitable.

Concerning the components of a pricing model the following list summarizes the main statements of the exploratory interviews. The findings mainly reflect the perspective of the seller which was also one of the limitations of the approach.

The following statements from the interviews indicate the basic understanding on the pricing model.

"Solutions pricing should contain a strong value based component always bearing in mind the potential alternatives."

"For solutions there should be a value based approach. Examples from the industry are: Allowing the use of cheaper machines due to the quality of the chemical or the use of chemicals to improve the yield in the customer process. The benefits have to be tied to the price."

"For solutions pricing should be taken from the customer perspective. The higher the benefit for the individual customer the higher the price should be."

"Besides a value based approach the pricing model should also depend on the sales channel."

"For solutions a pricing model could contain parts on innovation or on the future success of the solution based on savings or profit."

"*The greater the complexity of a solution the higher the price for it. It should be always taking into account the customer value. The pricing depends on competition and if the customer really wants a premium."*

"*The current problem for pricing solution and long term pricing models is the fluctuation in raw material prices. So increase and fall in raw materials should be reflected."*

"Flat rate pricing is preferred. But when cost for additional services exceed a certain line then costs should be covered. If material investment of supplier is high then advance payment is accepted."

4.4.2 Conclusion from exploratory research

The exploratory study confirmed that customized solutions are currently offered in a B2B environment. Without being aware of the theoretical model several of the described cases showed the characteristics of a customized solution. From the interviewee's perspective different underlying concepts seem to influence the value perception of a customized solution and might therefore have a direct impact on the willingness to pay.

Importance of different solution phases

It was mentioned by some interviewees that solution selling can be applied to industries such as software development, design, communication and market intelligence. The respondents from these industries described these offerings as a three to four phase process starting with the definition of the customer's requirement, followed by production/creation of the solution and the deployment to the customer. During the last step regular audits and follow up meetings with the customer helped in evaluating and improving the solution further. The final "post deployment"-phase was not included on a regular basis.

Most of the respondents were working in the chemical and logistic industry. These industries are mainly cost driven. It was mentioned by a marketing manager that any solution approach coming out of these industries could be unbundled by the customer's purchasing department. This would then lead to a standardized purchasing process which is based on different standardized criteria such as price and total cost of ownership. The magnitude of the criteria depended on the industry and on targets given to the purchasing department by the management.

The respondents further indicated that the closer the chemical industry could develop claims valuable to the end consumer market the easier it would be to create a valuable offering which come close to a

solution. Most of these offerings did not follow the process model defined by Tuli et al. (2007). The interviewees mentioned that the phases of “pre-solution consultancy” with the customer and the “post deployment evaluation” of the success were not offered on a regular base. It was assumed that this was mainly due to the protective attitude of customers not willing to share know-how with their suppliers.

These statements show two of the underlying issues which should be addressed by a conceptual model evaluating the impact on the willingness to pay. Firstly it seems to be obvious that not all 4 phases of the solution selling process are perceived as equally important and that some offerings which are considered to be customized solution do not necessarily include all phases. Secondly the willingness to share information in phase 1 of the process has been identified as a critical success factor for a successful solution implementation. The barrier to openly share information is therefore decisive and should be considered during the methodology design.

Trend towards outsourcing

Today’s challenging environment forces many companies to refocus on their core competences buying-in certain functions or utilize suppliers as resource integrators (MacDonald et al., 2011). This has been a common trend in the chemical industry in recent years which has led to the outsourcing of many production processes. As described off-record by the interviewees the benefit of outsourcing is mainly on the side of the customer as savings such as freeing production capacity, lowering capital investment and improving lead times does outweigh significantly the slightly lower margins for the toll manufacturing. This statement matched the findings of Ceci and Prencipe (2008) stating that the main benefit of buying solutions in the B2B environment lies in the outsourcing of business functions giving the buying company the opportunity to focus on their core competencies.

Looking beyond the scope of the exploratory study it could be argued that the success of solutions in B2B business transactions depends on the business focus and core competencies of the customer. Further it could be assumed that any industry or company might try to un-bundle an offering related to their own business focus.

It was mentioned by several respondents from a chemical company that services such as IT-solutions, facility cleaning solutions, exhibition designers and web page designers provide an excellent platform to offer customized solutions. These services were not considered as the core competency of the chemical company. On the other hand for areas such as raw material purchasing and supply chain management solutions would not be easy to establish as they addressed the core competencies of the company.

This leads to the conclusion that the attitude towards outsourcing is an important factor for the successful implementation of a solution and therefore the concept should be included into the further investigation into this topic.

Perception of "value-based"- pricing

Academic literature suggested that value based pricing is the most sensible method to price customized solutions (Sharma et al. (2011)). Issues which delay the widespread implementation within the industries were mentioned by Hinterhuber (2008). Additionally several interviewees mentioned during the exploratory study that any pricing model should include a value based component. This apparent discrepancy should be addressed in the further evaluation of the willingness to pay. The negative perception of the general pricing methods in contrast of being the only sensible method to price solutions contains a strong potential for conflict. Solution provider will have to address the reluctance to accept the method.

Perceived benefits and risks when offering customized solutions

When discussing the pros and cons of becoming a solution provider it seems to be obvious that this is a big step for any company to make, especially if the environmental factors such as strategy, management and the competitive landscape do not always support the implementation of a solution. Nevertheless the benefits postulated by the interviewees were considered to be higher margins and stronger bonding of the customer to the company. Following the argument of Vargo and Lusch (2004) that the entire solution approach does require a paradigm shift and an up-front investment into understanding the customer's requirement the transfer seems to be far from easy. Interviewing professional purchasers it became evident that solutions are not popular within standardized purchasing processes because they make offerings less comparable and cut off competition from the bidding process. Solutions seemed to have the reputation to be more expensive than "normal offerings". Therefore cost driven industries were reluctant to implement them.

Additionally any close relationship to a provider was considered to be dangerous as it potentially meant the loss of know how.

In general it seemed to be the case that certain industries did favour solutions whereas other industries had been standardized to such a degree that solutions became less likely. The results indicated that if value can be measured easily in monetary terms the benefit of a solution was lower and the tendency to unbundle the solution was higher.

One respondent gave the example of a solution from the textile industry. The company offered a colour

management solution for textile mills to standardize colour recipes based on desired colour shade outcomes. The concept failed as the offering limited competition. The ingredients for the recipes were produced by just one company and prices were set too high. Compared to other competitors the ingredients quality was not significantly different. So potential customers unbundled the offering and bought the ingredients from the cheapest supplier not making use of the service.

The comparison of pros and cons shows that becoming a solution provider is a difficult strategic decision. It requires an understanding about customer processes to communicate the benefits of a solution in a meaningful way. Companies with a broad portfolio might not be able to provide the deep knowledge in every segment.

The exploratory study tried to uncover the perceived risks and benefits when offering customized solutions. In the further thesis the buyer perspective should be taken into consideration as this was considered to be the real driver for a successful implementation of a solution. Recognizing the risk and benefits of becoming a solution provider provided some valuable insights into the mind set of buyers. This should now be developed further.

Variables to be included in a solution price

As already identified in the literature review right pricing is the key for the success of a solution. In B2B the pricing objectives of the company build the base for the applied pricing method (Avlonitis and Indounas (2006)). In line with Tulis "solution selling"- process the price has to comprise the whole process and should be set accordingly.

Based on the results of the interviews the price for a solution should be a function of the following variables

Price (solution) = f (value for customer (benefits, sacrifices), alternatives, competition, time frame, degree of integration, costs for provider)

Value should be considered as trade-off between benefits and sacrifices (Vinson et. al., 1977; Clawson and Vinson, 1978; Rust and Oliver, 1994; Zeithaml and Bitner, 1996). According to some of the interviewees value is not a fixed item but will change offer time. The perceived benefits might be

influenced by trends and changing company objectives. Traditional benefits to consider could be "reducing cost", "saving time" etc. Sacrifices are the "price to pay" or the amount of "time to invest" to get the offering up to the expected performance (Anderson and Narus, 1998). Furthermore as indicated by the respondents the price of the solution will always be a function of available alternatives which could be offerings performing in a similar fashion compared to the solution. The competition has an influence on the pricing of the solution. Even though solutions are supposed to be unique, competition will influence the pricing due to their alternatives and their pricing policy.

The above mentioned function can build the base to address the issue of a general pricing model for solutions. Any variable influencing the perceived value of the offering should be included in the methodology to achieve an accurate price for a solution. Testing the success of a solution is a long term project. It requires constant monitoring of the financial results and environmental factors influencing the value perception.

Summary

Looking back on the literature review current pricing policies in services show that different option for marketers do exist. As the each solution will require an adaptation of the pricing model the list provided by Avlonitis and Indounas (2006) provide an excellent guideline to consider certain combination to be applied to the specific solution.

There was no clear opinion on whether solutions were considered to be a successful approach to B2B marketing. The interviewees working within the chemical company were able to recall some cases in the industry but most of these cases did not meet the general definition of a solution. There was no indication that the concept of solution would be implemented in the near future.

On the other hand the business approach in the IT and marketing companies came close to Tuli`s definition. It indicated that certain industries have already embraced the concept and successfully implemented it.

During the exploratory study it became visible that there were differences in perception between buyers and sellers. These differences provide the base for the research questions addressing the willingness to pay and the price sensitivity based on the professional background of the respondents.

The variables which were identified in the exploratory study should now be ranked by the different sub groups. This should indicate how solution providers should address buyers and which methodology should be conducted to measure the willingness to pay and to maximize the profitability.

4.4.3 Limitations of the exploratory research and the applied methods

The exploratory study was conducted to disclose the opinions of buyers and sellers on the barriers to implement solutions, the benefits and risks associated with them and the variables which should be included in a solution price. This generated the base for the underlying concepts finally influencing the vale perception and the willingness to pay for solutions.

The study was limited to 10 professionals from different industrial backgrounds ranging from IT site maintenance, chemical marketing, purchasing and marketing communications. The data were generated during face to face interviews in the period of April to September 2010. 6 respondents were working for the chemical company Clariant in Muttenz, Switzerland. Their professional background ranged from purchasing to marketing experts. Clariant, as a medium size multinational company, consists of different functions which get into contact with solution providers or potentially offer solutions to the external market. The other four respondents worked in the logistics industry, for an external marketing communication company and for an IT provider for innovation software.

The interview partners were selected on a convenience base mostly recommended by the predecessor. This might have limited the universal applicability of the findings. The interviews lasted 35-45 min and were conducted in the respective offices of the respondents. Due to the nature of the method the data gathering was more unstructured than data generated in the online survey during the main study. Nevertheless the small sample of people provided rich valuable insights into the topic. The interviews were taped, coded and the findings were analysed in similar fashion to the qualitative research questions within the online survey.

During the interviews it became obvious that there was no common understanding on customized solutions. Depending on the industry there were different perceptions on the concept. Nobody was familiar with the theoretical process by Tuli et al. (2007). This could have limited the understanding of potential benefits and risk associated with becoming a solution provider. To get wider inside view a broader sample of respondents would have been preferable.

4.5 *Pilot study "General test of the conjoint approach"*

4.5.1 Methods for data collection

The objective of the pilot study is to test the usability of the case study and application of conjoint analysis as the method of choice to measure the willingness to pay for customized solutions. Additional information was collected in order to understand the perspective on certain topics which, according to the literature review can influence the value perception of a buyer.

Therefore a questionnaire was designed to collect data from industry professionals. The design of the questionnaire can be divided in three parts. The first part can be considered as the descriptive part raising data which can be statistically evaluated such as background information on the profession, attitudes scales towards risk and innovation and finally basic demographic data such as gender, age and the country of origin. The second part included open ended questions addressing different attitudes towards outsourcing, value based pricing, pros and cons of customized solutions and the willingness to share information with a supplier. The third section represents the core of the study. It provided a hypothetical case study requesting the respondents to rank solutions according to their perceived value. Respondent should consider themselves as professional buyer of a small chemical company.

To analyse the general suitability of the approach the survey was conducted online using discussion groups on professional social network sides as a distribution platform. The profile of the respondent was unspecific. The main focus was on professional purchasers and marketing professional from various industries but other respondent groups were allowed too.

The following chapter summarizes the applied methods for data generation and data analysis applied during the pilot study. The data generation was conducted by a self-administrated online survey which was distributed through social network sides and by means of direct mailing. The advantage of this quantitative research approach is that larger samples of individuals can be addressed at the same time. The upcoming section will first discuss the theoretical benefits of the applied methods against other available methods. Then in the following subsection the specifics of the applied methods used in this thesis will be outlined and explained.

Method 1: Data generation through an online survey

Web and e-mail based data collection methods are becoming increasingly popular because of low cost and high response rates (Craig & Douglas, 2001). In former times self-completed postal surveys suffered from poor response rates, slow response and the time consuming process of manual data transcription (Dillman, 1978). Since internet access became available to a wider target audience academic discipline such as marketing show a growing interest in applying online data collection techniques (Ilieva et al., 2002). Depending on the design, surveys can be conducted through e-mail or they can be posted on the web. Ileva et al. (2002) stated that a web based survey is appropriate for a wide target audience, where all visitors to certain websites have an equal chance to enter the survey. A main advantage of web based surveys is the better display of the questionnaire, whereas e-mail software still suffers from certain limitations in terms of design. The online distribution channel was chosen as it provided he fastest was to spread the questionnaire globally.

In terms of response rates Comley (2000) summarized the response rates of all virtual survey until 1999 and found that most of them were in the range of 15-29%. Dilman (1978, 1991) acknowledged that personalization yields in higher response rates. Ray et al. (2001) found that participants were promised the research results as an incentive for participation. Comley (2000) listed several factors affecting the response rates of virtual surveys including the design of the first page, the relationship with the website/brand and the interest and relevance of the survey.

Short response times have been identified as one of the greatest advantages of online surveys as they are send instantly to the potential respondent irrespectively of their geographical location. Ray et al. (2001) found that online surveys took under a month to complete. Ileva et al. (2002) stated that the response time of e-mail based surveys was significantly shorter (5.6 days) compared to mail surveys (12.2 days). Furthermore they found that due to the link between analytical software's such as excel or SPSS the responses can be automatically fed into these tools in order to generate an immediate analysis. This will decrease the time of the total survey.

Finally a short literature review on the data quality generated during an online surveys shows that web based surveys provide more complete information compared to postal based surveys (Mehta& Sivadas 1995, Bachman et al. 1996; Stanton 1998). Open ended questions for example for significantly longer and richer compared to a traditional postal survey. Ileva et al. (2002) stated that the advantages offered by an online survey are technology driven and the data quality will further improve with the introduction of more advanced software tools.

An alternative method to generate the data is the face to face interview which was considered at the beginning of the research. Due to the complexity of the case and the need for a broader sample the method of online survey quickly became the method of choice.
Wilson (2006) claimed that the main difference of an online survey compared to the face to face interview is the absence of an interviewer which generates advantages and disadvantages. The main advantage is that respondents are not influenced or biased by the researcher who might unintentionally influence the opinion of the respondent. On the other hand in absence of an interviewer the respondent will not be able to answer questions or clarify uncertainties. Therefore it is essential for any questionnaire to put together a set of questions generating straight forward answers. The issue of motivating the respondent to finalize the questionnaire could also be considered to be an advantage of including an interviewer into the process.
Nevertheless online surveys can partially overcome this by reminding people to finalize the survey before a dead line has been reached. Another option of today's online survey software is the option to interrupt the answering of the questionnaire and continue at a later stage.
Compared to face to face interviews the benefit of the online survey has to be balanced against lower general response rates. Wilson (2006) stated that typical response rates for a well-executed survey are around 40-50%. He further mentioned that it seemed to be not uncommon that other surveys which are less well executed achieve a response rate of 20% or even below.

To achieve higher response rates Wilson (2006) provided an excellent overview on tools which can be used to increase the response rate of the respondents.

The pre-notification of the respondents usually seems to result in higher response rates. For an online survey a pre-notification could be sent out by e-mail or posted on the social network site which then provides the platform for the exchange of information. A covering letter which can either be sent separately or as an introduction to the questionnaire should give the respondent an insight into the purpose of the survey, the reason why people should respond, an expected time frame for the completion as well as the assurance of confidentiality.

Comparing the advantages and disadvantages of any online survey the corresponding table could look as follows (Wilson 2006, Ileva et al. 2002):

Advantages	Disadvantages
National and international coverage	Low response rate
Low cost of distribution and analysis	Respondents are not part of the research population
No interviewer bias	Lack of control of questioning leading to empty answer boxes
Respondent convenience	Lack of control of respondents leading to responses filed by somebody different than the target subject
Broad appeal due to high penetration of high speed internet	Limitation of open ended questions to a small proportion
Fast delivery and fast analysis thanks to sophisticated analytical tools	Pre-reading the questionnaire could lead to biased responses
Easy personalization	Low willingness to respond to sensitive topics
Short response time	Depends on the available technology environment
Researcher control of the sample	Depends on the online education of the target group
Data can be directly loaded to a data analysis software	

Table 12: Advantages/Disadvantages of online surveys (Wilson 2006, Ileva et al. 2002)

The method applied to the research problem

To generate the basic data set required for the segmentation of the respondents the online questionnaire builder provided by Qualtrics.com was used. Qualtrics.com offered a wide range of possibilities and provided a set of templates for basic demographic questions such as age, gender, nationality and industry. The questionnaire can be found in the appendix section of the thesis.

The centrepiece of the questionnaire was a ranking question where the respondents had to indicate their preference towards different solutions of a maintenance provider. This data set was later used to determine the utilities of each phase of the solution selling process. The software allowed the user to rank different cards with a “drag and drop”- option indicating their preference.

To examine potential correlations between the solution ranking and the attitudes towards risk and innovation three pre-tested scales were included in the questionnaire. To measure these attitudes a five point's Likert scale was applied.

Additionally open ended questions on outsourcing, the value of customized solutions, value based pricing and the limits on information exchange to supplier were included. The objective of the open ended questions was to determine their potential influence on the respondent's willingness to pay. For example academic literature indicated that value based pricing is the preferred method for pricing solutions. At the same time literature showed that this method is hardly used in the industry due to its complexity and high risk potential.

Successful case studies for B2B solutions indicated that there is a certain degree of outsourcing involved in selling solution (case of BASF and HP in the appendix). Outsourcing is one of the biggest trends in business but today outsourcing is considered in a more differentiated way. Benefits and risk have been studied to a vast extent and therefore will not be part of the upcoming result section. The willingness to outsource business processes on the buyer's side might provide a good chance to solution providers to gain business in the B2B environment. At the time the success of solutions might therefore depend on the core competencies and the strategies of the potential buyers.

The survey was initiated on the 21 of October 2011. The objective was to gather more than 60 responses on the ranking exercises. The survey had to be prolonged to end the 23 of December 2011 to achieve 62 completed surveys. The target groups were marketing and purchasing managers using the professional social network sides.

The following internet platforms were used to connect with potential respondents fitting the rather unspecific profile. The respondent should be working in purchasing or marketing. They had to indicate the industry they were working in. In order focus the request was posted on different group sides with the following web domains:

www.linkedin.com including the sub groups:

1. Department of Marketing University of Strathclyde
2. BPO (business process outsourcing) executives
3. Buyers world (Europe, ASIA Pacific, North America, Middle East Africa)
4. Chemicals Sales Professionals

5. Procurement executives
6. Procurement professionals
7. SCM professionals
8. University of Strathclyde Alumni
9. The RFP database B2B forum

www.xing.com including the sub groups:

1. Alumni FH Aachen
2. Einkauf Beschaffung (Purchasing)
3. Global professional Purchasing experts
4. Procurement.ch Fachverband (Association) for supply chain management
5. Purchasing Procurement

Design of the questionnaire

The design of the questionnaire was crucial to the success of the survey. The research objective was the key driver for the design. It decided which questions were of high importance for the overall outcome. Additionally it determined which classification questions were needed to put the results into the right perspective.

The researcher has to put himself into the shoes of the respondent when designing the questionnaire (Wilson, 2006). He/she has to understand the limitations of certain research topics related to potentially sensitive issues such as finance and intellectual property. Therefore a professional approach to the questionnaire design was of uttermost importance.

There are some issues to remember when designing a questionnaire. Fumento (nd) provided an excellent summary. For self-administrated questionnaires he recommended a maximum of 12 pages. He further suggested a letterhead head of renowned background to add more prestige to the survey.

The wording was considered to be crucial. He suggested using the word “please” in all instructions to give the respondent the impression that the interviewer is directly talking to him. The first question or introduction text should capture the attention of the respondent to increase the likelihood of completion. A certain order such as starting with the least threatening to the most threatening was also considered as favourable.

It was suggested to not ask more personal information than necessary for the analysis. Information on salary etc. was considered to be sensitive. Furthermore all choices should be mutual exclusive and be

checked for ambiguity. Also no leading questions should be included. In the questionnaire there is a leading question on value based pricing. This was included as the literature review clearly indicated the negative perception against this method among B2B managers.
When thinking about the structure of the questions Fumento (nd) suggested not to intentionally shorten them but to always repeat the full phrase.
In general he suggested an official pre-test with some members of the target population. Any changes emerging from the pre-test should be included in the questionnaire and a second pre-test should then be initiated. In this thesis the pre case was conducted with respondents meeting the general nature of the sample. After some modifications in the design of the ranking question and the introduction text the survey was ready to start.
Fumento (nd) advised that open questions should be used sparsely in order to explore a topic in depth. Closed questions would be more difficult to construct but easier to analyse.
When deciding on the necessary response formats researchers have the choice between open-ended questions, closed questions and scaling questions. Open ended questions offer the respondent the opportunity to write their answer without any limitation given by the researcher. It provides the researcher with a large amount of information. The format has the potential to uncover the reasons behind attitudes and opinions. When trying to uncover the impact of attitudes towards certain topics on the willingness to pay open ended questions are a necessity. This format has its drawbacks which are mainly routed in their analysis and interpretation (Wilson, 2006). It involves editing and coding the responses putting them into predefined categories. Open ended questions pose particular problems in self-administrated surveys where no interviewer is around to provide help.
Close questions require a clear position from the respondent (Wilson, 2006). The multiple choice format provides the respondent with the opportunity to choose between different answers. The list of proposed answers should include the most likely responses plus additional “other” category.

The third format of questions used in the questionnaire was the so called scaling questions. Fumento (nd) suggested that rating scales should not include more than 5 verbal points. According to Wilson (2006) scaling referred to the assignment of numerical measures to subjective concepts such as attitudes or opinions. This allowed the researcher to compare different groups of respondents through statistical techniques. Different types of scales had to be evaluated before their incorporation in the questionnaire. Literature referred to one-dimensional versus multidimensional scales where the focus

could be either put on a single attribute such as risk or on multiple attributes surrounding one topic. For this part of the thesis pre-tested scales on risk, innovation and pro-activeness were used.
Most commonly used scaling approaches are the constant sum scale and the Likert scale. A constant sum scale question was used to let the respondent assign a fixed number of points to a set of pre-defined attributes. Referring to Wilson (2006) this comes with the benefit that the researcher could not only analyse the attributes according their importance but also gain an indication about the magnitude of the difference between different attributes. The disadvantage of this approach was that the number of attributes had to be limited as the respondent might find it difficult to allocate 100 points.
The Likert scale was used to give respondents the opportunity to express their level of agreement about a statement or concept. The total score was then used as a measure for the respondent's attitude. Like in this study a five point scale is frequently used by researchers ranging from "strongly agree" to "strongly disagree". As stated by Wilson (2006) designing a strong Likert scale involved a large pool of statements which should then be sifted to arrive at the final set of statements used in the questionnaire. Therefore as done for this pilot study it made sense to use a scale with a tested reliability. The validity of the scale should have been tested in several other studies before. With respect to attitudes scales on risk attitude, pro-activeness and innovation there has been a large set of tested scales available such as the one by Gomez et al. (1989).
The wording had to be adapted to the scope and background of the question. Questions on franchises such as in the original scale would have confused the respondent. The wording should be adjusted without alienating the original meaning of the tested scale.
The results of this are presented in Appendix 4.

Having discussed the benefits/risks using an online survey format and the issues surrounding the design of the questionnaire the questions stated should relate to the research questions.
In order to put the research question in context with the questions ask in the questionnaire the following chapter should explains the links.

1. ***Depending on their professional background (commercial or operation) how do the different levels of each phase of the solution offering influence the buyer's willingness to pay?***

Questions from the main study:

a) Solutions case *(Projective questions: Imagine you are a professional purchaser and rank the solutions, including a rank order scale question)*

Questions from the pilot study providing additional information:

a) What is your attitude towards value based pricing? *(Open-ended question)*

b) What is your philosophy toward business? *(Closed question: Multiple choice format)*

c) What would be your preferred solution in case it was not included in the solution case? *(Closed question in a rank order scale format)*

d) Please rank each phase of the solution process according to its importance? *(Closed question in a rank order scale format)*

2. How does an increasing price impact the value perception of different groups of buyers?

3. With respect to the maintenance case what could be cost saving opportunities in the solution selling process in order to make a customized solution more profitable?

Questions to address the main study:

a) Solutions case (*Projective questions: Imagine you are a professional purchaser and rank the solutions, including a rank order scale question)*

4. What are the components of a pricing setting model to improve the profitability of customized solutions in a B2B market?

Questions from the pilot and main study:

a) Please rank the following criteria according to their importance when accepting a price? (Close question using a constant sum scales format)

b) Solutions case (*Projective questions: Imagine you are a professional purchaser and rank the solutions, including a rank order scale question)*

c) What is your philosophy to business? *(Closed question: multiple choice)*

d) What is your attitude towards value based pricing? *(Open-ended question)*

Method 2: Projective questioning

The objective of this part of the questionnaire is to ask the respondents to put themselves into the position of a professional buyer in order to rank the solution according to their personal preference.

According to Wilson (2006) projective techniques were mainly used in group discussions and in-depth interviews to facilitate a deeper exploration of a respondent's attitude towards a concept or situation. The respondents had to project their feelings and personal attitudes into a particular task or situation. To evaluate their willingness to pay respondents had to put themselves into the shoes of a professional purchaser being offered a customized solution. The solution is divided into four phases according to the solution selling process proclaimed by Tulli et al. (2007). This projective question is part of the questionnaire and is the base of the upcoming analysis. Wilson (2006) mentioned that interpretation of projective questions is a difficult task but provides a useful framework to evaluate subjects in more depth.

The method applied to the research problem

The scope of this thesis is the value perception for solutions in a B2B environment with a focus on the customers' perspective and their willingness to pay. The result of his thesis should lead into a model of how to measure the willingness to pay in order to help solution providers to achieve profitable solutions.

The following case should help us to understand what components of a solution and the process of solution selling are important to customers. The purchasers has to make trade-offs between risk and security, cost reduction and revenue increase, continuous partnerships and one-off business relationships. These trade-offs are part of every purchasers decision making and should support the objective to get a generalizable methodology.

Therefore the case had to be relevant for a population which consist of commercial purchasers, marketing experts and operational managers. Solutions by definition have only a single target customer and therefore might not support generalizable findings suitable for a wider target audience. Nevertheless the conjoint analysis can help us to evaluate the willingness to pay for single respondents as well as for sub groups of the total population.

Similar to the argument of Ahlert and Bentrop (2008) we presented the same case to all respondents. The case started with the phrase: “Put yourself into the position of a professional purchaser”. This forced all respondents to see the case from the same perspective. Individual preferences could then be related to the same foundation. Through this method the researcher was able to measure the relative importance of each attribute in the solution process and the price sensitivity.

The case was called “Converting a basic maintenance offering into a sophisticated integrated solution”

Allocating certain portions of the offering to each of the 4 phases of the process postulated by Tuli et al. (2007) will convert the offering of the maintenance provider into a full scale solution with the objective of increasing the customers’ current and future revenues, its profitability and its cost position. The case study was set in the maintenance outsourcing industry.

Toossi et al. (2010) stated that with respect to maintenance outsourcing an increasing number of companies are outsourcing their non-core activities in order to reduce the risk of operation. The activities selected for outsourcing are those for which the risk of losing know-how into the supply chain is low. Additionally they claimed that this is mainly achieved by concentrating on a company’s core competencies and outsourcing all activities for which the company has neither a strategic need nor special capabilities.

Toossi et al. (2010) identified maintenance activities as a good candidate for outsourcing, specifically in the area where uptime, capacity and precision of equipment are critical. They also asserted that the provision product support or services could lead many products to achieve greater customer satisfaction and provide a competitive advantage in marketing. Auroma et al. (2004) found that there are three reasons for an enterprise to shift towards this rationale. Firstly a product base with a long life cycle can generate sustainable and more stable revenues. Secondly the focus on core competencies has generated a strong need for more services and thirdly services could be seen as source for a competitive advantage.

With respect to the reduction in business risk Markeset and Kumar (2004) reported that product support appears to be important for industries where the equipment is complex, where it fails frequently or has serious failure consequences providing high risk. Liyange and Kumar (2003) stated that historically maintenance has always been considered as a cost centre and a necessary evil but that there is an emerging view that it not only reduces business risk but should also be seen as a value adding process. They take on the risk of managing customers in-house activities; they develop new settings for

products and services to work together as an integrated system to increase the overall value of the solution to customers (Brady et al. (2004)).

These findings have an important implication on the selling of solutions. If outsourcing is one of the major drivers to bring solutions into the B2B market the mediating aspects of the relationship between outsourcer and provider have to be considered. When the outsourcing company loses all their capabilities in a certain function or process customized solution could potentially be a risky option for a company.

Details of the case

The respondent should put himself into the role of a purchaser for external service offerings in a small start-up chemical company. A continuous 300days/year and 24h/day run of your machines is crucial for the competitiveness of your products. You employ 1 full time employee (FTE) to run the machine.

The following information is important to understand the impact of a machine failure.

- Machine generates output of 6 million US$/year or 20000 US$/day
- One FTE costs you 60000 US$/year
- On average the machine breaks down 1.5 days per year. Average loss of 30000 US$/year

Therefore the company has the following expenses related to the machine

60000 US$ of labour costs

30000 US$ of downtime costs

90000 US$ of fixed costs

You have been asked to negotiate a deal with the maintenance department of your machine supplier. The warranty of the machines has already expired. The supplier offers you different service options for the maintenance in terms of a 4 phase process including two different service levels for each phase.

The attributes, associated levels and explanations to the latter are summarized in the following table.

Attributes	Levels	Explanation of levels
Phase 1: Definition of the machine status (current capabilities/performance)	Level 1: Outsource	External Experts conduct analysis (100%).
	Level 2: In-house	Customer conducts analysis (100%):

Phase 2: Customization of maintenance offering (value proposition)	Level 1: Safety option	• The solution provider (SP) pays for any machine downtime (any value between 0-60000US likely)
	Level 2: Risk option	• The solution provider tries to increase the output of the machine (any value between 0-60000 US$ likely)
Phase 3: Machine operation	Level 1: In-house	• Own FTE costs 60000 US$
	Level 2: Outsource	• Machine is operated by FTE of solution provider
Phase 4: Post implementation	Level 1: Value adding workshops	• SP offers workshops for customer's staff on the latest methods to reduce energy consumption and improve the quality of output.
	Level 2: No extra workshops	• The customer does not require additional service
Price	30000 US$	
	60000 US$	
	90000 US$	
	120000 US$	

Table 13: The case of "Converting a basic maintenance offering into a full scale solution"

Method 3: Conjoint analysis to analyse willingness to pay (a literature review)

As part of this thesis the researcher will estimate the willing to pay for a complex solution in the B2B environment taking into consideration a full scale solution selling process according to the four phases postulated by Tuli et al. in 2007. In order to get basic understandings on the theoretical background of conjoint analysis and their application area the next sections will try to recap some of the important literature on this analytical approach.

Basically academic literature distinguished four types of buying decisions (Katona 1951, Ahlert, Bentrop, 2008). They are

- Extensive decisions (ED)which are characterised by fact that the customer has no real concept to solve the problem and a high demand for information (Meffert, 1992)

- Limited decisions (LD) where the customer already has purchasing experience in the respective area and therefore can apply certain solution patterns.
- Habitual decisions (HD) are marked by routinely performed purchases where the customer does not need any further information. His preferences are obvious
- Impulsive decisions (ID) are driven by emotion where no criteria definition and searching for alternatives is conducted.

Ahlert and Bentrop (2008) stated in their paper that by comparing the four types of decision making it became obvious that the buying of a solution does meet the criteria of an extensive decision. Considering the B2B context of this thesis this statement should be challenged. Professional buyers do have vast experience in buying services and therefore at least compare existing offerings before deciding to purchase from a solution provider. Additionally the factor of habit and risk averseness brings in a certain portion of habitual into the decision process which should also be considered.

Therefore it could be argued that buying decision (BD) for a solution in a B2B environment are marked by a sum of the three types whereas the extensive decision should have the highest weight in the equation.

$$BD\ (solutions\ in\ B2B) = \mu \times ED + \rho \times HD + \omega \times LD$$

Based on the nature of a solution Ahlert and Bentrop (2008) claimed that the conjoint analysis was the right method to estimate the customer willingness to pay for complex solutions. Additionally they stated that due to high information requirement with regards to the attributes of the offering the adaptive conjoint analysis was the preferred one. Jacoby et al. (1977) stated that a limited number of attributes (between three to seven) are sufficient to explain the purchase with the same accuracy than evaluating the full spectrum.

Conjoint analysis is a multivariate quantitative technique designed to estimate the trade-offs people make when choosing a number of alternative product profiles which are described in terms of a combination of attributes (Green and Srinivasan (1978)). It enables the calculation of part worth or utilities for each attribute level used in the profile of the offering. The part worth indicates the relative importance of each attribute in terms of contribution to the overall evaluation of the offering. Conjoint

models are assumed to be additive which means that an individual's total utility for a multi-attribute offering is equal to the sum of its part worth for the individual attribute levels (Olson, 1977).

In general conjoint analysis has the objective to answer questions such as (SPSS Conjoint Handbook, 2006):

- What product/service attributes are important or unimportant to the customer?
- What levels of product attributes are the most or least desirable in the consumers mind?
- What is the market share of preference for leading competitors product versus our existing/proposed product

During the last 30 years different modification of conjoint methods have evolved trying to meet the ever increasing complexity of attributes and the desire to keep a conjoint based survey easy to handle and understand.

Looking back in conjoint history the rating based system was the first method to be introduced by Paul Green in the early 1970`s. It was based on the procedure to rank concept cards including the full scale profile of an offering consisting of multiple attributes. It was realized early on that respondents could not deal with a complexity higher than 6 attributes without using simplification techniques (Orme, 2001).

In case of adapting a full profile approach is converted in a factorial design which represents a suitable sub set of the full profile. It is also called orthogonal array. It is designed to capture the main effect for each attribute level. Interactions between levels of another attribute are assumed to be negligible. It also generates hold out cards, which are rated by the respondent but which are not included in the data to build the model. Instead they are used to validate the model (SPSS Handbook, 2006)

To overcome this issue Sawtooth Software released a new system called ACA (Adaptive conjoint analysis). With ACA, it was possible to study a dozen to two dozen attributes while still keeping the respondent engaged in the process. This was accomplished by having varying sections of the interview that adapted to the respondent previous answers. Only a couple of attributes were presented at one time not to overload the respondent but still achieving a full set of part worth utilities at the end.

The downside of this approach was that it requires computer administration due to its complexity. Secondly with respect to pricing studies it tended to understate the importance of price as variable. This understatement was increasing as the number of attributes increased in the study (Orme 2001).

In the early 1990`s the "Choice based Conjoint Analysis" became the favourite technique as it closely resembles the purchasing process for products in a competitive context. Instead of ranking product concepts, respondents were shown a set of products on the screen and asked to indicate which one they would purchase. CBC analysis provided an excellent way to get good results when the number of attributes was low. If interactions between attributes were of concern, CBC provided a valuable method to quantify them. First and foremost it represented a natural task that all respondents understand and it provides the option to select "none of the choices" option called limit card.

In literature there was some discussion on whether the results of the CBC and the CVA (conjoint value analysis) were fundamentally different. Oliphant et al. (1992) concluded that there was little difference between the successes of the two concepts in predicting holdout concepts. Huber et al. (1992) found differences. In their study the relative importance of attributes differed. Brand and price were more important in choice based than in rating based conjoint analysis. One explanation was that respondents may simplify their choice task by focussing on a few key attributes or by searching for important combinations.

The Sawtooth Software literature (2010) indicated that similar results can be expected from choice based and rating based conjoint analysis.

To overcome the repetitive nature and the often low relevance of traditional CVA and CBC questionnaires the adaptive choice based conjoint (ACBC) was developed trying to merge aspects from the CBC with the ACA approach. The ACBC first asks respondents about the ideal offering. Then the ACBC creates offerings close to the ideal offering of the respondent. The favourite offerings are taken forward to a choice tournament where the approach is similar to the traditional CBC. Sample size requirements are smaller compared to the standard CBC.

To decide on the right approach choosing a method that adequately reflected how buyers make decisions in the actual market place was essential. This did not only include the competitive context but also the way the products or services were described, displayed and considered.

Key decision areas are as follows (Orme, 2001)

Number of attributes: If once need to study many attributes (>8), ACA was considered a solid approach. More recently ACBC becomes the method of choice, especially when price becomes an additional attribute. Three or fewer attributes favour CBC.

Mode of interviewing: In case the respondents do not have a computer access and the survey has to be conducted in a face to face mode CBC should be considered. CVA is also an option in case the sample size is sufficiently small.

