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DUAL PERSPECTIVE ON CUSTOMER VALUE IN THE CONTEXT  
OF A SMART AND CONNECTED PHENOMENON: CASE INNO-  
VATIVE PRODUCT-SERVICE BUNDLE

Master of Science thesis

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## ABSTRACT

**NIUSHA SAFARPOUR:** Building a Value Proposition for a Cost-Reducing Service

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Focusing on value creation in marketing has always been the key to success for companies. As a result, the definition, analysis and communication of value has gained importance. Companies are making an attempt to make a value proposition that is not only lucrative for the customer, but also has great returns for the company itself. Although this might sound simple on paper, since it is the basis for business logic, it is much more complicated in real life situations. With the service elements in the offering and the emergence of technologies such as smart and connected phenomenon, the business models become more innovative and more complexity is added to the analysis of value.

The objective of this thesis is to introduce a method for the dual perspective of value in a bundle of product and service in a smart and connected context. This method draws from the customer value and customer lifetime value concepts to offer an all-inclusive study on value. This assists companies in crafting an appealing value proposition in a cost-saving offering for a client that offers value to the company over its lifetime. This study specifically deals with the state of the arts smart and connected phenomenon and provides a view on how value works in that context.

The framework created through this study serves to help the company choose a client that is of most value to the firm over the time of their cooperation. It then leads the company towards a better fabrication of the offering that is not only an attractive proposition to the client but also for the company. It gives a close insight onto where the benefit comes from and how a smart and connected bundle of products, services and relationships must be put together for maximum results in the modern age.

## PREFACE

Throughout my master's studies, I was familiarized with an expansive realm of knowledge. Given that I came from quite a different engineering background, it was always so appealing to me to be able to merge the two. When I read about the ongoing project in the Material Department, it resonated with me and brought to mind my own laboratory work during my undergraduate years. I saw it as the perfect opportunity to understand how to apply my newfound knowledge to the industry I was familiar with. After discussing how I thought I could contribute to the project, I joined the team.

While working on the commercialization project, I learned a lot about how a technology is introduced to the market step by step. The meetings and working closely with the consultants gave me an idea of how the objective is broken down to manageable questions and research is done to find answers. It was so rewarding when during the meetings we could come up with revolutionary ideas on how to exploit the innovation to the full.

I would like to thank Dr. Jouni Lyly-yrjänäinen, for his patience and insightful mentoring, not only throughout my thesis but also during my whole graduate study period. I also wish to express Dr. Petri Suomala for the supervision of my thesis. I would like to thank Dr. Matti Järveläinen, the head of the project case for his trust in my cooperation with them. The last words of gratitude go to my family for supporting me in ways that they were never taught and my life partner for bringing magic into my otherwise earthly life.

Tampere, 19.5.2016

Niusha Safarpour

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## LIST OF SYMBOLS AND ABBREVIATIONS

B2C	Business to Customer
B2B	Business to Business
ERV	Expected Relationship Value
LTV	Lifetime value

# 1. INTRODUCTION

## 1.1 Background

Nowadays, value is the core of every business. There are different aspects to value in this context. (Doyle 2008) Value creation lies in innovative development of bundles of products and services and offering them to the right market segments. A unique value proposition ensures a favorable position for the offering among the existing alternatives in the market (Kothandaraman and Wilson 2001).

It is important to find the gap in competitive market offering through positioning (Kotler and Keller 2006). Since the offering is composed of several elements, the positioning might not be very straight forward. Hence, identifying the rival offering by itself is a complicated task. (Bergen and Peteraf 2002) Each element might have to be positioned separately against offerings with comparable value proposition. Generally speaking, value is the difference between the benefits attained and costs incurred (Slywotzky 1996; Zeithaml 1988; Doyle 1989). The realization of value is a result of a well thought of business model around the company's capabilities (Chesbrough and Rosenbloom 2002)

New technologies are constantly transforming business models. For the companies to thrive in this constant transformation, they must have innovative approaches to value co-creation and value capture. A technology has no value unless it is commercialized through a well-planned business model (Chesbrough 2010). Superior value creation is the result of an insightful view of industry processes and the current practices. As new knowledge is created, it can be put to use in established industries for enhanced efficiency (Drucker 2007).

Creating an innovative product and service offering based on new technologies, is capital and resource intensive besides being time consuming. The innovated technology must be fully exploited to pay off (Chesbrough 2010). It is hence crucial for the co-creation partners to be chosen carefully. In other words, the company must choose to create value for partner customers that create value for them as well. At times, a certain technology can be of benefit to different entities. It is crucial for the company to assess the value of different entities for the company alongside the value it can create (Jain and Singh 2002).

It is also crucial to have a holistic view of value to be able to develop a business model that takes full advantage of the technology embedded in the product-service mix. It is

best that different potential partners and the benefits and expenses they introduce to the company are investigated. There is need for a holistic value proposition assessment that considers the duality of value, as seen by the client and the company.

If this gap in value assessment models is filled, certain strategic marketing decisions can be made with more research-based evidence and hence certainty. The selection of co-creation partners can be focused on the most profitable ones. The development of value proposition can then be based on the opinion of the value partners. The value proposition customization then is done considering the value capture model for the firm itself.

## 1.2 Objective

This thesis introduces a new value assessment model. This model considers the benefits and expenses of product, service and relationship. It views value from both co-creation partners' point of view. With the cloud systems as a new tool for service based on big data analysis, the development of a value-adding service concept is complicated. However, through insightful view, it can be very rewarding.

Communication of a convincing value proposition in a service concept is the next challenge. Due to the fact that value is created through use, the model for value assessment can be used as a foundation for demonstrating how the company wishes to create value for the selected partners. The framework hence guides the development of the service concept, partner selection and value analysis and communication. Thus, the objective of this thesis is...

*...to develop a framework for analyzing a dual perspective of customer value in the context of an innovative smart and connected product- service bundle.*

To fulfill this objective, the thesis reviews the literature on marketing, value, and smart and connected phenomenon. Then a framework is designed to analyze the benefits and costs to all parties in order to demonstrate customer perceived value and customer lifetime value at one glance. This serves to have the technology-based service fulfill its potential in value creation. The technology being innovated in the context of the smart and connected phenomenon, impacts different components of value which is also addressed in this thesis. Eventually, this framework is tested in a cost-reducing service concept development in the case project.

## 1.3 Research process

The research process started in May 2015, when the author took interest in participating in the commercialization stage of a project in another department in Tampere University of Technology. On a general level, the project aimed to integrate the cloud technology with an innovative measurement device into the realm of material sciences. A meas-

urement method was invented that would result in real time data and increased efficiency. The author cooperated with the project technical team by doing market research to prepare a value analysis. The commercialization stage of the project was officially started in May and was ongoing after this thesis was written. The findings of this part of the project were shared with a consulting company who was in charge of the commercialization project as a whole.

Throughout the duration of this study, the project was refined. With the market study of the rivals and the potential partner customers, the team got an insight into the reality and the expectations got narrowed down. The knowledge of the market and the technology brought them closer to a better understanding on how to bundle the product and the service. The initial view of the bundle got modified according to the facts discovered through the commercialization study. The case that this thesis is based on made the phenomenon more tangible. This resulted in an easier and more efficient development of the framework and a more thorough analysis. The framework is hence more beneficial if applied in another real life example.

**Table 1.** *Data gathering methods (Gummesson 1993).*

<b>Method</b>	<b>Description</b>
<b>Existing materials</b>	Everything that is conveyed by media other than humans. Existing materials are often referred to as secondary sources of data.
<b>Questionnaires</b>	Questionnaire surveys are used for formalized and standardized interviews.
<b>Interviews</b>	Questionnaire interviews are the most common method to generate data in case study research. They usefully include open-ended questions, which are asked according to interview flow.
<b>Observation</b>	Observation is a method to gather information by observing the subject of the study.
<b>Action research</b>	Action science requires the involvement of the researcher in the process and can contain all other data gathering methods.

The goal of this study was to create a theoretical framework for the analysis of the value surrounding a product-service offering bundle. The investigation for the purpose of this thesis was done through extensive market research. The rival offerings were found through their existing sales material on the internet. The different people on the team were interviewed. The members who worked directly with the cooperation partners were asked to share their observations of the client's current practices, needs and expectations. The people who worked on the technical side of the offering were also kept in touch with. Their insights into the technical capabilities of the innovation provided the information for positioning of the offering.



## 1.4 Structure of the thesis

This thesis is logically divided into eight chapters. The content and objectives of the chapters are as follows:

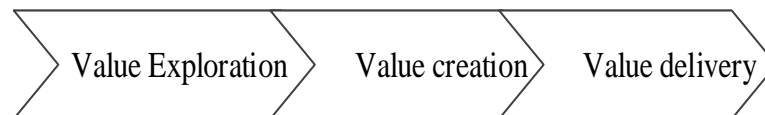
1. Chapter 1 introduced the background and main objective of the study. It elaborates on the research process and data gathering methods used in writing this thesis.
2. Chapter 2 discusses the marketing process with value in the core. It elaborates on the steps of marketing. The different segmentation and positioning methods are introduced. They are later used in the development of marketing mix in an extensive marketing process.
3. Chapter 3 elaborates more on the concept of value throughout literature. The different aspects of value, customer value and customer lifetime value are discussed. The value analysis process is then described. A value analysis framework is developed based on the elements of value.
4. Chapter 4 discusses a whole other side of the value, namely customer lifetime value. In an attempt to form mutually attractive activities between two entities, it is important to view value from a dual perspective. This chapter also introduces the smart and connected phenomenon to the extent necessary to analyze value in that context.
5. Chapter 5 briefly describes the case company and technology. It also views the case team objectives and the decisions they have made so far. In this chapter the technical aspects of the project are also introduced.
6. Chapter 6 goes through the project process and research. It reviews the different elements of the offering. It also applies the frameworks to the case.
7. Chapter 7 reviews the research objectives and the theoretical framework developed through the thesis. The framework is then applied to the case. The results are then analyzed and the limitations are pointed out. The key learning points are stated.
8. Chapter 8 concludes the thesis.

## 2. MARKETING

### 2.1 Marketing process

In the business world, every entity strives to survive and succeed by making profit. Kotler and Keller (2006) claim that financial success is mainly rooted in marketing ability. Marketing is gaining profit through a holistic, customer oriented management of business. It was born in the mid-50s out of a shift in the philosophy from the sales orientation towards a customer focused production point of view (Viardot 2004).

Marketing can be approached from two different angles. As a total business philosophy around value and as a discrete set of activities (Doyle 2012). Value is central to marketing because it is the incentive that activates the relationship between the firm and the customer. It has formally been defined as the organizational function and set of processes for exploring, creating and delivering value to customers and for managing customer relationship in ways that benefit the organization and its stakeholders (American marketing association 2013). Figure 1 illustrates marketing as a total business philosophy with value in the core.



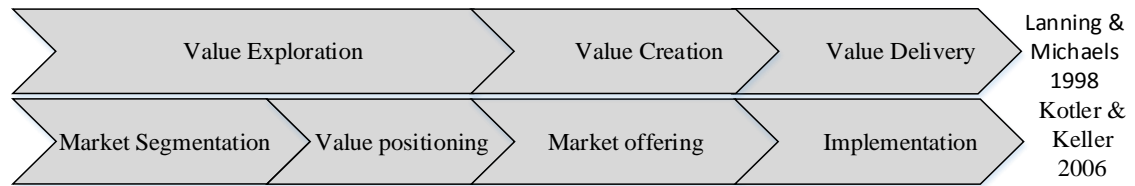
*Figure 1. Marketing as a total business philosophy (Adapted from Lanning and Michaels 1998).*

The meaning of the abstract word value is quite vague. Value, in this context, is realized as a product, service, idea or a combination of all three. The ultimate goal of marketing is the following:

- Effective use of resources
- Market share increase
- Securing a unique position in the competition

Marketing as a holistic business philosophy based on value clarifies the ultimate purpose. Nonetheless, a framework is needed to guide the organization through the value creation process. In order for marketing to be relevant to the strategy, Hooley et al. (2012) aptly begin the marketing process by defining the business purpose and core strategy. The framework developed by Kotler & Keller (2006) is a more detailed sequence for marketing as a discrete set of activities. The framework utilized in this study

first considers the strategic importance of marketing in the organization and then follows it to the tactical level. The framework is illustrated in Figure 2.



**Figure 2.** *Marketing process.*

The process starts with segmentation. The grouping of the heterogeneous market to smaller homogeneous subgroups is called segmentation. It can be described as a divide and conquer method. Segmentation is a crucial step that guides the orientation of the company towards the most appropriate target market. The evaluation of the segments happens throughout the segmentation process.

As the segmentation is carried out and segments are evaluated, the market is narrowed down and the segments that remain are the best match between the customer need and the company's competences. To postpone choosing the target market is to slowly fall into imitation of the competitor and undermine the uniqueness of the competitive advantage that can otherwise be claimed. (Porter, quoted in Jackson 1997; Freytag and Clarke 2001)

Once the company knows the customers, it is time to determine what position must be occupied in the market. There is a metaphorical ladder in customers' mind, as Ries and Trout (2001) envision, with all the options available in the market (the products, services and companies), organized relative to each other based on the characteristics that matter to the customer. This ladder serves to simplify the overload of information that targets the customer (Malhotra and Birks 2003).

The layout of the ladder and how the offerings are located on it, as Hooley et al. (2012) investigate, is a complicated result of the customer's perceptions, assumptions and feelings. It is a comparison of the alternatives available in the market. The company must decide where in this ladder there is a gap that matches what they can offer. By the end of positioning, the exploration of value from all aspects is done. The results of this step is a great input to the creation of value through the designing of the marketing mix.

The implementation stage starts with the sales and continues in the future. Similar to any plan, a marketing plan once implemented needs to be controlled. The budget and schedule goals, the strategic objectives and progress must constantly be monitored. In the dynamic environment there are so many factors studied in the beginning of the process that might change and as a result affect the company. It is crucial then for the marketing process to have that final feedback loop that constantly controls the process and

highlights the upcoming opportunities and threats. These stages are elaborated on in the following sections.

The marketing process discussed above seems to be quite generic for every organization in every industry. However, the composition and the emphasis on different stages might differ. A marketing oriented company can draw the following benefit (Graham et al. 2012):

- Understanding of customer needs and purchase behavior
- Insight into the factors that affect the purchase
- Knowledge of the industry dynamics and external forces
- Ideas of how to align the internal environment to attain the goals

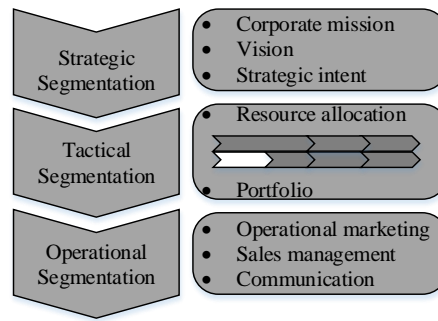
By offering customers superior value, profit is generated for the company. This means the development and protection of assets, generation of cash flow and attainment of objectives. This all leads to a virtuous circle of customer satisfaction and loyalty, employee motivation, improved organizational performance and sustained profits. (Graham et al. 2012) Customer loyalty is considered even more important in service business. This offering and its implications on marketing practices are discussed in the following sections.

## **2.2 Segmentation**

Segmentation is a step in value exploration in the traditional marketing process (Kotler and Keller 2006). The outcome seems to be deep knowledge about the market and different customers. The market needs and preferences are heterogeneous. A segment is a homogeneous subgroup within the market whose common characteristics result in a similar response to a marketing stimuli (Wind and Cardozo 1974).

The traditional view on segmentation assumed that segments objectively exist and are just discovered through marketing (Kotler and Keller 2006). In the modern and more technology-oriented marketing literature, they can be formed subjectively (Harrison and Kjellberg 2009; Drucker 2007) through innovation and marketing. Either way, segmentation affects and is affected by both the organization and the environment.

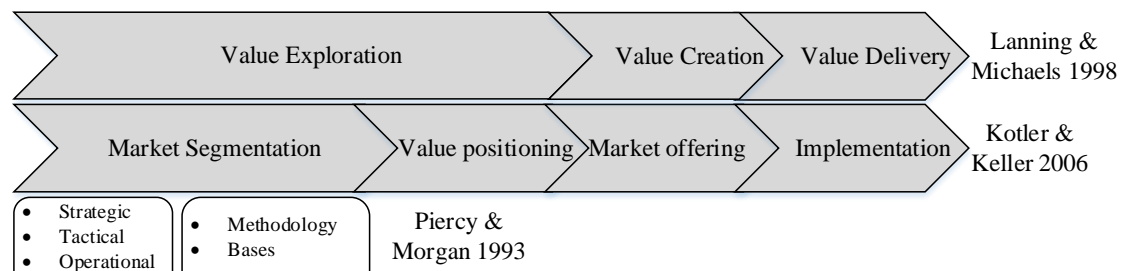
Segmentation has been introduced as a step in marketing (Kotler & Keller 2006). One common consensus about segmentation is that it ensures a better alignment between market needs and market offering, which results in more profitable use of a company's re-sources. In the long run, customer satisfaction and loyalty besides sustained competitive advantage, are attained as a result of the right segmentation practice. (Dibb and Simkin 2009) It is significant in all levels of a business. Figure 3 illustrates how Piercy and Morgan (1993) have classified the significance of segmentation to the practices of the organization at different levels.