Sample Size: In case of dealing with smaller sample sizes (<100), CBC is only an options when the respondents are willing to answer more choice tasks. Older rating systems such as ACA or the CVA are able to stabilize estimates with a smaller sample size compared to CBC. In the case of having a paper based interview with small sample sizes the traditional CVA should be considered.

Interview time: If the interviewer has time constrains, CBC is a good alternative, but one has to compensate for the limited amount of information by increasing the sample size. With about 8-10 minutes available ACBC becomes a viable option.

Pricing Research: In the case of pricing being a focal point of the study CBC and ACBC are recommended.

In order to address the parameters and complexity of our case as well as the low sample size a traditional CVA was chosen which then required an adaptation of the full profile through the orthogonal design function in SPSS. Based on the findings in literature three to four attributes favour a choice based conjoint. As the willingness to pay is the main focus of the research the attribute price should have a broader spectrum of levels. Using four price levels but still following the objective to restrict the amount of cards to an acceptable amount of 6 to 10 limits the amount of levels which can be used for the other attributes. Even though additional levels for phase 1 and 3 were considered (e.g. obligations shared between buyer and seller) the orthogonal design function in SPSS limited the design to 2 levels for each attribute leading to a stronger black and white perspective on the choice itself.

Ranking vs. Rating – an alternative approach to data generation

In order to arrive at a pricing function this thesis uses the ranking of different solutions asking the respondent to indicate a clear preference in their value perception of the solutions. Only then a traditional conjoint analysis will lead to useful results. In a ground breaking study by Alwin and Krosnick (1985) the main pros and cons were summarized.

Rating has been considered as an alternative method to indicate preference. It has some advantages in terms of ease of understanding and offers the possibility to attribute the same value to different options. On the other hand this often leads to narrow distributions and less differentiation between the items.

Ranking on the other hand forces the respondent to make a decision which at least reflects a real life business decision. A ranking of options is often used even though they might look like being the same at first sight. The major downside is that with every additional option the complexity of the ranking exercise increases leading to a limit of what respondents can normally manage. Having 8 different solutions on hand increases the amount of comparisons a respondent has to make to up to 30 whereas rating just requires 8 comparisons. Beside these obvious downsides Alwin and Krosnick (1985) mentioned that ranking puts a stronger emphasis on items mentioned first leading to a higher ranking in the final list.

In this thesis the ranking method was preferred as this offers the opportunity to generate real price functions based on the preference of the respondent. The maximum amount of cards was considered to be eight. This limited the amount of different levels which could be allocated to each attribute. As the price function should be generated across a broad price interval four prices were considered to be necessary. This led to a limitation for the others phases reducing the amount of levels to two per phase. In order to support the understanding of the respondent a set of cards including one solution per card was created.

The Impact of the different attributes on the perceived importance of an offering

When defining the value range for each attribute it is important to understand that this has a significant impact on the perceived value of an offering. Creyer and Ross (1998) stated that a wide range for the attribute price including a very high and a very low price will have a high relative impact on the perceived preference of an offering. Hair et al. (1995: 569) stated that the analyst must apply the criteria of feasibility and practical relevance to all attribute levels to ensure that stimuli are not created that will be favourably viewed by the respondent but never have a realistic chance of occurring. Bachhaus et al. (2011) suggested that the researcher has to exercise caution when deciding on the stimuli as they have to be relevant for the buying decision. It is of the uttermost importance that the stimuli can be considered independently from each other. Stimuli combinations such as brand in price often lead to correlation which should be avoided. Furthermore no level should represent a disqualifier. For example

if a respondent would totally reject the option to outsource certain parts of the process then the compensating nature of the other levels will not exist.

With respect to the attributes chosen for this conjoint the objective should be that the attributes are not or only weakly interdependent and be presented in a realistic value range. It can be assumed that the different phases of the process have a low interdependency. In phase 1 and 3 the respondents have to conduct a trade off decision deciding whether they would like keep the control of the phase in-house or put it in the hand of the supplier. Phase 2 asks for a decision between a risk insurance and revenue improvement. Phase 4 is a "yes or no"- decision on providing technical service after the solution has been implemented. It could be argued that any service the supplier provides will lead to an increase in perceived value and therefore to an increase in price. On the other hand losing control of the process can also be perceived negatively by the customer and therefore the perceived value of such an offering could go down. The only direct correlation with the attribute price could be assumed for phase 4. Offering an after sales service can be considered as an additional offering which could be positively correlated to price.

Another objective of the pilot study was to determine the value range for the attribute price. As the first step the range was wider including a very low value (30000 US$) and a very high value (120000 US$). Based on the findings of Creyer et al. (1998) that both the relative and subjective importance of an attribute increase when the range of values becomes greater the range of price values should be adjusted in case the importance of the attribute price is too significant. The price tag of 30000US$ is significantly below the cost for a machine operator and in combination with the value proposition this price might be unrealistic. Nevertheless a price below the current costs of the operator should still be considered as bottom line as savings on FTE costs are always a reason to consider the outsourcing of activities.

Therefore reducing the price range from 90000 US$ (30TUS$ to 120 TUS$) in the pilot study to 60000 US$ (50TUS$ to 110 TUS$) in the main study is a measure to reduce the perceived importance of the attribute price in relation to the other attributes.

The method applied to the research problem

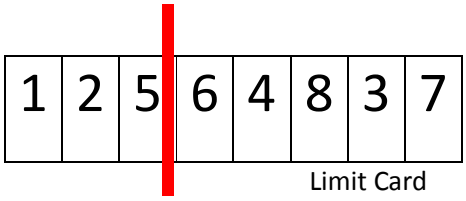
The complexity of the case and the incorporation of the profile into the online survey required the adaptation of the full profile design to generate a useful subset of a maximum of eight cards. The orthogonal design function within SPSS reduced the original 2x2x2x2x4 (64 cases in the full profile)

matrix to 8 cases displayed in the following table. The decision to go for eight cases was based on the impression given during a trial conjoint with different respondents with the objective to optimize layout, wording and the understanding of the case.

Card No.	Phase 1	Phase 2	Phase 3	Phase 4	Price
1	In-house	Risk option	In-house	No Workshops	30000
2	Outsource	Safety option	Outsource	Workshops	30000
3	Outsource	Safety option	In-house	No Workshops	120000
4	In-house	Safety option	Outsource	No Workshops	90000
5	In-house	Safety option	In-house	Workshops	60000
6	Outsource	Risk option	Outsource	No Workshops	60000
7	In-house	Risk option	Outsource	Workshops	120000
8	Outsource	Risk option	In-house	Workshops	90000

Table 14: The cases from the orthogonal design

Each respondent had to rank the set of card according to their personal preference giving the scope of the case. In the end the respondent had to position a limit card behind the last card he or she would be willing to buy for the given price. A typical result of such a ranking would look like this:



4.5.2 Methods for data analysis

The method for the data analysis depended on the type of question in the questionnaire. The descriptive part of the questionnaire raised demographical data as well as data on risk attitudes. The qualitative part focused on opinions about different issues surrounding the selling of customized solutions such as perceived benefits and risks, problems around value based selling, barriers between customers and suppliers etc. The conjoint section confronted the respondent with a hypothetical case study about a solution offering in the machine maintenance industry.

By using the "Qualtrics"-software the answers were filtered by the profession of the respondent. This led to the results for the two relevant sub groups namely purchasing, marketing as well as for the total sample and a single respondent. Applying these filters enabled the researcher to get the answers of each segment at a glance. Additional background information was raised concerning gender, age and country of origin but for complexity reasons these parameter were not further evaluated.

4.5.2.1 Data analysis: Descriptive findings

Descriptive statistics usually helps to describe the characteristics of a population by using a few numbers such as mean, measurers for the variability of the data set such as standard deviation and measures for significance testing such as Z or t-test. These measures were also used to analyse the data generated from the questionnaire.

Definition for mean:

"*The arithmetic average which is calculated by summing up all values and dividing it by the number of cases" (Wilson, 2006)*

Definition for standard deviation:

"A value to display the average distance that the values in the data set are away from the mean" (Wilson, 2006)

The formula is commonly known and can be stated as follows:

$$s = \sqrt{\frac{\sum_{i=1}^{n}(x-\mu)^{2}}{n-1}}$$

Definition for the t-test:

"The t-test helps the researcher to determine whether based on the sample size the means between to samples are significantly different." (Wilson, 2006)

Usually a measure of 95% confidence is considered to be sufficient. Comparing the applicability of the Z-test with the t-test, Wilson (2006) stated that the use of the t-test is appropriate when the mean and the variance of the population were unknown and the sample size is less than 30. This led to the decision to use the t-test as measure for the statistical significance of the samples.

The formula which was used in the respects is the following

$$t = \frac{(Mean\ from\ sample\ 1) - (Mean\ from\ sample\ 2)}{\sqrt{[(Standard\ error\ for\ sample\ 1)\quad^2 + (standarderror\ for\ sample\ 2)\quad^2]}}$$

Analysis method applied in the thesis

Descriptive statistics was used to evaluate the attitude scales as well as the ranking questions to analyze the prioritization of decision criteria and the phases of the solution process.

To analyse the attitude towards risk, pro-activeness and innovation a five point Likert scale was used ranging from strongly agree to strongly disagree. The software supported the analysis by determining the mean and the standard deviation for each sub group. In this case the groups of marketing and purchasing created significant bigger subsets compared to smaller subsets which were combined to the group "others". It included different types of respondents coming from technical support or an operational and commercial background.

As the small sample size was small the statistical significance was low. Only large gaps (> 0.4) in mean between the sub groups were taken into consideration for a t test evaluation. The data were analysed but due to the low statistical significance they were not included into the methodology development.

To understand the weighting of the criteria taken into consideration when accepting a price the respondents were ask to weigh a pre-determined set of criteria according their importance. The criteria were originally determined in the exploratory research phase conducted prior to this pre-thesis. The

respondent then had to weight the criteria by distributing 100 points between these criteria. Again the respondents were filtered by segment and the mean weight including the standard deviation was determined. The ranking should then indicate the importance of each criterion for the decision process when accepting a price.

Additionally descriptive statistics can be applied to the importance ranking of the solution selling process phases. The ranking of the means indicate the preference for each analysed sub group and should help us understand which are the truly important phases.

4.5.2.2 Data analysis: Qualitative findings

Qualitative data are commonly analysed by applying content analysis. This analysis method consist of two components namely the data organization and data interpretation. Considering the organization of data a tabular method of analysis is often the method of choice. It enables the researcher to relate the information to different sub group of respondents. Wilson (2006) stated that it has the disadvantage of being inflexible and that information not fitting in the framework is often ignored. In order to quantify the statements coming from open-ended questions literature often suggests using coding methods. Coding allows the researcher to transfer the often unstructured information into quantifiable data. According to Wilson (2006) the post coding of open ended questions includes the development of a list of the actual responses which are then categorized under a common headline even though their original wording is different. The method was applied during the analysis of the open-ended questions.

Interpretation of qualitative data is a skill which requires experience (Wilson, 2006). It is important to understand how the generated data contribute to the research questions. The following section describes how the qualitative data from the online survey were analysed.

Analysis method applied in the thesis

To analyse the content of the open ended questions content analysis was used. The Qualtrics software tool enables the researcher to filter the questions according to different parameters such as “Working Department”, “Age” or “Working experience”. This simplified the organization and analysis of the data set. A tabular method provided a helpful method to organize the data. It enabled the researcher to structure data according to the most important respondent groups such as marketing and purchasing. The software also enabled the researcher to quickly determine and analyse outliners willing to pay significantly more. This would help to identify and specify the environment necessary to increase the willingness to pay for a solution.

To analyse the content a free coding method was used. For this method key words within the set of answers were identified. If these words or a corresponding meaning appeared frequently in the transcript they were marked and included in the cluster. It was helpful to define a clear set of codes before applying it. This reduced the variability in the interpretation.
Cluster headlines were phrases such as “High Costs”, “Vendor dependency” etc. To display the clusters Word 2010 offers a set of graphical tools. Within a circle the cluster headlines can be shown. Attached to the circle the different statements given by the respondents and addressing the cluster headline are summarized.

4.5.2.3 Data Analysis: Conjoint findings

Before conducting the conjoint analysis it was necessary to define whether the analysis should be done for a single respondent or for a group of respondents which would either be the whole population or a relevant subset. Based on the ranking of the solution cases and the position of the limit card the researcher assigned relative values to the cards. Every card below the limit card got assigned a negative value and every card above got assigned a positive value. The relative difference between each card was considered to be the same. This dummy coding related to an arbitrary origin is called “effects coding”.

To determine the utilities for each attribute level it was necessary to define the meaning of utility. According to the Sawtooth manual from 2010 utility is defined as:

“Conjoint utilities or part worth are scaled to an arbitrary additive constant within each attribute and they are interval data. The arbitrary origin of the scaling within each attribute results from dummy coding in the design matrix. Using a dummy coding is called effects coding. Utilities are scaled to sum to zero within each attribute.”

Once the dummy coding based on the ranking was finalized, the researcher puts together a matrix based on the ranking of the respondents. Then each attribute level of the solution was assigned the dummy value previously assigned to the entire solution. Within the matrix of the eight cards each level got 4 dummy values assigned to it as each level was included 4 times in the ranking.

To determine the average utility, the total sum of the 4 values was divided by 4 and adjusted by the constant μ to arrive at the utility of the attribute level. The sum for each attribute should have resulted to 0.

Having determined the utility within each attribute the next step was to determine the relative importance of each attribute. To assess the relative importance of each attribute, the researcher had to consider how much difference each attribute could make in the total utility of the product. The difference was the range in the attribute utility values. The percentages from the relative ranges were calculated obtaining a set of attribute importance values adding up to a 100 per cent. (Sawtooth, 2010)

Analysis method applied in the pilot and main study

The objective of the pilot study was to investigate different preferences between the sub groups and therefore this approach could be considered as valid. As ranking data are ordinal data the 25, 50 and 75% quartiles were chosen to evaluate the distribution of the ranking within the different sub groups of respondents. In order to determine the quartiles the ranks of each solution card were written in an ascending order. Then the value at the position representing 25% of the whole line was taken as 25% quartile. The same was done for the 50% (median) and the 75% quartile. The ranking was then determined by the following order.

1. Smallest median
2. Smallest 25% quartile
3. Smallest 75% quartile

The highest utility for each level gave an indication about the composition of the most preferred solution for each sup group. The result indicated whether the sub group prefers to keep a phase of the process in-house or outsource it to the solution provider. In phase two of the “solution-selling”-process the trade-off between a “safety option” where the solution provider guaranteed a compensation for any machine downtime and a “revenue increase” option where modifications on the machine lead to a higher output had to be made. The rankings on phase four indicated whether the respondents of the sub segment valued post deployment service offerings such as a workshop. In this case workshops were considered as service as this is a common practice of companies trying to bond customers beyond the implementation phase.

4.5.3 Limitations of the pilot study

There were different areas which limited the generalizability of the findings. The data collection was first conducted on a face to face interview base. But it emerged quickly that the target of > 60 valid responses would only be achieved by broadening the approach and spreading the questionnaire on line via different business networks such as LinkedIn.com or Xing.com. The general advantage of this method

was that the questionnaire was distributed simultaneously to business professionals worldwide. Even though the access was limited to platforms where B2B buyers communicated non target respondents were also allowed to answer the questionnaire. Overall 130 people started the survey but only 40% completed it. The missing questionnaires were collected in a face to face interview which took about 30 minutes each. The major reasons for the low completion rate could be found in the complexity of the questionnaire. The duration for completion ranged from 25 minutes to 2 hours. The low response rate and the corresponding lack of data led to the following downsides.

Firstly the small sample sizes for the different segments were not sufficient to evaluate the findings statically. The t-test values for significance were generally below the target 1.96 which equals a 95% confidence interval. The findings will therefore only be considered as tendencies leaving room for the final study which should cover a relevant focus group dealing with maintenance outsourcing and providing a high likelihood of being exposed to such a specific buying decision in real life.

In the pilot study from the 62 respondents who completed the conjoint case and delivered data for the conjoint analysis only 25% considered themselves as professional purchasers, another 25% were marketing professionals and remaining 50% came from other areas such as manufacturing, sales or from back office functions. It was therefore not possible to segment the findings by different industries, functions or culture. There were other impacts which should be evaluated in a future study.

The ranking question was created via the Qualtrics toolbox and proved to be difficult to understand by the respondents. The drag and drop method was only understood after some practice. The maintenance case was complex and the cards including all 4 phases of the solution selling process and a corresponding price were not easy to understand in a couple of minutes. This might have let many respondents to quit the questionnaire due to the high time investment.

Secondly the specifics of the case study likely had different meanings to the respondents. Maintenance operations on machines might not have been an area where every respondent felt comfortable. This could lead to a different level of understanding and therefore to a different perception of value. The major obstacle of this thesis was to find a common case for the B2B market leading to generalizable results. Maintenance offerings were often associated with solution offerings in the pre study and where therefore chosen to represent the base for the thesis.

Using a target group specific case as base for the conjoint analysis was vital to measure the willingness to pay. Due to the complexity of the case a lot of explanation was necessary leading to the

discontinuation of the survey. This should have been considered when deciding on the design of the experiment. On the other hand too many levels and attributes could have led to an increased number of cases even after applying the orthogonal design function in SPSS.

It should be clear that the professional background as well as the nature of the industry influence the value perception of the respondents (Bolton and Drew, 1991). A long term survey comparing different industries will make sense and should open up a new area of research. Only industry specific studies will enable the solution seller to understand the needs of the industry buyer and the chances for a successful implementation.

Thirdly in order to reduce the complexity of the conjoint it was necessary to set up a design with the maximum of 9 cases (8 solutions, 1 limit card). To achieve this and still include the 4 phases from Tuli' s solution selling process plus a price attribute with 4 levels into the conjoint the design had to be limited to a 2X2X2X2X4. This still would have resulted in 64 cases for the full profile. SPSS 18 was then able to create a limited design of 8 cards which according to the pre-testing can still be considered as manageable. The two "hold-out"-cards were not considered due to the complexity this would generate. 8 cards were considered the maximum the respondent could handle in a traditional conjoint ranking. The researcher therefore had to choose very polar levels for one attribute meaning an all or nothing approach. The respondents mainly had the choice between a 100% in-house or a 100% outsource option. It was mentioned by some respondents that a third option representing a team approach of solution provider and buyer would be a preferred option.

Fourthly the price levels were set in relationship to the risk and expenses of the buyer. Other closer set price levels might have led to a more diverse picture. The 30000 US$ price level was considered the most attractive price but other individuals preferred higher prices in case of the value proposition was more attractive. The price levels were therefore adjusted in the main study.

The conjoint method can be used to determine price intervals for a specific offering depending on the needs and value perception of the target customer. The final price for the solution offering might still depend on the negotiation skills of both buyer and seller and on the importance of the attribute price for the buyer.

The questionnaire showed some weaknesses which were communicated by the respondents. In Question 7 an additional point in the "multiple choice"- selection could have been related to other

business philosophies. The phrasing of question 18 was loaded as it suggests that value based pricing is hardly used in the industry.

4.6 *Main study "Applying the maintenance case to a relevant focus group"*

The results of the pilot study indicate the general approach of the data collection and data analysis can be applied to determine the willingness to pay for customized solution. During the online survey it became clear that the profile of the respondents was too broad in order to ensure that they will be exposed to a buying decision related to a maintenance case in a factory. Therefore a new face to face interview session was conducted with 25 respondents from three companies in the chemical industry. As the case study is dealing with a service offering in the operation and maintenance industry the respondents should be either working in the purchasing department deciding on buying external services or having a background in operations where they are directly exposed to such service offerings. Three companies were addressed via their purchasing and engineering departments.

Based on the learning from the pilot study certain parts of the survey were modified. The price range was reduced and the order of the stimuli was changed as literature suggested that in the classical conjoint the order of the stimuli presentation has a direct impact on the preference decision (Alwin and Krosnick (1985)). They stated that respondent's assign a higher importance on cards which they evaluate first. In the pilot study the lowest price offerings were mentioned first. As the attribute price is likely to have received a higher attention due to its "four levels"- set up (Creyer et al., 1998) a cumulated negative impact should be avoided. Additionally the final presentation of the case followed the guidance presented by Bachhaus et al. (2011, p 497 ff.) namely

1. Keeping the number of attributes and attribute levels small.
2. Attributes have to be independent from each other and the levels have to be relevant for the buying decision.
3. Applying the orthogonal design if the full profile exceeds 20 cases
4. A concrete case study has to be the base of the experiment
5. The part worth has to be based on an additive value model
6. A total conjoint analysis is preferred to the sum of individual analysis

In order to define the right respondents the researcher focussed on two areas in the respective organisations which were commercial purchasing and operations. The objective of the validation is if the developed methods can determine differences in the willingness to pay of the two groups.

The profile of the 25 respondents is displayed in the following table. With respect to the companies studied is can be said that Clariant is a global leader in the production of special chemicals with a global set up of production sites. Each site has different technical engineers which conduct maintenance services in the plants. At the same time Clariant has a group function which is dedicated to the purchasing of external service offerings including maintenance services. These two groups were exposed to the questionnaire. In order to brief all parties on how to deal with the case study a short presentation was conducted in front of all plant engineers on the Gendorf site. The other plant engineers located in regions outside Europe were briefed through a telecom. The same procedure was done in Frankfurt where most of the commercial procurement people are located.

Respondent	Industry	Profession	Company	Location	Nationality
1	Chemical Industry	Purchasing of external services	Clariant	Frankfurt	German
2	Chemical Industry	Technical Procurement	Clariant	Munich	German
3	Chemical Industry	Corporate procurement services	Clariant	Suzano/Brazil	Brazilian
4	Chemical Industry	Commercial sourcing manager	Clariant	USA	American
5	Chemical Industry	Purchasing of external services (indirect spend)	Clariant	France	French
6	Chemical Industry	Purchasing of external services	Clariant	China	Chinese
7	Chemical Industry	Purchasing of external services	Clariant	Frankfurt	German
8	Chemical Industry	Purchasing of external services	Clariant	Frankfurt	German
9	Chemical Industry	Sourcing of external services	Clariant	Frankfurt	German
10	Chemical Industry	Purchaser of external services	KOLB	Hedingen	Swiss
11	Chemical	Purchaser of external	KOLB	Hedingen	Swiss

	Industry	services			
12	Chemical Industry	Operations/Maintenance Engineer Amin plant	Global Amines	Gendorf	German
13	Chemical Industry	Operations/Maintenance Engineer Amin plant	Global Amines	Gendorf	German
14	Chemical Industry	Operations/Maintenance Engineer Amin plant	Global Amines	Gendorf	German
15	Chemical Industry	Operations/Maintenance	Clariant	Gendorf	German
16	Chemical Industry	Operations/Maintenance	Clariant	China	German
17	Chemical Industry	Operations/Maintenance	Clariant	Brazil	Brazilian
18	Chemical Industry	Operations/Maintenance	Clariant	USA	American
19	Chemical Industry	Operations/Maintenance Ethoxylation plant	Clariant	Gendorf	German
20	Chemical Industry	Operations/Maintenance Ethoxylation plant	Clariant	Gendorf	German
21	Chemical Industry	Operations/Maintenance Ethoxylation plant	Clariant	Gendorf	German
22	Chemical Industry	Operations/Maintenance Glycolether plant	Clariant	Gendorf	German
23	Chemical Industry	Operations/Maintenance Glycolether plant	Clariant	Gendorf	German
24	Chemical Industry	Operations/Maintenance Multipurpose plant	Clariant	Gendorf	German
25	Chemical Industry	Operations/Maintenance Multipurpose plant	Clariant	Gendorf	German

Table 15: Profile of the respondents to main study

Based on the results of the pilot study both the design and the order of the cards were changed. In order to reflect the trade-off decision between in-house handling and outsourcing of the process phases the

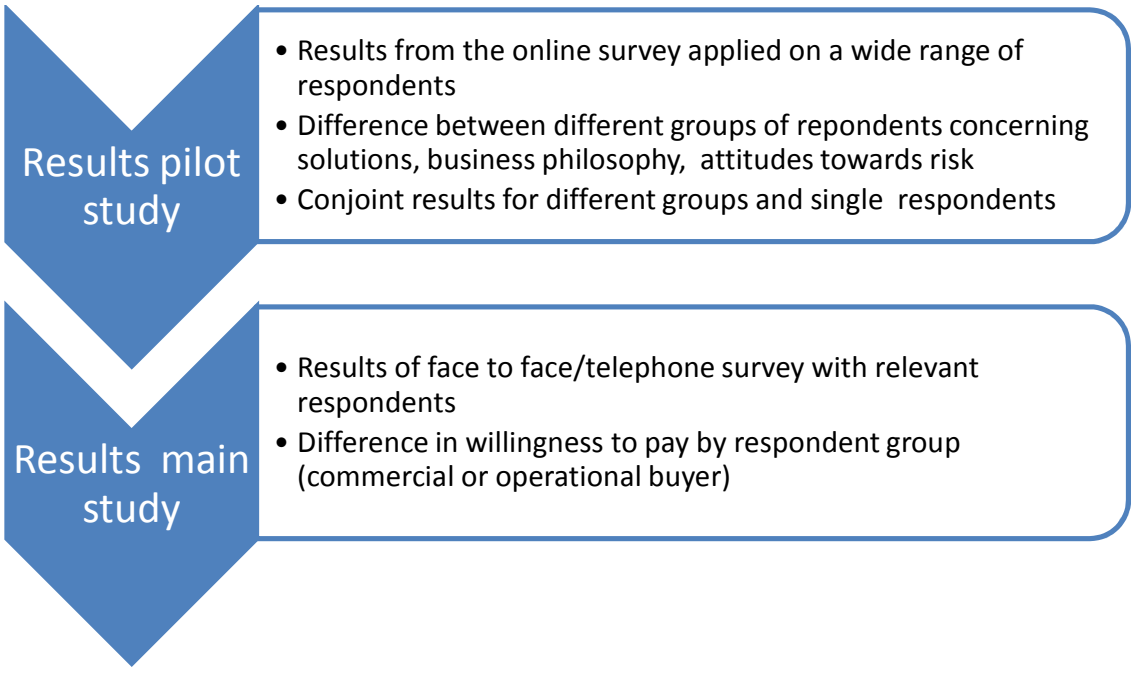
wording was simplified explicitly mentioning that the supplier does not provide any offering if the phase was conducted in-house. Additionally, as mentioned before, the price range was adjusted to make the offerings appear more realistically based on the surrounding variables. The set of cards presented to the 25 respondents was as follows:

Card No.	Phase 1	Phase 2	Phase 3	Phase 4	Price
1	No service by supplier	Supplier pays for revenue loses	No service by supplier	Supplier offers training and consultancy	70000
2	Supplier evaluates the machine	Supplier tries to increase the output	No service by supplier	Supplier offers training and consultancy	90000
3	Supplier evaluates the machine	Supplier pays for revenue loses	No service by supplier	No service by supplier	110000
4	No service by supplier	Supplier pays for revenue loses	Supplier operates machine	No service by supplier	90000
5	No service by supplier	Supplier tries to increase the output	No service by supplier	No service by supplier	50000
6	Supplier evaluates the machine	Supplier tries to increase the output	Supplier operates machine	No service by supplier	70000
7	No service by supplier	Supplier tries to increase the output	Supplier operates machine	Supplier offers training and consultancy	110000

8	Supplier evaluates the machine	Supplier pays for revenue loses	Supplier operates machine	Supplier offers training and consultancy	50000
9	**No purchasing below that point**				

4.6.1 Structure of the upcoming result section

Based on the applied methodology the results section can be divided into two areas mentioned in the following table.



Result Section

5 Results pilot study: “General test of the conjoint approach”

The survey was conducted online using the questionnaire builder on www.strathbusiness.qualtrics.com. The objective of the survey was to determine if conjoint analysis could be applied to determine the willingness to pay for customized solutions in a B2B environment. Additionally the pilot study included a wide array of questions addressing the impact of the professional background of the respondent on the price sensitivity, the related attitudes towards risk, their philosophy towards business and the perception on issues such as outsourcing and value based pricing. This information should be analysed in order to provide guidelines to solution sellers on the concepts influencing the value perception of an offering.

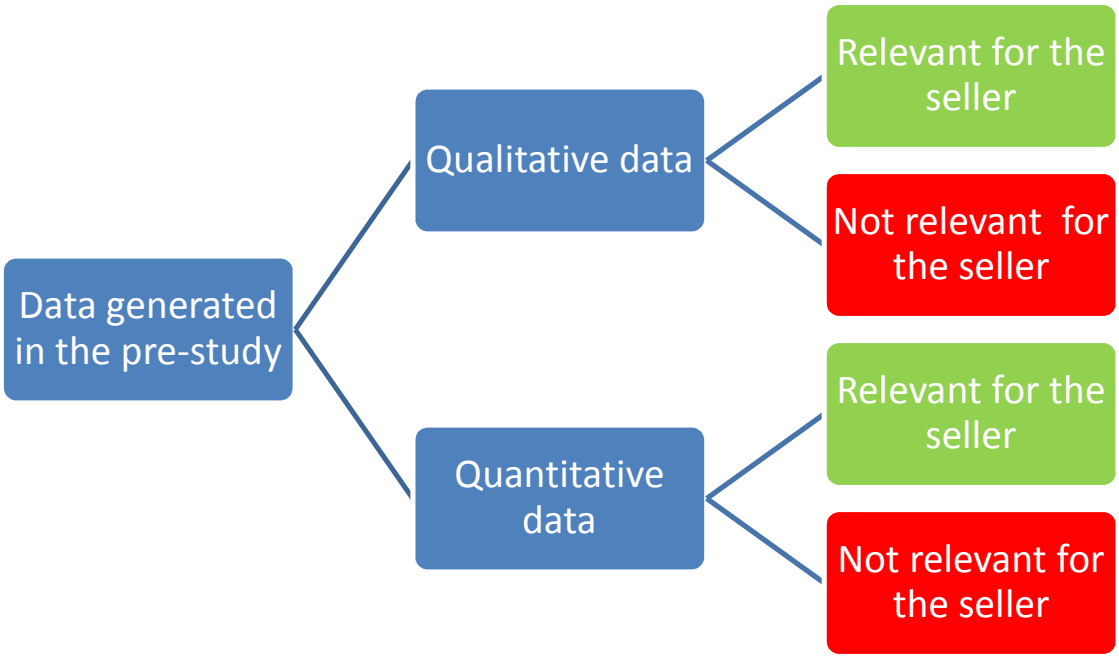


Figure 17: Data classification and their relevance for the value perception

Furthermore a hypothetical maintenance case study was created to measure the preference of the respondent. The data were analysed through a conjoint analysis.

The response rate was moderate. From the 140 respondents starting the survey only 62 completed it. This amounts to a response rate of 44 per cent. The survey was running during 8 weeks from the 27th of October 2011 to the 25th of December 2011. The data set can be found in the appendix.

The findings can be subdivided into three major groups:

1. Findings from descriptive statistics such as demographics, business philosophy, attitudes and preference scales
2. Findings from qualitative open ended questions on outsourcing, advantages and pitfalls of customized solutions, the problems of value based pricing, limits and barriers for the exchange of information.
3. Findings from the case study and the proposed design of the questionnaire

These three areas should create a comprehensive picture on understanding how customers value offerings and how this reflects in their willingness to pay. Each step of the following section will conclude with a verdict about the usefulness of the generated data to support this approach.

5.1 *Findings from qualitative data generated by open-ended questions*

The objective of this section is to validate the qualitative information generated in the exploratory primary research. The questionnaire covers questions on benefits and risks from the purchasing perspective, the limits in the information exchange with a supplier and the resentments to value based pricing which is considered the main pricing method for solutions. Each sub section will close with a short statement about whether the question provides some relevance for the solution provider.

5.1.1 Risk/disadvantages of buying customized solutions from the purchasing perspective.

The respondents were asked to put themselves in the position of a potential buyer of a customized solution. From this perspective the respondents should answer on where they see the biggest risk and disadvantages of customized solutions. The open ended question were analysed by a coding method, Finally the statements were counted and put into groups fitting to the following top 4 headlines.

1. Single Vendor Dependency (16 mentions)
2. High Costs (11 mentions)
3. Choosing the wrong technology (3 mentions)
4. No market references (3 mentions)

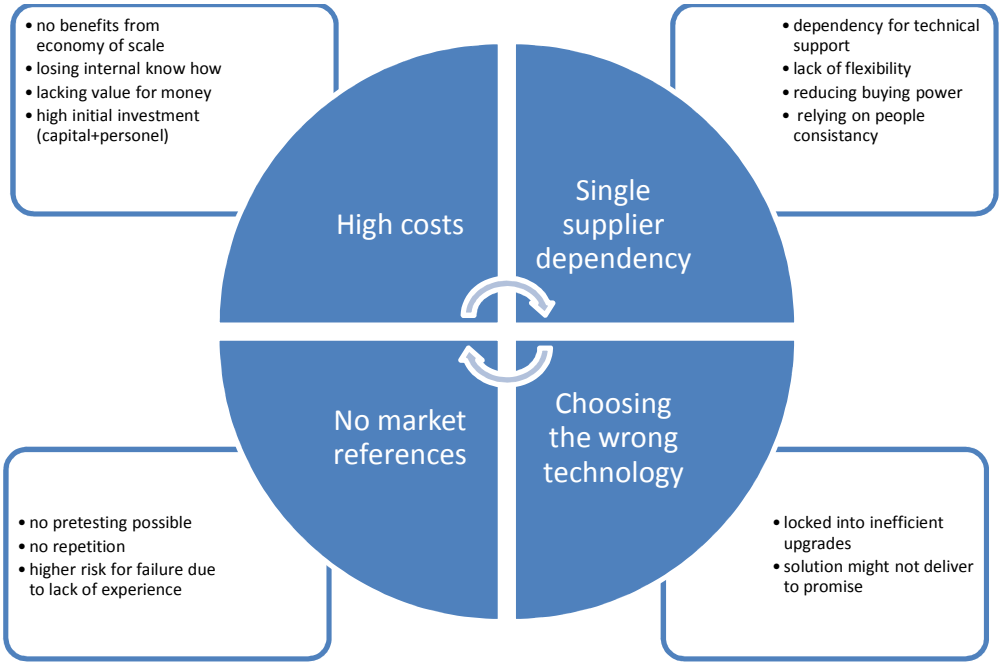


Figure 19: Risk of buying customized solutions

This gives an indication on the biggest disadvantages of customized solution from the perspective of a purchaser. The single vendor dependency and the perceived high costs are the two biggest risks linked to these offerings. The lack of market references and the danger of depending on the wrong technology are the other perceived disadvantages.

These results reflect the main concerns of buyers during the evaluation of a solution offering. A single supplier dependency is traditionally tried to be avoided by a purchasing department. A single supplier status puts the seller in a strong pricing position enabling him to dictate the price. A purchaser would like to have the option to change suppliers in case offerings are the same and the price is lower. This has also been identified by Hakansson et al. (1975). By applying pressure to the seller the buyer tries to achieve that prices are always offered on the lowest possible level. Therefore offering a customized solution might give the impression to the purchaser that he might enter an unfavourable business relationship. This fear should be tackled in case the solution seller would like to make its offering a success.

The high costs are related to the perception that customized solutions do not contain standardized processes and therefore are per se more expensive. High costs are also related to perceived loss of know how when sourcing out complete processes to a solution provider. The lack of value for money is also mentioned frequently by the respondents. Value as mentioned in the literature review is often defined as a simple trade-off between benefits and sacrifices. Solution providers have to achieve a positive value

perception of their offering and have to demonstrate how they can achieve that. If the initial value perception is too low for the price requested it is necessary to continuously demonstrate the value during the selling process. As mentioned in the literature review by Anderson et al. (1998) solution sellers have to show the benefits of their offering to the buyer with respect to technical/economic/service and social benefits as well as having to understand the point of reference the customer has with respect to the background of the offering.

5.1.2 Benefits/Advantages of buying customized solutions from the purchasing perspective.

The respondents were asked to put themselves in the position of a potential buyer of a customized solution. From this perspective the respondents should answer on where they see the biggest benefits/ advantages of customized solutions. The open ended question were analysed by a coding method and as in the previous section the statements were counted and put into groups fitting to the following top 4 headlines.

1. Customization (11 mentions)
2. Efficacy of processes affected by the solution (5 mentions)
3. Focus on core processes (3 mentions)
4. One interface to customer (5 mentions)

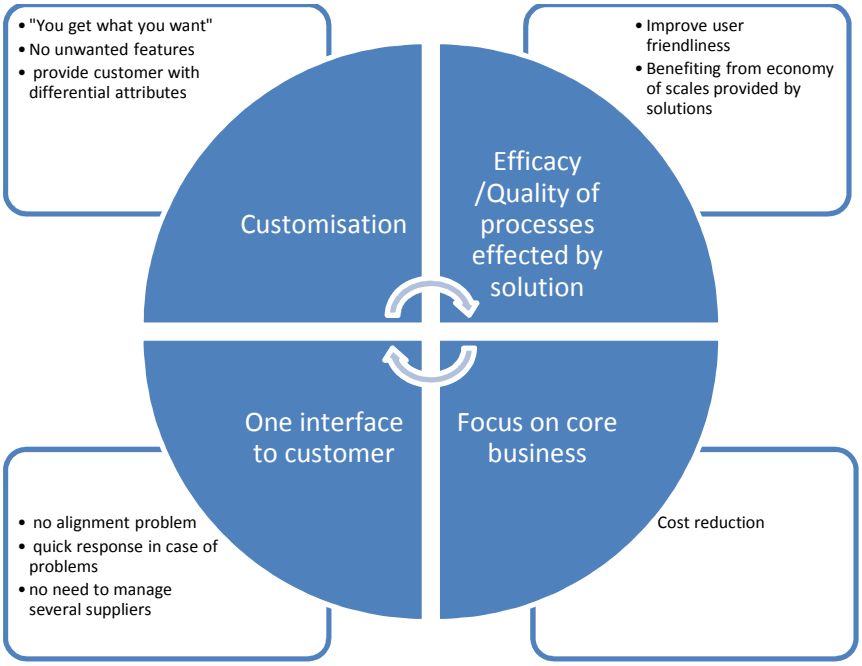


Figure 20: Benefits of customized solutions (own figure)

Customization and efficacy improvement are the two major benefits associated to customized solutions. As long the customized part of the solution offers a real potential for differentiation to competition the benefit is positively perceived. This has an impact on the desired value of the offering. The potential for differentiation to competition has to be shown to the buyer of the solution. Unwanted features can be avoided if the solution can be customized. So the buyer has the perception that he only pays for what he needs. This is important when evaluating the benefit and cost of a solution. Does the customer utilize all the features offered by the solution or not?