**Figure 3.** Segmentation in different levels of business (Adapted from Piercy and Morgan 1993).

The figure above shows the implications of segmentation to the concerns at different levels of the organization. By knowing the segment the vision and strategic intent of the company can be shaped around real customer requirements. The market understanding attained through segmentation results in a managerial insight on company's mission. The choice of segment mandates resource allocation decisions and other tactical activities. If more than one segment is to be chosen, the company must aim for a balanced portfolio based on segment characteristics. At an operational level, the segment knowledge affects the operations such as sales and communication to name a few. (Piercy & Morgan 1993)

Another stream of studies discuss segmentation in practice. There are numerous studies each with a new framework on segmentation. Figure 4 illustrates the different views on segmentation in literary streams. There are two separate views regarding the levels and the process of segmentation.



**Figure 4.** Segmentation as a stage in the marketing process.

The marketing process includes segmentation. As described above segmentation has been studied from a different aspect as well. The process described for segmentation also requires the determination of the following:

- Methodology
- Bases

Several methods are suggested in literature for segmentation. These methods make use of certain factors or bases. Methodology can refer to the direction or the stages of seg-

mentation. In one stream, segmentation has been done in two different manners with regard to the direction of segmentation: breakdown and buildup. The former takes the whole market and minimizes it to segments that are accessible, measurable and substantial. Other scholars see that it might be more practical to start from the bottom up. In this buildup view, individual customers are considered different and then similarities are sought to form groups. The individual customers that synergize with regard to needs and technology, form one cluster because they can utilize the company's resources more efficiently. Based on these similarities segments and clusters are formed. (Kotler and Keller 2006)

Freytag and Clarke (2001) believe that, in a turbulent market, it is more apt to take a buildup approach to the matter. The market, as opposed to conventional marketing assumptions, is not static. This dynamism stems from the competition, technological advances and its vulnerability to political and social changes. The decision of which approach to take depends on the industry facts such as number of relevant customers, applications of the offering, nature of the relationship with customers and above all the company's goal for segmentation.

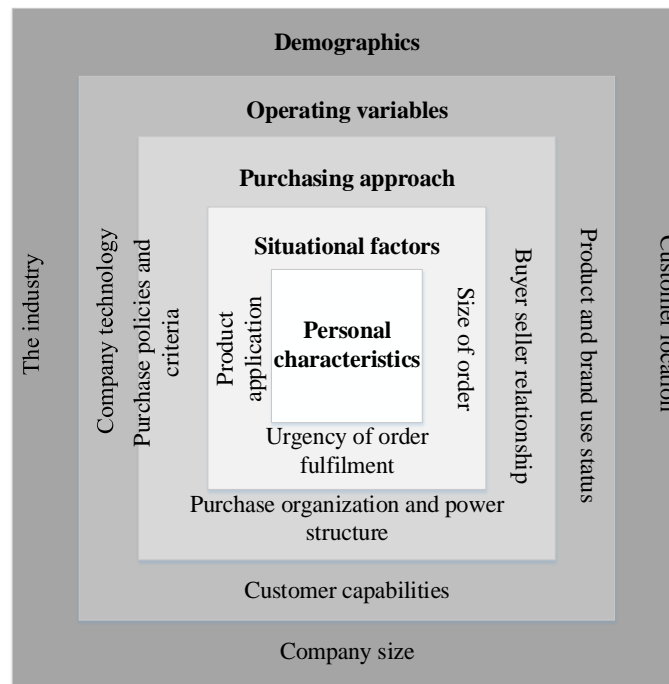
Methodology can also refer to the stages for segmentation. The frameworks in literature can be grouped with regard to the number of steps. These steps are related to the they attempt to segment the market (Kalafatis and Cheston 1998):

- Unordered approach
- Double stage Micro-Macro approach
- Multi stage Nested approach

The unordered approach is done based on individual segmentation bases with no clear order. This approach requires a resource intensive market research process which generates an overwhelming amount of data, some of which might even be irrelevant. The analysis of this mass of data is difficult and ends in confusion and inefficient, if any, segmentation results.

The other segmentation method specifically for industrial markets is double stage macro and micro segmentation. Macro segmenting is done based on information that can be found from secondary sources (Choffrey and Lilien 1978). It is done based on variables that affect buyer reaction (Wind and Cardozo 1974; Webster 1979). After Macro level Micro segmentation can be done based on factors regarding purchasing behavior of the decision making unit (Wind and Cardozo 1974). The micro segmentation is a challenging task according to Sudharshan and Winter (1998). The practice of collecting data on the variables is difficult and costly. This data is not easily accessible and time and resources must be allocated to research and engage with the customer to have reliable and accurate information. For segmenting the market at multiple levels, in the study of in-

dustrial market segmentation, Bonoma and Shapiro (1984) propose a model that progresses in five levels. As illustrated in Figure 5.



**Figure 5.** *The nested segmentation method (Bonoma and Shapiro 1984).*

The nests are put in the order of factors that are easiest to observe, to the least, demographic, operating variables, purchasing approach, situational factors and personal characteristics. Bonoma and Shapiro (1984) admit that the nested approach might not be applicable to every industry and every product. As a matter of fact, it seems possible to skip irrelevant criteria given that the approach is fully understood. The versatility assigned to the model is clear indication that it is not a one size fits all approach.

Whichever method is chosen for segmentation, factors are to be chosen as bases for segmentation. Factors can be causal or descriptive. In causal factors segmentation is done based on the benefit the customers can draw from the offering. (Haley 1968) The descriptive factors, on the other hand, merely rely on the characteristic of the segments, independent from the stimuli.

Hlavacek and Reddy (1986) elaborate more on causal factors. In each segment, customers have problems that can be solved through similar processes. The segment members seek the same applications. In this approach, a product concept is defined. This concept clearly describes the core benefits and the generic functions of the offering. Laughlin and Taylor (1991) add concentration ratios and product customization requirements. The bases scattered across literature are numerous. Freytag and Clarke (2001) systematically categorize the information needed about the market members for segmentation into three groups as categorized in Table 2.

**Table 2.** Segmentation bases (Freytag and Clarke 2001).

<b>Characteristic</b>	<b>Goals</b>	<b>Behavior</b>
-Industry membership (Bonoma and Shapiro, 1983) -Geographic location (Bonoma and Shapiro, 1983) -Technological competence (Bonoma and Shapiro, 1983) -Sales volume (Hummel, 1960) -Financial capability (Bonoma and Shapiro, 1983) -Profit potential (Freytag and Clarke, 2001) -Network position (Freytag and Clarke, 2001) -Environment (Bonoma and Shapiro, 1983)	-Benefits (Haley, 1968) -Usage and application (Cardozo, 1980) -Order size (Bonoma and Shapiro, 1983) -Purchase criteria (Freytag and Clarke, 2001) -End-user requirement (Unger, 1974) -Technical capability (Bonoma and Shapiro, 1983)	-Purchase strategy (Cardozo, 1980) -Purchase organization (Cardozo, 1980) -Composition by role (Bonoma and Shapiro, 1983) -Purchase type (Wilson et al., 1971) -Supplier relationship (Freytag and Clarke, 2001) -Risk and uncertainty (Bonoma and Shapiro, 1983) -Alternate suppliers (Freytag and Clarke, 2001)

First, it is important to know the customers characteristics. Their product, process and technologies, their relationship with possible competitors, and their attitude, whether they are innovative or profit oriented matter. Second, goals or what customer wants on a strategic level is of importance because they influence the customers' purchase and sales strategies and product and service preferences. Last, behavior or what customers do in practice must be paid attention to. The customers' value over time is valuable here. Whether the customer switches suppliers and uses single or multiple suppliers is significant information. (Freytag and Clarke 2001)

According to the different empirical studies, Kalafatis and Tsogas (1998) claim that the choice of bases is industry specific. The industry dynamics and the transparency of information are the external factors that might affect the choice of bases. The company must also keep their strategy in sight and define goal along the marketing process. According to these goals and the state of the market and the environment, the segmentation bases are determined by the company as it serves them. Furthermore according to the same matters, the priority of each base is determined.

According to this long list of segmentation bases, there are many ways in which a market can be segmented. However, not all of them are useful. As a matter of fact if all firms followed the same segmentation logic, none could find a unique position in the rivalry. Since the collection and analysis of data demand resources, the company must



focus on practicality of the information. Depending on the firm's goal, a combination of bases are used. In order to be relevant segments must have the following characteristics:

- Differentiable
- Measurable
- Substantial
- Accessible
- Actionable (Brassington et al., 2007)
- Sustainable (Kotler 1991)
- Stable (Thomas 1980)

First, differentiable means the segments must respond differently to different marketing mixes, specially, the targeted segment. Second, volume potential and characteristics of the segment must be measurable. Third, substantial is when the segments are big enough to serve profitably. Fourth, accessibility of the target market must be easy for the company. Fifth, actionable means that attracting and serving the customers is feasible. Sixth, sustainability means serving the targeted segment in the future within the strategic scope and resources of the company is possible. Last, stability is how the future behavior of the targeted segment can be foreseen and planned upon. (Graham et al. 2012)

The shortcomings in all the methodologies is introduced so far are clear indication that there is no generalizable solution for segmentation (Goller et al. 2002). Venter et al. (2015) argue that with all the much ado surrounding segmentation in literature, it fails in practice. If exploited, however, it has great potential. But all the time and investment goes to waste without the objectives being achieved. Due to its importance in the marketing process, an attempt must be made to bridge the gap between the theory and practice. There are three various methods of targeting favorable customers. The three approaches are as follows (Brassington and Pettitt 2007):

- Concentrated
- Differentiated
- Undifferentiated

First, the concentrated approach, or niche strategy, means the focus on serving one market segment with one specific marketing mix. This ensures a deep market knowledge and possibly relationship-based business with the customers. With only one marketing mix to manage, the costs are low. On the other hand, it renders the company vulnerable to the threat of new entrance, especially if the company's success lures them in. Then, if there is need to grow, it might be challenging due to limited resources and an established position which is no longer favorable. It is like the company has no back-up plan.

Second, the differentiated targeting strategy means developing different marketing mixes for different market segments. It allows the company to spread the risk over a larger scope. However, acquiring the knowledge and designing the different marketing mixes demands more resources. It is crucial for the company not to cross the line and overreach itself in trying to satisfy too many diverse segments.

Last, the undifferentiated strategy is assuming the market is a large homogeneous unit. In this case one marketing mix is developed for the whole market. This strategy results in low costs due to economies of scale. Nonetheless, it is likely that the marketing mix does not satisfy all the market members the same and a segment will automatically emerge. This makes the company's market share prone to any competition that uses better knowledge of the appearing segments to develop a marketing mix that meets the needs better (Brassington and Pettitt 2007).

Segmentation results in great outcome for the firm. The right segmentation approach can give the company a deep insight into the market. Once the segmentation and selection have been carried out, the following results can be expected (Palmer and Millier 2004):

- An understanding of the customer and market
- A guideline for allocation of resources
- The creation or modification of marketing mix relative to the new segment
- Evaluation and development of new approaches

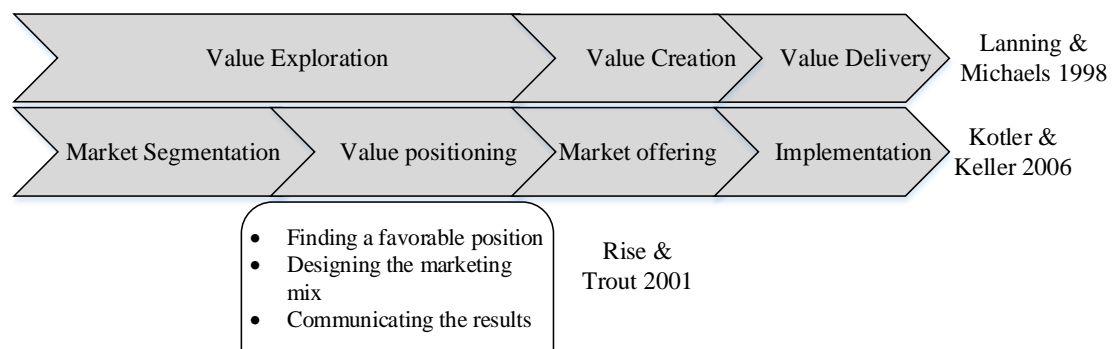
The segmentation process gathers and analyzes data about the customers. During evaluation and segment selection, other factors such as the firms and the environment are also taken into consideration. A concept introduced alongside segmentation is reverse segmentation (Kotler et al. 2002). This view was developed with the new dynamic view of the modern business world and the consequential importance of the customer relationship.

With the advent of information technology, the customer can communicate to the company their values, preferences, and characteristics. This allows the company to segment the market more efficiently through their interaction with customers. Besides, it supports the company to develop a marketing mix that is a better fit to that segment. In today's highly competitive environment, with technologies developing quicker than ever and value of customer relationship and service business, this concept is a beneficial segmentation approach. However, if the market is defined too narrowly, the competitive relevance is overlooked and the company might be surprised by a rival attack. Besides, a narrow market blinds the company to alternate uses of their resources to create a competitive advantage (Bergen and Peteraf 2002).

All in all, segmentation is a concept unique to every single company in each single case, when it comes to the bases and methodology. Segmentation can start from those bases that are easier to identify, can be found from secondary sources and can be applied from one study to the other (Beane and Ennis 1987). It is also a decision with long-term impact that is not easily reversible. Even when the right target segment is chosen, to stay in the rivalry, constant product development is needed. To grow with market demand, the changes in the competitive environment and the market must be under constant control.

## 2.3 Positioning

The significance of the concept of positioning has been pointed out by Kotler in the foreword for the book *Positioning* by Ries and Trout (2001) as an idea that fortifies each element in the four Ps. According to the marketing strategists who coined the phrase, Ries and Trout (2001), positioning is done to the mind of the prospective customer so that the offering occupies a certain space in its mind. In the literature, positioning can serve the functions presented in Figure 6.



**Figure 6.** Positioning stage in marketing.

First, finding a favorable position is a result of positioning. Competitor awareness helps detect an achievable competitive advantage for the company (Ries and trout, 1985, Doyle and Saunders, 1985). By knowing about the competition, a gap between what customers value in an offering and how they are currently served in the market is found. Second, positioning helps the design of the marketing mix. Brassington and Pettitt (2007) explicitly point out that positioning has a role in the development of new offerings as well as modifying the existing ones. Last, communicating the results is made possible with positioning. Kotler and Keller (2006), integrate it into marketing strategy by viewing it as what clarifies the brand's essence and the customer goals it fulfills uniquely. Mohr et al. (2005) claim that there are associations built for the customer to make that clarification. It is hence vital to investigate what associations are favorable and integrate them into the offering. It is crucial to keep track of how the attributes associated with the product, weigh against those of the competitors, and then communicate those to the target segment.

Kotler and Keller (2006) see the positioning strategy as membership in a certain category. This membership demonstrates the essence of the brand and expresses the goals it helps the target accomplish in a unique way. Presence in a category is established by certain points of parity and difference. Points of parity are essential to membership and the points of difference are the compelling factors that make the brand stand out for the target. Especially in case of new innovations, when the category membership is not clear, it must be devised and communicated.

It is interesting to realize that this category might undergo an evolution throughout the offering's lifecycle. Just as the segments evolve through time and the solution is to constantly search and update the market information, the category might change. The change in category might mandate certain changes to the company, such as modification of offering and communication.

There are several processes in the literature for positioning. Brassington and Pettitt (2007) Mohr et al. (2005) and Hooley et al. (2012) have introduced certain steps. Kotler and Keller (2006) do not provide a concrete framework for the positioning process. Nonetheless, what they propose as a competitive frame of reference seems to be the foundation for the development of a well-positioned marketing mix. There are different tools for positioning developed throughout literature. The process of positioning depends on what positioning tool is being used. All in all the following steps seem to be the essence of positioning:

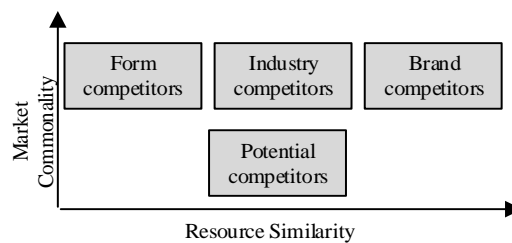
- Competitor identification
- Criteria determination
- Comparison

For positioning, the competitors must first be identified. Competitors are entities that operate in the same industry or offer products with similar applications and benefits or target similar customer needs. Accurate competitor identification, with any of these methods, requires a double sided view of the market, the demand and the supply side attributes. Looking at the demand side clarifies every product that can satisfy the customer all the same. The supply side consideration demonstrates the firms that are similar in technological and production capabilities (Bergen and Peteraf, 2002). Based on this view, Chen (1996) introduces these two sides as market commonality and resource similarity.