Efficacy and quality improvements generated by a solution are related to the perception that solution providers can actually drag their experience from a certain economy of scale which might either be the process to address a problem or having the experts capable of fulfilling the requirements better than in-house stuff.

Attitudes divided by profession segment

	Buyer	Seller
Attitude towards benefits of customized solutions	• Reduction of overall costs • Tailored to special requirements/needs • Helps to create enduring business relationship	• Higher differentiation to competition • Customized to customer needs • Uniqueness of the offering

	• Uniqueness of offering • Get know how from specialist	• Higher user friendliness • More flexibility for customers • Faster time to market • Allow companies to utilize offerings to their greatest potential • No need to rework off the shelf solution • Integration ensures optimal work performance • Savings on total cost of ownership • No standard approach worked due to the difference in existing systems • *"Every business is different"* • Achieve business goals in terms of creativity
Attitude towards downsides of customized solutions	• Extremely high cost and risk if something has to change • Need more expansive staff • High risk if not properly customized • High dependency on third party • More expensive than "ready to use" • Competitive bidding becomes difficult • Higher risk of IP leakage in Asia	• Cost for customization/integration • Vendor dependency • No pre-testing possible • No success due to lack of understanding/ communication between parties • Difficulties in providing service/maintenance • Not immediately available • *"Costs outweigh benefits"*

Table 16: Different perspectives on solutions (Purchasing vs. Marketing)

The tabular comparison of purchasing and marketing professional indicates the different perspective on pros and cons of customized solutions. In general it is remarkable that marketing professionals have a more diverse view on the benefits of customized solutions. They use terms such as *"Higher differentiation to competition"*, *"Savings through total cost of ownership"* and more *"creativity"* and *"flexibility"*. The number of perceived benefits on the purchasing side is rather limited and mainly focuses on the benefits of customization.

When considering the downsides purchasers use terms such as "high risk" and "high dependency" more often than marketing professionals.

These results are significant in terms of the perceived value of the solution and the way solution sellers have to sell their offering. Assuming that the decision makers involved have a biased view on solution offerings sellers might have to tailor their approach addressing the fears of a purchaser in the same way they should focus on the value generating features of their solution when addressing marketing.

Therefore it is crucial to understand the needs of the customer not only in respect to the company strategy but also with respect to the position of the business partner.

The following two figures summarize the statements from the questionnaire with respect to value and risks associated with customized solutions.

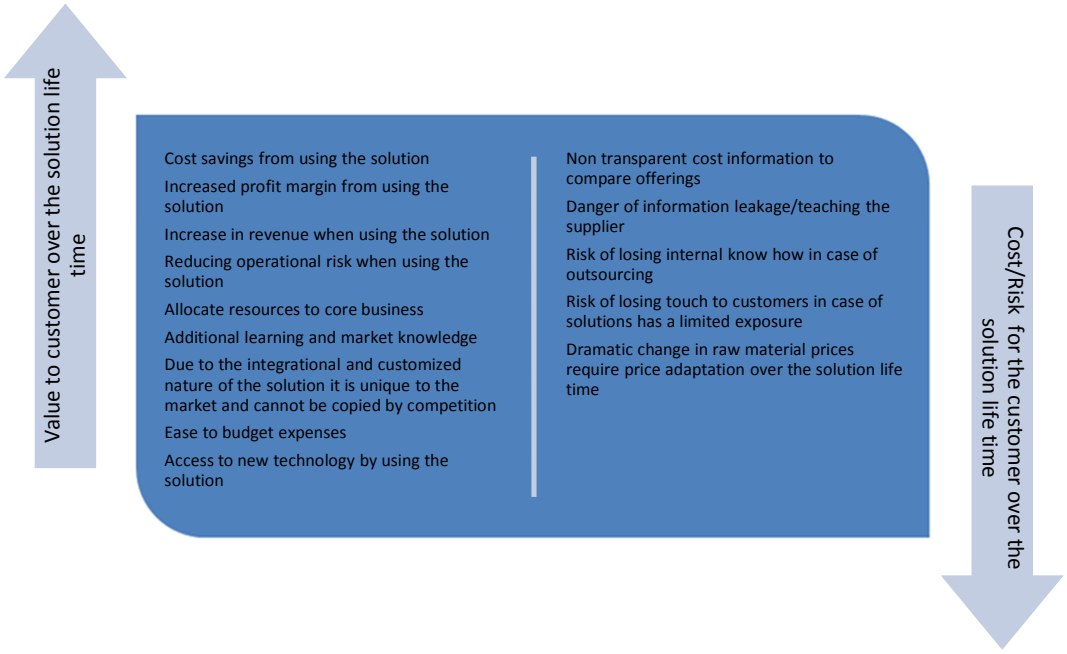


Figure 21: Comparison of value and cost/risk for buyers (own figure)

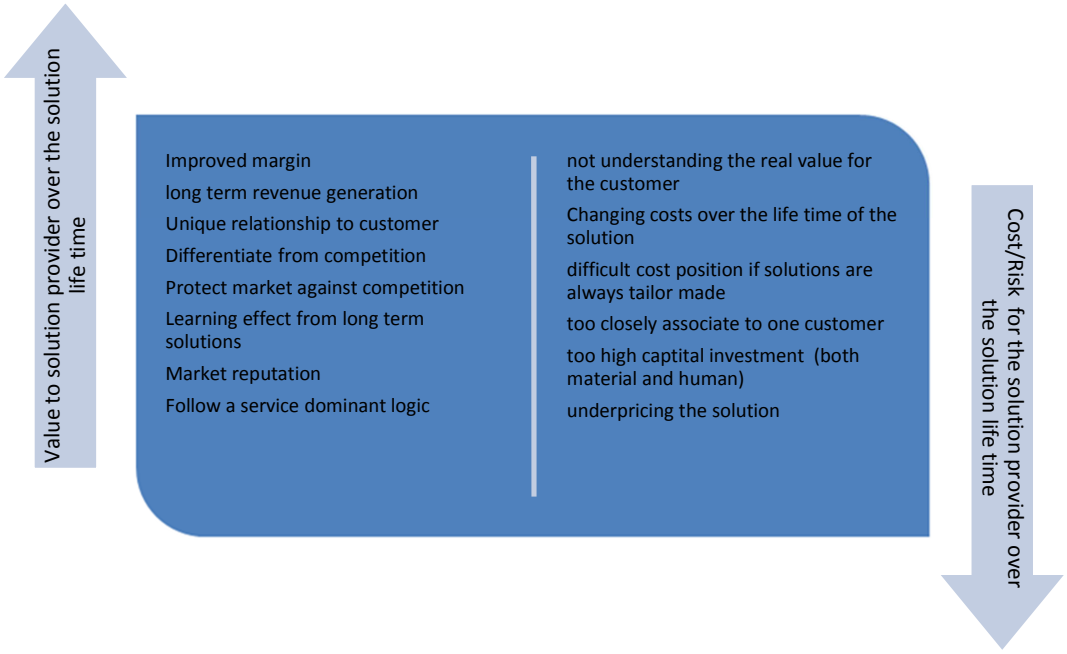


Figure 22: Comparison of value and cost/risk for the solution provider (own figure)

The analysis of the statements shows that an understanding of the perceived benefits and risk of customized solutions are very relevant to understand the perceived value of a solution. It seems to be a trade off between long term benefits and short term risks. As the respondents do not represent a specific industry the results provide a good overview. The results meet the findings in the literature review about the antecedents to become a solution provider and the problems implementing customized solution successfully. An understanding of this trade-off in combination with different value perceptions based on the professional background of the buyer provides a strong insight and should be included in the methodological approach.

Verdict

Data	Relevant for the seller	Not relevant for the method
Perceived benefits and risks of customized solutions from the purchasing perspective	☑	

5.1.3 Limits for the information exchange with supplier

Reading academic literature on solution selling it becomes obvious that a strong business relationship between seller and buyer and the constant exchange of information are considered to be necessary pre-condition to implement a solution. It is common knowledge that the exchange of business information is often restricted because of fears related to the lack of confidentiality. The objective of this question was to understand where professional buyers and sellers draw a line when giving information to suppliers and how this may impact the implementation of a successful solution. By definition a solution has to continuously satisfy customer needs and this requires a constant communication of the needs to the supplier.

This is a summary of all statements given by all respondents out of the purchasing perspective.

- Danger of information transfer to competition
- Information on costs, margins and revenues
- Internal process know how
- Intellectual property
- Protection of core competence
- Brand protection
- Information on the unique selling proposition
- Information which limit our ability for competitive bidding

Two quotes from the survey on limits of information exchange:
"When a project is carried in "partnership" usually the exchange of information is never disclosed as it was agreed. Generally conflicts arise and quality of the projects gets jeopardized. This is due to differences of interests. Supplier wants customer be dependent of its goods and services while customer wants to be independent from it sources or suppliers.
"Limits are set within the relationship by the decision makers and negotiators. The limits are set by bias, fear, and indecision – emotional factors internal to their organizations. My opinion then is the limit is set by the abilities within the relationship to create trust and transparency."
The following table segments the answers in relation to the professional background of the respondents. In general both sides see limitations on information on intellectual property. Besides this limitation purchasers also try to avoid information which limit a competitive bidding and the information on the core competencies of their company.

Buyers	*Sellers*
• **Information limiting competitive biding** • **Intellectual properties** • **Internal information** • **Information about core competencies** • **Depends on personal relationship**	• *"They talk to competition"* • *"Never expose details to supplier/customers"* • Knowledge level, intent to work together, trust • Budget/financial information • Intellectual property

Table 17: Limitation of information exchange to supplier (Purchasing vs. Marketing)

These results indicate that getting the necessary information from the buyer to achieve real customization and a resulting competitive advantage will be a significant challenge. A long term and trustful relationship is considered to be helpful to open up internal information. This would also mean that solution providers might have to focus their effort on companies where they have long lasting partnership with. Alternatively the buying company should be willing to accept an open information policy granting the solution provider access to the required information.

The barrier of exchange might depend on the personal perception of the buyer on the benefit of the solution for the company and the impact the solution has on his personal position in the company. These barriers are important to realize and present a major obstacle within the selling process. This is related to the risk that due to a lack of communication the final solution might fail or being perceived as being of low value for the customer.

An understanding about the limits in the information exchange is likely to have a significant impact on value of the solutions. If the limits are high the solution provider will not get the right level of information necessary to define the customer's requirements and to customize the solution. The limitations have to be clarified at the beginning to avoid later problems later in the solution selling process.

Verdict

Data	Relevant for the seller	Not relevant for the seller
Limits for the information exchange with supplier	☑	

5.1.4 The perception of value based pricing in B2B

The statements from the literature review have identified value based pricing as the most applicable pricing method for selling customized solutions. Simultaneously it was mentioned that companies do resist applying the method due to various reasons. As the objective of this thesis is the creation of a pricing function it is vital to understand the resistance to apply them in day to day business. This open ended question had the objective of understanding the perception of the respondents towards value based pricing. This is important for the solution seller with respect to their applied pricing approach. If value based pricing itself is mainly negatively perceived it might be necessary to apply or compare different pricing methods letting the customer decide on which approach he prefers.

The most interesting statements from the respondents are cited below.

"Professional procurement teams try to counter them or at least make them transparent/introduce competition"

"Value based approaches have to compete with cost driven approaches"

"Global standards lead to products with less differential features"

"Commoditization of products"

"It requires constant research and monitoring of the business, something which is both time and cost consuming not to mention the risk of having incorrect data."

"The willingness to take risk is shifted as far as possible down the value chain"

"It requires deep analysis into the customer needs and an understanding about the value to the customer. It should surprise and open the eyes of the customer"

"Needs to be related to output to become a win-win situation"

"Besides the price purchasers in B2B need to feel safe and feel good about their decision. Value based approaches do not give this feeling"

Besides the above statements the following phrases were used by the respondents why value based pricing strategies are not applied in the industry.

No uniform understanding of value
•No uniform definition of value along the value chain •Lack of knowledge on both sides •No desire for value in B2B •Value means different things to different people •Purchasers are mainly concerned with the short term bottom line
Lack of understanding the customer business
•Lack of accurate data and research •Lack of qualified sales people selling the solution •No understanding of end uses and markets on the supplier side •Lack of understanding the final consumer impact in B2B
Lack of transparency for purchasing
•Requires upfront investment (high risk cost) •Difficult to anlyse hidden costs, revenues of non-qualitative and non directly measureable actions

Table 18: Why value based pricing strategies are not applied?

Summarizing the answers given in the survey it can be concluded that three major reasons can be noted why value based pricing is rarely applied in the B2B industry. No uniform understanding of value, lack of understanding the customer business and the lack of transparency for the buyer/purchaser. These findings are in line with the findings of Hinterhuber (2008). These barriers have to be addressed by the solution seller. The perception of value has to be aligned or at least understood to see whether both views the view of the buyer and the view of the seller are complementary. Additionally the lack of desire for value is mentioned in the survey. In today's B2B environment an effort should be made to quantify and measure value. The quantification based on relevant parameters for the customer might help to reduce the perceived risk and help buyers to estimate a bottom line impact.

Understanding the customer business is considered to be a precondition to implement customized solutions. This data might be either generated in a joint effort of solution provider and buyer during phase 1 of the solution selling process or can be acquired by market intelligence. The requirements of the buyer can be determined by analysing the respective value chain and the company strategy. Furthermore an expert hired from the respective industry could help in shortening the period needed to acquire the data and skills. Additionally the hiring of experts might increase the perceived value of the solution in the eyes of the buyer.

The perceived lack of transparency of the value based selling method might be related to a lack of openness on both sides. In general a solution provider should consider keeping the pricing approach as

transparent as possible giving the purchaser the opportunity to compare the offering even though the value is different. Transparency helps to create trust on the buyer side which reduces the perceived risk of the purchase.

Table 22 compares the opinion of purchasing and marketing with respect to their attitude towards value based pricing. Purchasing clearly states that the focus on short term objectives and the attempt to de-bundle offerings does prevent value based pricing being a widespread success. For the solution provider this is another hint that the customer approach for customized solutions should be quite selective and customer specific. The objectives of the professional purchasing function in a B2B environment have to be fully understood. But also an understanding about the company's strategic direction might offer opportunities to the solution provider as it can be assumed that the company's strategic direction also influences the goals of a purchaser (Hakansson et al. (1975).

Marketing experts on the other hand claim that a lack of trust, market references and market knowledge is the major driver for the low success rate of value based pricing. But also they mentioned the need of purchasers to feel safe about their decision. Making the purchaser feel safe seems to be a common statement in the questionnaire and should be an issue when approaching the customer. The pricing model for the customized solution should therefore have a component dealing with the distribution of the risk between buyer and seller. Increasing the risk for one side should lead to a higher or lower price.

	Buyer	Seller
On the perception of value based pricing in B2B	• Most purchasers are only interested in short term gains and not in long term costs • Professional purchasing teams try to de-bundle offering • Marketing has not fully understood its impact on the market • *"buyer do not value value"*	• Not transparent • Lack of trust between parties • "No one using it" therefore no market reference • Need more market intelligence and knowledge • Need to feel safe about a purchase in B2B ➔ low risk attitude

Table 19: Comparison of Marketing and Purchasing on value based pricing

Value based pricing is considered to be the most relevant method to price solutions (Sharma, 2011). Understanding the barrier to implement the method in B2B should help solution provider to decide how to communicate a pricing model with a strong value based component.

Verdict

Data	Relevant for the seller	Not relevant for the seller
The perception of value based pricing in B2B	☑	

5.1.5 Summary of the findings from the qualitative part

The set of open ended questions should have elaborated on the attitudes and opinions on different issues potentially impacting the willingness to pay.

The perceived main risks related to customized solutions are

1. Single Vendor Dependency
2. High Costs
3. Choosing the wrong technology
4. No market references

The perceived main benefits related to customized solutions are

1. Customization
2. Efficacy of processes affected by the solution
3. Focus on core processes
4. One interface to customer

Marketing professionals seem to have a more diverse view on the benefits of a customized solution than purchasers.

In B2B there seem to be barriers for the information exchange which according to literature (Evanschitzky et al. (2011), Brady et al. (2004), Sawhney et al. (2006)), are considered a vital pre-requisite to establish a successful solution. Intellectual property, information on core competencies and process know how are rarely exchanged due to the fear that they could end up with competition.

Value based pricing has not been implemented on a broad scale in the B2B environment (Hinterhuber, 2008) and the respondents gave three major reason why this approach has been rarely adapted. Firstly there is no uniform definition of value; secondly suppliers do not understand customer business to address the right needs with their value proposition and thirdly purchasing perceived this pricing method as in transparent.

All three open ended questions are dealing with relevant information necessary to implement a solution successfully. The limitation in the information exchange impact phase 1 of the solution selling process. The perceived benefits and risks impact the overall value perception of the solution whereas the attitude towards value based pricing shows the need for more creative pricing models in order the realize mutual benefits between both parties.

Data	Relevant for the seller	Not relevant for the seller
Perceived benefits and risks of solutions	☑	
Limits for the information exchange with supplier	☑	
The use of value based pricing in B2B	☑	

5.2 *Findings from descriptive statistics*

5.2.1 Department of the respondents

The survey started with some general questions to understand the demographics of the respondents. From the 62 respondents completing the survey 70% came out of Europe and 14% out of India. Reason for that was the individual reach of the chosen social network platforms. Most of the subscribers on xing.com are located in Europe. The alumni platform of the University of Strathclyde seemed to have attracted mainly respondents from the United Kingdom whereas linkedin.com has a global reach and was the main source for the respondents from Asia. The data in the appendix show the origin of respondents completing the survey.

The question on the professional background of respondents should be used for the purpose of segmentation. Therefore this question has the objective to filter the respondents based on their profession and to investigate differences in their willingness to pay. The following figure shows the results from the “Qualtrics”- survey.

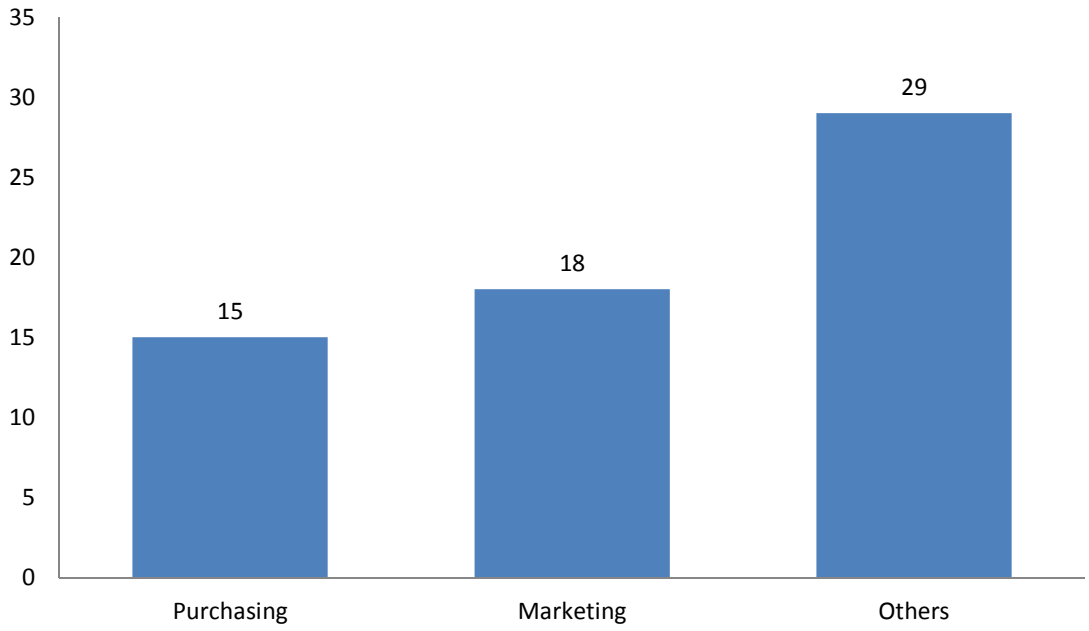


Figure 18: Department of respondents

The figures show that the biggest segment belongs to the group “others”. The group contains a wide array of people including operations, IT professional, technical sales people. Including a question with the objective to filter the respondents based on their profession should be part of the final methodology.

Verdict

Data	Relevant for the seller	Not relevant for the method
Professional background of the buyer	☑	

5.2.2 Philosophy to business

The philosophy to business should give an indication about what drives the individual in his daily work. This can either be influenced by personal attitudes but also dictated by company objectives. The answer distinguishes between the increase in revenue, the increase in cash, the reduction of costs and a

balanced approach considering all answers as equally important. Overall 110 respondents answered this question. Even though most of them did not continue the questionnaire the results displayed in figure 18 are more representative due to the larger sample size.

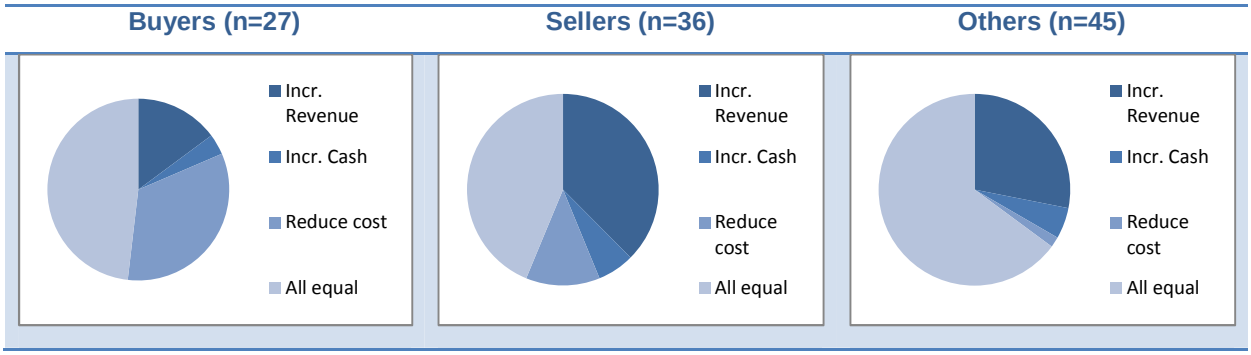


Figure 18: Philosophy to business by segment

There is a difference between sellers and buyers in the split between increase of revenue and the reduction of costs. This leads to the assumption that purchasers might focus on "the cost reducing"-abilities of a solution whereas sellers consider the ability of increasing revenue as more important and therefore focus on benefits of the solution which support this objective. All segments focus on an equal balance of the above mentioned philosophies. Nevertheless the sample size is small to state this as a generalizable finding but it indicates that a there is a different business approach when focussing on the value proposition of an offering.

This could have significant impact on the value perception of customized solutions. If the buyer is the main decision maker he or she might evaluate the benefit by the potential of reducing costs. A value proposition focusing on the increase in revenue does most likely not lead to a favourable perception of the solution by the buyer. On the other hand sellers might consider the potential for increasing their companies' revenue as an appealing outcome. The business philosophy should therefore be considered as part final methodology to get an understanding on the basic perception of the respondent.

Verdict

Data	Relevant for the seller	Not relevant for the seller
Buyers philosophy towards business	☑	

5.2.3 Attitude scales

In order to measure the attitudes towards risk pro-activeness and innovation pretested scales were included in the survey. Due to the limited number of respondents it is difficult to draw any generalizable conclusions from the data. The objective of the scales was to indicate differences between different group of respondents and how they might influence their willingness to pay in this specific case. The research question was included as different statements in literature related risk taking to the purchase of customized solutions. In literature sacrifice is often related to the risk associated with an offering (Zeithaml, 1988; Liljander and Strandvik, 1993; Bowman und Faulkner, 1994; Heskett et. al., 1994; Rust and Oliver, 1994; de Ruyter 1997 et al. and Sweeny 1998 et. al.). Kim et al. (2007) found that the nature of a performance based contract between sellers and buyer depends on the level of risk aversion both parties have. Companies having a neutral attitude towards risk have the best premises to enter such a business relationship. Sharma (2002) stated that suppliers accept some of the risk, often through performance-based and risk based contracts.

There are only some notable differences between the respondent groups and the statistical validity is limited. The main differences between the respondent groups are following:

Attitude towards pro-activeness

Concerning their pro-active attitude the respondents of the two groups did not show a significant difference in attitude. Only with regard to the statement *""I view risk on a job as a situation to be avoided at all costs"* the t-value of 1.82 indicates a stronger difference in mean. The seller group shows a stronger tendency to disagree on this statement compared to the buyer group.

There is a tendency of buyers to avoid risk on their jobs. Sellers seem to have a stronger tendency to accept risk on a job associated to change. The implications on their business decision can only be assumed and will be subject to the answer given for below. Nevertheless due to the small sample size statistical significance is below 95% confidence.

Attitude towards business risk

Concerning their attitude towards taking risk in business there is no significant difference between the two groups of respondents. Only two statements show an interesting difference between the two groups which should be further investigated. Sellers have the tendency to agree more strongly on the statements that a company should only take risks in areas which it knows well and that research is important before making risky decisions. Both t-values do not indicate a validity of the difference greater 95% but there is a tendency that sellers are slightly more conservative compared to buyers. It could be assumed that marketing research is an important part of the marketing discipline and sellers put a stronger focus on research investigating all potential impacts of a business decision.

Attitude towards innovation

Concerning their attitude towards innovation there is a significant difference between sellers and buyers concerning their focus on innovative products. Buyers stronger agree that they would focus on such an approach.

The total data set can be found in Appendix 5.

Conclusion

In general there seems to be no significant difference between the groups concerning their personal attitudes towards risk. Table 52 provides an overview about the differences.

Attitude towards	Pro-activeness	Business risk	Innovation
Difference Sellers/Buyers	slight differences with low significance	no difference	slight differences with certain significance

Table 20: Summary of attitudes differences

There are some tendencies in the results which indicate a different attitude towards business risk, innovation and pro-activeness between sellers and buyers. Due to the small sample size the results do

not provide a strong statistical significance but sellers show a stronger proactive attitude when it comes to change job. This could also indicate that they are willing to take higher risks on the job. On the other hand sellers put a stronger emphasis on research before making business decision and they pledge for expanding into business areas the company knows well. The focus on research might not come as a surprise as sellers have to deal with market analysis on a day to day basis. Based on their very basic job description they are responsible for business expansions and looking into new markets as well as thinking long term. There are no references in literature considering attitude differences between the two investigated groups. Hakansson et al. (1975) found that high uncertainties about markets, needs and transactions often increase the communication and interaction level between buyer and seller. This could lead to the assumption that the attitude towards risk is depending on corporate driven factors rather than personal attitudes. This is supported by the findings of Tossi et al. (2011) arguing that the economic value of outsourced maintenance can be measured by different methods including reliability and risk engineering methods. These methods provide a security to the buyer and might reduce the impact of the personal attitude to risk in general and provide clarity in assessing the cost benefit trade-off for propositions such as outsourcing maintenance (Macdonald, 2011)

Considering innovation buyers would have a stronger focus on the promotion of new services. This might come as a surprise but could have different explanation. The focus on new product and services is not the main objective of a buyer but according to the results it is the most important driver for the development of a company. Sellers deal with the promotion of new products and services. But especially in a B2B environment sellers might realize that innovation cycles are long and the promotional focus on the existing portfolio could also generate additional sales. This broader perspective might have impacted the results.

Verdict

Data	Relevant for the seller	Not relevant for the seller
Buyers attitude towards risk, innovation and proactiveness		☑

5.3 *Results from the ranking question*

In order to evaluate certain sub groups of the total sample the total sample was filtered according to their profession. As we are dealing with ordinal data we evaluate the 3 quartiles in order to get a relevant ranking for the total group. The median (50% quartile) was decisive for the position in the overall ranking. In case of identity the 25% quartile was decisive followed by the 75% quartile.

The following groups are analysed by conjoint analysis to determine their willingness to pay and identify cost saving opportunities.

1. the total sample
2. an individual respondent
3. the buyer sub group
4. the seller sub group

5.3.1 Results of the total sample

Overall 62 respondents finalized the ranking of the eight solution cases including the positioning of one limit card which had to be positioned below the last solution the respondent considered buying. The ranking had the objective to understand the preferences of the respondents considering the composition of the solution process. To make the case relevant to the B2B industry a maintenance case was created and the offer was broken down into 4 phases which were in line with the solution selling process generated by Tuli et al. (2007). Table 20 shows the overall result based on the average position of the solution within the ranking

Solution	25% Quartile	50% Quartile	75% Quartile	Overall ranking
1	1	2	5	1
2	2	2	6	2
3	3	5.5	8	6
4	4	5	6.5	5
5	3	4.5	6	4
6	3	4	7	3
7	4	6	8	8
8	3	6	7	7
Limit Card	4	6	9	9

Table 21: Results from the ranking exercises (total sample)

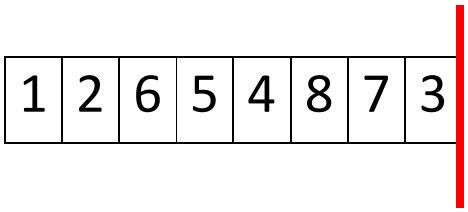


Figure 19: Representative ranking for the total sample

The median of each solution represents the value below which 50% of all data are positioned. It shows that solution 1 was the most popular closely followed by solution 2. This means that price is the main driver for the decision and that 30000 is considered to be an attractive offer no matter what values the other attributes have. As the price is the same for solution 1 and 2 the difference can only be explained by the value of the other attributes. Here it is interesting to realize that solution 1 only includes a value proposition for phase 2 which stated the intention to increase the output of the machine. All the other phases will be done inhouse or without additional service. This offering is valued higher than solution 2 offering a risk insurance against any loses but also giving control of all the other phases into the hands of the supplier. On rank 3 and 4 both solutions cost 60000 US$ which confirms that the ranking is mainly driven by the price attribute. Solution 6 includes the value proposition to increase the output but this time the evaluation and the machine operations are outsourced to the solution provider. Following on rank 5 and 6 there are the 90000 US$ solution followed by the 120000 US$ solution in the end. Overall it can be confirmed that considering the total sample price dominates the decision on the ranking.

RANK 1 Phase 1: In-house Phase 2: Risk option Phase 3: In-house Phase 4: No Workshops Price: 30000 US$	RANK 2 Phase 1: Outsource Phase 2: Safety option Phase 3: Outsource Phase 4: Workshops Price: 30000 US$	Rank 3 Phase 1: In-house Phase 2: Safety option Phase 3: In-house Phase 4: Workshops Price: 60000 US$
Rank 4 Phase 1: Outsource Phase 2: Risk option Phase 3: Outsource Phase 4: No workshops Price: 60000 US$	Rank 5 Phase 1: In-house Phase 2: Safety option Phase 3: Outsource Phase 4: No Workshops Price: 90000 US$	Rank 6 Phase 1: Outsource Phase 2: Risk option Phase 3: In-house Phase 4: Workshops Price: 90000 US$
Rank 7 Limit Card	Rank 8 Phase 1: Outsource Phase 2: Safety option Phase 3: In-house	Rank 9 Phase 1: In-house Phase 2: Risk option Phase 3: Outsource

	Phase 4: No Workshops Price: 120000 US$	Phase 4: Workshops Price: 120000 US$

Table 22: Preference ranking of solutions (total sample)

The output data from the ranking indicate that price was the most important feature in this specific solution offering followed by the customization of the offering, the post deployment services, the deployment and finally the definition of customer requirements. The following detailed conjoint analysis provides more insides.

Results by segment (buyers & sellers)

To investigate the results for each of the segments the data were distinguished by the profession of the respondent. Then an average ranking was created for each of the segments. The individual rankings for each stimulus were added and divided by their number. Table 25 and 26 show the results for each segment. The position of the limit card is indicated by the red line. During the ranking the limit card was named as card indicating the position below one would not buy anymore.

Preference ranking of buyers

Solution	25% Quartile	50% Quartile	75% Quartile	Overall ranking
1	1	2	6	1
2	2	2	6.5	2
3	4	6	9	8
4	1	4	6.5	3
5	2.5	5	5.5	4
6	2.5	5	8	5
7	4	6	8	7
8	3	6	7	6
Limit Card	4.5	7	8.5	9

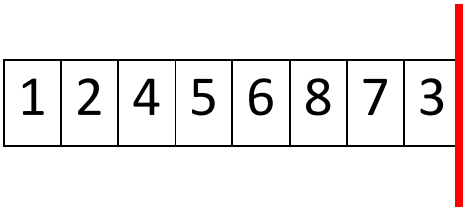


Table 23: Preference ranking of buyers

Similar to the results of the total group the buyer sub sample puts the cheapest solution 1 and 2 in front. In contrast to the total group solution 4 makes rank 3. Solution 4 costs 90000 US$ but includes the safety option (supplier pays for all downtime) and the outsourcing of the machine operations to the supplier. The 60000 US$-solutions follow on rank 4 and 5. Also here the buyers prefer the safety option against the risk option. Solution 8 follows on rank 6. The most striking result of the ranking is the difference between solution 4 and 8 both charged at 90000 US$. Here buyers are willing to pay for risk reduction and outsourcing of staff. Overall price is the main attribute driving the ranking. For the main study it would be important to revise price levels in order to make them look more realistic in term of the perceived price/benefit ratio.

The ranking of the sellers looks slightly different.

Preference ranking on sellers

Solution	25% Quartile	50% Quartile	75% Quartile	Overall ranking
1	1	3	5	2
2	1	2	6	1
3	3	5	9	5
4	4	5.5	7	7
5	4	4.5	6	4
6	3	4.5	6	3
7	4	6	8	8
8	3	7	7	9
Limit Card	3	5	9	6

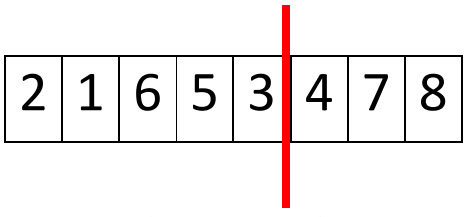


Table 24: Preference ranking of sellers

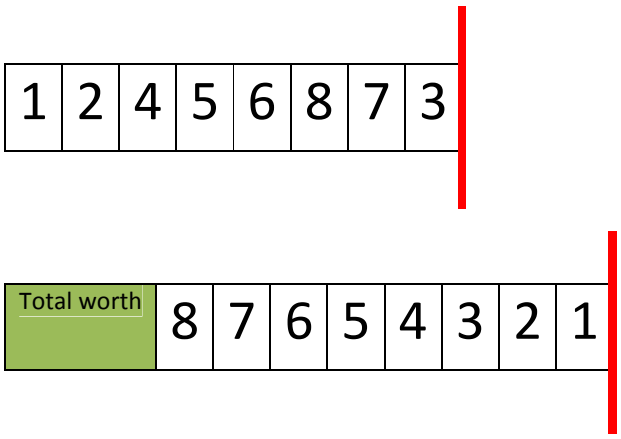
Solution 2 which includes the outsourcing of all activities to the supplier plus workshops and a risk assurance for all loses in production is ranked at number 1 followed by solution 1. At rank number 3 and 4 both 60000 US$ solutions are positioned. Solution 6 also includes the outsourcing of phase 1 and three but targets to increase the output of the machine rather than giving risk insurance. On the other hand

solution 3 (120000 US$) comes in at number 5 and therefore much higher than in the buyers ranking where it ended up at rank 8.

This would have important implications for the solution provider. The value perception of buyers in B2b seems to be mainly driven by price. Nevertheless there are differences between the different sub groups. Sellers favour the outsourcing option getting more service for their money (Solution 2 is ranked higher than 1 and solution 6 higher than 5). Buyers on the other hand are willing to pay a higher amount to cover the downtime of the machine (solution 4) but at a low price they are going for the option to 1 (only increase the output) instead of the all inclusive option 2. More details will now be generated through a conjoint analysis.