The different companies that target the same market are striving to satisfy similar customer needs. The firm's competitive position is a result of its unique resource bundle. Since resources impose a constraint on the firm's strategic choices, their similarity directs the firms towards the same direction (Chen 1996). Berger and Peteraf (2002) warn however, that in practice the identification is biased towards one side. Adopting this

view helps the firm identify competitors that are often overlooked by the conventional methods; indirect and potential competitors.

Competitor identification is a challenging task, because there are different levels at which a certain substitute can be found for the company's offering. In the most untapped markets, there is always one alternative solution, fulfilling the need in-house. (Anderson and Narus, 1998). The indirect competitors have also been recognized by Kotler and Armstrong (2009) who categorize competitors in four levels as illustrated in Figure 7.



**Figure 7.** Different layers of competition (Kotler and Armstrong 2009; Chen 1996).

First, in brand competition the rival might offer the exact same product functions at the product level. Second, there might be a competitive substitute for the offering, at the same product category level in industry level competition. Third, competition can rise from a different sort of solution that serves the purpose in potential competition level. Fourth, in form competition, the competition might be over the finite resources owned by the target market between generic choices. (Lehmann and Winer, 2005) The industry and form competitors are grouped into indirect competitors in Peteraf and Bergen's (2003) model. The potential competitors are taken for granted by Kotler and Armstrong (2009). Together these models give a comprehensive view of the competitive environment.

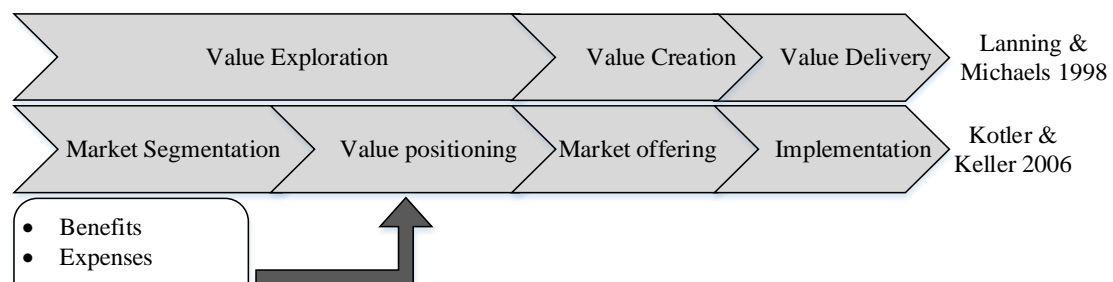
The brand competitors have high market and resource commonality. They serve the same markets with the same resources. Firms that have similar resources but do not target the same markets yet are the potential competitors that must always be kept into consideration as potential rivals. The form competitors serve the same markets but with different types of resources. Industry competitors are those that might have resource similarity for serving the same market. The substitutes for the offering can be either from the industry or form group of competitors. They are very important but invisible. The substitutes can revolutionize the industry structure and customer mindset.

The budget and generic level competition mandates a choice strategy for non-comparable alternatives as studied by Johnson (1984). In other words, instead of comparing attributes, one combines attribute values into an overall evaluation. It can also mean that customers search for comparable representation for non-comparable alternatives. Price is a concrete attribute that can be compared even for non-comparable

alternatives. This level for competition is too general to focus on. However, this analysis can serve as a pool for idea generation, but it has its merits.

The shortcoming of this model according to the Kotler and Armstrong (2009) is that the importance of different market segments is overlooked. However, if this map is generated for segment groups or even individual customers separately, this would not be an issue. Another drawback is how different resources are assumed to be equal, while in reality, some may be more crucial to firm's success. In this case it seems that focusing on the resources that support the core competencies is relevant.

After all, competitor identification is merely a classification of the competitive environment. Once the competitors are identified, the criteria for positioning must be determined. In the tools used for positioning, the entities are mapped on one surface based on two or more dimensions. These dimensions, as illustrated in Figure 8 can be determined through the segmentation practice. The benefits and expenses are the dimensions taken from the segmentation stage for positioning purpose, as Figure 8 illustrates.



**Figure 8.** *The input of segmentation for positioning.*

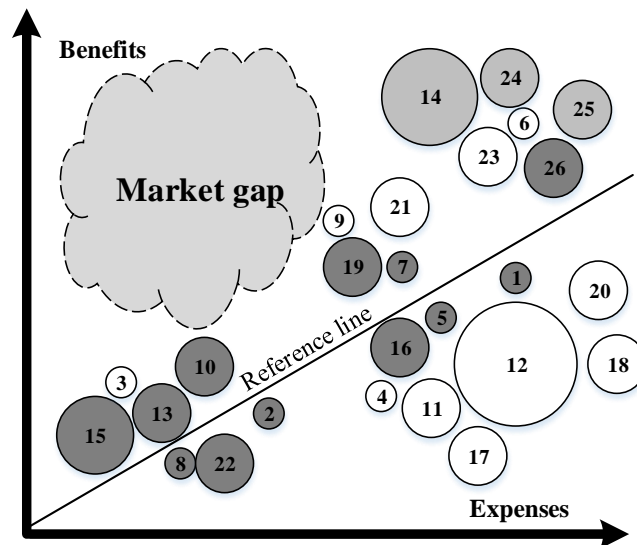
The knowledge of customers acquired through segmentation is the starting point for positioning. The selected segment has different alternatives in the market. These alternatives are the future competing offerings. They each have certain benefits and expense implications for the customer. If the gap among these benefits and expenses overlaps with the competence of the company, a unique market offering can be formulated.

In business, different market offerings are put in order relative to the perceptions and preferences of the respondents on spatial maps. This scaling identifies the number and nature of the dimensions that shape the consumer perception of brands. It also positions the consumer's favored brand relative to the other offerings. Malhotra and Birks (2003) explain how multidimensional scaling facilitates different marketing functions such as:

- Image measurement
- Market segmentation
- New product development
- Advertising effectiveness
- Pricing analysis

- Channel decisions
- Attitude scale construction

Perceptual maps are the visual result of multidimensional scaling. They convey the information about the rival offerings and the customer perception at one sight. Depending on whether the attributes are qualitative or quantitative, tables and diagrams can be used for positioning respectively. An example of the perceptual mapping of 26 competitors is illustrated in Figure 9.



*Figure 9. Perceptual mapping of competition.*

The visual positioning of competitors clarifies the gap in the market. The attributes used in this visualization are determined through marketing research. They are the attributes that are most significant to the target segment. The axes demonstrate attributes and the size of the circles, the significance of the competitor. The reference line is hence attained for customer perceived value. The offerings that position above the reference line offer more value than expected by customer and vice versa.

The competitors that position around the reference line, seem to be beneficial to benchmark against and are shown with the gray color. The competitors that position higher than the reference line can also be benchmarking targets. They are the ones offering superior benefit and might set the future industry standard. (Ulaga and Chacour 2001)

To visualize the competitors as such, the weighted offering attributes are listed. They are compared across competitors, preferably from the customers' perspective. A customer value analysis map is developed based on this data (Ulaga and Chacour 2001). Neal (1980) justifies the use of perceptual mapping with regard to the following benefits:

- The development of an understanding of relative strengths and weaknesses of products from customer's point of view.
- The building of a knowledge of similarities and dissimilarities between the competing offerings.
- The ease in positioning of the new products and repositioning of the existing products.
- The tracking of the audience's perception of the offering throughout its lifecycle to ensure the effectiveness of communication attempts.

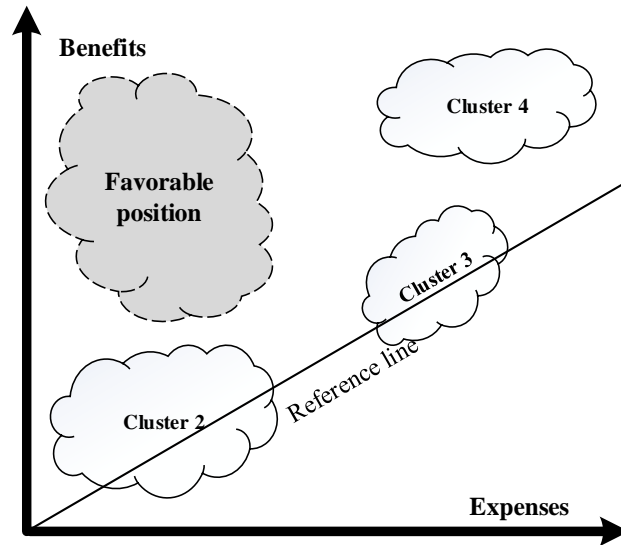
Conjoint analysis can be used to determine the attributes that are significant to customers and must be used in a positioning study. Conjoint analysis can be used to clarify the importance consumers attach to salient attributes and the relevant utilities. In new product development, conjoint analysis can study the trade-off between the attributes in the customer decision making process. (Green et al. 2001)

The difference between the two methods discussed is that in multidimensional scaling the stimuli are the products, while in conjoint analysis they are combinations of attribute levels determined by the researched. The goals achieved by conjoint analysis are as follows:

- Determination of the relative importance of attributes in the choice process.
- Estimation of market share of brands with different attribute levels.
- Determination of the composition of the most preferred brand.
- Segmentation of the market based on attribute preference similarity.

Conjoint analysis is based on the assumption that the most important attributes can be identified as a trade-off model in the decision making process. A thorough marketing research can fuel the data these two techniques summarize. These analyses form the basis of the decision. In the above example, the positioning map can be simplified. It would be logical to put competitors into groups by the use of cluster analysis, as depicted in Figure 10.





**Figure 10.** *Perceptual mapping of the most relevant competitor clusters.*

This method sorts individuals into homogenous subgroups, similar to the segmentation method for customers. Variables that create a clear differentiation between the clusters are chosen for clustering individuals into groups. In a positioning study, the variables are the attributes that guide the customer's decision making.

The positioning can also happen without the marketers' intention. However, it is in the company's best interest to carefully plan the position that guarantees a competitive advantage in the market and form its activities accordingly. A well-planned and executed positioning strategy can help in achieving the objectives of the core strategy (Hooley et al., 2012). There are instances of when positioning is unfavorable. They are portrayed in Figure 11.

		Uniqueness claimed	
		Narrow	Broad
Credibility	Believable	<b>Over-positioning</b> Too exclusive or narrow	<b>Underpositioning</b> Nothing special
	Inconceivable	<b>Doubtful positioning</b> Improbable claims	<b>Confused positioning</b> Unclear what the positioning is

**Figure 11.** *Unfavorable positions (Adapted from Hooley et al. 2012).*

These unfavorable positioning instances might be due to under positioning, over positioning, doubtful or confused positioning (Pelsmacker et al. 2004; Kotler and Keller; 2007). Under positioning occurs when there is not enough differentiation conveyed in

comparison to the competitors. Over positioning happens when the benefits used as differentiating factors seem too exclusive. Confused positioning is caused by the inconsistency in the communication and choice of distribution channels. Doubtful positioning is when the company's claims as to how they differentiate are not accepted. Such risks and errors in positioning might create the need to reposition.

Pelsmacker et al. (2004) see repositioning as the measure taken in the event of changing customers or competition. However, in the event of the failures in the initial positioning strategies discussed earlier, these methods can also be used. Ries and Trout (2001) define repositioning as what is done to the positioning of the competitors in order to open a gap in the customers' perception. They nevertheless warn that its success is not certain. The repositioning strategies below are proposed:

- New brand introduction
- Changing an existing brand
- Changing perception of own brands
- Changing perception of other brands
- Changing the importance of attributes

If the analysis of the outside environment are deemed as the indicators of market attractiveness and the internal analysis, the current and potential company strengths in serving the segment, a framework for target market selection developed by Hooley et al. (2012) can be applied. In competitor analysis the challenge is to determine whether the gap in the market is a favorable position or simply exists because it is not meaningful to the customers (Im and Workman 2004).

Kotler and Keller (2006) see the positioning strategy as membership in a certain category. This membership clarifies the essence of the brand. It also expresses how it meets the needs uniquely. Presence in a category is established by certain points of parity and difference. Points of parity are essential to membership and the points of difference are the compelling factors that make the brand stand out for the target. Especially in case of new innovations, when the category membership is not clear, it must be devised and communicated. This membership informs the customers of the nature of the product. Category membership is conveyed through the following ways:

- Announcing category benefits
- Comparing to exemplars
- Relying on products descriptors

First, announcing category benefits is because the customers use a specific category for a need. The category benefits assure the customers that the needs are met. The communication of category benefits assure the customers of the fulfilment of that need. Second, comparison to exemplars is done because associating an unknown brand with another

better known member of the category and conveys category membership. Last, the use of concise explanatory phrases help clarify the unique position. (Kotler and Keller 2012)

It is interesting that in positioning practices firms might try to affect the composition of the perceptual map through communication techniques. As Bergen and Peteraf (2002) point out, industry leaders are more interested in keeping their role as the sole member of the map. On the contrary, other firms make an attempt to associate themselves with the leaders.

It is interesting to realize that this category might undergo an evolution throughout the offering's lifecycle. Keller et al. (2002) view the point of difference in performance, imagery and consumer insight associations. They break performance down further into benefits, reliability, service effectiveness, design and value for price. Brand imagery is the depiction of the user of the offering and the circumstances. Consumer insights are the least appealing differentiation factor when the competition is really tight. They rely on the understanding of customers and their needs in depth, which are easily emulated.

The difficulty inherent in the communication of positioning through the points of parity and points of difference is the unfavorable correlations. For instance, it is common consensus that low price and high quality do not go together. The art of marketing is to find that unique position where the optimal trade-off between these correlated attributes and benefits are reached and effectively communicate that message. When positioning is viewed for communication purposes, it can be built around the following strategies:

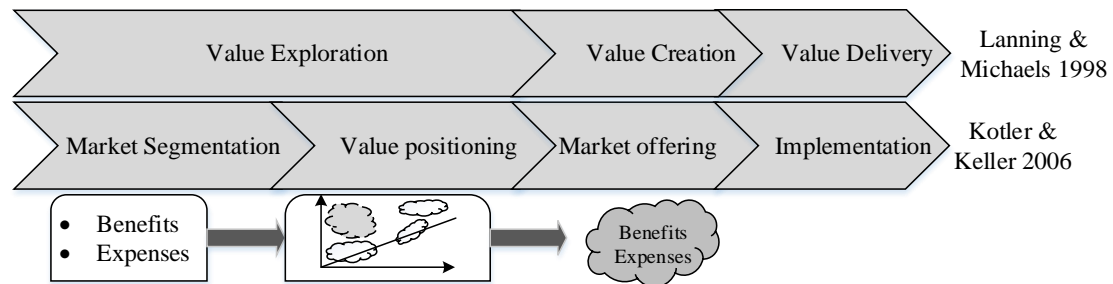
- Product attributes
- Price-quality relationships
- Reference to competitors
- Usage occasions
- User characteristics
- Product class

Positioning might be done through a mix of above strategies. It is important to remember the final goal which is presenting a unique offering distinct from the competitors. (Lovelock and Wright, 1999) Since benefits and expenses have been used for positioning in this model, price-quality relationships can be the strategy pursued. Price and quality are the building blocks for value proposition of the market offering. These elements are further discussed in the chapter on value.

## **2.4 Market offering**

When the firm is clear on who they want to serve and where in the market they can best leverage their resources and competences, it is time to construct the offering. The bene-

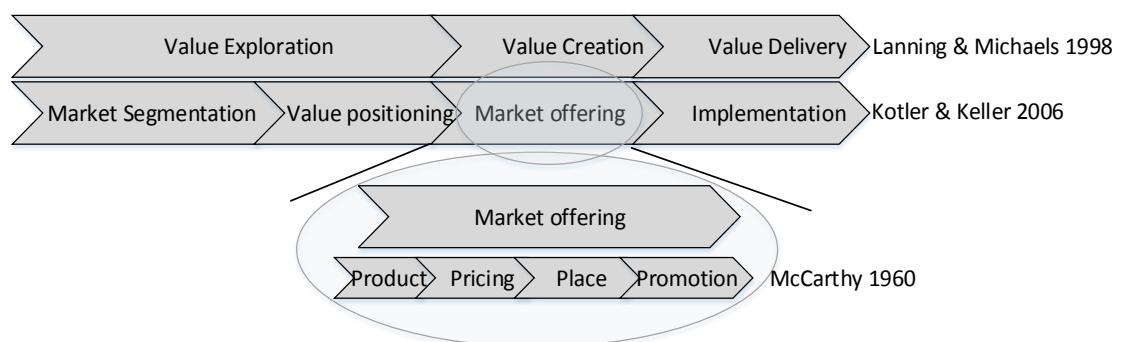
fits and expenses that are significant to the chosen segment are investigated. They form the map of how rival offerings position in the customers' mind. The gap in the benefit and expense bundles is detected. This gap is the outcome of the value exploration stage. This gap is to be filled through the market offering that is designed in the value creation stage as shown in Figure 12.