The conjoint data and the evaluation of the total sample and a single respondent can be found in the pilot study

5.3.2 **Conjoint analysis for the buyer group**



Base worth = Sum of total worth / number of stimuli

$$\Rightarrow \mu = \frac{8+7+6+5+4+3+2+1}{8} = 4.5$$

Card	Outsource	Inhouse	Safe option	Risk option	Inhouse	Outsource	Workshops	No workshops	30T$	60T$	90T$	120 T$	Rank value
1		β_{12}		β_{22}	β_{31}			β_{42}	β_{51}				8
2	β_{11}		β_{21}			β_{32}	β_{41}		β_{51}				7
3	β_{11}		β_{21}		β_{31}			β_{42}				β_{54}	1
4		β_{12}	β_{21}			β_{32}		β_{42}			β_{53}		6
5		β_{12}	β_{21}		β_{31}		β_{41}			β_{52}			5
6	β_{11}			β_{22}		β_{32}		β_{42}		β_{52}			4
7		β_{12}		β_{22}		β_{32}	β_{41}					β_{54}	2
8	β_{11}			β_{22}	β_{31}		β_{41}				β_{53}		3

Table 25: Formal display of part worth (buyer sub group)

Card	Outsource	In-house	Safe option	Risk option	In-house	Outsource	Workshops	No workshops	30T$	60T$	90T$	120 T$	Rank value
1		8		8	8			8	8				8
2	7		7			7	7		7				7
3	1		1		1			1				1	1
4		6	6			6		6			6		6
5		5	5		5		5			5			5
6	4			4		4		4		4			4
7		2		2		2	2					2	2
8	3			3	3		3				3		3
X	3.75	5.25	4.75	4.25	4.25	4.75	4.25	4.75	7.5	4.5	4.5	1.5	
X-μ	-0.75	0.75	0.25	-0.25	-0.25	0.25	-0.25	0.25	3	0	0	-3	
part worth	β_{11}	β_{12}	β_{21}	β_{22}	β_{31}	β_{32}	β_{41}	β_{42}	β_{51}	β_{52}	β_{53}	β_{54}	

The estimated total worth of each stimulus is calculated as:

⇨ y1 (estimated worth) = 2 + 0.75 -0.25 – 0.25 +0.25 + 3=5.5

This leads to the following results for the relative importance of the purchasing group.

	Outsource	In-house	Safe option	Risk option	In-house	Outsource	Workshops	No workshops	30T$	60T$	90T$	120 T$
$\beta_{\mathrm{jm\ (norm)}}$	0	1.5	0.5	0	0	0.5	0	0.5	6	3	3	0
$\beta_{\mathrm{jm^*}}$	0	0.167	0.06	0	0	0.06	0	0.06	0.66	0.33	0.33	0

For the group of purchasers the relative importance of the attributes can therefore be ranked as follows:

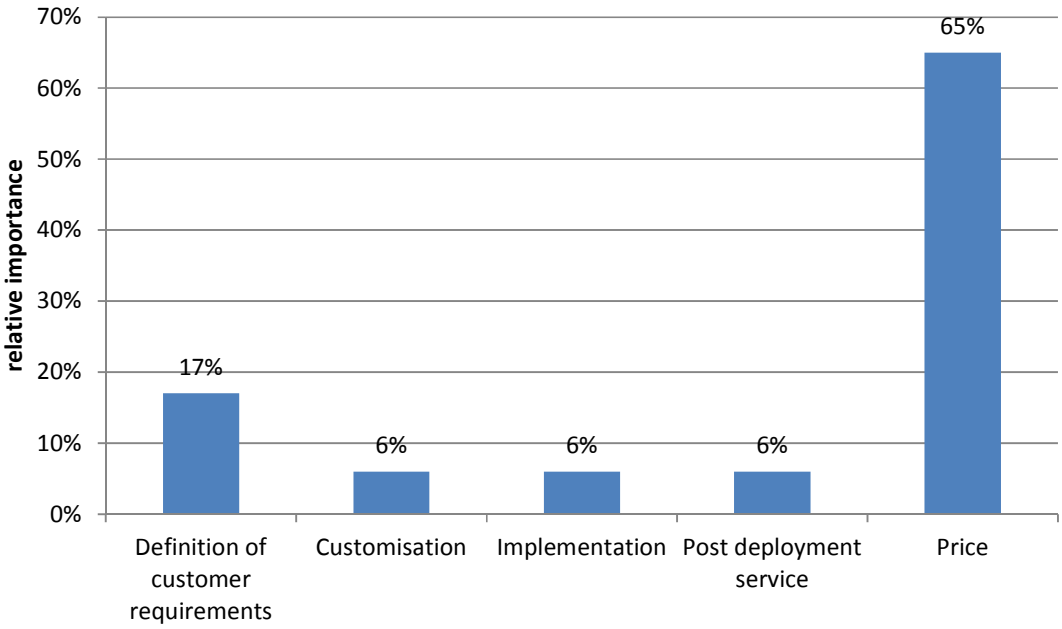


Figure 20: Relative importance of attributes for purchasing group

Price has by far the highest relative importance for the buyers group followed by the definition of customer requirements (phase 1). It can be assumed that based on the design of the most favourable solution purchasers would like to keep this phase of the solution process in-house. The solution provider should therefore focus on phase 2 and 3 where he can add value to the offering and where the relative impact on the total utility is lower.

To determine the willingness to pay of the purchasing group a linear interpolation method was applied. The most favourable solution design for the purchasing group according to the conjoint analysis is as follows

Phase	Level	Part worth (Utility)
1	In-house definition of requirements	0.75
2	Solution provider pays for downtime	0.25
3	Machine operated by solution provider	0.25
4	no workshops	0.25
Total solution utility		1.5

Table 26: Preferred solution based total utility (purchasing group)

The maximum price the purchasing group would be willing to pay for this offering should be equivalent to a part worth of -1.5. To calculate that by linear interpolation it is assumed that the part worth between 30T$ and 120T$ has a linear development.

This means

$$\frac{45000}{-3} = \frac{X}{-1.5} \Rightarrow X = 22500$$

Figure 21: Pricing function for the purchasing group

The maximum price the purchasing group would be willing to pay for their favourite offering is therefore

75000 US$ + 22500 US$ = 97500 US$

This means that compensating a positive part worth (utility) of 1.5 needs a price that has a utility of -1.5 which is 97500 US$.

Phase	Level	Part worth (Utility)
1	In-house definition of requirements	0.75
2	Solution provider pays for downtime	0.25
3	Machine operated by solution provider	0.25
4	no workshops needed	0.25
Total solution utility		1.5
Maximum price	97500	-1.5

Table 27: Maximum price to achieve zero utility (purchasing group)

Keeping in mind that the solution provider can only provide value for phase 2 and 3 the part worth of the solution process would be 0.5 (0.25 (solution provider pays for downtime) + 0.25 (machine operation by solution provider)). This reduces the maximum willingness to pay to 82500 US$.

$$75000\ \text{US\$} + \frac{15000\ US\$}{2} = 82500\ \text{US\$}$$

The modified solution selling process offered to a purchasing professional could look as follows

Maximum willingness to pay for the modified process:

82500 US$

Figure 22: Suggested modified solution offering to purchasing professionals

To reduce their cost the solution provider therefore could ask the customer to analyse the current state of the machine. It can be assumed that given the high positive utility for the in-house definition of requirement the customers might be willing to accept that. Additional workshops should also not be offered as they generate cost without generating any apparent value for the customer.

It is interesting to note that in the pricing function for the purchasing group there is no difference in the part worth for 60000 and 90000 US$ which indicate a lower price sensitivity in this range.

The simplified profit calculation for the solution offered to the purchasing group could look as follows:

Position	lower scenario	upper scenario
Revenue (Maximum willingness to pay)	82500	82500
Cost paying for downtime	0	-60000
Cost for running the machine	-60000	-60000
Profit	18750	-37500
Margin	23.8%	-45 %

Table 28: Profit calculation based on maximum WTP (purchasing group)

The summary clearly shows that the maximum price might not be high enough to generate a sustainable profit with this solution. An additional option could be to reduce the cost for the machine operator but there are likely to be regulatory barriers to that such as minimum wages directives.

5.3.3 Conjoint analysis for the seller sub group

2	1	6	5	3	4	7	8

Table 29: Preference ranking of seller group

Total worth	4.5	3.5	2.5	1.5	0.5	-0.5	-1.5	-2.5

$$\mu = \frac{(4.5 + 3.5 + 2.5 + 1.5 + 0.5 - 0.5 - 1.5 - 2.5)}{8} = 1$$

Card	Outsource	Inhouse	Safe option	Risk option	Inhouse	Outsource	Workshops	No workshops	30T$	60T$	90T$	120 T$	Rank value
1		3.5		3.5	3.5			3.5	3.5				3.5
2	4.5		4.5			4.5	4.5		4.5				4.5
3	0.5		0.5		0.5			0.5				0.5	0.5
4		-0.5	-0.5			-0.5		-0.5			-0.5		-0.5
5		1.5	1.5		1.5		1.5			1.5			1.5
6	2.5			2.5		2.5		2.5		2.5			2.5
7		-1.5		-1.5		-1.5	-1.5					-1.5	-1.5
8	-2.5			-2.5	-2.5		-2.5				-2.5		-2.5
X	1.25	0.75	1.5	0.5	0.75	1.25	0.5	1.5	4	1	-1.5	-0.5	
X-μ	0.25	-0.25	0.50	-0.5	-0.25	0.25	-0.5	0.5	3	0	-2.5	-1.5	
part worth for	β_{11}	β_{12}	β_{21}	β_{22}	β_{31}	β_{32}	β_{41}	β_{42}	β_{51}	β_{52}	β_{53}	β_{54}	

	Outsource	Inhouse	Safe option	Risk option	Inhouse	Outsource	Workshops	No workshops	30T$	60T$	90T$	120 T$
$\beta_{jm\ (norm)}$	0.5	0	1	0	0	0.5	0	1	5.5	2.5	0	1
β_{jm*}	0.06	0	0.12	0	0	0.06	0	0.12	0.647	0.294	0	0.12

The relative importance of the attributes indicates that price has a similar importance as for the buyer group. In contrast to the buyer group the seller group puts a higher relative importance on phase 2 and on phase 4. The composition of the most favourable solution shows that phase 1, 2 and 3 can be influenced by the solution provider.

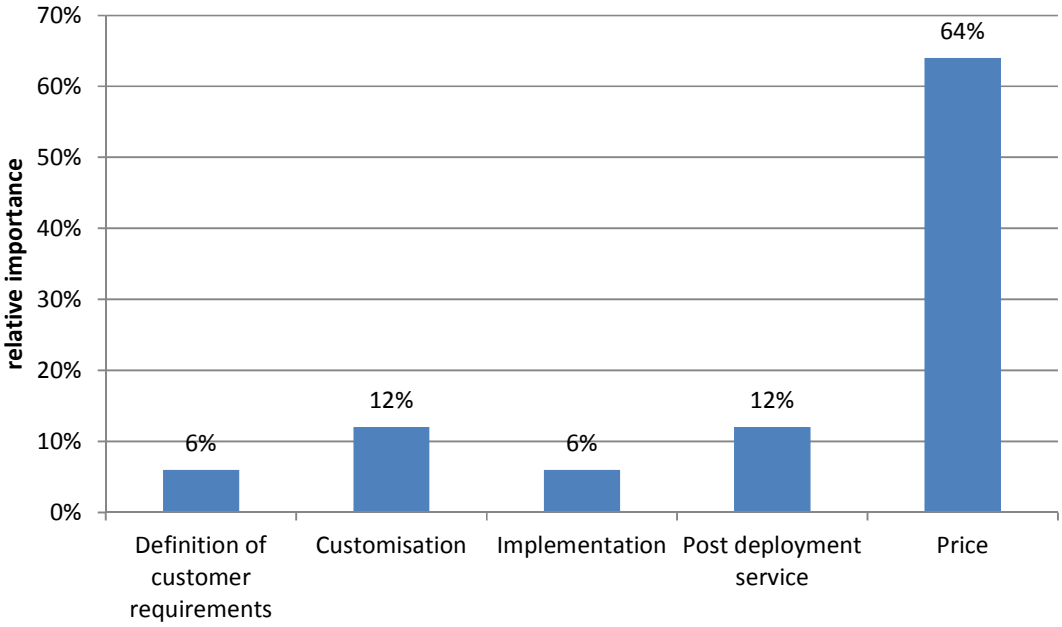


Figure 23: Relative importance of attributes for the marketing group

To determine the willingness to pay of the purchasing group a linear interpolation method was applied to the three price- part worth. The most favourable solution design for the purchasing group according to the conjoint analysis is

Phase	Level	Part worth (Utility)
1	Outsource definition of requirements	0.25
2	Solution provider covers all revenue loses	0.5
3	Machine operated by solution provider	0.25
4	no workshops	~~0.50~~

Total solution utility	1.0

Table 30: Preferred solution based on total utility (marketing group)

The maximum price the marketing group would be willing to pay for this offering should be equivalent to a part worth of -1.0. Based on the pricing function in figure 33 this equals

$$x = 90000$$

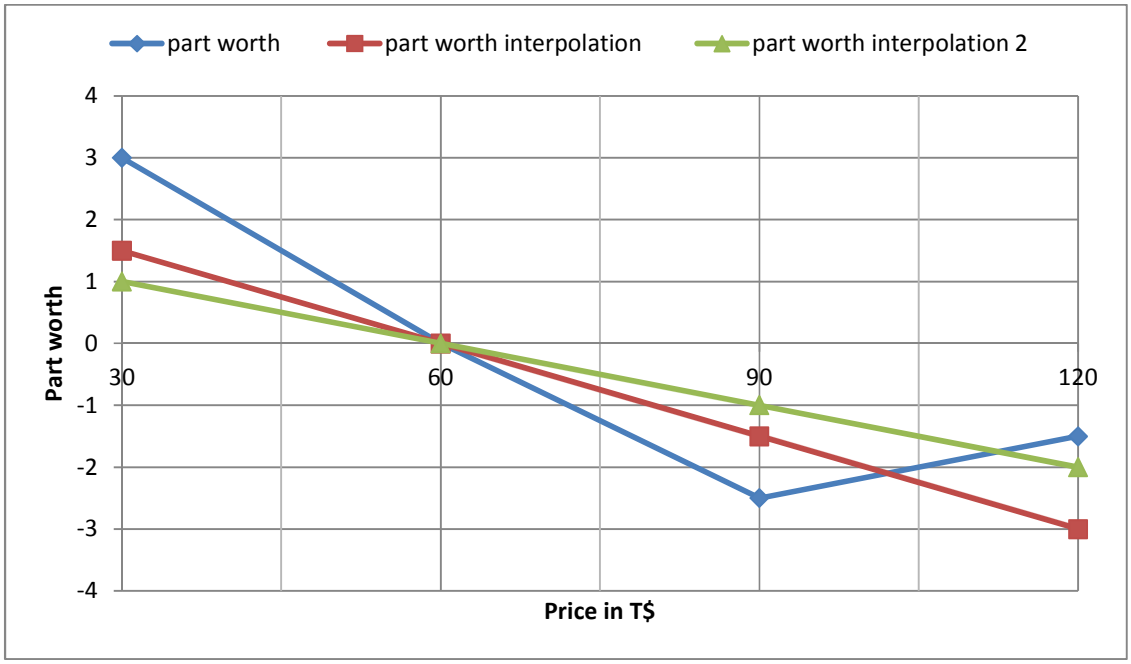


Figure 24: Pricing function for the seller sub group

Phase	Level	Part worth (Utility)
1	Outsource definition of requirements	0.25
2	Solution provider covers all revenue loses	0.5
3	Machine operated by solution provider	0.25
Total solution utility		1.0
Maximum price	80000-90000	-1.0

Table 31: Maximum price to achieve zero utility (seller group)

Keeping in mind that the solution provider can only provide value for phase 1, 2 and 3 the utility of the solution process would be 1 .0 (0.25 (outsource definition of requirements) + 0.5 (solution provider

covers all loses) + 0.25 (solution provider operates machine). Using the price function in figure 30 the maximum price the seller would pay for the offering would be between 80000 -90000 TUS$ depending on which interpolation we apply.

For the solution provider this means that the offering should focus on phase 1, 2 and 3 of the solution selling process.

The maximum price for both groups is the same but there is one significant difference to the solution process favoured by the buyer group. The maximum price the seller group would pay is a little higher but it also comes with the downside of the solution provider has to cover phase one of the process namely the definition of requirements

The modified solution selling process offered to a marketing professional could look as follows

Maximum willingness to pay:

85000 US$

Figure 25: Suggested modification of the solution process for the seller sub group.

A profit calculation for the solution offered to the seller sub group could look like that:

Position	lower scenario	upper scenario
Revenue (Maximum willingness to pay)	85000	85000
Cost for analysing the machine	-3200	-9000
Paying for all downtimes	0	-60000
Operating the machine	-60000	-60000
Profit	21800	-44000
Margin	26%	-51.7 %

Table 32: Profitability calculation based on the WTP (seller sub group)

The two scenarios indicate that there is a slim line between success and failure when it comes to the profitability of the solution. In the case of the machine running without any problems no payment for downtimes will occur. Then the solution provider can get some profit from his offering and even afford to pay his machine operator the same amount of money the operator of the customer would get.

5.3.4 Summary of the conjoint section

The conjoint analysis was conducted to determine the willingness to pay for a specific maintenance solution relevant in the B2B market. Special focus was put on the differences between buyers and sellers. The conjoint analysis enables researchers to create pricing functions for both individuals and sub groups.

Even though the individual sample sizes are small the conjoint analysis indicates that solution offerings need to be customized to meet both the expectation of customers and the requirements of the solution provider in order to keep costs under control. Customers, depending on their professional background, seem to be willing to pay only for certain parts of the solution process postulated by Tuli et al. (2007). Obviously this statement only holds for the hypothetical case presented to the respondents. Nevertheless a customization of the solution selling process addressing the specific background of the buyer is an adequate measure to ensure profitability. At the same time it is in the best interest of the solution provider to ensure that the quality of his work remains on the highest level as any failure or mistake in the maintenance of the machine will reduce his profit.

One of the major questions is whether purchasers in B2B buy solutions for the purpose of reducing risk or increasing revenue (Sharma, 2011). Price in both sup groups is by far the most important attribute which might be owed to the price levels in the maintenance case. The lower price levels might have been too attractive to the respondents leading to an overstatement of the price attribute.

Both sub groups are not willing to pay for post deployment service offerings indicating that solution offerings might be evaluated on a project base without the desire to create a long term business relationship. This can have serious impacts on the solution provider as the benefits of a long term business relationship might not materialize.

The conjoint analysis also indicates that individuals in B2B can have a significantly higher willingness to pay depending on their personal preferences. In case of respondent 6 the price function over the given pricing interval is flatter compared to those for the sub groups in purchasing and marketing. This indicates less price sensitivity and therefore more space for the solution provider to manoeuvre and generate a profit.

A decision guideline for solution providers based on the findings is shown in chapter 8 “Impact on Management”

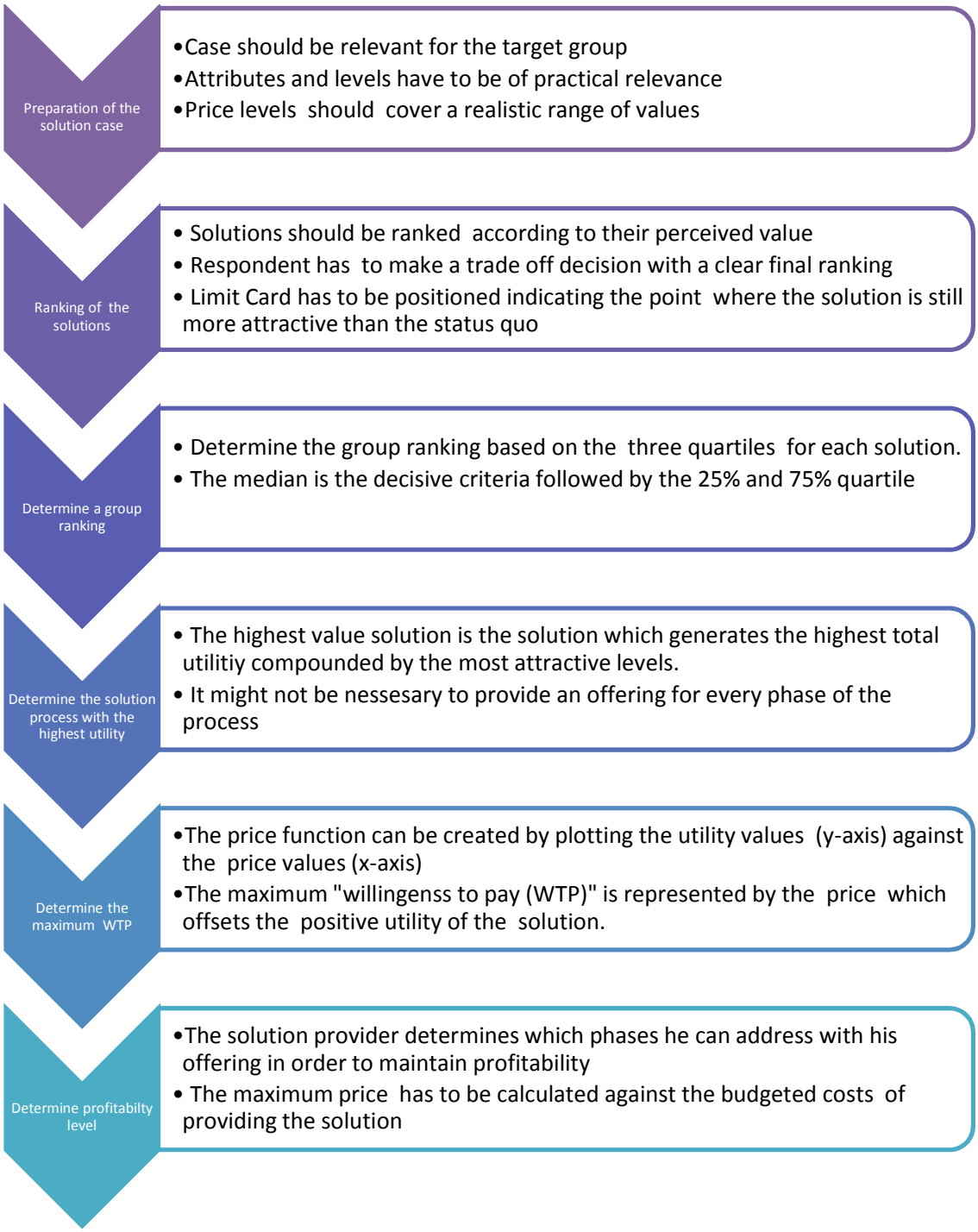
Summary of conjoint results on the willingness to pay (WTP)

To summarize the findings there is a difference in the willingness to pay for the solution process. It is obvious that buyers will only consider paying for certain phases of the solution whereas they like other phases to be conducted in-house. The analysed sub segments have a different preference about which phases of the process should be outsourced and which should kept in-house. Also considering the value proposition of the solution both sub groups favour the safety option leaving the risk to the solution provider being exposed to higher cost in case of production failure. The gap between the two groups, even though it is not visible from face value, has to be contemplated with respect to the risk distribution between solution provider and buyer and the potential costs. The following summary shows that between the studies sub groups there is no significant difference when we consider the potential profitability range. Nevertheless looking into individual responses there are opportunities to charge higher prices without investing into the different solution phases or taking high amounts of risk.

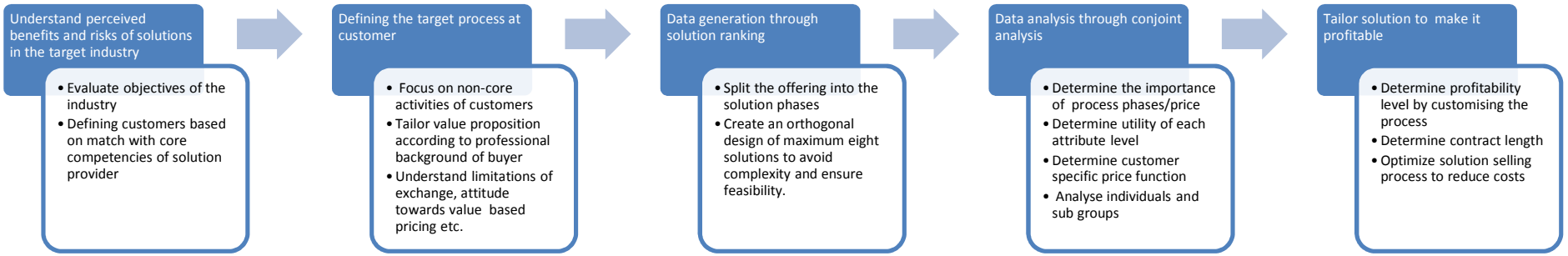
Sample	Maximum price for the most favourable solution (US$)	Potential costs for the solution provider	Profitability range of solution provider
Total sample	82500	Cost for downtime payments, operating machine	-45.5% - 27.3%
Respondent 6	135000	Analysing the customer requirements + try to increase output + workshop organization	53.3% - 69.3%
Buyers	825000	Cost for downtime payments, operating machine	-45% - 23.8%
Sellers	80000-90000	Analysing customer requirements, cost for downtime payments, operating machine	-51% - 26%

Table 33: Summary on the WTP by respondent group

Proposed process for the data evaluation to determine the willingness to pay



Proposed methodological approach to optimize the willingness to pay in B2B



6 Result from the main study "Applying the maintenance case to a relevant focus group"

During the pilot study it became obvious that the applied sampling method led to a group of respondents with an unspecific profile. As the case was highly specific and addressed a certain buying situation in the chemical industry it became necessary to define a more relevant group of people to rank the solutions. Furthermore the value of customized solutions can only be understood by people who handle these offerings in real life and who, in reality might come across such a proposal. The sample in the pilot study contained a great variety of people working either in purchasing, operations or sales. The corresponding industries ranged from Chemicals to IT and logistics.

The methodological approach defined in the pilot study is now applied on a relevant set of people working in the buying departments of chemical companies responsible for maintenance/operation outsourcing or working in operations as engineers evaluating and approving external maintenance providers.

The maintenance case has been modified in two respects. Firstly the price levels have been changed from 30, 60, 90, 120 TUS$ to 50, 70, 90, 110 TUS$. The main reason for the adaptation was that 30 TUS$ was considered a very low price level in relation to what was offered in the solution. As a consequence the meaning of the attribute price might have been overrated. The relative importance of the attribute price will change as the interval between the lowest and the highest price gets smaller. Secondly the order of the solutions was changed putting one of the low price solutions from position 1 to position 5 and from position 2 to position 8 respectively. The reason for that was a statement in conjoint literature where the author suggested that the first stimuli in a conventional conjoint analysis get a higher degree of attention from the respondent than the latter ones. This effect in combination with a low price level might have given the low price offerings a higher perceived importance.

The introduction to the case was further simplified and translated into German in order to address the local engineers in the German plants. The introduction, new order of solutions and the ranking results of the 25 respondents are added in the appendix. The profile of the respondents was mentioned in the methodology section. The 25 respondents came from three companies all producing oleo chemicals and surfactants. First company was Clariant, a world leading Speciality Company with production sites in all four major continents. All regions have commercial buying centres handling external maintenance services and local plant engineers for their evaluation and implementation. 25 respondents answered

the case study (11 purchasers and 14 engineers/plant managers). All respondents confirmed that these evaluations fall in their area of responsibility. The modified stimuli set up were as follows.

Card	Phase 1	Phase 2	Phase 3	Phase 4	Price
1	No service	SP pays for downtime	No service	SP offers training +consultancy	70000
2	SP evaluates machine	SP increases output	No service	SP offers training +consultancy	90000
3	SP evaluates machine	SP pays for downtime	No service	No service	110000
4	No service	SP pays for downtime	SP operates machine	No service	90000
5	No service	SP increases output	No service	No service	50000
6	SP evaluates machine	SP increases output	SP operates machine	No service	70000
7	No service	SP increases output	SP operates machine	SP offers training +consultancy	110000
8	SP evaluates machine	SP pays for downtime	SP operates machine	SP offers training +consultancy	50000
Limit card					

6.1 *Results of the purchasing group*

Applying the evaluation model defined in the pilot study the results of the purchasers are as follows:

Solution	25% Quartile	50% Quartile	75% Quartile	Overall ranking
1	3	4	5	4
2	3	5	7	5
3	8	8	8	9
4	2	4	5	3
5	6	7	9	8
6	2	3	3	2
7	5	7	7	7
8	1	1	1	1
Limit Card	4	7	9	6

This leads to the following group ranking for the purchasing group

8	6	4	1	2	7	5	3

At this point it should be mentioned that all respondents in the purchasing group ranked solution 8 as their number 1. This is not surprising as this is a complete solution where everything is handled by the supplier and the supplier pays for any revenue loss that might occur. The purchasing group decided to outsource the complete process to the supplier knowing that he is liable for any loss that occurs.

Based on the methodological approach defined in the pilot study this leads to the following allocation of utility values.

Total worth	4.5	3.5	2.5	1.5	0.5	-0.5	-1.5	-2.5

$$\mu = \frac{(4.5 + 3.5 + 2.5 + 1.5 + 0.5 - 0.5 - 1.5 - 2.5)}{8} = 1$$

Card	Outsource	no service	SP increases	SP pays	no service	Outsource	training+ consultancy	no service	50T$	70T$	90T$	110 T$	Rank value
1		1.5		1.5	1.5		1.5			1.5			1.5
2	0.5		0.5		0.5		0.5				0.5		0.5
3	-2.5			-2.5	-2.5			-2.5				-2.5	-2.5
4		2.5		2.5		2.5		2.5			2.5		2.5
5		-1.5	-1.5		-1.5			-1.5	-1.5				-1.5
6	3.5		3.5			3.5		3.5		3.5			3.5
7		-0.5	-0.5			-0.5	-0.5					-0.5	-0.5
8	4.5			4.5		4.5	4.5		4.5				4.5
X	1.5	0.5	0.5	1.5	-0.5	2.5	1.5	0.5	1.5	2.5	1.5	-1.5	
X-μ	0.5	-0.5	-0.5	0.5	-1.5	1.5	0.5	-0.5	0.5	1.5	0.5	-2.5	
part worth for	β_{11}	β_{12}	β_{21}	β_{22}	β_{31}	β_{32}	β_{41}	β_{42}	β_{51}	β_{52}	β_{53}	β_{54}	

	Outsource	no service	SP increases	SP pays	no service	Outsource	training + consultancy	no service	50T$	70T$	90T$	110 T$
$\beta_{\text{jm (norm)}}$	1	0	0	1	0	3	1	0	3	4	3	0
$\beta_{\text{jm*}}$	0.1	0	0	0.1	0	0.3	0.1	0	0.3	0.4	0.3	0

Calculating the relative importance of each attribute for the purchasing group leads to the following results.

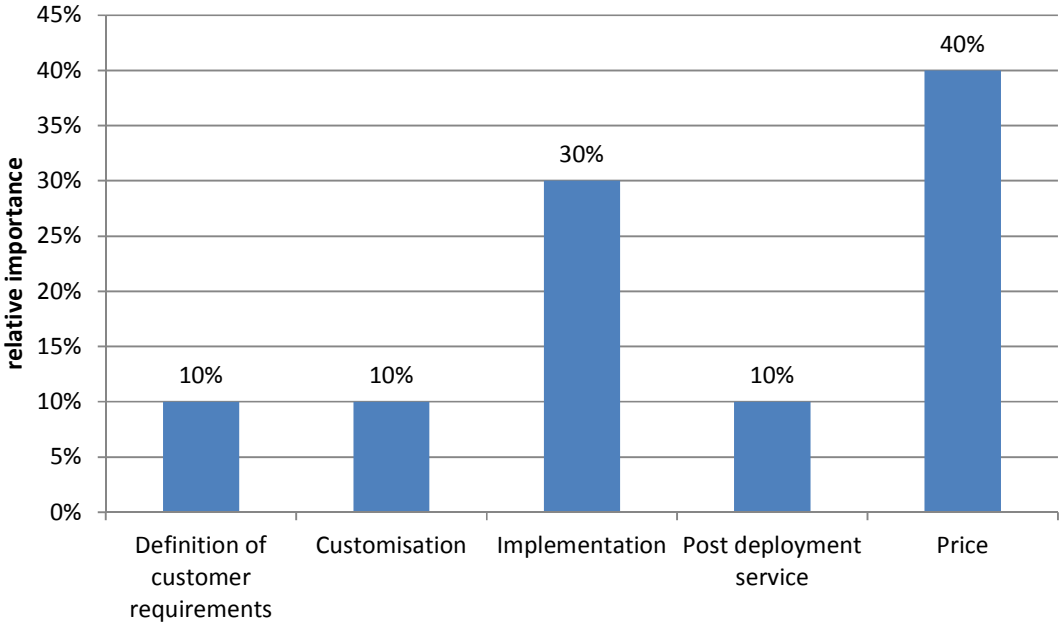


Figure 26: Relative importance of attributes for the purchasing group

The optimal solution based on the highest utility values for each attribute would be identical to solution number 8. In the conjoint analysis this solution was worth 50000 US$. Based on the maximum utility of the preferred offering and the price function derived from the conjoint analysis it can be estimated that purchasers are willing to pay > 110000 US$.

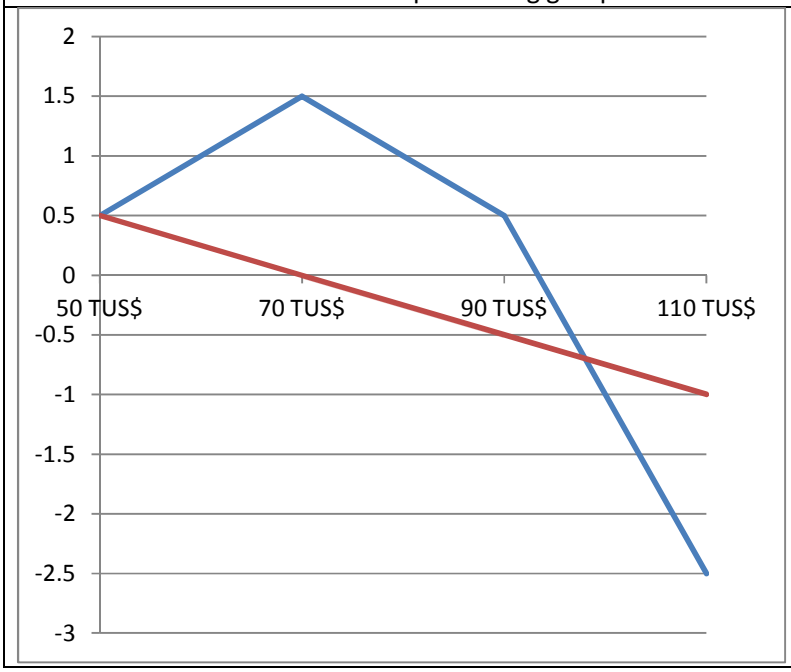
Price function for the commercial purchasing group	Total utility of best solution= +3.0
	Phase 1: Solution provider analysis machine status = 0.5 Phase 2: Solution provider pays for all downtimes = 0.5 Phase 3: Solution provider operates the machine = 1.5 Phase 4: Solution provider offers training and consultancy = 0.5

Figure 27: Price function vs. preferred solution

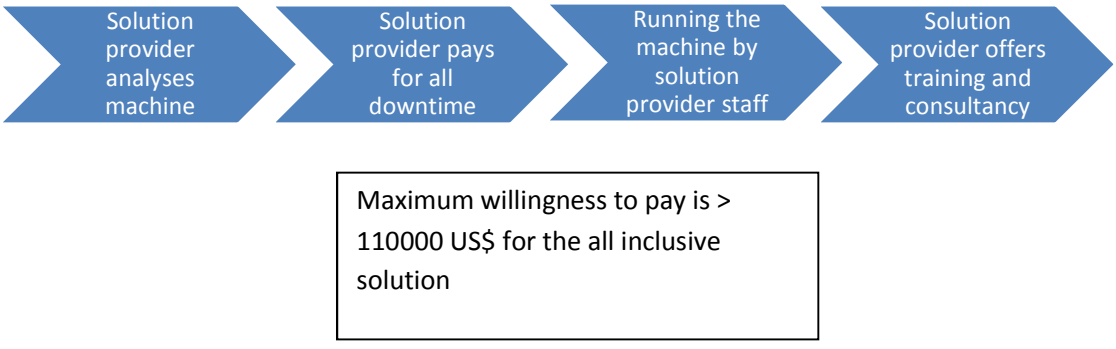


Figure 28: Preferred solution of the purchasing group

In the following table the potential profitability levels of the offering are calculated based on the assumption that the lowest amount the purchasers are willing to pay is around 110 TUS$ and the highest around 190 TUS$ (using the red interpolation curve as reference). This value strongly depends

on how the pricing function is interpolated. To get a better picture it might be necessary to re-visit the group and ask them for a concrete price for their favourite solution. Only then the validation of the model can be checked for it validity. The solution provider has to ensure the downtimes are minimized as this drives his profitability level.

Position	lower scenario	upper scenario
Revenue (Maximum willingness to pay)	110000	190000
Cost for analysing the machine	-9000	-9000
Paying for all downtimes	-60000	-60000
Operating the machine	-60000	-60000
Profit	-19000	61000
Margin	-17%	32.1 %

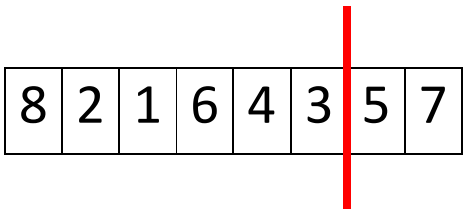
Figure 29: Potential profitability levels for the solution offered to purchasers

6.2 *Results of the operations group*

Applying the evaluation model defined in the pilot study the results of the operation group are as follows:

Solution	25% Quartile	50% Quartile	75% Quartile	Overall ranking
1	3	4.5	5	3
2	1	2.5	6	2
3	3	5.5	8	6
4	4	5.0	7	5
5	4	7	8	8
6	3	4.5	7	4
7	6	8	9	9
8	1	2	4	1
Limit Card	4	5.5	9	7

This leads to the following group ranking for the operations group



Compared to the purchasing group the operations group puts a stronger focus on solution number 2 which achieved nearly identical ranking than solution number 8. The main difference is that the intention to increase the machine output seems to be valued higher with the operations groups than with the purchasing group. This does not come as a surprise. Operational people focus their efforts on an optimal utilisation of their assets. Any value proposition which supports their efforts can be expected to be considered of high value.