**Figure 12.** *Market offering in marketing process.*

The benefits and expenses that are found in the value exploration stage are the starting points for the market offering. There are different frameworks suggested in literature for considering different aspects of an offering. Frey (1961) has taken advantage of a double category method, the offering, and tools. The offering category includes product, packaging, brand, price and service. The tools are distribution channels, personal selling, advertising, sales promotion and publicity. This view is too general. Lazer and Kelly (1962) found it more beneficial to have three categories: goods and services, distribution and communication. The price might be overlooked in this framework.

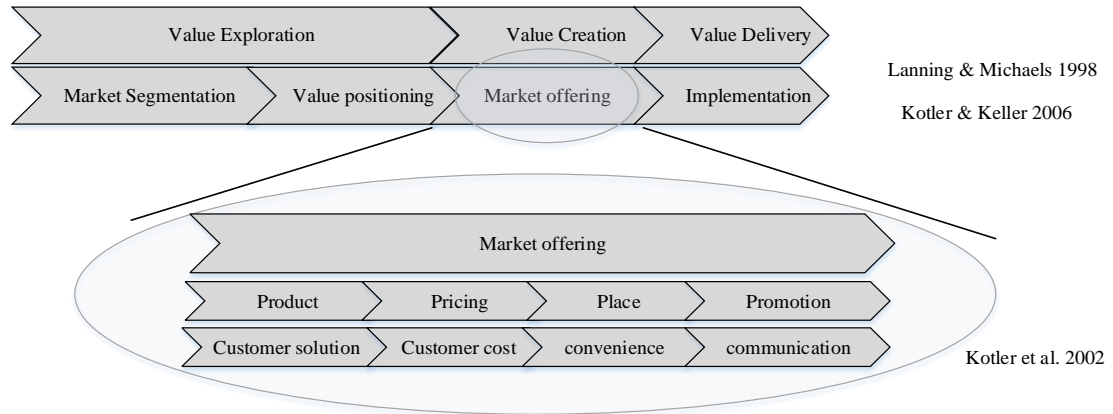
The theory that seems more widely applied and deservedly so, is a framework called the four Ps of marketing proposed by McCarthy (1996). The offering is viewed from both seller and the buyer's perspective (Kotler 2006). Figure 13 demonstrates the marketing mix development steps in more details.



**Figure 13.** *Marketing mix elements.*

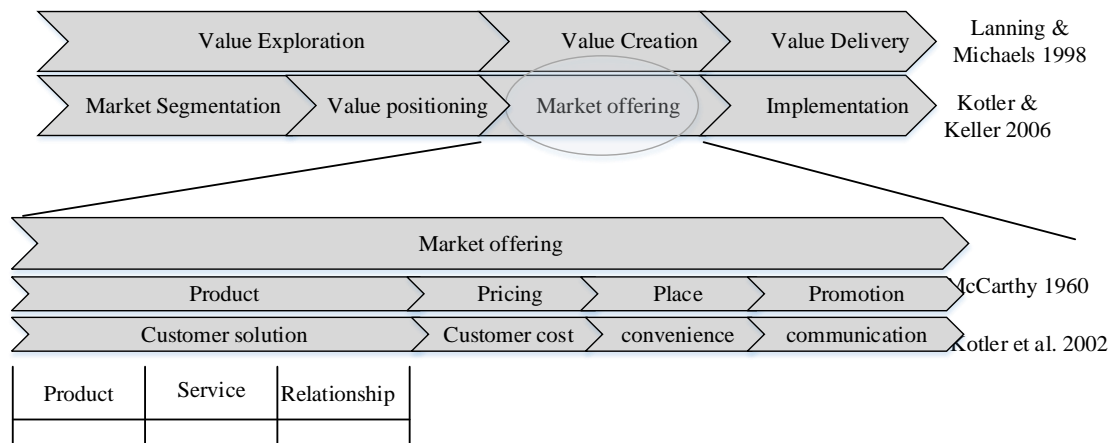
The four Cs view the marketing mix from the customers' point of view. The buyer is interested in the four Cs (Kotler et al. 2002; Lauterborn 1990). Customer solution defines the product relative to what customer need it fulfills. The cost to customer is a better measure of the expense to customer than the price, which is only one expense

dimension. The place element from customer perspective is viewed from convenience point of view. Communication methods as opposed to promotion, are more of an interactive method than merely advertisement tools. The 4Ps and 4Cs, illustrated in Figure 14, are different points of view on the same concepts.



**Figure 14.** *Different views of the market offering.*

The product, as presented by Figure 14, product is the company’s offered solution for the customer. Pricing when viewed from company’s side, is the cost imposed upon the customer. The place that the market offering is presented is seen by the client as an element of convenience. The promotion of the offering is the communication element of the offering carried out between the two entities. The offering can be a bundle of products, services or both that serves as a solution to customers’ need. This concept is visualized in Figure 15.



**Figure 15.** *The different product elements.*

The product is composed of a function, the physical attributes and complementary elements. Service used to be the distinguishing point in market success (Viardot 2004). Ulaga and Chacour (2001) however, see product as a bundle of three elements, product, service and promotion, which essentially is the same concept in different words. In the present market at times service has gained importance. It might actually be the core of

the offering. Service as the offering will be elaborated on more in the upcoming chapters.

Pricing is a complex matter that depends on three elements named by Mohr et al. (2005) as the three Cs, costs, competition and customers. These three elements can be the focus of the pricing practice resulting in a different pricing strategy as follows:

- Cost-based
- Competition-based
- Value-based

Costs determine one end of the price range, the financial cost below which the price must not drop. Activity based costing is a structured way to include all activity costs in the price. However, there might be regulations that prevent companies from pricing their services as they please. (Pride and Ferrell 2010) Competition is a benchmark against which the customers evaluate the offers. Depending on the product features and its position among the rivals', the price can be set below, equal or above that of the competitors. There are certain cases where the prices are set after asking for quotes and through biddings and further negotiations for competing services. (Pride and Ferrell 2010)

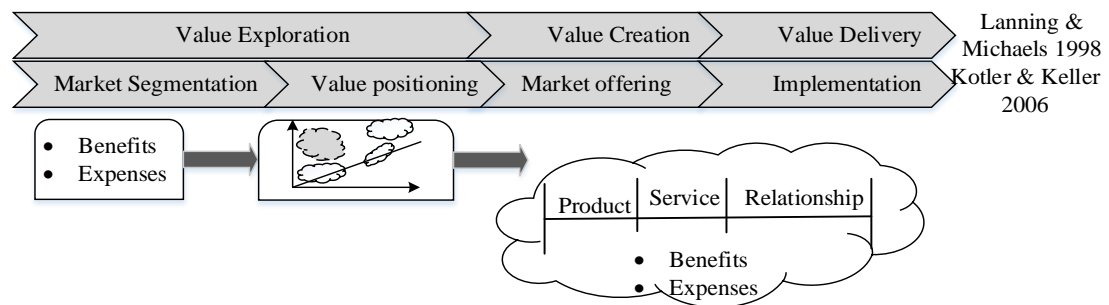
In value-based pricing, customer perceived value sets the framework for pricing. The customers compare the offering based on the perceptual benefits it delivers to them against costs imposed upon them. The customer value proposition concept is discussed further in the next chapter. The choice of distribution channel is another issue that calls for attention, which might even affect the pricing practice. (Ferrell and Hartline 2008)

Channels also require certain product design modifications as well if they are strong players in the market. In the realm of high technology, since it is really important for the sales force to inform the customers, in the introduction phase of a product, companies rely on their own sales force. However, eventually, to reach all the target customers other distribution channels might be necessary. Distribution decisions are made based on the size of the market, the cost of the network and product characteristics (Viardot 2004). The relevance of price to the overall business is determined through the revenue model designed elaborated on later on.

Communication and promotion is the last element in the marketing mix. The significance of a great technology is only realized when it is sold. The communication is based on product benefits relative to customer needs instead of product characteristics. In the marketing process the communication mix is designed. In order to design the communication strategy, the objectives are set first. It is important to distinguish whether the communication is being done to educate the customer, create awareness or reinforce and

finalize sales. It also depends on whether the communication is being done in B2B or B2C environment (Viardot 2004) and the nature of the offering.

With the market segmentation carried out, information about the customer base is gathered. The benefits and expenses are determined as the segmentation bases that can be applied to the positioning practice. Then, after the competitors are studied, they are positioned based on benefits and expenses on a map in order to find the best position for the firm's offering. The market offering is then formulated for the selected target customer as Figure 16 summarizes.