Based on the methodological approach defined in the pilot study this leads to the following allocation of utility values.

Total worth	5.5	4.5	3.5	2.5	1.5	0.5	-0.5	-1.5

$$\mu = \frac{(5.5 + 4.5 + 3.5 + 2.5 + 1.5 + 0.5 - 0.5 - 1.5)}{8} = 2$$

Card	Outsource	no service	SP increases	SP pays	no service	Outsource	training+ consultancy	no service	50T$	70T$	90T$	110 T$	Rank value
1		3.5		3.5	3.5		3.5			3.5			3.5
2	4.5		4.5		4.5		4.5				4.5		4.5
3	0.5			0.5	0.5			0.5				0.5	0.5
4		1.5		1.5		1.5		1.5			1.5		1.5
5		-0.5	-0.5		-0.5			-0.5	-0.5				-0.5
6	2.5		2.5			2.5		2.5		2.5			3.5
7		-1.5	-1.5			-1.5	-1.5					-1.5	-1.5
8	5.5			5.5		5.5	5.5		5.5				5.5
X	3.25	0.75	1.25	2.75	2	2	3	1	2.5	3	3	-0.5	
X-μ	1.25	-1.25	-0.75	0.75	0	0	1	-1	0.5	1	1	-2.5	

part worth for	β_{11}	β_{12}	β_{21}	β_{22}	β_{31}	β_{32}	β_{41}	β_{42}	β_{51}	β_{52}	β_{53}	β_{54}	

	Outsource	no service	SP increases	SP pays	no service	Outsource	training + consultancy	no service	50T$	70T$	90T$	110 T$
$\beta_{jm\ (norm)}$	2.5	0	0	1.5	0	0	2	0	3	3.5	3.5	0
β_{jm*}	0.26	0	0	0.16	0	0	0.21	0	0.32	0.36	0.36	0

Calculating the relative importance of each attribute for the operations group leads to the following results.

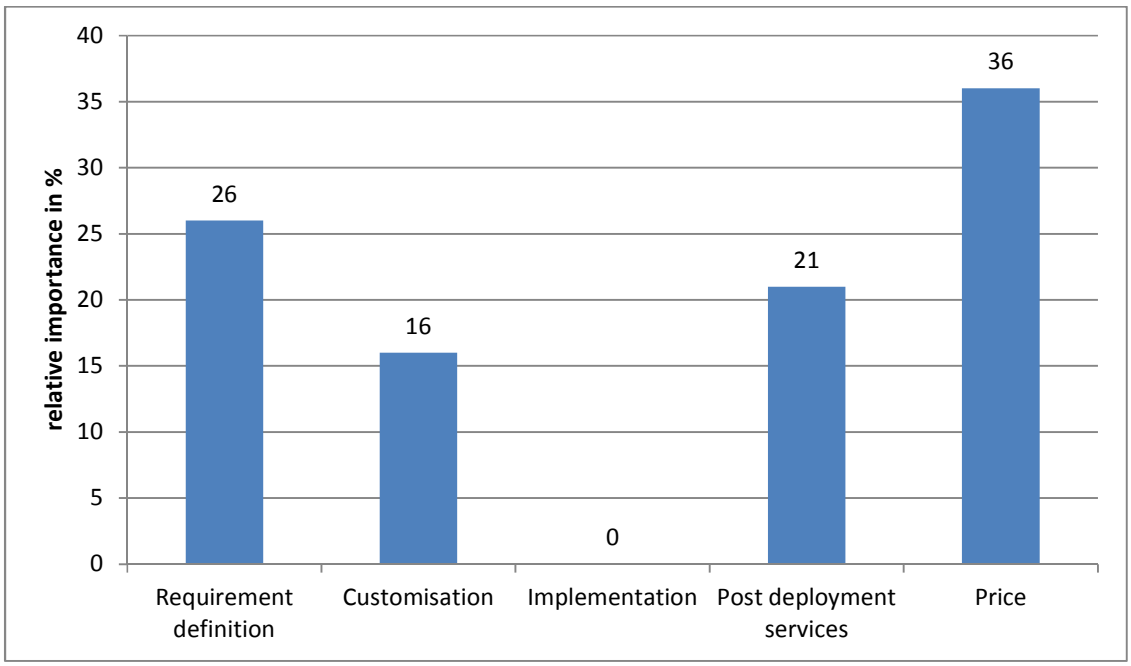
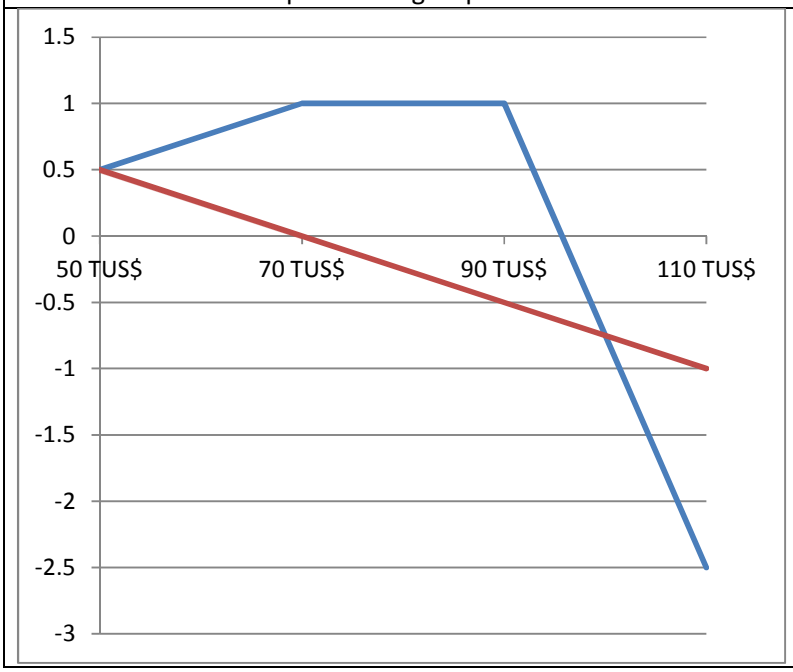


Figure 30: Relative importance of attributes for the operations groups

The optimal solution based on the highest utility values for each attribute would be similar to the solution chosen by the purchasing group. Main difference is that the outsourcing of the machine operation is not considered to be relevant. Compared to the purchasing group the price has a lower relative importance compared to the other attributes but still remains the most important one. Based on the maximum utility of the preferred solution and the price function derived from the conjoint

analysis it can be estimated that the members of the operational group are willing to pay > 110000 US$ for the customized offering.

Price function for the operational group	Total utility of best solution= +3.0
	Phase 1: Solution provider analysis machine status = 1.25 Phase 2: Solution provider pays for all downtimes = 0.75 Phase 3: Inhouse operation of machine = 0 Phase 4: Solution provider offers training and consultancy = 1

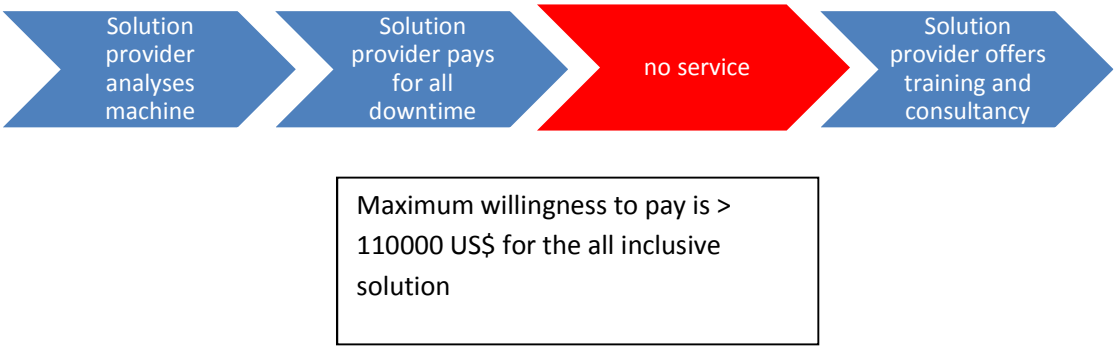


Figure 31: Preferred solution of the operations group

In the following table the potential profitability levels of the offering are calculated based on the assumption that the lowest amount the purchasers are willing to pay is around 110 TUS$ and the highest around 190 TUS$. This value strongly depends on how the pricing function is interpolated. To get a better picture it might be necessary to re-visit the group and ask them for a concrete price for their favourite solution. Only then the validation of the model can be checked for it validity. The solution provider has to ensure the downtimes are minimized as this drives his profitability level.

Position	lower scenario	upper scenario
Revenue (Maximum willingness to pay)	110000	190000
Cost for analysing the machine	-9000	-9000
Paying for all downtimes	-60000	-60000
No service	0	0
Profit	41000	121000
Margin	37%	64 %

Figure 32: Potential profitability levels for the solution offered to operations group

The following table summarizes the individual responses from both groups. The data for the relative importance of the attributes, the composition of the solution with the highest total utility (value add), the price sensitivity given as utility value at 110000 US$ and the resulting willingness to pay. In case the value add was greater than the utility of the highest price level it can be assumed that the respondent would be willing to pay more than the highest price given in the conjoint.

	relative Importance					Favourite solution				Value add	Price sensitivity	Williness to pay
Respondents	Definition of machine status	Value Proposition	Running of machine	After sales service	Price	Phase 1	Phase 2	Phase 3	Phase 4			
Purchasing 1	6	24	41	0	29	no service by supplier	Supplier pays for all loses	Supplier operates machine	no service	2.75	"-1 at 110000"	>110000
Purchasing 2	11	11	44	11	22	no service by supplier	Supplier tries too increase	no service	no service	0.5	"-1 at 110000"	<110000
Purchasing 3	10	20	10	0	50	supplier evaluates machine	Supplier pays for all loses	Supplier operates machine	Supplier offers training	2.5	"-3 at 110000"	<110000
Purchasing 4	10	20	10	0	50	supplier evaluates machine	Supplier pays for all loses	Supplier operates machine	Supplier offers training	2.5	"-3 at 110000"	<110000
Purchasing 5	6	18	28	6	44	supplier evaluates machine	Supplier pays for all loses	Supplier operates machine	Supplier offers training	2.5	"-3 at 110000"	<110000
Purchasing 6	6	14	47	12	18	supplier evaluates machine	Supplier pays for all loses	Supplier operates machine	Supplier offers training	3.5	"-1 at 110000"	>110000
Purchasing 7	24	5	20	20	33	supplier evaluates machine	Supplier pays for all loses	Supplier operates machine	Supplier offers training	3.5	"-2 at 110000"	>110000
Purchasing 8	0	7	53	7	33	no service by supplier	Supplier pays for all loses	Supplier operates machine	Supplier offers training	2.5	"-1,5 at 110000"	>110000
Purchasing 9	24	5	19	19	33	supplier evaluates machine	Supplier pays for all loses	Supplier operates machine	Supplier offers training	3.5	"-2 at 110000"	>110000
Purchasing 10	0	12	12	47	30	no service by supplier	Supplier pays for all loses	Supplier operates machine	Supplier offers training	3	"-1,5 at 110000"	>110000
Purchasing 11	18	9	18	18	36	supplier evaluates machine	Supplier pays for all loses	Supplier operates machine	Supplier offers training	3.5	"-2 at 110000"	>110000
Average	10.5	13.2	27.5	12.7	34.4					2.75		
Operations 1	6	12	41	0	41	supplier evaluates machine	Supplier pays for all loses	no service	no service	0.75	"-1 at 110000"	<110000
Operations 2	0	80	20	0	0	no service by supplier	Supplier pays for all loses	Supplier operates machine	no service	2.5	"0 at 110000"	>110000
Operations 3	11	11	44	11	22	supplier evaluates machine	Supplier pays for all loses	Supplier operates machine	Supplier offers training	3.5	"-1 at 110000"	>110000
Operations 4	6	12	6	47	29	supplier evaluates machine	Supplier pays for all loses	Supplier operates machine	Supplier offers training	3	"1 at 110000"	>11000
Operations 5	32	5	5	10	47	no service by supplier	Supplier tries too increase	no service	no service	0.25	"-2,5 at 110000"	<110000
Operations 6	50	19	19	0	13	supplier evaluates machine	Supplier pays for all loses	no service	no service	2.75	"0 at 110000"	>110000
Operations 7	26	0	32	16	26	supplier evaluates machine	no preference	no service	Supplier offers training	2	"-0,5 at 110000"	>110000
Operations 8	19	4	19	14	43	supplier evaluates machine	Supplier pays for all loses	Supplier operates machine	no service	2.25	" -3 at 110000"	<110000
Operations 9	0	12	41	6	41	no preference	Supplier pays for all loses	Supplier operates machine	Supplier offers training	2.5	"-2 at 110000"	>110000
Operations 10	25	6	6	50	12.5	supplier evaluates machine	Supplier tries too increase	no service	Supplier offers training	3.5	"-0,5 at 110000"	>110000
Operations 11	10	10	20	10	50	supplier evaluates machine	Supplier pays for all loses	Supplier operates machine	no service	2	" -3 at 110000"	<110000
Operations 12	39	6	6	17	33	supplier evaluates machine	Supplier pays for all loses	no service	Supplier offers training	2.75	"-2 at 110000"	>110000
Operations 13	26	11	32	6	26	supplier evaluates machine	Supplier pays for all loses	no service	Supplier offers training	2	"-0,5 at 110000"	>110000
Operations 14	6	0	41	12	41	supplier evaluates machine	no preference	no service	Supplier offers training	0.75	"-2 at 110000"	<110000
Average	18.3	13.4	23.7	14.2	30.3					2.18		

Table 34: Individual results of the main study

Conclusion and Implication Section

7 Conclusions and implications

After listing the results of the survey in the previous chapter the next chapter will investigate how the findings can contribute to answer the research questions. In the conclusion chapter every research question will be handled separately. The result should support the creation of the pricing model for customized solution addressing specific needs of different groups of respondents with respect to the maintenance case.

7.1 *Answering the research questions*

Research question 1: *Depending on their professional background (commercial or operation) how do the different levels of each phase of the solution offering influence the buyer's willingness to pay?*

Based on the results from chapter six the professional background of the respondent seems to have an impact on the value perception of a customized solution. There is a tendency that professional purchasers prefer a different composition of the solution offering compared to respondents working in operations.

The relative importance of the process phases

When applying the maintenance case to the unspecified group of respondents in the pilot study "price" was by far the most important attribute scoring a relative importance between 65 to 67% depending on the definition of the sub groups. Looking on individual responses the importance ranking of the attributes can drastically change. Respondent 6 (data in the appendix) perceives the operation phase as most important to him. With respect to the maintenance case this means that to him keeping the machine operation inhouse is the most important issue.

In the main study the researcher changed the focus group towards a more relevant set of individuals with a strong understanding of the case background and a high likelihood to encounter such a buying decision in their professional live. The results were different from the pilot study in terms of perceived importance and the willingness to pay.

Commercial purchasers

During the main study 11 commercial purchasers from 3 companies in the chemical industry performed the ranking of the solutions. In terms of perceived importance of the attribute price was the most important attribute with 40% relative importance followed by the machine operation with 30% and the remaining phases of the solution with 10% each. This result is based on the group ranking conducted in the result section. Looking into the individual results listed in table 33 the perceived importance of the price attribute ranges from 18 to 50% whereas the operations attribute ranges from 10 to 53%. This means that the value perception of the maintenance solution can be influenced most by changing either the price level or the machine operation part. When performing the trade off between inhouse and external operations all except one commercial purchaser favoured the outsourcing of the machine operation to the solution provider. For the other attributes 7 out of 11 (64%) favoured the external evaluation of the machine in phase 1. 10 out of 11 (91%) preferred the safety option (solution provider pays for all downtimes) and 9 out of 11 (82%) preferred the inclusion of post deployment services offerings (training and support) into the solution.

Operational buyer

During the main study 14 operational buyers such as plant technician and engineers performed the ranking. Compared to the results of the commercial buyers the relative importance of the attributes has a different distribution. Price is still the most important attribute with 36% followed by phase 1 (definition of the machine status) with 26%, phase 4 (post deployment service offerings) with 21% and the value proposition in the customisation phase with 16%. In contrast to the other group the operation phase was not considered to have a significant impact on the value perception. Looking into the individual responses the relative importance of each attribute shows a broader range of values compared to the commercial purchasing group. The importance of the “price” attribute ranges from 0 to 50% and so does the “definition of the machine status” and the post deployment phase. The value proposition phase even ranges from 0-80% and the machine operation phase from 6 to 44%. Concerning the respective preferences when performing the trade off in each phase 11 out of 14 (79%) prefer the external evaluation of the machine which seems higher than the result from the purchasing group, 10 out of 14 (71%) prefer the safety option which seems to be significantly less compared to the other group. Only 6 out of 14 (43%) would like to outsource the machine operation. Considering the background of the group this does not come as a surprise as the machine operation is part of the job description of the respondents and likely to be considered their responsibility. Finally 8 out of 14 (57%)

like to have external offerings in the post deployment phase. This is also significantly lower than the value coming from the commercial purchasing group.

These findings partially contradict some of Tuli's et al. (2007) results stating that customers consider post deployment support as the most important phase in the solution selling process (92%) and the requirement definition the least important part with 76%. Obviously the data collection method by Tuli is different to this approach as multiple answers were possible. Töllner et al. (2011) indicated that employees from a buying centre put the highest importance on the signalling activities of the solution provider. These signalling activities are a process step preceding the requirement definition where providers have to show the value of their solution and provide references. This indicates that early phases of the process are of higher importance compared to the later ones.

Conclusion

These conclusions suggest that there is a different value perception of a solution between different buying groups such as commercial purchasing and operations. This finding is supported by the views of Adams (1963) proposing that people perceive something as an inequity when the "input/output"- ratio of two persons in the same relationship is different. Furthermore the findings of Bolton and Drew (1991) also indicated that the value perception depends on customer characteristics and the sacrifices they have to endure. They claimed that the service value depends on the personal sacrifices of a customer when handling the offering and the customer characteristics such as professional background, personal attitudes and company targets.

With respect to the two buying groups in this study it should be understood that the exposure of the commercial purchaser to the implementation of the solution is low whereas the operational decision maker have to work with the external company on a day to day basis. So the use pattern will be different. Recalling the main literature findings Macdonald et al. (2011) stated that the value assessment is considered to be vital for both the provider as it influences the design of the offering and for the customer as this might assist the "outsource vs. in-house" decisions. Furthermore they found that the assessment of the value-in-use takes place on corporate level as well as on the individual level. Managers should consider both the financial impact and the value-in-use on the factory floor level. The results in this study suggest that there is indeed a difference.

The outsourcing of the machine operation is one of the major drivers in the value assessment of the commercial purchaser. The benefit of this choice can be quantified easily making in terms of its financial

impact. On the contrary the operational buyer puts a higher importance on all other phases of the process which relate to the implementation of the solution.

The results of the main study suggest a more customized approach with a clear evaluation of the buyer's professional background and a tailoring of the solution selling process according to the results of this evaluation. It can be concluded that the commercial purchaser is willing to pay for the opportunity of outsourcing the running of the machine and the risk associated with the downtime. Given the specifics of the case purchasers tend to look for cost reduction. In this case the safety option is considered to be an insurance against the loss in output whereas the risker option is related to an increase in revenue as the outcome is uncertain. If on top the solution does offer an additional cost reduction opportunity such as the outsourcing of the machine operation, purchasers seem to become even less price sensitive.

On the contrary operational buyers seem to derive more value from the external analysing capabilities of the solution provider in phase 1. For the other phases the desire to put too much into the hand of the solution provider seems to be lower. As a matter of fact one of the favourite solution compositions which became second in the operations ranking consisted of external evaluation of the machine, the value proposition to increase their out including post deployment services but without the outsourcing of the machine operations.

The following table summarizes the trade off decision of both groups.

Solution phase	Commercial purchaser	Operational buyer
External definition of machine status	64%	79%
Solution provider pays for any downtimes	91%	71%
External operation of the machine	91%	43%
Solution provider offers training and consultancy	82%	57%

Table 35: Summary of trade offs choosing to outsource phases of a solution

Both groups put a high value on the full service solution. The main difference is that operational buyers as a whole are more cautious on using external service offerings than commercial purchasers. The impact on the willingness to pay will be evaluated in the latter section. In the end offering a full profile

solution will come with a strong pressure on costs and for the sake of risk reduction solution providers have to consider neglecting or even skipping certain phases of the process as customers are not willing to pay for them.

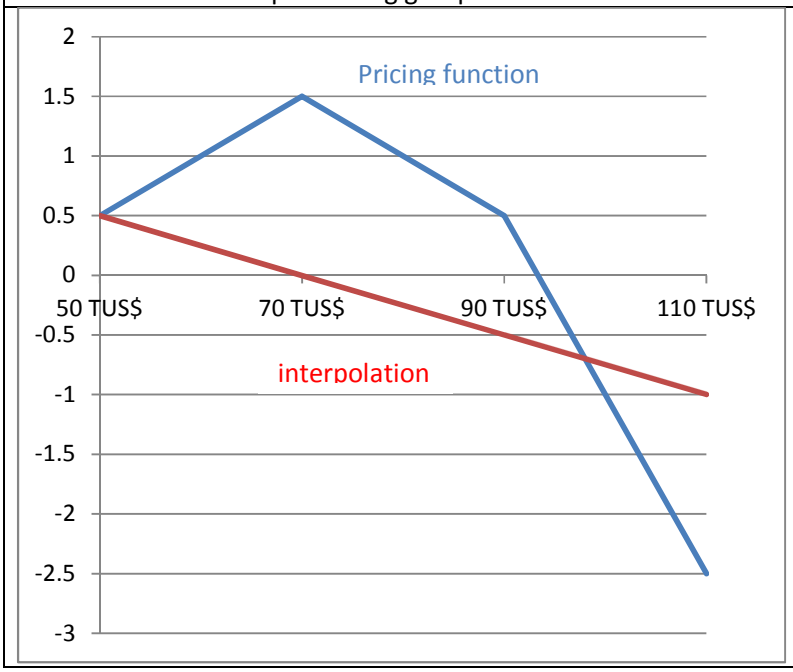
The pricing function for both sub groups

The pricing function plots the price level against the corresponding utility value for every respondent. The shape of the graphs indicates the perceived value of the price which then has to be added to the total utility of the favourite solution composition. Often the function is not a straight line. Therefore the data points should be interpolated in order get apply for the calculations later on.

During the pilot study two sub groups of the total sample were studied in detail. One group consisted of buyers the other of sellers. In order to interpolate data points in the pricing function I used linear interpolation. A wider range can be covered if different straights are used. This gives the researcher the opportunity to work with price corridors instead of one single price.

Commercial purchaser

The pricing function for the commercial purchasers looks as follows:

Price function for the purchasing group	Total utility of best solution= +3.0
	Phase 1: Solution provider analysis machine status = 0.5 Phase 2: Solution provider pays for all downtimes = 0.5 Phase 3: Solution provider operates the machine = 1.5 Phase 4: Solution provider offers training and consultancy = 0.5

Looking at the consolidated pricing function for the commercial purchasing group it shows there is no linear correlation between price and utility. Between 50000 and 90000 the utility varies between 0.5

and 1.5 with its peak at 70000 US$. It is important to understand that the price sensitivity is always driven by the offer behind the price. Due to the methodology and the orthogonal design some offers might look more favourable than others. The value perception of the 110000 US$ level seems to be drastically reduced. The reason behind this could be the composition of the corresponding solution. Looking into the offerings which had a price tag of 110000 US$ the composition looks as follows.

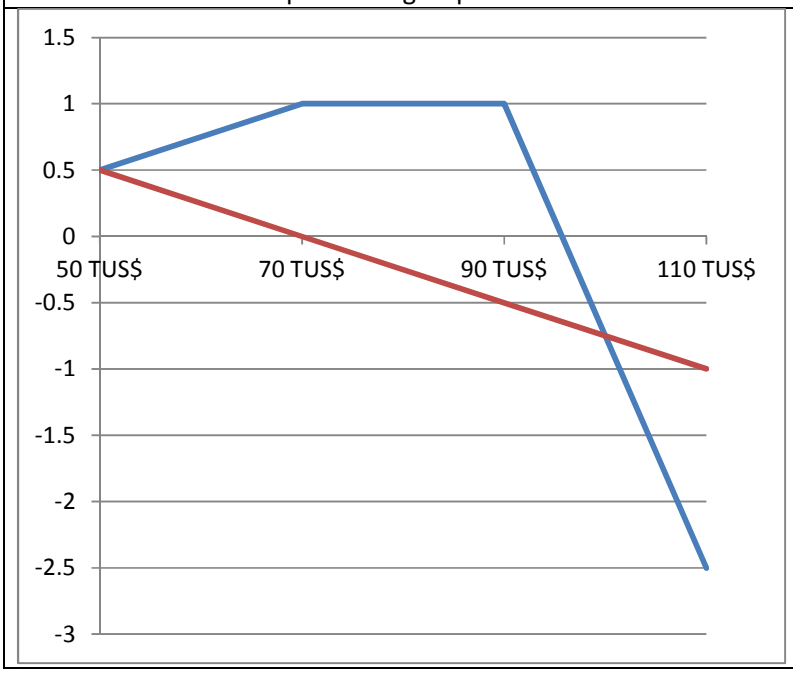
solution 3	SP evaluates machine	SP pays for downtime	No service	No service	110000
solution 7	No service	SP increases output	SP operates machine	SP offers training +consultancy	110000

The most important attributes for the commercial purchaser were price and the machine operation followed by the value proposition. None of the solution has both components contained at the same time. The low utility value at 110000 can therefore be explained. Taking into consideration that the total utility of the most favourable solution is + 3.0 the maximum price the commercial purchaser group would be willing to pay is likely to be beyond 110000 US$. Nevertheless it is doubtful that maximum price can be achieved by the solution provider as a positive value perception in form of a positive total utility of the solution should be maintained. The solution provider can influence all phases of the solution process which is a chance and a challenge in terms of trading off quality and cost control.
The overall benefit of the solution for the purchaser should be positive. Therefore a final price up to 110000 U$ could be realistic. The preferred design of the solution offered to the commercial purchaser should include the safety option (paying for downtime) and the machine operation (conducted by solution provider) as well as both a post and pre deployment evaluation and training part. The solution provider has to be aware that this could lead to higher fixed cost (machine operation) and variable costs (downtime payment).
Looking into the individual responses of the 11 commercial buyers it becomes obvious that the preferred solution composition scores an average utility of 2.75 with most of the values ranging from 2.5 to 3.5. Assuming that the utility value of the price level 110000 is -2.5 it can be assumed that 10 out of 11 respondents would have been willing to pay 110000 US$ or more the full profile solution offered by the provider.
The process by which the offerings are evaluated by purchasers should be observed with respect to Anderson and Narus (1998) findings considering the value in business markets as the worth in monetary

terms of the technical, economic, service and social benefits a customer company receives in exchange for the price it pays for a market offering.

Operational buyers

The consolidated pricing function for the operational buyers group shows a similar relationship of price and utility with the commercial one. Between 50000 and 90000 US$ the utility is positive ranging between 0.5 and 1.0. For the price level of 110000 US$ the utility drops to -2.5.

Price function for the operations group	Total utility of best solution= +3.0
	Phase 1: Solution provider analysis machine status = 1.25 Phase 2: Solution provider pays for all downtimes = 0.75 Phase 3: Inhouse operation of machine = 0 Phase 4: Solution provider offers training and consultancy = 1

The preferred solution of the operations group has a total utility of 3.0 with phase 1 and phase 4 being the main value drivers. At first glance that would also lead to the assumption that the willingness to pay for the preferred solution composition would be greater than 110000 US$.

Looking into the 14 individual responses the picture gets more diverse. Whereas the utility of the price 110000 US$ was generally between -1 and -3 within the commercial purchasing group, the range for the operational buyers is between 1 and -3 with 3 respondents showing utilities of ≥ 0 . This indicates that operational buyers are slightly less price sensitive. The average utility of the preferred solution is 2.18 which is lower than the 2.75 from the commercial group. Nevertheless the previous evaluation shows

that operational buyers rely on less external support for the machine operation. The solution could therefore be more profitable for the solution provider as it could significantly reduce its cost base.

Conclusion

For the solution provider tailoring the process to the value perception of the buyer is crucial for profitability. The art is to find the right balance based on the value perception of the buyer. In this specific maintenance case operational buyers seem to be driven by using external expertise to generate additional revenues whereas as commercial purchasers look mainly for risk and cost reduction. The latter comes with higher potential costs and risks for the solution provider for which the purchasers arepartially willing to pay for. The results show that solution providers have to carefully study the preferences of the buyer taking into consideration their professional background to tailor the offering with the best possible impact on their profitability. If the buyer does not value the requirement definition phase and post deployment service offerings than it should not be included in the offering. Again these findings challenge the general process by Tuli et al. (2007) with respect to the potential profitability of his full scale offering. Findings indicate that the process should be either reduced to its relevant components or the certain sensitive part should be left to customer or worked out together with him.

The conclusions from the main study are supported by other findings from literature. The generation of profit from solutions is a challenge which has been acknowledged among others by Bonnemeier (2011), Sawhney (2006) and Sharma (2011). Ahlert and Bentrop (2008) stated that the optimal price of a solution lies close to the maximum price the customer is willing to pay for the overall benefit of the solution. It should include material and labour costs, research and development cost, capital costs and other overheads.

At the same time the solution provider has to ensure capturing the cost of implementation and the cost occurring over the life time of the solution. Addressing this issue the findings of the thesis suggest that the solution provider should adapt their solution selling process based on the willingness to pay of the purchaser identifying in which area the customer would like to perform the work himself and where the provider can add value. This will lower the cost base and give the solution provider the opportunity to focus on relevant areas. On the other hand potential costs for compensation payment have to be covered by the offering. In the main the 110000 US$ identified as maximum price for the maintenance solution offering are likely to lead to a loss making business if not properly managed. In this case the

offering could be adapted individually with the objective that higher paying customers cover the loss made with others.

The difficulties in recovering the costs for the initial stages of the solution process have been identified by Sharma et al. (2011) and Bonnemeier (2011). The following table summarizes the impact of the different levels on the WTP of the sub groups. The green arrow indicates an increase in utility, the red arrow a reduction.

Impact on WTP	Phase 1 In-house /Outsource	Phase 2 Safety/Risk	Phase 3 In-house/Outsource	Phase 4 Y / N
Commercial	↓ ↑	↑ ↓	↓ ↑	↑ ↓
Operation	↓ ↑	↑ ↓	↑ ↓	↑ ↓

Table 36: Impact of attribute levels on the willingness to pay

Research question 2: ***How does an increasing price impact the value perception and the price sensitivity of different groups of buyers?***

During the answer to research question 1 it became obvious that due to their similarity the consolidated price function are only of limited use answering research question 2. Therefore question 2 will go into a detailed evaluation of the individual price function in order to get an impression about the individual price sensitivity.

Earlier academic research by Gabor and Granger (1966) stated that price sensitivity is related to price elasticity of demand defined as the ratio of percentage change in quantity such as units sold or sales revenues relative to the objective price of the offer. Monroe (1990) defined price consciousness as the degree to which he or she is unwilling to pay a high price for a product and willing to refrain from buying a product whose price is unacceptably high. Nagle and Holden (1995) suggested that many factors have an impact on price sensitivity. These factors are perceived substitutes, unique value, switching costs, difficulty of comparison, price-quality, relative expenditure, end-benefits, shared costs, perceived fairness and inventory effects. It was also stated by Danes and Mullikin (2012) that this factors are product/service and target market dependent.

For the given maintenance case only a few factors can considered to be relevant. The offerings are potential substitutes to an alternative namely not buying the service at all. This is signalled by the limit card. Any solution below the limit card should not be considered for purchasing. The end benefit effect can be relevant for both investigated groups depending on their individual KPI's.

In order to estimate the value perception and the corresponding price sensitivity of the individual respondents in the main study the following section will evaluate the development of the price function with increasing price level and compare these data with the preferred solution of the respondents.

Commercial Purchasing

Respondent	Utility level @50	Utility level @70	Utility level @90	Utility level @110
1	1	1	-0.5	-1.5
2	0	0	1	-1
3	1	2	0	-3
4	1	2	0	-3
5	1	1	1	-3
6	0	0.5	0.5	-1
7	0	1.5	0.5	-2
8	1	1	-0.5	-1.5
9	0	1.5	0.5	-2
10	0.5	0.5	0.5	-1.5
11	0	2	0	-2
Average	0.5	1.2	0.3	-1.7

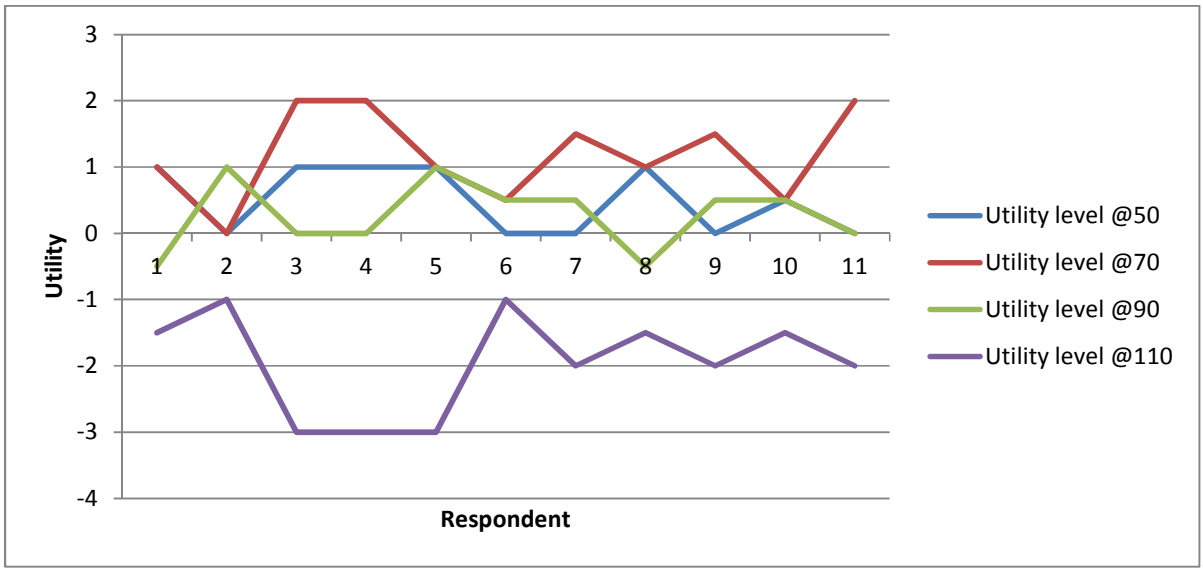


Figure 33: Price utilities for the commercial purchasing group

As mentioned before the steep drop of the utility value between 90 TUS$ and 110 TUS$ is remarkable. Even though some of it can be explained with the composition of the individual solutions it seems to be a general tendency as this is the case for all respondents.

Operational buyers show a slightly different result. Also there is a steep drop between 90 and 110 TUS$ the average utility level is higher (-1.2 vs. -1.7). Between 50 and 90 TUS$ the level is more or less constant.

Operational buyers

Respondent	Utility level @50	Utility level @70	Utility level @90	Utility level @110
1	-1.5	0.5	2	-1
2	0	0	0	0
3	0	1	0	-1
4	0.5	-1.5	0	1
5	0	0.5	2	-2.5
6	-0.5	0	0.5	0
7	-1	1.5	0	-0.5
8	2	0	0.5	-2.5
9	1	1.5	-0.5	-2
10	0	0.5	0	-0.5
11	2	1	0	-3
12	0	1	1	-2
13	1	-1.5	1	-0.5
14	1.5	-0.5	1	-2
Average	0.4	0.3	0.6	-1.2

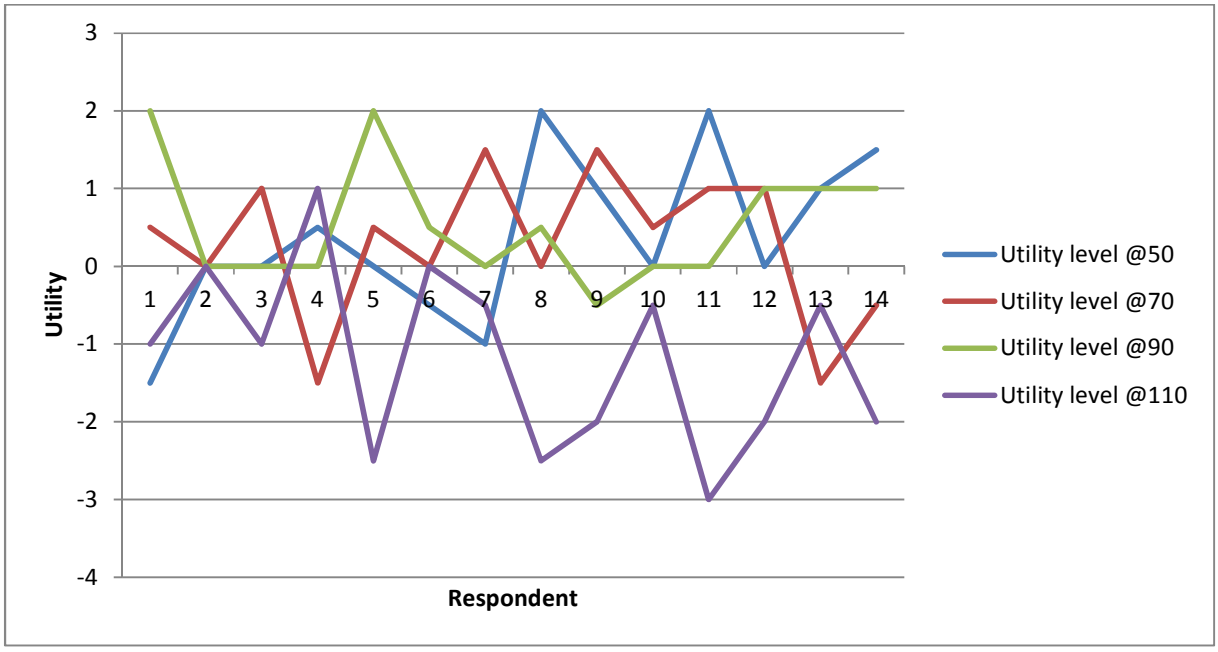


Figure 34: Price utilities for the operations groups

There are five respondents who show a different utility development over the price range. These are respondents 2, 4, 6, 7, 10 and 13. This result shows that for these respondents there are attributes which are more important to them than price.

For respondent 2 it is the value proposition (solution provider pays for all downtimes), respondent 4 and 10 (post deployment service such as training and consultancy), respondent 6 (definition of machine requirements), respondent 7 and 13 (in-house machine operation).

Conclusion

The shape of the price function indicates how a change in price impacts the perceived value of an offering. Price sensitivity of individuals or buying groups will impact the willingness to pay for a solution (Dunas and Mullikin, 2012). Price sensitivity is related to price elasticity and depends on different factors mentioned in the introduction. With respect to mobile service customers Munnukka (2005) found that price sensitivity can be significantly explained by a customer's level of innovativeness and the level of satisfaction with the operator's service.

Whereas the shapes of the consolidated price functions for both target groups are similar the individual results show clear differences.

The data from the conjoint analysis can be used to estimate price sensitivity of different respondents or respective subgroups.

Comparing both data sets there is a tendency that the price sensitivity of operational purchasers is lower. Within the commercial purchasing group the utility for the price level 110 TUS$ is constantly below the utilities of the other price levels (figure 33). The utilities in the operations group overlap significantly (figure 34). This could mean that for the same offering the willingness to pay more than 110 TUS$ is slightly higher on the operations side.
Caution should be taken when using conjoint data to estimate the willingness to pay. Orme (2010) stated that traditional conjoint analysis tends to understate consumers price sensitivity leading to inflated values with respect to the willingness to pay.

In general the findings call for a case specific approach of the solution provider investigating the business environment of the main decision maker and estimating their individual price function. In case of buyers working in operations they might be less sensitive to cost reduction proposals and accept offerings with potentially higher short term profitability benefits for the provider and long term profitability benefits for themselves.
The findings are in line with the literature on value perception. The price the respondent pays for a certain utility can be directly linked to the value perception of the offering.
According to literature value can be considered to be a trade-off between quality/benefits and price/sacrifices (Vinson et. al., 1977; Clawson and Vinson, 1978; Rust and Oliver, 1994; Zeithaml and Bitner, 1996). Basically consumers try to maximize their personal perceived value of the deal (Lovelock 1991; Rust and Oliver, 1994, Chen and Dubinsky 2003). Bolton and Drew (1991) found that Customers value assessment is influenced by the sacrifice as well as customer characteristics. Macdonald et al. (2011) claimed that the value-in-use use depends on individual as well as corporate objectives.
The results confirm that increasing price in a B2B environment can lead to different changes in value perception and the corresponding willingness to pay. This is based on the individual trade-off between benefits and sacrifices.
Price functions derived from conjoint analysis are rarely resulting in a straight line. This can either be the result of variation in the data set or an indication that in certain price ranges the respondent has a non-linear value perception of the attribute price. Applying linear interpolation to create upper and lower limits for a potential price can provide a certain flexibility in case of unexpected cost increases. This approach would be in line with Bonnemeier's (2011) suggestion asking for a price interval for solutions.

Research question 3: With respect to the maintenance case what could be cost saving opportunities in the solution selling process in order to make a customized solution more profitable?

According to literature customized solutions have difficulties to generate profits (Bonnemeier (2011), Sawhney (2006) and Sharma (2011)). Hinterhuber (2008) stated that the lack of acceptance of value based pricing in the B2B industry is a constraining factor for the successful implementation of customized solutions.

The answer to research question 3 should indicate to what extent the conjoint model can help to identify cost saving opportunities for the solution provider in order to make their offerings more profitable.

The selling of customized solutions has been defined by Tuli et al. (2007) as a four step process consisting of the definition of customer requirements, customisation and integration, deployment and post deployment services. For each process step the solution provider can present different options to the customer from which he or she can choose. The process then can be evaluated through conjoint analysis to define the preferred level of service for each process step.

This procedure implies that through a deeper understanding of customer preferences unnecessary parts of the process can be avoided leading to a leaner but also more cost effective offering.

Based on the data generated in the main study the researcher will indicate some opportunities for the solution provider when offering solution to different buying groups.

Each process phase (attribute) in the maintenance process consisted of two levels. For three phases the respondent had to make a trade off between an in-house or outsourcing solution. In phase 2 the customer had to choose the value proposition which was either a safety option making the solution provider liable for all downtimes or a risk or innovation option in which the solution provider had the objective to increase the turnover of the machine.

Looking into the results of the two respondent groups it becomes clear that commercial purchases mainly favour the full profile solution including the safety option. With respect to the cost level for the solution provider this is the most expensive option as he/she has to provide

1. An evaluation of the machine status
2. The covering of the risk to pay for any revenue loss the customer might experience
3. An additional full time employer to run the machine
4. Training and consultancy in the post deployment phase

What option does the provider now have to reduce costs which go beyond the obvious reduction in labour costs? The willingness to pay for the full profile solution is high. Based on the conjoint data and the price function for the commercial purchasers solution providers should be able to charge beyond 110000 US$. Assuming certain costs for the phases 1, 3, 4 the profitability level entirely depends on the downtime payments. Therefore the incentive to run the machine at the highest possible quality without loss is in the basic interest of the solution provider. Additionally the solution provider could consider offering the assignment of mixed teams where certain parts of the process could be performed by the customer. This could be applicable to the phases 1 and 4. The evaluation phase could be conducted in a mixed team which could also benefit the acceptance of the service at the customer side. Training and consultancy could also be conducted as shared activity in which the solution provider could train the customer in order to let them become consultants within their organisation.

The picture for the operations group is different. Some of the respondents favour solution in which the solution provider does not cover all process steps. Several respondents prefer to keep the machine operation in-house and not to use the post deployment service offerings but they still assign a high utility to these offerings. In terms of cost this significantly reduces the cost implications for the provider. The consolidated price function for the operations group shows a similar price sensitivity compared to the commercial group but with higher utility values for the higher price levels.

The following table shows some opportunities in terms of cost reduction

Respondent	Phase 1	Phase 2	Phase 3	Phase 4	Total utility
6	provider evaluates machine	provider pays for downtime	no service	no service	2.75
7	provider evaluates machine	no preference (can provide the option to increase	no service	provider offers training and consultancy	2.0

		output)			
10	provider evaluates machine	provider improves the output	no service	provider offers training and	3.5

Table 37: opportunities for cost savings in the operations group

The red areas indicate where the solution provider can offer less or no involvement in the customer processes but still offers solutions with a significant positive utility. The main cost saving is the avoidance machine operation and the in case of 7 and 10 the coverage of the machine downtime which reduces the risk dramatically. Savings with respect to the maintenance case can be between 60 -120 US$ as the FTE is assumed to cost 60TUS$ and the risk of downtime is assumed to be 3 days/year = 60TUS$. The willingness to pay is assumed to be > 110TUS$ based on the positive total utility of the solution and the consolidated price function. These figures are hypothetical but nevertheless the potential for higher profits might be with the operations group.

Conclusion

Conjoint analysis offers the potential to identify process steps within the solution selling process where the provider has the opportunity to save costs. With respect to the maintenance case the opportunities for cost savings and higher profitability seem to be depending on the target group. Operational buyers meeting the profile of technicians or engineers seem to offer more cost saving potential compared to commercial purchasers. Therefore the target group is relevant to the provider to achieve a significant profit with their offerings.

Research questions 4: What are the components of a price finding model to improve the profitability of customized maintenance solutions in a B2B market?

The components of a price model

The following components should be included in a general price finding model for customized solution to improve their profitability.

Component 1: Incorporate the available alternatives

The data from the pilot study confirm the finding in the literature indicating that buyers/purchasers consider the opportunity costs (available alternatives) of an offering much stronger than sellers (Carmon

et al. 2000). This is an indication that providers of customized solutions should compare different options available to the customer and evaluate their cost/performance ratio. This is a major step towards successfully implementing a solution. Professional buying centres analyse cost structures of offerings and try to make them transparent and comparable. This was already mentioned by Hakansson (1976). Sellers should counter this approach by proactively comparing their offering with available alternatives from the market following the basic formula:

$$\text{Price of the solution} = \text{value of solution to buyer}$$

AND

$$\text{value of "solution" to buyer} > \text{value of "alternative" to buyer}$$

$$\Rightarrow \quad \text{MinP (solution)} + \alpha \times \text{value add (solution)} > \text{MinP (alternative)} + \beta \times \text{value add(alternative)}$$

Whereas:

MinP = Minimum Price (covering costs)

α, β = factor (proportion of the value add (VA) charged to the customer)

VA = value add which could be measured through the part worth of the levels within the different attributes

Component 2: Lifetime of the solution

Bonnemeier (2011) suggested a flexible model including a mixed calculation for price components relevant at different times of the customer cycle or annual total cost of ownership assessments to align value based price parameters. Mentioned by several respondents in this study the pricing strategy has to recognize the positioning of the company compared to competition. Therefore they suggest the use the definition of a price corridor instead of a single fixed price to give more flexibility to react to environmental changes.

To be considered a successful solution the profit over the duration of the solution should be larger than the profit generate by the standard cost-plus approach. Only then the company should consider pursuing this business model of selling customize solutions. Therefore different models of generating

profit should be evaluated. As mentioned by Sharma (2011) initial costs of customized solutions are high and should be retrieved offer the life time of a solution.

Bonnemeier's (2011) proposal for a flexible pricing model meets Evanschitzky's (2011) definition of a customized solution in which he included the "dynamical developing needs over time". Macdonald et al. (2011) suggested that need changes can have a significant impact on the value perception of the solution over time.

An example for the profit generated by a customized solution in B2B is shown in figure 35. The graph shows a potential profitability development of a solution in comparison to a standard sale with a decreasing profitability due to the entry of low cost competition.

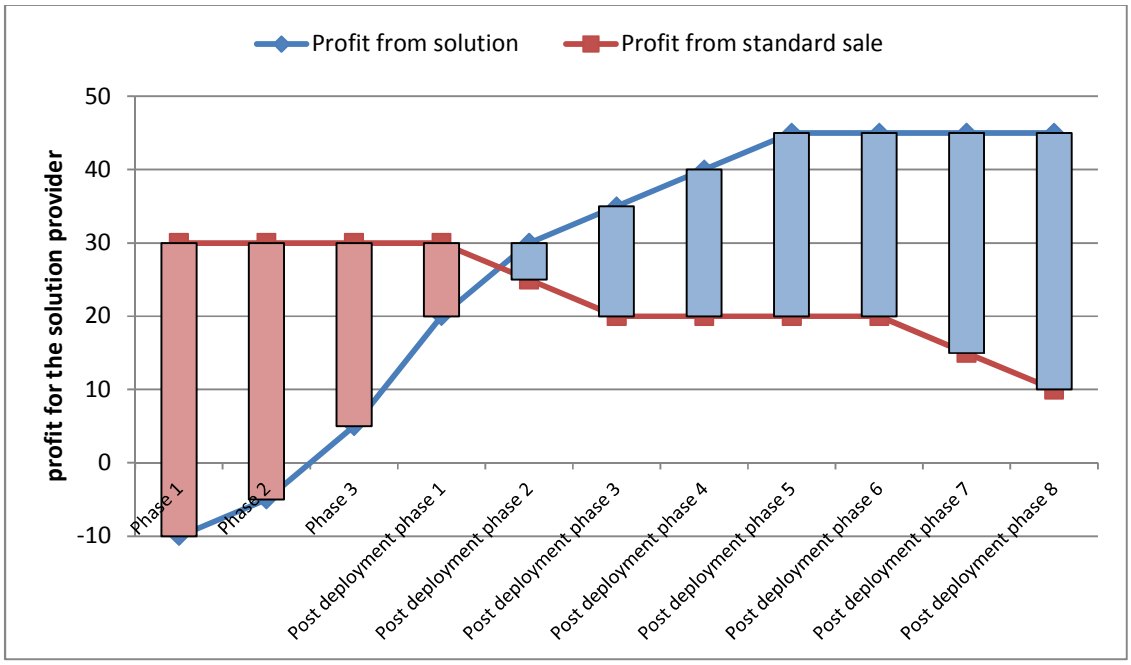


Figure 35: Profit generation solution vs. standard sale (own figure)

To extent the payback time of a solution it is in the vital interest of a solution provider to have a long term commitment of the buyer. Based on the findings from the pilot the contract duration seems to have lesser priorities to purchasers so therefore longer contract times should be negotiated.

Ideally figure 35 should be modified to display a more profitable approach to the solution provider which results in figure 36.

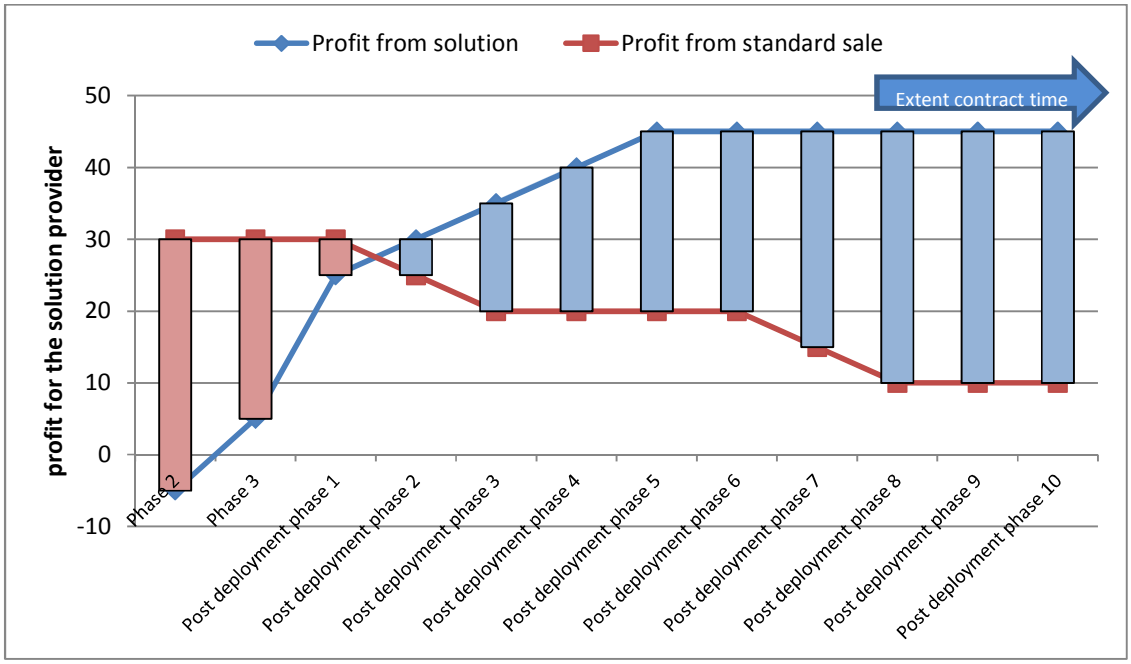


Figure 36: Modified return to the solution provider (own figure)

During the four phases of solution selling process the profit of the solution provider is likely to be negative as the upfront investment for research and analysis are high. This finding confirms the findings of Sharma et al. (2011) suggesting that companies struggle to recover the upfront investment costs. It can be assumed that any successful solution will recover the initial costs after the implementation phase. The profit should then increase during the lifetime of the solution. This model provides a higher risk to the solution provider as in case of a non-successful implementation he might not be able to recover the costs. It also assumes that the profit of the provider for the conventional business approach will go down as low cost competition will create a copy of the offer and reduce the profit of the existing provider.

The opposite model is often used in health insurance pricing models. There the assumption is that young people start to spend money early for their health insurance which will then be needed in the future. The longer the lifetime of the business relationship the higher the potential profit for the insurer.

Overall the management of a solution provider has to consider and encounter the high up-front investment necessary to establish a solution. Therefore and with respect to the purchasers' willingness

to pay for the solution, the provider should focus only on certain phases in the process which the buyer values most.

Component 3: Determining the importance of the process phases and value proposition

This has been explained in detail during answering questions 1. The importance of the process phases is depending on the target group.

Component 4: Price sensitivity of the target buyer

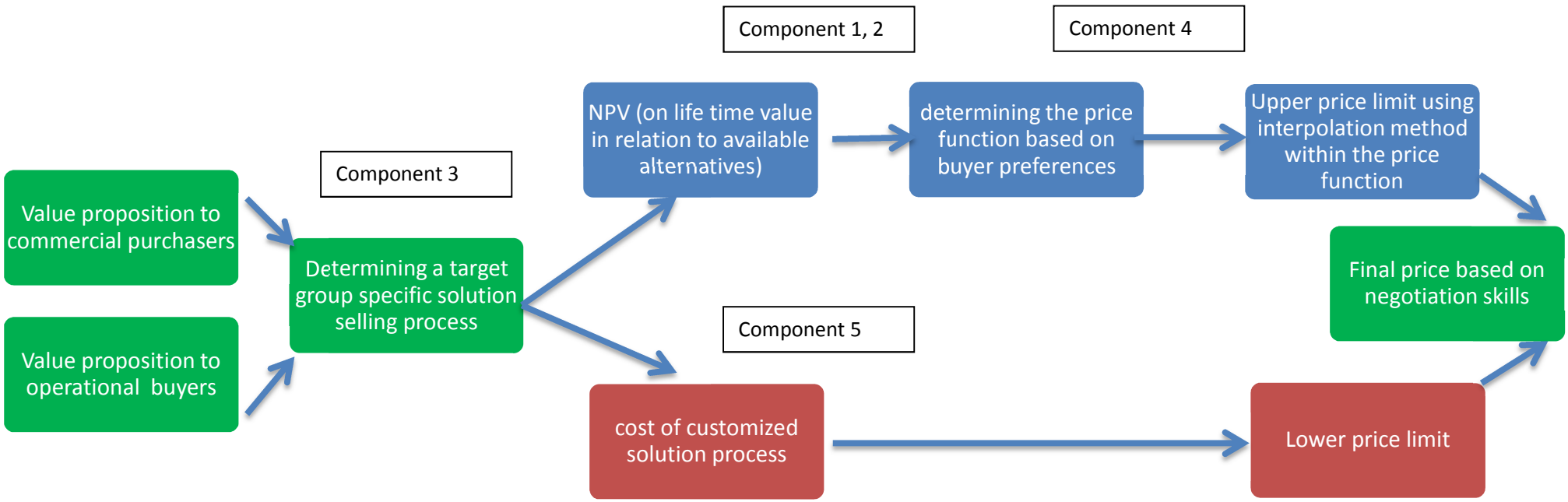
This has been explained in detail during answering questions 2. Price sensitivity is depending on the target group and can be identified with conjoint analysis

Component 5: Cost saving opportunities in the solution selling process

This has been explained in detail during answering questions 3. Conjoint analysis can identify cost saving opportunities within the solution selling process. The magnitude for the opportunities depends on the profile of the target group.

Following the recommendations from Bonnemeier (2011) and Sharma et al. (2011) a price finding model should work a price corridor instead with a single price. Working with price corridors provides the benefit to protect the profitability level against variations in raw material, false cost projections and other overestimated willingness to pay.

Suggested price setting model with respect to the maintenance case



7.2 *Reengaging with academic research*

Following the result section this paragraph will reengage with current literature and use the results to confirm or challenge findings of leading academics in the area around solution selling. The results for the main and pilot study will be measured against former findings in the areas of:

1. Pricing policies and models for customized solutions
    a. Sharma, A., Iyer, G.R. (2011), "Are pricing policies an impediment to the success of customer solutions?", Industrial Marketing Management 40, 723-729.
2. The importance of different phases of the solution selling process
    a. Tuli, K.R., Ajay, K.K., Sundar, G., Bharadwaj (2007), "Rethinking Customer Solutions: From Product Bundles to Relational Processes", Journal of Marketing, Vol. 71 (July 2007), 1-17.
3. The impact of different types of buyers on the willingness to pay
    a. Töllner, A., Blut, M., Holzmüller, H. H. (2011), "Customer solutions in the capital goods industry: Examining the impact of the buying centre", Industrial Marketing Management, 40 (5), 712-722.
    b. Macdonald, E.K., Wilson, H., Martinez, V., Toossi, A. (2011), "Assessing Value-In-Use: A Case Study in a Maintenance Solutions Context", Industrial Marketing Management, Special Issue on Service and Solution Innovation, Vol. 40, No 5, pp. 671- 682.
4. Value based pricing in industrial markets
    a. Hinterhuber, A. (2004), "Towards value-based pricing – An integrative framework for decision making", Industrial Marketing Management 33 (8), 765-778.
    b. Hinterhuber, A. (2008), "Customer value based pricing strategies: why companies resist", Journal of Business Strategy, Vol. 29, No. 4, pp. 41-50.
    c. Hinterhuber, A. (2008), "Value delivery and value-based pricing in Industrial Markets", Advances in Business Marketing and Purchasing, Volume 14, 381-448.

The results of the thesis challenge several findings from solution literature.

The importance of different phases of the solution selling process

The results suggest that the four phase's solution selling process has to be adapted depending on the target customer group to achieve a better profitability. With respect to the value proposition of the solution different customer groups value different aspects of the offering. Additionally and related to the conceptual framework proposed by McDonald et al. (2011) an additional phase could be added to Tuli`s process which included a continuous evaluation of the value in use which the solution provides. This could be the base to determine the revenue streams to the solution provider over the life time of the solution (figure 37).

With respect to the maintenance case commercial purchasers tend to pay for a full profile solution including the outsourcing of all included activities to the solution provider. Additionally they favour the safety option which makes the solution provider liable for any downtime occurring during the lifetime of a solution. This leads to a higher level of risk for the solution provider in terms of cost increases and the outflow of cash. Operational buyers are less concerned with the deployment process and put a stronger focus on the other components of the process. They tend to avoid a strong exposure and a too high dependency on the solution offering. They favour maintaining control over the machine operation and are less likely to make use of the post deployment service offering.

Tuli et al. (2007) analysed the perception on customized solutions by comparing the perspective of sellers and buyers. Whereas suppliers consider solutions as customized and integrated combinations of goods and services, buyers perceive them as relations process of the four steps already highlighted in the literature review. The effectiveness of the model depends on supplier and buyer variables. Customer variables include the willingness to adapt and support the integration into their organisational structure. Tuli et al. (2007) collected the data through in depth interviews over a period of one year. The qualitative data were analysed through coding techniques to group the answers and cluster the main findings. The frequency the themes were mentioned during the interviews was used to determine their importance. From the customer perspective the post deployment process was considered the most important followed by customization and deployment. The requirement definition was considered the least important. These findings were not confirmed during the maintenance case where commercial buyers favoured the deployment (machine operation) and the operational buyers the requirement definition followed by the post-deployment services. As mentioned before the gap can be explained by the different definition and content of the phases. Tuli's research is totally based on qualitative data

which for an exploratory research is the right approach. Nevertheless the data interpretation of qualitative data is generally a weak spot and requires a strong methodology. Using a mixed method of exploratory data and quantitative data will enrich the findings and provide measureable differences based on acknowledged methodologies such as conjoint analysis.
Töllner et al. (2011) stated that within a buying centre different roles show different preferences in the solution selling process. “Users” are individuals applying the solution on a daily base e.g. in the factory. “Users” favour mainly the customization and deployment of the solution. The purpose of the “buyer” is to manage the contact to the solution providers. “Buyers” are mainly focusing on the early stages of the process including the definition of the requirement.
The commercial buyers in the main study fit the profile of Töllner`s “Buyer group”. Within the studied companies they were responsible for the identification and selection of suppliers. The operational buyers were also involved in the decision making process but with the difference that they were users of the maintenance solution at the same time. Comparing the sample and findings of Töllner (2011) with the findings of the main study it shows the following results:

Sample (Töllner et al. (2011)): Engineering departments in the capital goods industry and related contacts in different departments
Sample (Dammann (2013)): Operational buyers (Engineering department) and commercial purchasers in the corresponding department.

Another important aspect to compare both experimental set ups is the scope and definition of each phase. Töllner et al. (2011) defined “Requirement definition” as the period where the supplier aims to capture all specific customer requirements and insights in the operational processes. In the maintenance case it was specified as “Definition of the machine status” which seems to be a good match. Töllner defined customisation as the process of designing, modifying and selecting the right products to fit into the customer’s environment. In the maintenance case the scope of this phase was shifted towards the value proposition which is related to the benefit the provider offers to the customer. This was considered to be appropriate with respect to the conjoint set up as the respondent have to make clear choices between different offerings. In Töllner’s experiment “deployment” was associated with running trials and providing staff for training and workshops. The maintenance case focuses on the operation of the machine as basic offering within the deployment phase. Maintenance was considered as component

of the post deployment support whereas the case study phrased it generally as additional training and consultancy.

	Töllner et al. (2011)		Dammann (2013)	
Importance	**User**	**Buyer**	**Commercial buyer**	**Operational buyer**
1	Customisation	Definition of Requirements	Deployment	Definition of Requirements
2	Deployment	Post deployment process	Definition of Requirements	Post deployment process
3	Post deployment process	Customisation	Post deployment process	Customisation
4	Definition of Requirements	Deployment	Customisation	Deployment

Table 38: Comparison of preferences

The difference can be explained with the definition of the specific roles and the scope and meaning of the solution phases. The experimental set up is decisive and can lead to different preferences. Nevertheless the thesis confirmed that different types of buyers show different preferences within the process.

Töllner et al. (2011) used an exploratory approach conducting 17 in depth interviews in 9 companies. They ensured that the respondents were involved in a relevant buying decision. From the data generated in these interviews they identified two further activities in the solution selling process and ranked their importance depending on the professional background of the respondent. This method is a direct approach whereas the methodology in the thesis used the preference ranking to determine the relative importance of the process steps. The advantage of the latter is that during the conjoint respondents are exposed to a concrete buying decision and the resulting emergence of the relative importance weights is likely to more intuitive and less biased.

McDonald et al. (2011) proposed a conceptual framework for the assessment of the value-in-use in the context of a maintenance service provider. They included provider attributes, customer usage processes and the customer evaluation of the value-in-use. Here findings included that decision making units are driven by individual and corporate goals influencing their value assessment. They also found that within the B2B context multiple respondents are needed in order to assess the value in use.

This thesis tries to add some quantitative data in order to investigate how the value perception of different buying groups can influences the willingness to pay. Therefore a value proposition is included within the solution offering in order to understand the decision making processes when confronted with a cost benefit trade-off in the maintenance industry.
In the future academics should analyse the value of a solution offering in a B2B environment always in context to the professional background of the target customer.
Additional to the findings on the dependency of the target customer the findings in the pilot study indicate that value based pricing methods still have a low acceptance in the B2B environment. The main barriers for the success of this method are the lack of transparency as well as the limitation in information exchange between buyers and sellers which are based on low levels of trust and the fear of losing a competitive advantage.

Value based pricing in industrial markets

Even though value based pricing has been identified as the most suitable pricing method for customized solutions the low level of acceptance of the pricing method itself requires the solution provider to address the issues such as total pricing transparency during the process.
Hinterhuber (2008) stated that customer value is equal to the concept of the customer's reservation price. The reservation price is the price at which the consumer is indifferent between buying and not buying. The perspective can also be transferred to interpret utility values in a conjoint analysis. Utility values can be added up to create optimized compositions to create a total utility for an offering. When price is included as attribute the negative utility of a high price can be traded off against the benefit of attractive offering with the same value. Ideally when the resulting value is zero this should be the reservation price equalling customer value. Similarly to Hinterhuber this thesis suggests talking about value ranges instead of single prices. This can be illustrated when interpolating price functions in a conjoint analysis. It shows the benefit of working with upper and lower scenarios when pricing value based offerings.
Academics dealing with the value based pricing methodology should be aware of the low acceptance level in the business to business environment and the impact it has on pricing customized solution.

In order to quantify the economic value correctly Hinterhuber (2008) suggested a 6 step process which looks as follows

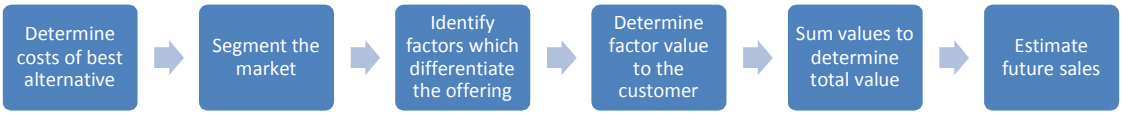


Figure 37: Six steps to quantify economic value (Hinterhuber, 2008)

The process shows similarities to the findings in the thesis. Hinterhuber (2008) confirmed that in order to determine the value of different factors to the customer conjoint analysis provides a simple tool to capture trade offs in product features and to assign monetary values to specific attributes. The findings in the thesis can be seen as a practical confirmation for the proposed process. It was indicated that using conjoint analysis to determine factor values, total values to get a projection on profitability is a helpful tool of practical use. This will help practitioners to position the solution correctly and to include service elements into the offering which are truly valued by customers.

With respect to the maintenance case the post deployment phase seems one of the least important phase of the process proposed by Tuli et al. (2007). This challenges the common perception that customers in B2B are interested in a long lasting relationship to their suppliers which goes beyond the scope of the value proposition of the solution offering. Professional purchasers show less interest in a strong dependency on one supplier as this seems to limit their freedom to operate.

Besides the influence of the professional background of the buyer the solution provider also has to analyse the core competencies and strategic direction of the customer in order to place the solution offering in the most effective way. When analysing solution offerings in a B2B environment academics should be aware of the fact that the success of the solution might not only depend on the value

proposition but also on the internal expertise within the customer. Offering the same solution to two companies within the same industry might lead to different outcomes. One company might consider the value proposition a valuable addition to their own limitation as well as an opportunity to shift free resources from strategic less important departments towards areas with a stronger strategic focus. Other companies might consider the solution as a competitive offering to their existing business process and therefore are not willing to share information with the solution provider.

Pricing policies and models for customized solutions

In their 2011 publication Sharma and Iyer were asking "Are pricing policies an impediment to the success of customer solution". In order to generate higher margin from solutions the authors studied the pricing practices in two industries –business process outsourcing and power generation equipment. It was also confirmed that the offerings were not true solutions but bundled products which could be unbundled by customers. Sharma et al. (2011) stated that from a customer's perspective the higher priced solution should offer benefits greater than what may be obtained from component products and services. They also assumed that the lack of successful pricing of solutions may be due to the fact that selling firms are not selling true solutions and customers can disaggregate the solution into its components. In today's business environment outcome based or quantity based pricing models are used. This was the base for using the value propositions in the maintenance study where the respondent had to trade off the proposition to pay for downtime with the option to generate additional revenues.

To understand the pricing model for solutions in the business process outsourcing industry (BPO) Sharma and his co-authors interviewed 24 executives from marketing and supplier firms. Concerning the prevalence of solutions in the BPO industry the focus is mainly on cost reduction driven by customer expectations. As customer needs drive the compositions of customized solutions the industry has to follow these needs. Research question 3 addresses the opportunity for cost reductions on the provider side in order to increase the chances for profitability. According to Sharma et al. (2011) the general perception of solutions in the BPO industry does not meet the common definition. The approach to use trade off decision to either outsource of insource process steps could adapted in this industry in order to derive more value from the offering. If not all process steps are valued equally by the customer the provider can consider skipping certain elements.

Concerning the pricing methods for solutions Sharma et al. (2011) found that within the BPO industry mainly cost plus pricing is used and no true solutions were sold. Customers define their needs and send

out the requirements to different vendors tending to buy from the provider with the lowest offering. Customers should not be able to unbundle solutions and they will not be able to do so when the service and technology are deeply integrated in the customer processes. Enforcing new pricing models is a difficult task as competitors tend to offer pricing models which the customer wants ensuring that the purchasing department remains totally transparent in terms of cost evaluation.

The objective of this thesis was to provide guidelines in terms of price setting suggesting that providers should consider their cost base as well as addressing customer preferences and value them according their importance. This might be a more sensible approach in order to bring solutions or any other construct in the area of improved profitability. The findings and doubts of Sharma et al. (2011) are a true reflection of today's status in the BPO industry and also affect the value perception in our case study. Nevertheless the data showed that based on the attractiveness of the offer purchasers are willing to pay significant prices for risk reduction and revenue improvement and it is up to the solution provider to keep their cost under control. Different approaches to achieve this were suggested during the thesis including the minimisation of break down times, taking our part of the offerings which are not relevant for the customer group and focusing on buyer groups with lower price sensitivity such as operational buyers.

7.3 *Impact on the solution provider*

The findings of the thesis have several implications for managers of companies which would like to develop into the area of customized solution in B2B. The findings from this thesis should provide some long needed guidance on how to position a solution considering the attitudes and needs of the potential buyer. Sharma et al. (2011) stated that traditional pricing approaches do not seem to be applicable to customized solutions as there is a disparity in value perception of buyers and sellers. Furthermore they questioned the often stated value of integration as a benefit for buyers as this hinders purchasers in evaluating the real value of the solution. Andersson and Wynstra (2010) suggested determining the price of a solution on a negotiation base by trying to find the best fit between the expectations of buyers and sellers.

In general these doubts are confirmed by the analysis of the questionnaire and the results from the conjoint. But there are certain guidelines for managers to be considered in the future.

Firstly managers should carefully study the strategy of their target customers to understand the strategic objectives of the potential buyer. The offerings should then focus on non-strategic areas where

the customer is willing to openly discuss and exchange information with the solution provider. This is a key learning inside from outsourcing business processes to external providers. The survey in the pilot indicates that there are limits and barriers to information exchange especially when talking about issues of strategic importance. Marketing managers of solution providers should understand that these barriers will be difficult to overcome and should not spend too much time and energy trying to achieve that. Buyers have to feel comfortable exchanging information and too much pressure by the solution provider could be counterproductive.

Secondly when addressing buyers it is important to understand their way of deciding on a deal. Buyers strongly consider and evaluate available alternatives. It is therefore recommended to proactively analyse the alternatives available to the customer and present the analysis to the purchaser.

Thirdly the pricing of the solution should be strongly related to the cost and risk reduction for the customer when addressing a commercial purchaser or revenue gains with less involvement in internal processes when addressing an operational manager. The benefit should then be shared equally between provider and the buyer knowing that depending on the composition of the solution the direct cost (machine operation) and the indirect costs (paying for downtimes) can be significantly different.

Risk reduction for the customer is a strong benefit of a solution in B2B and especially commercial purchasers seem to be willing to pay a higher price for it. The revenue increase option on the other hand should be priced lower as the overall risk for the solution provider is lower. For example no additional costs for the solution provider can be expected as they will not be held reliable in case of machine breakdown. The pricing could then be based on sharing of additional revenue where the solution provider profits from the output increase.

A general conclusion for marketing mangers of solution providers could be that prices should increase with the level of risk the solution provider is willing to take and the individual price sensitivity of the buyer represented by an individually shaped pricing function. Furthermore prices are strongly limited by opportunity costs of the customer. The solution provider should compare the profitability of both options as higher selling prices might be compensated by higher costs during the solution process.

To reduce the initial costs for a customized solution the supplier should leave the evaluation of the requirement to the customer and dismiss any post deployment service offering. This would reduce the solution selling process from a 4 phase process to a 2 phase process. This condensed version might not

be considered to be a customized solution in the original sense but could lead to a higher profitability for the provider.

In the case of the decision maker being an operational person the focus for the solution provider should be laid on phase 1 and phase 4 of the solution selling process. Operational decision maker's seem to be less cost-sensitive and are more susceptible to the long term benefits of a solution. This calls for a flexible communication strategy tailored to the target group when promoting the solution on different levels to the buyer. Obviously these findings are case specific but should be taken in consideration when discussing the general approach.

It is strongly recommended to managers to openly discuss the components of the solution price. Value based pricing has the image to be non-transparent which is a major problem for the acceptance of the method. An open discussion about shared benefits and risks will create a trustful atmosphere and reduce the barrier for information exchange.

To regain the initial investment necessary to set up and implement the solution the provider should target long term contracts with the customer. The contract duration seems to be of lower importance to the customer therefore giving the solution provider the chance to regain the costs associated with the initial set up and implementation

Apart from the overall price the customer who is willing to pay for the solution the pricing model should also consider the timing of the incremental cash flows (figure 37). In case both parties agree on a gain sharing agreement based on the value in use for the customer a continuous analysis should be conducted over the life time of the solution. This process could look as follows:

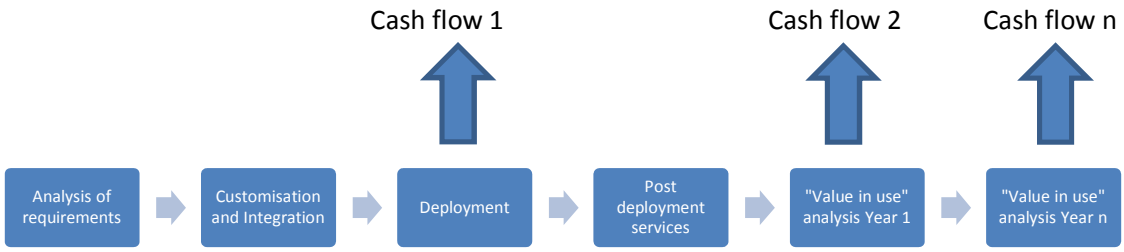


Figure 38: Incremental cash flows to the solution provider (own figure)

The main study shows that managers of solution providers have to consider multiple layers when trying to improve the solution selling process and maximize the willingness to pay. The following conceptual model shows the impact of different concepts and how the solution provider should approach the customer.

Finally all the findings can be incorporated in one pricing function which can be subdivided in operational and relationship components. As mentioned by the respondents of the pre study the price of a solution should include the following constituents:

Price (solution) = f (value for customer (benefits, sacrifices, cost reduction potential), alternatives, competition, time frame, degree of integration, costs for provider)

The equation covers the operational side of the exchange including cost for customization and implementation and the value added benefits for the customer realized over time such as cost reduction, revenue increase, technological benefit, uniqueness and risk reduction.

This also follows the findings of Nagle and Holden's (2002) who suggested that the price finding should be led by an understanding about the price of the customers best alternative (reference value), plus the value of whatever differentiates the offering from the alternative (differentiation value).

Considering the soft or relational issues involved the context of the offering is crucial. As mentioned before solutions should focus on non-strategic process within the customer. The price finding should be transparent and the offering should address the professional background of the buyer.

There is far more room for research in this area and some of the potential issues were raised during the study.

As guidance for managers to increase the acceptance and profitability of their solution offering the following model might be helpful. As stated by Brady et al. (2005) understanding the customer needs and strategic priorities is the fundamental prerequisite to position the solution efficiently.

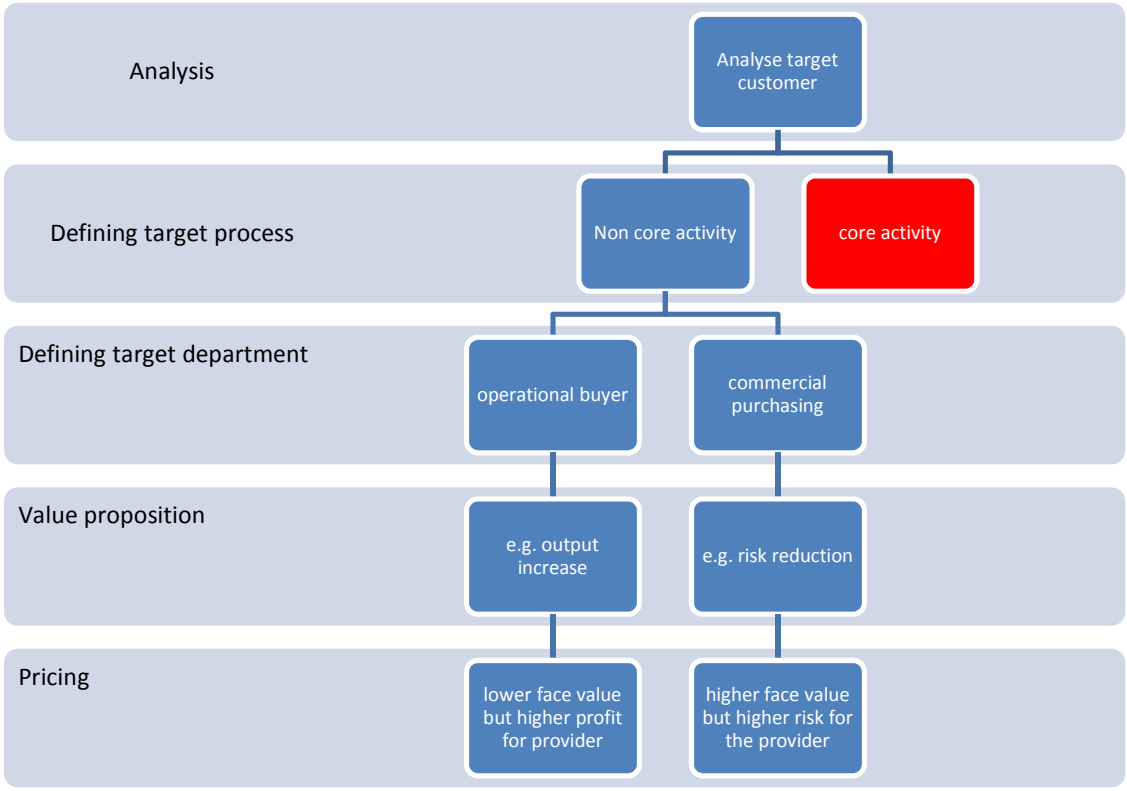


Figure 39: Decision guide for management (own figure)

The main objective of a solution provider is to achieve a level profitability which justifies the complex business model. Especially in a B2B environment this is difficult due to the professional way buyers evaluate and compare offerings. Price is still the main attribute which affects the value perception. Including all 4 phases of the solution process in the offering can become a costly way of satisfying the customer and the findings show that they might not be willing to pay for them. The study shows that buyers in B2B can rarely be addressed in the same way. The management of a solution provider should understand that and keep the offerings flexible emphasising different phases of the process depending on the nature of the buyer.

The conjoint method is an excellent way to understand the impact of different value perceptions. This will help managers to modify their offerings with respect to a higher profitability.

Generating consolidated rankings for different respondent groups enables the researcher to generalize the findings for different respondent groups. Future studies will be able to benefit from the methodology providing inside information on the all-important questions which is: “What are different customer groups willing to pay for an offering?”

Following the findings of this thesis a modification of the general definition of solutions could be considered. Profitability should be a pre-condition to turn an offering into a solution. A solution could therefore be regarded as:

“Customized and integrated offering addressing complex, varying customer problems over time, and providing higher value in use than the sum of its parts simultaneously generating higher profits for the provider than a simple provision of products and services”.

To determine the minimum price level the model suggests a bottom up cost calculation including R&D, cost of capital and allocated overheads. Including the findings from the thesis it can be suggested that this approach also depends on the target customer. As pointed out in the conclusion section the solution selling process has to be adapted to the needs of the buyer and therefore the minimum price strongly depends on the solution-buyer needs as well as on the amount of risk taken over by the solution provider.

7.4 *Suggestion of further research*

The gaps in data collection leave some space for additional research in the area of pricing customized solutions. Conjoint analysis should be used more extensively in the future to measure the willingness to pay of different target groups. Possible areas to further investigate the willingness to pay for customized solutions could include culture, industry and current financial performance of the company.

Instead of focusing on the solution process the willingness to pay should be measured related to the value proposition of the solution. One of the main findings of the thesis is that purchasers beside the price are mainly interested in the risk and cost reducing aspects of the solution. Therefore in a future study different outcome based value propositions should be presented to purchasers and the willingness to pay should not be measured in absolute terms but relative to the opportunity/alternative available to him.

Another area for future research is the area of value based pricing. Even though the topic is growing in popularity the acceptance in the B2B market seems low. There is an underlying issue of price transparency as one factor of a mutual trustful business relationship. Price transparency is often avoided by the supplier as price setting is considered to be an inter-company issue. Nevertheless if the value proposition is including mutual benefits and shared risk it should be studied whether an open and transparent approach will increase the acceptance of value based pricing.

As discussed during the thesis the trend towards outsourcing could support the success of customized solutions. The learning's from outsourcing should be further evaluated with focus on the implementation of customized solutions.

An open information exchange is a pre requisite to implement a customized solution. As the thesis showed there are barrier to the exchange and it is up the buyer to determine the level of openness. Therefore another area for potential future studies could investigate the nature and depth of the business relationship to the supplier and the willingness to disclose information necessary to implement customized solutions. As Sharma et al (2011) mentioned integration is not considered to be a favourable feature in the B2B industry and keeping the supplier an arm length away is more the rule than the exception.

The results from the questionnaire suggest that purchasers when accepting a price rank the reputation of the supplier above their relationship. This could mean that a strong reputation is required to achieve profitable solutions. In this case moving from a pure product or service driven company towards a

solution provider would only make sense as long as the market position of the company concerning brand, quality and reliability is strong. For future research it could be interesting to investigate if companies with a weak corporate brand are less likely to have success in selling customized solutions.

Additional research should be conducted on dynamic pricing models for customized solutions. The latest literature suggests that customers' expectations towards a solution do change over time and the pricing model should reflect this time dependency. Therefore a fixed upfront payment for a solution might be transparent to the buyer but not give enough flexibility for the solution provider to react to certain cost changes. A development of a dynamic model should therefore provide an excellent opportunity to create additional benefits for both academics and practitioners.

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Appendix 1: Best practices in implementing the solution selling process

Even though the implementation of profitable solutions has been far from easy there are cases for successful business models. To demonstrate the successful implementation of the solution selling process in B2B it is helpful to relate to best practice examples from the industry. First example comes from BASF Coatings. Their business approach reveals that a "cost per unit" (outcome based) price model is a feasible approach leading to a strong focus on cost reduction and the increase of productivity at the same time. The second example comes from HP

BASF Coatings:

BASF is the biggest chemical company in Europe. Their sales amounted to 64 bn. Euro in 2010. BASF employs 110000 people in more than 200 countries. As part of their strategy to make customers more successful they consider the creation of tailor made solutions through continuous customer dialogue. The proportion of sales allocated to tailor made solutions has been estimated with around 40% (BASF Yearly Report 2006). This has not been changed significantly as BASF as expand their global presence in the emerging market focusing mainly on standardized products.

"We work together with our customers to develop solutions that make both partners more successful." (BASF, 2011)

One of the major examples is the business model of the BASF Coatings division. As mentioned by Ahlert and Kawohl (2008) BASF coatings supports automotive manufactures at their coating processes and is directly involved in the production process. Besides the maintenance of the coating process they are responsible for the purchasing, storage, recycling of the chemicals and quality control.

Within their business model BASF Coatings cover all 4 phases of the solution process by Tulli et al. (2007) (Identification of the customer requirements, customization and integration, implementation and post implementation support).

BASF coatings are paid per “cost by unit”. Because of this way of revenue generation, BASF focuses on continuously reducing the costs and increasing the productivity at the same time. This is in line with the interest of the automotive manufacturer. As of 2006 BASF coatings was running 30 coating workshops with an output of 30 million cars. This enables them to realize economies of scale in different process steps including waste water treatment, reducing pollution and the use of energy. In co-operation with Renault they were able to reduce their usage of paint by 30%, in the co-operation with BMW they were able to reduce the energy demand of the coating process by 10% (Ahlert and Kawohl, 2008).

The implementation of phase 4 (post deployment process) creates a strong customer bonds which helps to establish long term customer relationships.

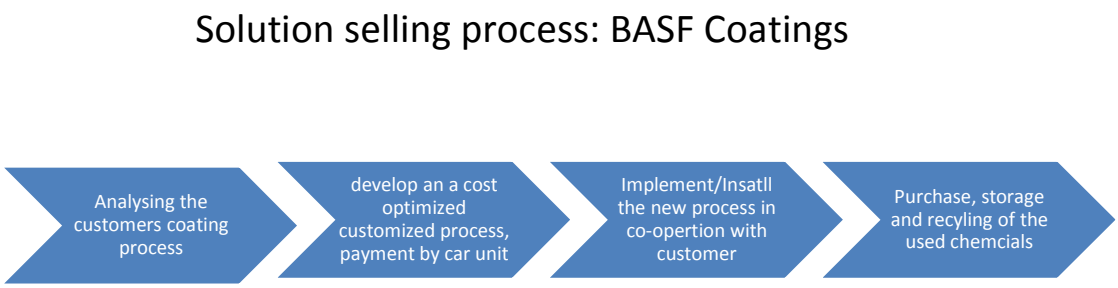


Figure 40: Solution selling process by BASF Coatings

Hewlett Packard (HP):

HP offers comprehensive solutions in the area of print management services (Ahlerts and Kawohl (2008)). In phase one (identification of the customer problem) HP analyses and evaluates the customer regarding existing printing and imaging products. This phase includes an evaluation of direct and indirect printing costs. In the second phase HP developed a customized solution focusing on optimizing the customers printing and imaging processes to reduce costs. HP uses external benchmarks to define potential cost savings. Based on customer requirements the implementation is either conducted by a HP

specialist or by the customer itself. HP provides online information helping the customer's staff implement the solution. In the post implementation phase the customer has the opportunity to outsource the whole Imaging and printing processes to HP. Additionally HP offers a system to automatically trigger the replenishment process of empty toners or cartridges.

The benefits for the customer are as follows:

- Reduction of the network exchange
- Efficient copying and printing
- Lower fax costs
- Less space required
- Improved working processes

One example of a successful implementation of such a solution is the collaboration with the chemical company 3M. 3M approached HP to reduce their printing costs and to improve their internal printing infrastructure. The first phase of the solution process was conducted by 3M. They analysed the status quo in all countries. HP was chosen as strategic partner due to their capabilities to implement a globally standardized system. Especially the high operative costs were an interesting starting point for improvements. After aligning the internal 3 M printing infrastructure HP took over the management of the printing and imaging processes. Based on a five years contract the partner agreed on a fixed monthly fee and variable cost depending on the printing volume.

Solution selling process: HP Hewlett Packard

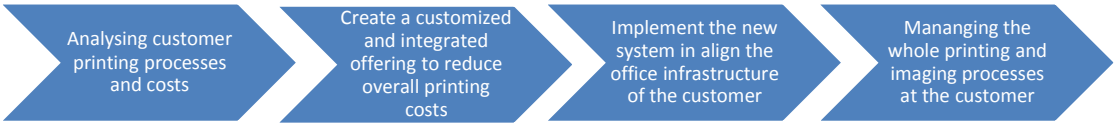


Figure 41: Solution Selling Process by Hewlett Packard

Appendix 2: Solution Survey (the questionnaire)

Introduction:

Dear respondents, I am a student at the University of Strathclyde Business School currently doing research for my doctorate in marketing. The topic of my research is an investigation into the area of "Customized Solutions" and the related selling process. "Customized Solutions" are offerings which are defined as follows: "Solutions are individualized offers for complex customer problems that are interactively designed and whose components offer an integrative added value by combining products and/or services so that the value is more than the sum of the components." (Sawhney, 2006).

The "process of selling solutions" is described in a 4-phase model which defines the base of this questionnaire.

Definition of customer requirements

Customization and integration of goods and services

Deployment of the solution

Post deployment customer support/service offerings

The following questionnaire is targeted at professional purchasers and marketing managers in the B2B environment. It has the objective to get an understanding on how these two groups value solutions and the related selling process. I would highly appreciate if you could take 25-30 minutes of your time to answer the following questions.

Best regards and thank you in advance

Sven Dammann (doctoral student)

Q1 What is your age?

- ❍ < 30 (1)
- ❍ 30 - 35 (2)
- ❍ 36 - 40 (3)
- ❍ 41 - 45 (4)
- ❍ 46 - 50 (5)
- ❍ 51 - 55 (6)
- ❍ 56-60 (7)
- ❍ > 60 (8)

Q2 What is your gender?

- ❍ Male (1)
- ❍ Female (2)

Q3 What is your country of origin?

Please select below... (1)

Q4 In which industry are you employed?

- ❍ Forestry, fishing, hunting or agriculture support (1)
- ❍ Mining (2)
- ❍ Utilities (3)
- ❍ Construction (4)
- ❍ Manufacturing (5)
- ❍ Wholesale trade (6)
- ❍ Retail trade (7)
- ❍ Transportation or warehousing (8)
- ❍ Information (9)
- ❍ Finance or insurance (10)
- ❍ Real estate or rental and leasing (11)
- ❍ Professional, scientific or technical services (12)
- ❍ Management of companies or enterprises (13)
- ❍ Admin, support, waste management or remediation services (14)
- ❍ Educational services (15)
- ❍ Health care or social assistance (16)
- ❍ Arts, entertainment or recreation (17)
- ❍ Accommodation or food services (18)
- ❍ Other services (except public administration) (19)
- ❍ Unclassified establishments (20)

Q5 How many years have you been working in that industry?

- ❍ < 1 years (1)
- ❍ 1 - 5 years (2)
- ❍ 6 - 10 years (3)
- ❍ 11 - 15 years (4)
- ❍ 16 - 20 years (5)
- ❍ 21 - 25 years (6)
- ❍ > 25 years (7)

Q6 In which department are you currently working in?

- ❍ Purchasing (1)
- ❍ Marketing (2)
- ❍ Others (please specify (3) _____

Q7 What is your business philosophy?

- ❍ Increase revenue (1)
- ❍ Increase cash (2)
- ❍ Reduce cost (3)
- ❍ All equal (4)

Q8 What in your opinion are the advantages/benefits of buying customized integrated solutions?

Q9 What in your opinion are disadvantages/risks of buying customized integrated solution?

Q10 The Solution case:

Imagine you are a professional purchaser and your company owns a machine with the following characteristics:

One full time employee is required to run the machine. Cost: 60000 US$/year

Machine downtime leads to a yearly revenue loss between 0-60000 US$/year

A supplier offers you eight different solutions consisting of 4 components with 2 options each, at a certain overall price.

Component 1: Analyzing the machine status ("Inhouse", "Outsource")

Component 2: Value proposition ("Pay for downtime", "Increase output")

Component 3: Machine operation ("Inhouse", "Outsource")

Component 4: After sales services ("Workshops", "No workshops")

Price: ("30000 US$", "60000 US$", "90000 US$", "120000 US$")

Component 1 and 3 can be either conducted by your own staff ("Inhouse") or by the suppliers staff ("Outsource").

The value proposition (Component 2) of the solution either commits the supplier to "Pay for all losses related to downtime (potential revenue loss between 0-60000 US$) " or requests the supplier to "Increase the output of the machine (potential revenue increase between 0-60000 US$)"

As after sales services (Component 4) the supplier offers "Workshops" on energy saving, market intelligence etc. Please rank the following eight solutions from the supplier by "drag and drop" according to your preference. Put the red card at the position from where you would not buy any of the offerings

Solution 1	Component 1	Component 2	Component 3	Component 4	Price
	Inhouse	Increase output	Inhouse	No Workshops	30000 US$
Solution 2	Component 1	Component 2	Component 3	Component 4	Price
	Outsource	Pay for downtime	Outsource	Workshops	30000 US$
Solution 3	Component 1	Component 2	Component 3	Component 4	Price
	Outsource	Pay for downtime	Inhouse	No Workshops	120000 US$
Solution 4	Component 1	Component 2	Component 3	Component 4	Price
	Inhouse	Pay for downtime	Outsource	No Workshops	90000 US$
Solution 5	Component 1	Component 2	Component 3	Component 4	Price
	Inhouse	Pay for downtime	Inhouse	Workshops	60000 US$
Solution 6	Component 1	Component 2	Component 3	Component 4	Price
	Outsource	Increase output	Outsource	No workshops	60000 US$
Solution 7	Component 1	Component 2	Component 3	Component 4	Price
	Inhouse	Increase output	Outsource	Workshops	120000 US$
Solution 8	Component 1	Component 2	Component 3	Component 4	Price
	Outsource	Increase output	Inhouse	Workshops	90000 US$

Limit Card	None of the solutions below this line I would consider buying

Q11 In case the card game before did not display your favorite answer please create your preferred solution and indicate the price range you would be willing to pay.

Component 1 (1)	❍ Inhouse (1)	❍ Outsource (2)
Component 2 (2)	❍ Pay for downtime (1)	❍ Increase output (2)
Component 3 (3)	❍ Inhouse (1)	❍ Outsource (2)
Component 4 (4)	❍ Workshops (1)	❍ No workshops (2)
Price (5)	❍ < 60000 US$ (1)	❍ > 60000 US$ (2)

Q12 Please rank the four 4-phases of the solution selling process according to their importance ("Drag and Drop")

_____ Phase 1: Definition of customer requirements (1)
_____ Phase 2: Customization and Integration (2)
_____ Phase 3: Deployment and Implementation (3)
_____ Phase 4: Post deployment, value adding services (4)

Q13 Please rate the following statements according to your personal opinion

	Strongly Agree (1)	Agree (2)	Neither Agree nor Disagree (3)	Disagree (4)	Strongly Disagree (5)
I am not willing to take risks when choosing a job or a company to work for (1)	❍	❍	❍	❍	❍
I prefer a low risk/high security job with a steady salary over a job that offers high risks and high rewards (2)	❍	❍	❍	❍	❍
I prefer to remain on a job that has problems that I know about rather than of working at a new job that has unknown problems even if the new job offers greater rewards (3)	❍	❍	❍	❍	❍
I view risk on a job as a situation to be avoided at all costs (4)	❍	❍	❍	❍	❍

Q14 Please rate the following statements according to your personal opinion

	Strongly Agree (1)	Agree (2)	Neither Agree nor Disagree (3)	Disagree (4)	Strongly Disagree (5)
A successful company should provide leadership in new product development (1)	❍	❍	❍	❍	❍
The success of a company depends on constantly improving their products/services (2)	❍	❍	❍	❍	❍
A successful company should provide leadership in the devlopment of new operating procedures (3)	❍	❍	❍	❍	❍
In my company I would emphasize on the promotion of new inovative products/services (4)	❍	❍	❍	❍	❍

Q15 Please rate the following statements according to your personal opinion

	Strongly agree (1)	Agree (2)	Neither Agree nor Disagree (3)	Disagree (4)	Strongly Disagree (5)
I look for challenges at work (1)	❍	❍	❍	❍	❍
I think a lot about to improve my chances for getting ahead (2)	❍	❍	❍	❍	❍
I get a thrill out of confronting challenges at work (3)	❍	❍	❍	❍	❍

Q16 Please rate the following statements according to your personal opinion

	Strongly agree (1)	Agree (2)	Neither Agree nor Disagree (3)	Disagree (4)	Strongly Disagree (5)
My business strategy would be characterized by a strong tendency to undertake high risk projects (1)	❍	❍	❍	❍	❍
A business should only take risks in areas that it knows well (2)	❍	❍	❍	❍	❍
Research is important before making a risky decision (3)	❍	❍	❍	❍	❍
I am a gambler - it is impossible to plan for the future (4)	❍	❍	❍	❍	❍

Q17 Considering the relationship to your suppliers. Where do you see the limits for information exchange?

Q18 Why in your opinion are value based pricing strategies so rarely used in the industry?

Q19 What is your attitude towards "outsourcing"?

Q21 Please weigh the following decision criteria based on their importance when accepting a price (adding up to 100)

_____ Relationship to supplier (1)
_____ Reputation of supplier (2)
_____ Transparency of pricing (3)
_____ Value proposition of offering (4)
_____ Raw material prices (5)
_____ Payment terms of supplier (6)
_____ Available alternatives (7)
_____ Contract duration (8)

Appendix 3: Survey results - General demographics respondents

The nationality of respondents completing the survey:

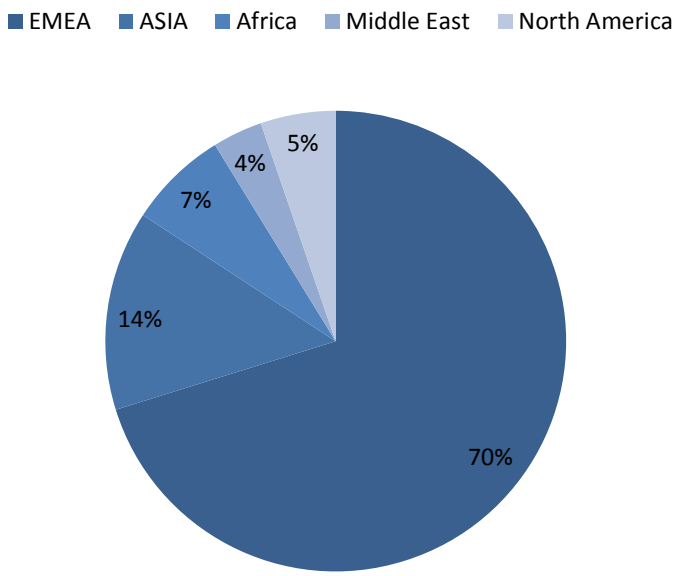


Figure 42: Origin of respondents

For the interpretation of the results the origin of the respondents as well as the gender are not considered to be one of the potential decisive variables. Even though this might have an impact on the perception of value and the attitude towards risk etc. complexity issues permits their inclusion and should be investigated in future academic work. The gender distribution of the 62 respondents is displayed in figure 22.

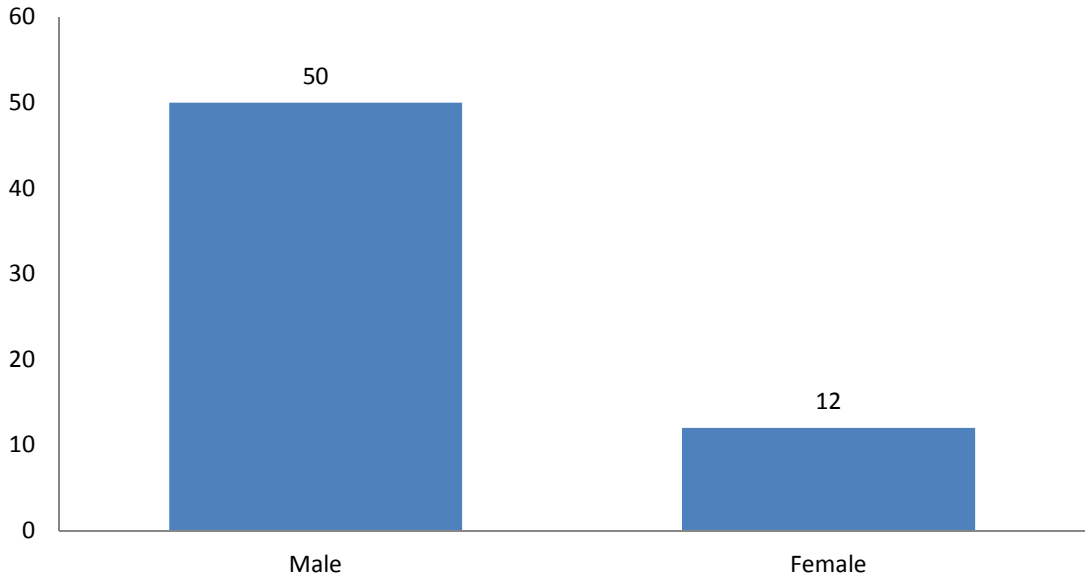


Figure 43: Gender of respondents

Therefore the generated data are included for the sake of completeness.

Similarly this is the case for the question on the years of experience. Although there could be a correlation between general value perception and the experience of the respondent in the respective position this is not considered to be one of the major variables in this study. Figure 23 gives an overview on how long the respondents work in their respective position.

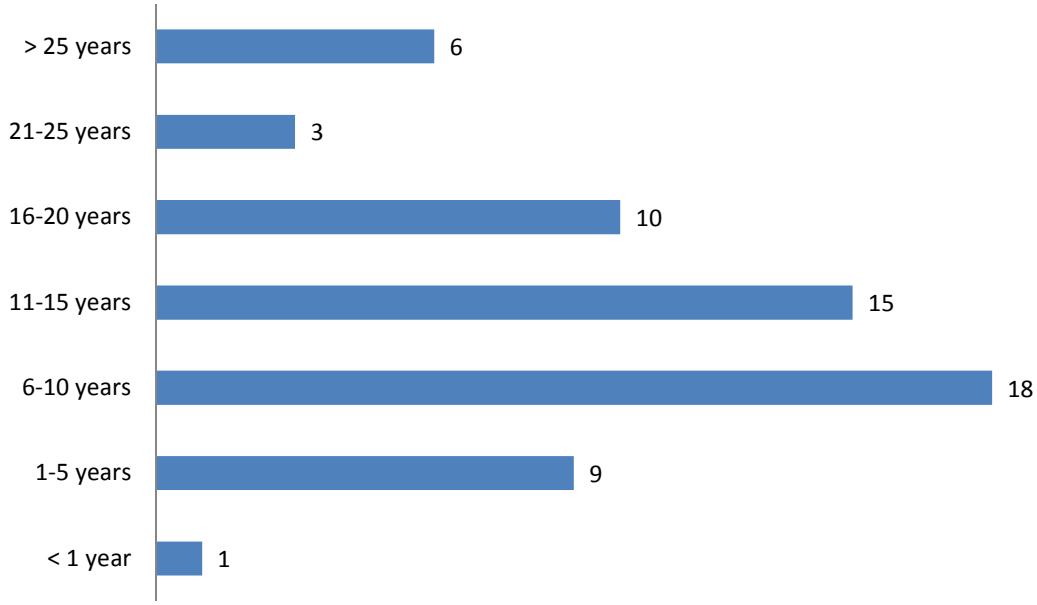


Figure 44: Professional experience in the current position

Appendix 4: Data generated during the methodology generation phase

The overall ranking according to the mean values indicates the following perceived importance of the four steps within the solution selling process.

1. Definition of customer requirement
2. Customization/Integration
2. Deployment and Implementation
4. Post deployment value adding services

There seems to be a slight difference between marketing and purchasing in the perceived importance of the deployment and implementation step and the importance of value added post deployment services.

The significance of the difference can be measured with the t-test. Generating a value of 1.96 or higher can be interpreted as 95% likelihood that the means are significantly different

The formula is as follows:

$$t = \frac{(x1 - x2)}{\sqrt{\frac{s1^2}{N1}} + \sqrt{\frac{s2^2}{N2}}}$$

Significance testing of the mean difference for the "Deployment and implementation phase" for purchasing and marketing:

$$\Rightarrow \; t = \mathbf{0.27} = \boldsymbol{no\ statistical\ significance}$$

Significance of the mean difference for the "Value added post deployment services" for purchasing and marketing:

$$\Rightarrow \; t = \mathbf{1.15} = \boldsymbol{no\ statistical\ significance}$$

The data set unfortunately is too small to generate a statistical relevant sample size. For purchasing experts the deployment and implementation step could be of higher importance whereas for marketing expert the relative importance of the post deployment services is higher compared to purchasing. But these data are just tendencies and have to be evaluated further.

Attitudes scales towards pro-activeness, business risk taking and innovation

One of the important research questions has the purpose to evaluate the link between different attitude patterns and the preferences indicated by the ranking of the solutions. A five point Likert scale ranging from "*strongly agree*" to "*strongly disagree*" was used to measure the attitudes of the respondents towards pro-activeness, business risk taking and innovativeness. The scales were pretested by Gomez-Mejia and Balkin (1989). The pro-activeness scale was originally designed to analyse the willingness to take risks when changing or choosing a job. In all cases the number of respondents was low. For the most obvious differences in means the statistical relevance was tested by applying a t-test.

Pro-activeness scale

(57 valid responses, 11 from purchasing, 12 from marketing, 34 others)

"I am not willing to take risks when choosing a job or a company to work for"

	Mean	Standard deviation
Overall	3.57 (towards disagree)	1.09
Purchasing	3.55	0.69
Marketing	3.50	1.38
Others	3.71	0.98

"I prefer a low risk/high security job with a steady salary over a job that offers high risks and high rewards"

	Mean	Standard deviation
Overall	3.37 (Slightly towards disagree)	1.17
Purchasing	3.45	1.13
Marketing	3.33	1.15
Others	3.39	1.17

"I prefer to remain on a job that has problems that I know about rather than working at a new job that has unknown problems even if the job offers higher rewards"

	Mean	Standard deviation
Overall	3.92 (towards disagree)	1.06
Purchasing	3.55	1.37
Marketing	4.08 (Disagree)	1.00
Others	4.07	0.86

Testing the mean of marketing (N1 = 12) against purchasing (N2 = 11)

$$\Rightarrow \; t = \mathbf{1.05} = \text{no statistical significance}$$

"I view risk on a job as a situation to be avoided at all costs"

	Mean	Standard deviation
Overall	3.98 (towards disagree)	0.95

Purchasing	3.73	1.01
Marketing	4.42 (Strongly disagree)	0.79
Others	4.00	0.90

Testing the mean difference between marketing (N1 = 12) and purchasing (N2 = 11) the t value is

$$\Rightarrow \underline{t = \mathbf{1.82} = 90 - 95\%\ confidence}$$

Unfortunately the sample size makes it difficult to state some generalizable findings. Nevertheless there is a tendency that marketing professionals are willing to take higher risks than purchasing professionals when it comes to changing jobs or taking risk on a job.

On the statement *"I view risk on a job as a situation to be avoided at all costs" the* t test between the two means generates a value of 1.82 which is below the 95% confidence interval value of 1.96 but is still big enough to be considered for further investigations.

This tendency has to be further evaluated. From the perspective of a purchaser some of the major downsides of solution were related to high risk related to IP leakage, over dependency and risk of being stuck with an outdated technology. The nature of a purchaser and his low pro-activeness might be less beneficial for a solution seller. On the other hand the stronger pro-activeness of marketing professionals might increase the acceptance for the solution and the willingness to cooperate with a solution provider.

Risk taking

(55 valid responses, 11 purchasing, 12 marketing, 32 others)

The attitude towards the risk taking at work is another scale which was used in the questionnaire. The objective here is again to link the risk attitude towards challenges at work as well as the risk attitude towards risk taking in business with the different sub groups in the study namely purchasing and marketing. The group of "others" was included for the sake of completion. There were two different scales one being related challenges at work. Again the small sample sizes made a statistically analysis obsolete.

Scale 1:

„I look for challenges at work";

	Mean	Standard deviation
Overall	1.42 (strongly agree)	0.60
Purchasing	1.36	0.50
Marketing	1.58	0.67
Others	1.32	0.55

Testing the mean difference of marketing (N1 = 12) and purchasing (N2 = 11) leads to

$$\Rightarrow \quad t = \mathbf{0.88} \text{ = no statistical significance}$$

"I think a lot about to improve my chances for getting ahead";

	Mean	Standard deviation
Overall	2.02 (Agree)	0.87
Purchasing	2.09	0.83
Marketing	2.33	0.78
Others	1.89	0.92

Testing the mean of marketing (N1 = 12) against purchasing (N2 = 11)

$$\Rightarrow t = \mathbf{0.65} = \text{no statistical significance}$$

"I get a thrill out of confronting challenges at work";

	Mean	Standard deviation
Overall	1.81 (Agree)	0.68
Purchasing	2.09	0.70
Marketing	2.09	0.70
Others	1.61	0.57

Scale2:

"My business strategy would be characterized by a strong tendency to undertake high risk projects";

	Mean	Standard deviation
Overall	2.91 (Neither degree/disagree)	0.84
Purchasing	3.09	0.83
Marketing	3.08	0.79

Others	2.82	0.82

"A business should only take risks in areas that it knows well",

	Mean	Standard deviation
Overall	2.51 (Neither degree/ disagree)	1.05
Purchasing	2.91	1.22
Marketing	2.33 (Slightly towards agree)	0.98
Others	2.39	1.03

Testing the mean difference between marketing (N1 = 12) and purchasing (N2 = 11) leads to

$$\Rightarrow \; t = \mathbf{1.26} = \text{no statistical significance}$$

"Research is important before making a risky decision",

	Mean	Standard deviation
Overall	1.73 (Agree)	0.59
Purchasing	1.91	0.54
Marketing	1.58	0.51
Others	1.71	0.66

Testing the mean of marketing (N1 = 12) against purchasing (N2 = 11)

$$\Rightarrow \; t = \mathbf{1.5} = \text{no statistical signicance}$$

"I am a gambler. It is impossible to plan for the future",

	Mean	Standard deviation
Overall	4.00 (disagree)	0.80
Purchasing	4.00	0.77
Marketing	4.00	0.74
Others	4.00	0.77

In total there was no significant statistical difference between the two groups which achieves a t-value of 1.96 or better. There is a tendency for marketing professionals to consider research as being important before making risky business decisions (t value: 1.5). The other small difference came out the statement that marketing experts suggests that companies should only do business in areas they know well. These results could be interpreted that marketing managers are more careful when making business decisions. Market analysis is an important part in the job of a marketing manager. Therefore generating these data is a daily business task of a marketing manager.

Innovation

(53 valid responses, 11 valid responses from purchasing, 12 valid responses from marketing): The attitude towards innovation as the key driver for business success is measured by the next scale. The following tables again distinguish between purchasers, marketing professionals and the group of "others" not considering themselves belonging to any of the first two groups.

"A successful company should provide leadership in new product development"

	Mean	Standard deviation
Overall	1.77 (Agree)	0.89
Purchasing	1.73	0.90
Marketing	1.73	0.90
Others	1.85	0.95

"The success of a company depends on constantly improving their products/services"

	Mean	Standard deviation
Overall	1.49 (towards strongly agree)	0.78
Purchasing	1.36	0.50
Marketing	1.45	0.69
Others	1.63	0.93

"A successful company should provide leadership in the development of new operating models"

	Mean	Standard deviation
Overall	2.11 (agree)	0.97
Purchasing	2.27 (agree)	0.90
Marketing	2.45 (agree)	1.21
Others	2.00	0.92

"In my company I would emphasize on the promotion of new innovative products/services"

	Mean	Standard deviation
Overall	1.88 (agree)	0.92
Purchasing	1.45 (strongly agree)	0.52
Marketing	2.18 (agree)	1.17
Others	2.04	0.92

Testing the mean of marketing (N1 = 12) against purchasing (N2 = 11)

$$\Rightarrow \underline{t = \mathbf{1.97} = \ statistical\ significance}$$

Summarizing the results there is only one statement where a tendency for a difference between the two sub groups can be observed. With regard to the statement that they would focus on new and innovative products or services, purchasers agreed more strongly than marketing professionals (t value: 1.97 > 95% significance). The data seem to be surprising. Emphasizing mainly on new and innovative products could lead to neglect of the cash cows and star products. Marketing professionals being familiar with life cycle management of products might consider a balanced approach between innovative and cash cows as more sensible.

The attitude towards outsourcing

The question on the attitude towards outsourcing has been included in the questionnaire as successful customized solutions in B2B have often been associated with outsourcing business processes. The cases of BASF and Hewlett Packard are good examples for that. Outsourcing has been around for quite some time and the benefits and downsides have been documented well. The objective of this question was to get a general understanding on the attitude towards outsourcing and to link this to potential learning for providers of solution and how this impact the business approach and the pricing. The results indicate that there are perceived positive and negative aspects about.

The following statements were given by the respondents.

"It must be used to part of your business that are not the first priority, ex. Management platform, cleaning, and transportation. I would not outsource R&D, sales and marketing unless you have not the expertise to do so."

"It is useful in getting internally unavailable resources [.....] Consider importance of the target function for outsourcing, available internal capabilities, risk of total reliance on an outsider and how the function will be controlled after outsourcing"

"Critical operations should not be outsource, critical means: time safety, operations and goals. Outsourcing bears the risk of operator's disengagement."

"If performance is transparent and better than internal efforts plus dependency can be managed"

Table 23 summarizes the perceived negative and positive aspects of outsourcing.

Table 39: Positive and negative aspects of outsourcing

It can be stated that the comments given are in line with the findings in literature on the impact of outsourcing (Agnal & Nordin (2009), Nordin (2005), Jennigs (2002)). The respondents suggest focusing outsourcing on large non-strategic and less innovative activities and putting stronger focus on the company's core business. The other side of the coin is obviously related to the loss of know-how, the investment for the analysis and for manufactures in particular outsourcing is less favourable due to the need for balancing their resources and their product mix.

Again comparing the statements based on the different functions in table 24 both sides suggest limiting it to non-strategic processes with the clear objective to higher performance and efficacy for lower costs.

	Purchasing	Marketing
Attitudes towards outsourcing	• Limit to non-strategic processes • Performance has to be transparent • Always consider hidden costs • Either achieve benchmark or outsource to third party • To achieve higher flexibility	• Loss of know how • *"In-house is better than outsourcing"* • Minimize operational costs • Improve efficiency • *"If other can do it more competitively let them do it"* • *"Stick to core business outsource everything else"*

• Consider long term impact

Table 40: Comparison on attitudes towards outsourcing

For the solution provider that means that knowing the strategic focus of the customer is crucial. Focusing the solution offering on less strategic processes and showing the clear benefit of the offering against their current solution might increase the acceptance of the buyer. It is also possible that for non-strategic processes buyers will apply a less stringent analytical process to de-bundle the offering. Then less transparency would be required leading to a potentially higher margin.

Importance of the phases of the solution selling process

Total valid answers to this question: 46 (11 from purchasing, 11 from marketing, 24 others)

	Definition of requirements	Customization	Deployment	Value add services
Overall	Mean 1.51/SD 0.95	2.61/0.89	2.60/1.01	3.13/0.92
Purchasing	2.00/1.55	2.50/0.55	2.17/1.17	3.33/0.82
Marketing	2.00/1.31	2.60/1.06	2.50/1.2	2.88/0.99
Others	1.41/0.80	2.88/0.86	2.88/1.11	2.82/1.01

The overall ranking according to the mean values indicates the following perceived importance of the four steps within the solution selling process.

3. Definition of customer requirement
4. Customization/Integration
3. Deployment and Implementation
5. Post deployment value adding services

There seems to be a slight difference between marketing and purchasing in the perceived importance of the deployment and implementation step and the importance of value added post deployment services.

The significance of the difference can be measured with the t-test. Generating a value of 1.96 or higher can be interpreted as 95% likelihood that the means are significantly different

The formula is as follows:

$$t = \frac{(x1 - x2)}{\sqrt{\frac{s1^2}{N1}} + \sqrt{\frac{s2^2}{N2}}}$$

Significance testing of the mean difference for the "Deployment and implementation phase" for purchasing and marketing:

$$\Rightarrow \; t = \mathbf{0.27} = \boldsymbol{no\ statistical\ significance}$$

Significance of the mean difference for the "Value added post deployment services" for purchasing and marketing:

$$\Rightarrow \; t = \mathbf{1.15} = \boldsymbol{no\ statistical\ significance}$$

The data set unfortunately is too small for generate a statistical relevant sample size. For purchasing experts the deployment and implementation step could be of higher importance whereas for marketing expert the relative importance of the post deployment services is higher compared to purchasing. But this data are just tendencies and have to be evaluated further.

Verdict

Data	Relevant for the method	Not relevant for the method
Importance of the phases of the solution selling process	☑	

Criteria for accepting a price

The background of this question is to get an understanding on the most important criteria for purchasers when accepting a price. The respondents had to weight the criteria according to the

perceived importance. The sum of weight should be 100. This information is intended to help solution sellers to structure both the approach and the pricing policy towards the customer.
The criteria were determined and defined during the study preceding this thesis. The ranking was executed by 60 respondents. The following tables summarize the opinion of purchasing and marketing professionals.

Criteria when accepting a price **(the purchasing perspective)**

Available alternatives	30.00%
Transparency of pricing	28.36%
Raw material prices	28.18%
Reputation of supplier	26.18%
Value proposition of offering	23.73%
Relationship to supplier	20.82%
Payment term to supplier	20.55%
Contract duration	19.91%

Table 41: Criteria for accepting a price in B2B (purchasing perspective)

Criteria when accepting a price **(the marketing perspective)**

Transparency of pricing	27.73%
Relationship to supplier	23.18%
Value proposition of offering	21.82%
Payment terms of supplier	19.45%
Available alternatives	18.64%
Reputation of supplier	15.45%
Raw material prices	15.45%
Contract duration	13.18%

Table 42: Criteria for accepting a price (the marketing perspective)

The findings suggest that purchasers put a strong focus on available alternatives, raw material prices and the pricing transparency. Marketing professionals prefer a transparent pricing and a good relationship to their supplier.

For the solution selling process as well as for the pricing policy this could mean that the solution seller has to consider the available alternatives to the buyer and look for a transparent pricing policy. The reputation of the supplier is of higher importance for purchasing managers than for marketing.

For marketing professionals transparency and the relationship to a supplier are the most important criteria.

For solution sellers these results show that purchasing has a stronger tendency to compare different offerings based on defined criteria. This means that even though the solution might be unique purchasers are like to analyse and compare the benefits of different offerings.

Transparency of the pricing policy is a key need for the buyer and the solution provider should ensure that the communication is as open as possible. The other indication is that purchasing prefers reputable suppliers compared to marketing who put a stronger focus on relationship. This could mean that a strong brand and reputation might be beneficial to companies who would like to sell customized solutions to purchasers. This could lead to the assumption that to be successful in solution selling a strong reputation is a pre-condition. On the other hand companies having a weak position in their respective market and trying to implement this business model might not benefit from selling solutions. These findings are an interesting starting point for further research in this area.

Verdict

Data	Relevant for the method	Not relevant for the method
Criteria for accepting a price		☑

Summary of findings from the descriptive part

The respondents can be classified in three subgroups namely purchasing, marketing and others. According to the questionnaire the others come from disciplines such as manufacturing, technical services, management and IT. The group others contributes by 50% to the total sample size.

The business philosophy differs by segment. Purchasing professional put a strong focus on cost savings whereas marketing professionals put more focus on revenue increase. This might be an important factor interpreting the different priorities and the different willingness to pay for a customized solution.

The perceived importance of the phases of the solution selling process does not show significant statistical differences between the subgroups due to the small sample size. The main difference can be seen in the perceived value of phase 4. Marketing professionals seemingly put higher value on the post deployment phase whereas purchasing puts more emphasis on the deployment phase.

The attitude scales do indicate some differences between the sub-groups of marketing and purchasing but no wider statistical significance was found. Some tendencies are worth mentioning.

Marketing professionals seems to be taking higher risks when changing a job and they put a stronger focus on research before making a business decision. They also prefer to expand into business areas the companies know well. Purchasing managers on the other hand would put a stronger emphasis on new and innovative products in their company. The stronger focus on research in combination with a cautious attitude when expanding the business might offer different opportunities to a solution provider compared to addressing a purchaser which favours innovation but also seems to be more risk averse in his job.

The ranking of relevant criteria when accepting a price in B2B shows that there is a difference between purchasing and marketing. Whereas marketing sees their priorities in pricing transparency, the relationship to the supplier and the value proposition of the offering purchasing puts their focus on available alternatives, the transparency of the price and the raw material costs.

Data	Relevant for the method	Not relevant for the method
Department of respondent	☑	
Business philosophy	☑	
Attitude scales		☑
Criteria for price acceptance		☑
Importance of solution phases	☑	

Appendix 5: Ranking results of respondents

All:

ID	Pref1	Pref2	Pref3	Pref4	Pref5	Pref6	Pref7	Pref8	Pref9
1	2	6	9	1	4	5	7	8	3
2	2	6	1	9	4	7	5	8	3
3	8	3	1	5	9	6	2	7	4
4	5	2	8	4	9	7	3	6	1
5	2	6	1	4	9	5	8	3	7
6	8	5	1	9	3	2	6	7	4
7	2	6	9	4	1	7	5	8	3
8	2	9	6	7	1	4	8	5	3
9	6	1	8	7	9	5	2	4	3
10	8	1	6	9	7	2	5	4	3
11	1	5	8	3	9	6	2	4	7
12	1	2	3	4	6	7	8	9	5
13	7	4	8	5	1	6	9	2	3
14	1	4	6	7	2	8	9	5	3
15	3	4	5	6	7	1	8	9	2
16	1	2	3	4	5	7	8	9	6
17	1	2	7	9	6	3	8	5	4
18	1	7	3	9	4	6	8	2	5
19	1	2	3	4	5	6	7	8	9
20	3	8	9	7	6	4	1	2	5
21	4	1	9	3	5	2	8	7	6
22	1	2	3	4	5	6	7	8	9
23	6	2	5	3	8	7	4	1	9
24	1	2	3	4	5	6	7	8	9
25	2	6	7	4	1	8	3	9	5
26	1	2	7	6	3	4	8	5	9
27	2	1	7	8	3	4	5	6	9
28	2	3	5	6	4	8	9	7	1
29	1	2	4	6	7	3	8	5	9
30	1	8	9	6	7	2	5	4	3
31	1	2	3	4	5	6	7	8	9
32	3	9	2	7	1	8	6	4	5
33	7	1	6	8	2	5	9	3	4
34	1	2	3	4	9	5	6	7	8
35	1	6	7	8	2	3	9	4	5
36	1	2	3	4	5	6	7	8	9
37	2	1	9	5	4	3	8	6	7
38	2	8	6	5	9	1	4	3	7

39	4	2	5	6	1	3	8	7	9
40	6	2	4	5	1	7	8	9	3
41	3	7	5	1	2	8	4	6	9
42	1	2	3	4	5	6	7	8	9
43	1	2	7	8	3	4	9	5	6
44	1	2	7	6	4	3	8	5	9
45	1	2	9	5	3	4	8	6	7
46	4	1	8	9	5	2	7	6	3
47	4	5	6	7	8	3	1	2	9
48	2	1	5	6	7	3	8	4	9
49	1	8	6	4	5	7	3	9	2
50	1	3	4	5	6	7	8	9	2
51	4	5	7	6	8	1	2	3	9
52	6	5	8	2	4	3	9	1	7
53	2	1	7	8	4	3	9	6	5
54	1	4	5	3	2	6	7	8	9
55	1	5	7	9	2	8	6	4	3
56	1	6	2	4	5	7	9	8	3
57	1	2	3	4	5	6	7	8	9
58	3	7	5	1	2	4	8	6	9
59	2	1	9	6	3	4	8	7	5
60	4	1	9	3	2	5	8	6	7
61	6	5	8	2	3	4	1	7	9
62	1	3	7	6	5	2	8	4	9

Marketing:

ID	Pref1	Pref2	Pref3	Pref4	Pref5	Pref6	Pref7	Pref8	Pref9
1	7	4	8	5	1	6	9	2	3
2	1	4	6	7	2	8	9	5	3
3	1	2	3	4	5	6	7	8	9
4	1	2	3	4	5	6	7	8	9
5	6	2	5	3	8	7	4	1	9
6	1	2	7	6	3	4	8	5	9
7	2	8	6	5	9	1	4	3	7
8	1	3	4	5	6	7	8	9	2
8	3	7	5	1	2	4	8	6	9
10	2	1	9	6	3	4	8	7	5
11	4	1	9	3	2	5	8	6	7
12	2	6	9	1	4	5	7	8	3
13	8	3	1	5	9	6	2	7	4
14	5	2	8	4	9	7	3	6	1

15	8	5	1	9	3	2	6	7	4
16	2	6	9	4	1	7	5	8	3
17	2	9	6	7	1	4	8	5	3
18	8	1	6	9	7	2	5	4	3

Purchasing:

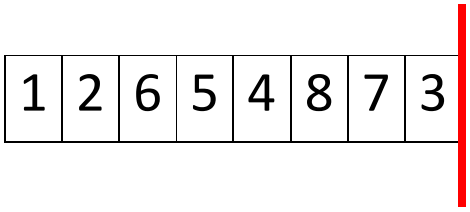
ID	Pref1	Pref2	Pref3	Pref4	Pref5	Pref6	Pref7	Pref8	Pref9
1	1	2	7	9	6	3	8	5	4
2	4	1	9	3	5	2	8	7	6
3	2	3	5	6	4	8	9	7	1
4	4	2	5	6	1	3	8	7	9
5	6	2	4	5	1	7	8	9	3
6	4	1	8	9	5	2	7	6	3
7	4	5	6	7	8	3	1	2	9
8	2	1	7	8	4	3	9	6	5
9	1	6	2	4	5	7	9	8	3
10	1	2	3	4	5	6	7	8	9
11	5	2	8	4	9	7	3	6	1
12	6	1	8	7	9	5	2	4	3
13	1	5	8	3	9	6	2	4	7

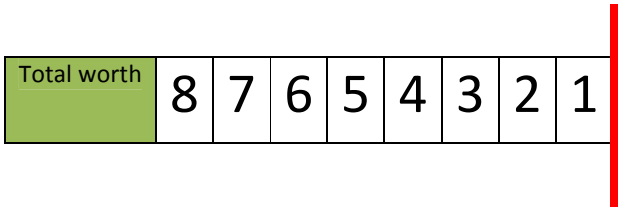
Others:

ID	Pref1	Pref2	Pref3	Pref4	Pref5	Pref6	Pref7	Pref8	Pref9
1	3	4	5	6	7	1	8	9	2
2	1	2	3	4	5	7	8	9	6
3	1	7	3	9	4	6	8	2	5
4	3	8	9	7	6	4	1	2	5
5	1	2	3	4	5	6	7	8	9
6	2	6	7	4	1	8	3	9	5
7	2	1	7	8	3	4	5	6	9
8	1	2	4	6	7	3	8	5	9
9	1	8	9	6	7	2	5	4	3
10	1	2	3	4	5	6	7	8	9
11	3	9	2	7	1	8	6	4	5
12	7	1	6	8	2	5	9	3	4
13	1	2	3	4	9	5	6	7	8
14	1	6	7	8	2	3	9	4	5
15	1	2	3	4	5	6	7	8	9
16	2	1	9	5	4	3	8	6	7
17	3	7	5	1	2	8	4	6	9

18	1	2	3	4	5	6	7	8	9
19	1	2	7	8	3	4	9	5	6
20	1	2	7	6	4	3	8	5	9
21	1	2	9	5	3	4	8	6	7
22	2	1	5	6	7	3	8	4	9
23	1	8	6	4	5	7	3	9	2
24	4	5	7	6	8	1	2	3	9
25	6	5	8	2	4	3	9	1	7
26	1	5	7	9	2	8	6	4	3
27	6	5	8	2	3	4	1	7	9
28	1	3	7	6	5	2	8	4	9
29	2	6	1	9	4	7	5	8	3

Appendix 8: Conjoint analysis for the total sample (62 respondents)





Base worth = Sum of total worth / number of stimuli

$$\Rightarrow \mu = \frac{8+7+6+5+4+3+2+1}{8} = 4.5$$

Card	Outsource	In-house	Safe option	Risk option	In-house	Outsource	Workshops	No workshops	30T$	60T$	90T$	120 T$	Rank value
1		β_{12}		β_{22}	β_{31}			β_{42}	β_{51}				8
2	β_{11}		β_{21}			β_{32}	β_{41}		β_{51}				7
3	β_{11}		β_{21}		β_{31}			β_{42}				β_{54}	1
4		β_{12}	β_{21}			β_{32}		β_{42}			β_{53}		4
5		β_{12}	β_{21}		β_{31}		β_{41}			β_{52}			5
6	β_{11}			β_{22}		β_{32}		β_{42}		β_{52}			6
7		β_{12}		β_{22}		β_{32}	β_{41}					β_{54}	2
8	β_{11}			β_{22}	β_{31}		β_{41}				β_{53}		3

Card	Outsource	Inhouse	Safe option	Risk option	Inhouse	Outsource	Workshops	No workshops	30T$	60T$	90T$	120 T$	Rank value
1		8		8	8			8	8				8
2	7		7			7	7		7				7
3	1		1		1			1				1	1
4		4	4			4		4			4		4
5		5	5		5		5			5			5
6	6			6		6		6		6			6
7		2		2		2	2					2	2
8	3			3	3		3				3		3
X	4.25	4.75	4.25	4.75	4.25	4.75	4.25	4.75	7.5	5.5	3.5	1.5	
X-μ	-0.25	0.25	0.25	-0.25	0.25	-0.25	-0.25	0.25	3	1	-1	-3	
part worth	β_{11}	β_{12}	β_{21}	β_{22}	β_{31}	β_{32}	β_{41}	β_{42}	β_{51}	β_{52}	β_{53}	β_{54}	

Table 43: Part worth calculation for every level

The estimated total worth of each stimulus is calculated as:

$$yk = \sum_{j=1}^{J} \sum_{m=1}^{Mj-1} b\,jm * xjm$$

⇨ y1 (estimated worth) = 2 + 0.25 -0.25 + 0.25 +0.25 + 3=5.5

That results in the following and a comparison between empirical and estimated part worth

Card	empirical worth	estimated worth	empirical rank	estimated rank
1	8	8	1	1
2	7	7	2	2
3	1	1	6	6
4	4	4	5	5
5	5	5	4	4
6	6	6	8	8
7	2	2	7	7
8	3	3	3	3

Table 44: Calculation of estimated part worth (utility)

To calculate the relative importance of each of the attributes the part worth have to be standardized following the equation:

$$\beta_{\text{jm (norm)}} = \beta_{\text{jm}} - \beta_{\text{min}}$$

This is followed by the adjustment of the scale according to the formula:

$$\beta_{\text{jm*}} = \frac{\beta_{\text{jm (norm)}}}{\sum_{j=1}^{J} \max(\beta_{\text{jm (norm)}})}$$

This leads to the following results for the relative importance of the total group.

	Outsource	Inhouse	Safe option	Risk option	Inhouse	Outsource	Workshops	No workshops	30T$	60T$	90T$	120 T$
$\beta_{\text{jm (norm)}}$	0	0.5	0.5	0	0	0.5	0	0.5	6	3	3	0
$\beta_{\text{jm*}}$	0	0.0625	0.0625	0	0	0.0625	0	0.0625	0.75	0.375	0.375	0

For the group of purchasers the relative importance of the attributes can therefore be ranked as follows:

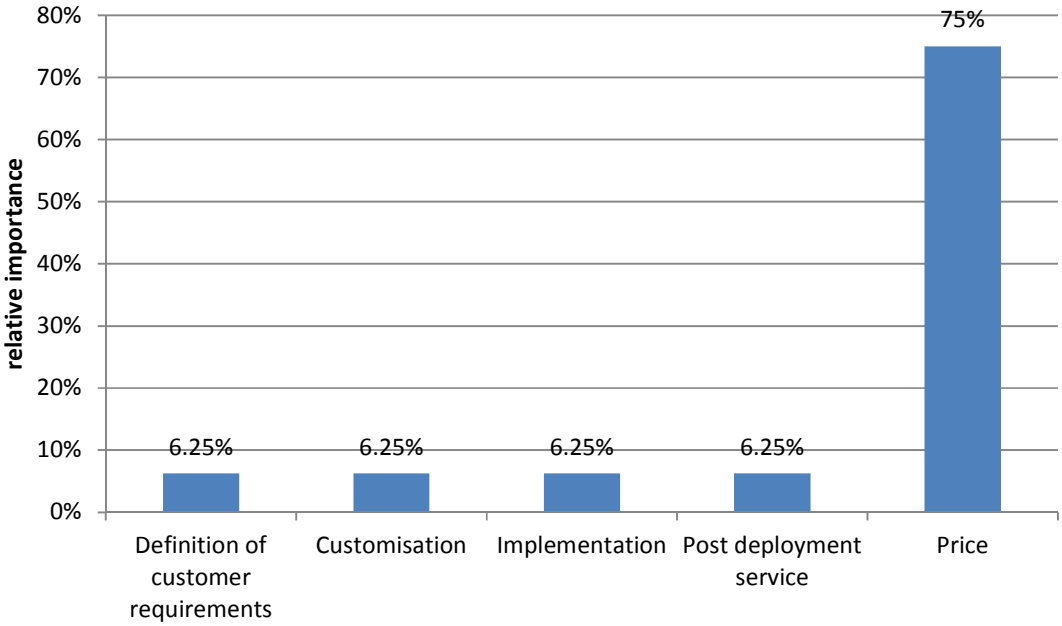


Figure 45: Relative importance of attributes for total sample

According to Backhaus et al. (2011) the relative importance is the range between the biggest and the smallest part worth of an attribute. Changing this attribute therefore has a strong impact on the perceived total worth of the offering. Price is the most important attribute for the total group with a 75% importance. There is no difference in importance between the different phases of the solution selling process. This means that a change in the price attribute has the strongest impact on the perceived importance of the solution. A change in one of the solution phases has a minor impact.
In order to determine the willingness to pay for the total group a linear interpolation method was applied to the three price- part worths. The most favourable solution design for the total group according to the conjoint analysis is as follows

Phase	Level	Part worth (Utility)
1	In-house definition of requirements	0.25
2	Solution provider pays for downtime	0.25
3	Machine operated by solution provider	0.25
4	no workshops	0.25

Total solution utility	1.0

Table 45: Preferred solution based on total utility (total sample)

To determine the maximum price the group would pay for this offer the price attribute can score a part worth of max -1 which results in the total value of 0. To conduct the calculation by linear interpolation it is assumed that the part worth between 30T$ and 120T$ has a linear development (Fig. 21).
It can be seen a part worth of -1.0 equals a price of 90000 US$. This could be considered as the maximum willingness to pay but still achieving a non-negative value for the whole solution.

Figure 46: Pricing function for the total sample

Phase	Level	Part worth (Utility)
1	In-house definition of requirements	0.25
2	Solution provider pays for downtime	0.25
3	Machine operated by solution provider	0.25
4	no workshops	0.25
Total solution utility		1.0
Maximum price	90000 US$	-1.0

Table 46: Maximum price to achieve zero utility (total group)

Keeping in mind that the solution provider can add value to phase 2 and 3 (0.25 for the downtime payment and 0.25 for operating the machine) to the solution process the maximum price the customer would willing to pay has a negative part worth of -0.5 which equals

$$75000 + \frac{15000}{2} = 82250 \text{ US\$}$$

The suggested offering to the whole group would therefore concentrate on phase 2 of the offering which includes the customized value proposition only.

Maximum willingness to pay:

82250 US$

Figure 47: Preferred offering of the total sample

A simplified profitability calculation for the total group could look as follows:

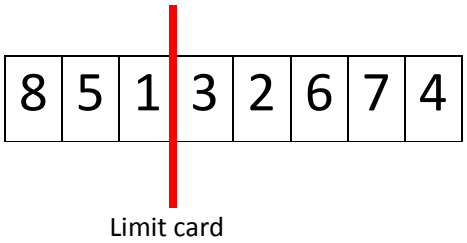
Position	lower scenario	upper scenario
Revenue (Maximum willingness to pay)	82500	82500
Cost paying for downtime	0	-60000
Cost for machine operation	- 60000	- 60000
Profit	22500	-37500
Margin	27.3%	-45.5%

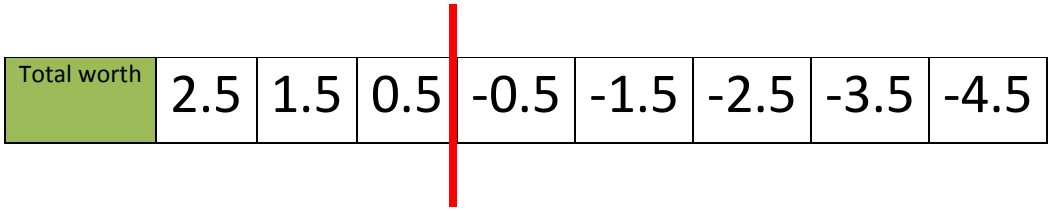
Table 47: Profit calculation based on maximum willingness to pay (total sample)

The upper scenario is based on the historic data on machine breakdown. One additional day of machine breakdown will generate a negative profit. The cost for the machine operation depends on the cost of the FTE needed to operate the machine. Here it is assumed that the cost will be the same for the solution provider than for the buyer.

Conjoint analysis for specific respondent (No 6)

To demonstrate that the conjoint analysis of individual preference rankings can lead to customer specific creation of a solution the ranking of respondent 6 was chosen. The individual ranking was different from the average ranking of the total group.





Base worth = Sum of total worth / number of stimuli

$$\Rightarrow \mu = \frac{-8}{8} = -1$$

Card	Outsource	Inhouse	Safe option	Risk option	Inhouse	Outsource	Workshops	No workshops	30T$	60T$	90T$	120 T$	Rank value
1		0.5		0.5	0.5			0.5	0.5				0.5
2	-1.5		-1.5			-1.5	-1.5		-1.5				-1.5
3	-0.5		-0.5		-0.5			-0.5				-0.5	-0.5
4		-4.5	-4.5			-4.5		-4.5			-4.5		-4.5
5		1.5	1.5		1.5		1.5			1.5			1.5
6	-2.5			-2.5		-2.5		-2.5		-2.5			-2.5
7		-3.5		-3.5		-3.5	-3.5					-3.5	-3.5
8	2.5			2.5	2.5		2.5				2.5		2.5
X	-0.5	-1.5	-1.25	-0.75	1	-3	-0.25	-1.75	-0.5	-0.5	-1	-2	
X-μ	0.5	-0.5	-0.25	0.25	2	-2	0.75	-0.75	0.5	0.5	0	-1	
part worth	β_{11}	β_{12}	β_{21}	β_{22}	β_{31}	β_{32}	β_{41}	β_{42}	β_{51}	β_{52}	β_{53}	β_{54}	

	Outsource	Inhouse	Safe option	Risk option	Inhouse	Outsource	Workshops	No workshops	30T$	60T$	90T$	120 T$
$\beta_{\mathrm{jm\ (norm)}}$	1	0	0	0.5	4	0	1.5	0	1.5	1.5	1	0
β_{jm^*}	0.12	0	0	0.06	0.48	0	0.18	0	0.1	0.1	0.07	0

For respondent 6 the relative importance of the attributes can therefore be ranked as follows:

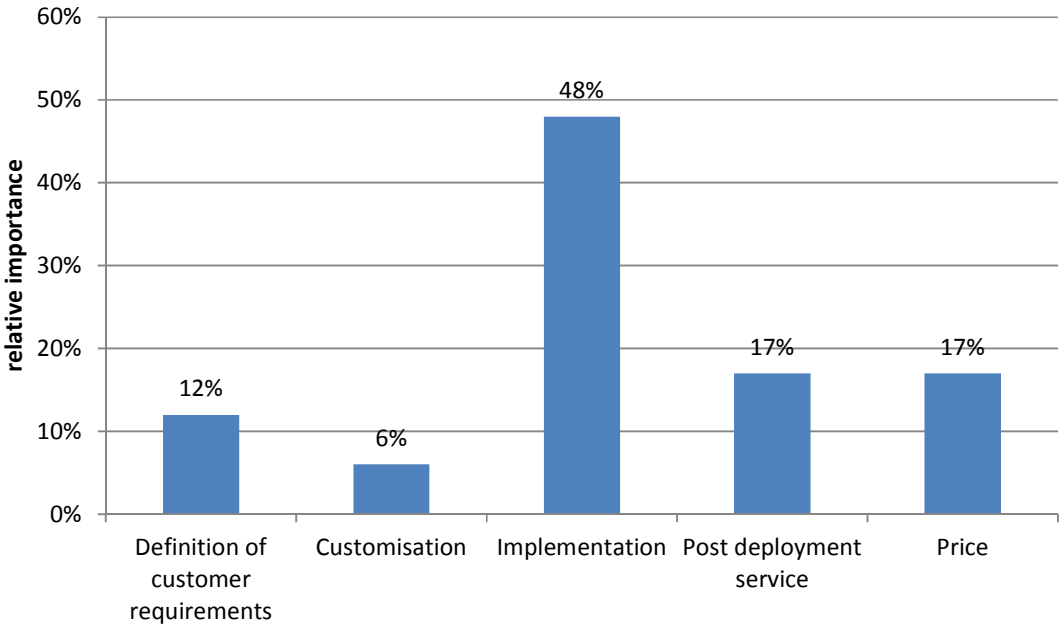


Figure 48: Relative importance of attributes for respondent 6

For this specific respondent the in-house machine operation is of the highest importance. Any solution should be designed around this fixed requirement. Compared to the larger groups price is of lower importance to the respondent. The solution offering with the highest utility for respondent 6 is shown in the following table.

Phase	Level	Part worth (Utility)
1	Outsource definition of requirements	0.5
2	Solution provider tries to improve output	0.25
3	Machine operated by in-house staff	2
4	value adding workshops	0.75
Total solution utility		3.5

Table 48: Preferred solution based on total utility (respondent 6)

To determine the highest possible price the group would pay for this offer the price attribute can score a part worth of max -3.5 which results in the total value of 0. The attribute price is of low importance for the respondent. The most important level is the in-house operation of the machine run. There seems to be a strong desire that the machine operation will be conducted by in-house personnel. In this specific case the solution provider should design a customized offering for respondent 6 putting a stronger emphasis on defining customer machine requirements and helping him to increase the output of its

machine. Additionally the solution provider should offer value adding workshops on for the customer relevant topics. It should be suggested to take out phase 3 out of the offering. Therefore the total worth of the solution to respondent No. 6 is now reduced to 1.5.

Phase	Level	Part worth (Utility)
1	Outsource definition of requirements	0.5
2	Solution provider tries to improve output	0.25
~~3~~	~~Machine operated by inhouse staff~~	~~2~~
4	value adding workshops	0.75
Total solution utility		1.5

Based on the individual pricing function for respondent 6 (Fig. 21) the maximum price to compensate a total worth of 1.5 would be more than 120000 US$. The real value can only be estimated but based on the shape of the curve it is likely to be around 135000 US$. The pricing function has a distinctively different shape compared to the examined sub groups. The relatively flat shape of the curve indicates that the impact of the price level on the total utility of the solution is low .

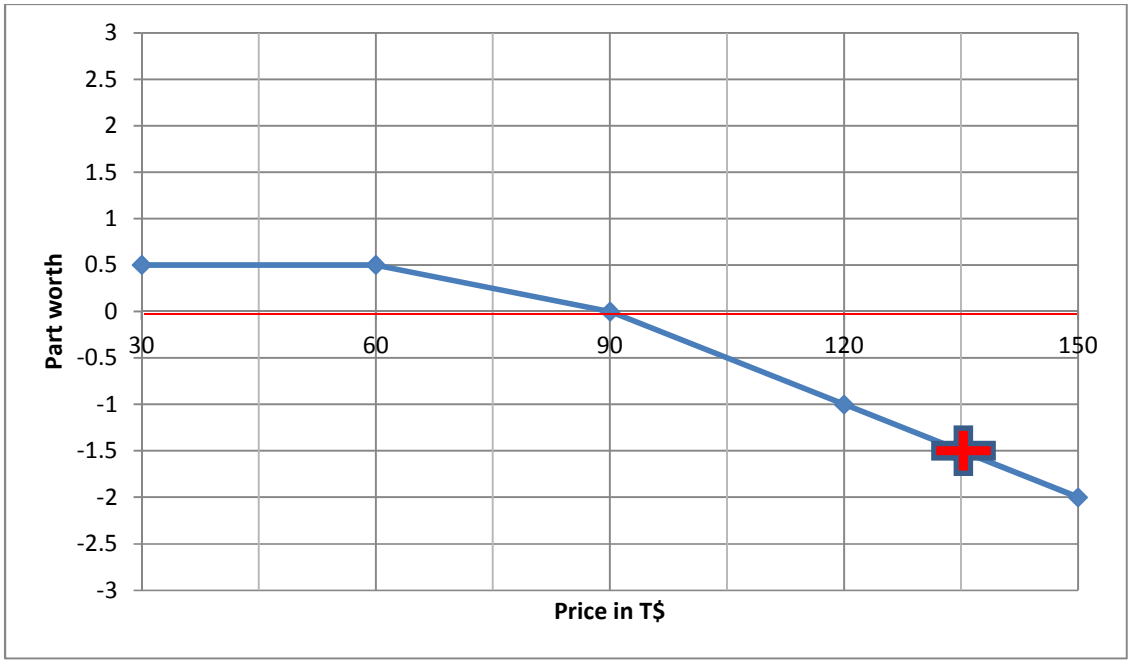


Figure 49: Individual pricing function for respondent 6

Phase	Level	Part worth (Utility)
1	Outsource definition of requirements	0.5
2	Solution provider tries to improve output	0.25
~~3~~	~~Machine operated by inhouse staff~~	~~2~~
4	value adding workshops	0.75
Total solution utility		1.5
Maximum price	135000	-1.5

Table 49: Maximum price to achieve zero utility (resp. 6)

This table translates into the following theoretical offering specifically tailored to the requirement of respondent 6.

Maximum willingness to pay:

135000 US$

Figure 50: Individual offering for respondent 6

The profit calculation for respondent 6 could look as follows

Position	lower scenario	upper scenario
Revenue (Maximum willingness to pay)	135000	135000
Cost for analysing the machine status	-3200	-9000
Cost for improving machine output (consultancy)	-3200	-9000
Cost for implementing changes for	-20000	-20000

improvement		
Cost for conducting workshops	-15000	-25000
Profit	93600	72000
Margin	69.3%	53.3%

Table 50: Profit calculation based on maximum WTP (resp. 6)

The cost for analysing the machine status, improving the machine output and conducting the workshop are an estimation based on a consultancy fee of 200 US$/hour which is not uncommon in this industry. Additional cost might be caused when implementing the changes. We assume one day loss in output (20000 US$).

Furthermore we assume that the analysis and the improvement of the output take about 2-5 days (8 working hours per day). The workshop cost the supplier between 15000-25000 U$$.

All in all the solution could be highly profitable for the solution provider when managing the cost related to the value proposition.

Appendix 9: Data from the main study

Operations:

Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6	Rank 7	Rank 8	Rank 9	Profession
2	1	3	4	5	6	8	7		Operations
8	1		4	3	7	2	6	5	Operations
8	6		4	7	1	2	3	5	Operations
8	7	2	1	3		4	5	6	Operations
4	5	1	2	6	7	8	3		Operations
3	2	8	6	1	4	5	7		Operations
2	1	3	6	8		5	7	4	Operations
8	6	4		5	2	3	1	7	Operations
8		6	4	1	7	5	2	3	Operations
2	8	1	7		6	3	5	4	Operations
8	6	4	5	1	2		3	7	Operations
2	8	6		1	3	4	5	7	Operations
2	3	8	5		1	4	6	7	Operations
2	5	1	8	3	4	6	7		Operations

Operations	Consider buying	inside Top 3
Solution 1	9	6
Solution 2	10	8
Solution 3	5	4
Solution 4	6	3
Solution 5	6	2
Solution 6	9	4
Solution 7	5	1
Solution 8	14	9
Limit Card	0	3

Purchasing:

Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6	Rank 7	Rank 8	Rank 9	Profession
8	4	6	1		7	5	3	2	Purchasing
5	2	1	3	4	6	7	8		Purchasing
8	1	6	4	2	5		3	7	Purchasing
8	6	1	4	2	5	7	3		Purchasing
8	4	6	1	2	5	7	3		Purchasing
8	4	6		7	1	2	3	5	Purchasing
8	6	2		1	4	7	3	5	Purchasing
8	6	4		7	1	5	2	3	Purchasing
8	6	2		1	4	7	3	5	Purchasing
8	1	2	7	4	6	5	3		Purchasing
8	6	1	2	4	7	3		5	Purchasing

Purchasing	Consider buying	inside Top 3
Solution 1	7	5
Solution 2	8	4
Solution 3	5	0

Solution 4	9	4
Solution 5	4	1
Solution 6	10	9
Solution 7	5	0
Solution 8	11	10
Limit Card	0	0