**Figure 16.** *Market offering elements and implications.*

The early studies in marketing revolved around distribution and exchange of manufactured products with focus on economics. The products in this context were mainly commodities. Value was created through production. Tangible goods were then exchanged. Possession uses are significant and the transfer of title or sales became important. The focus evolved into a customer focus. Marketing was then a decision making approach for satisfying customers with a marketing mix in pursuit of a profit. Since the new marketing concept emerged the companies focused on customers rather than the company. Marketing was hence viewed as a social and economic process. Financial results were the feedback from the market about the validity of the value proposition. The more recent references started fragmenting marketing into relationship marketing and service marketing to mention a few (Vargo and Lusch 2004).

These are also elements of the market offering that are proposed as a solution to the customer. These elements and the kind of value proposition they compose are elaborated on further as follows. Kotler and Keller (2012) claim that marketing is treating value exploration, creation and delivery as a means to long-term effort for co-prosperity for key constituents. The superior value chain is created through expansive customer retention, loyalty and lifetime value capture. The key nature of value in this view leads us to have a closer study of value in its different forms.

## 3. VALUE CREATION

### 3.1 Value

So far, the marketing process has been built around value. Value has been studied in literature in accordance with different disciplines. There are different aspects of value. Building a business around it increases the likelihood of success (Slywotzky 1996; Woodruff 1997; Doyle 2008). The discussion on the concept can be found in different areas such as marketing (Kotler 1972; Ulaga 2011; Lindgreen et al. 2012) and management (Anderson et al. 2006; Leepak et al. 2007).

The significance of value spans from a tool for pricing (Cannon and Morgan 1990; Ingenbleek et al. 2010) to a source of competitive advantage (Slater 1997; Woodruff 1997; Ulaga and Eggert, 2006). It has been studied in both B2B (Anderson et al. 2009; Keränen and Jalkala 2014) and B2C settings. Regardless of the vast literature on value, it is still a controversial topic. To begin with, the definition has been quite ambiguous (Piercy and Morgan 1997; Anderson and Wynstra 2010).

It is confirmed by scholars (Piercy and Morgan 1997; Woodruff 1997; Jaworski and Kohli 1993) that proposing a definition for customer value is difficult. Value is subjective for each customer (Day 2002; Holbrook 2005), conditional to the context of use, relative to competition and dynamic over time (Parasuraman 1997; Smith and Colgate 2007; Palmer and Millier 2004). They change, due to competition, promotional efforts, changing consumer perception and information (Zeithaml 1988). Table 3 summarizes different value definitions through literature.



**Table 3.** *Value definition in literature.*

<b>Value definition</b>	<b>Author</b>
<b>Sheth et al. (1991)</b>	"The five values influencing market choice behavior are functional value, social value, emotional value, epistemic value and conditional value."
<b>Anderson et al.(1993)</b>	"Perceived worth in monetary units of the set of economic, technical, service, and social benefits received by a customer firm in exchange for the price paid for a product offering, taking into consideration the available alternative suppliers' offerings and price."
<b>Butz and Goodstein (1997)</b>	"By customer value is meant the emotional bond established between a customer and a producer after the customer had used a salient product or service produced by that supplier and found the product to provide an added value."
<b>Woodruff (1997)</b>	"Customer value is a customer perceived preference for an evaluation of those product attributes, attribute performances, and consequences arising from use that facilitate (or block) achieving the customer's goals and purposes in use situations."
<b>Grönroos (1997)</b>	"Customer-perceived value can be described as core solution plus additional services divided by price and relationship costs or core plus/minus added value."
<b>Gassenheimer et al. (1998)</b>	"The sum of transactional cost advantages and constraints together with the emotional cost and benefits in relative to alternative options."
<b>Doyle (2008) Kotler (1972)</b>	The perceived product benefits minus the product price and cost of ownership, e.g. Installation, training, maintenance and risks and uncertainties associated with switching suppliers.
<b>Kothandaraman and Wilson (2001)</b>	"Value is the relationship between the competing market offerings and their respective prices."
<b>Eggert and Wolfgang (2002)</b>	"In the B2B-context, customer perceived value is conceptualized by cognitive construct, pre-/post-purchase perspective, strategic orientation, present and potential customers and suppliers' and competitors' offerings."
<b>Woodall (2003)</b>	"Value for the customer is any demand-side, personal perception of advantage arising out of a customer's association with an organization's offering, and can occur as reduction in sacrifice and benefit (determined and expressed either rationally or intuitively); or an aggregation, over time, of any of all of those."
<b>Liu (2006) Han and Sung (2008)</b>	"Customer value for a business service is defined [...] as an organizational buyer's assessment of the economic, technical, and relational benefits received, in exchange for the price paid for a supplier's offer to competitive alternatives."
<b>Blocker (2011)</b>	"Customer value in B2B contexts is defined as the customer's perceived trade-off between benefits and sacrifices within relationships."

Some of these definitions focus solely on the monetary nature of the value (Anderson et al. 1993) and overlook the markets where more non-monetary and intangible benefits contribute to the choice (Sheth et al. 1991; Butz and Goodstein 1997). Eggert and Wolf-gang (2009) offer an insightful definition for business market. In a review on value literature Khalifa (2004) has categorized the value definitions into three groups. These categories are means-end models, value component, means-end and benefit costs models. However, this categorization does not seem very logical due to the admitted overlap between categories. The more recent studies take into consideration the importance of customer value over time and in the relationship context (Woodall 2003; Liu 2006; Han and Sung 2008; Woodall 2003). This view is beneficial in this particular study.

Some authors also pay attention to the element of competition in customers' perception of value (Miles 1961; Anderson et al. 1993; Gassenheimer et al. 1998; Hoolbrook 2005; Pynnönen et al. 2011). This seems like a legitimate consideration. To create superior value, the firms' resources and core capabilities must be used to deliver a competitive offering (Kothandaraman and Wilson 2001). In other words, value always finds significance in comparison to other options. It can be said that value is relative and not absolute.

Another recurring concept in most of value studies is the perceived nature of value. Value as seen by the customer must be explored, created and delivered. Kothandaraman and Wilson (2001) aptly state:

*“Value is in the eye of the beholder”*

Regardless of the vast literature on value, it is still a controversial topic. As evident from the summary above, the definition has been quite ambiguous (Piercy and Morgan 1997; Anderson and Wynstra 2010). Value is created when the benefits of a strategic activity exceed the cost (Day and Fahey 1988). All the definitions acknowledge that value is strictly related to customer perception of the benefit as opposed to the offering itself and the features (Slywotzky 1996; Zeithaml 1988; Doyle 1989).

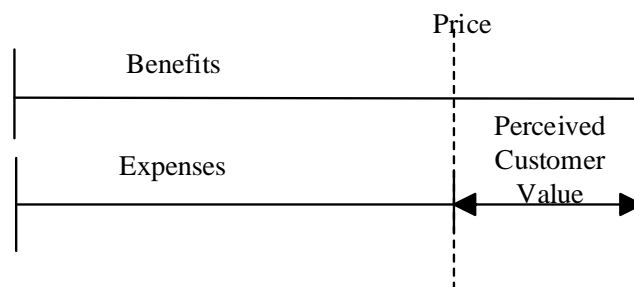
$$Benefits_O - Expenses_O > Benefits_A - Expenses_A$$

According to the equation..., the customer has more tendency to opt for the firm's offering if only the benefits it offers compared to the price is more than that of the alternative (Kothandaraman and Wilson 2001). The alternatives are the competitors discussed in the section on positioning. It is interesting to point out another model for value that does not view value from the difference point of view, but from sum. Smith and Nagle (2005) define value as the price of the alternative, or the reference value, plus the value of the differentiation factor from the alternative. In other words the savings and gains realized by using the firm's offering rather than that of the competitor.

Value has been approached from other angles in literature though. Woodruff (1996) categorizes value further based on whose benefit is taken into account, a broad network, the supplier or the customer. A business prevails if it provides value for three constituents: customers, employees and investors (Reichheld 1994). There are hence three streams of literature: organizational value, customer value and customers' value also known as customer lifetime value. Shareholder value is attained in an exchange with customer value.

There are other sides to value besides that perceived by customer. While customer value is defined from the customer perspective, customers' value is the value of an individual customer to the organization. Hence, these three categories co-exist, with customer value at the core (Treacy and Wiersema 1995) Customer lifetime value is one side of the coin. It is studied further because it contributes to the target segment selection (Reichheld 1994) and resource allocation decisions. If prospective clients for a relationship are to be chosen customer lifetime value must be looked into.

The other side of the coin is the customer value, which is the value the company offers the customers. The reason behind such an emphasis on customer value is how it effects customer's perception of the offering and the brand. It later on has an impact on customers' adoption decision. Along with customer satisfaction of the value proposition comes loyalty in the long-term (Reichheld 1994) and possibility of building a relationship. Common consensus about value is the customers' perception of the trade-off between what is received, namely quality and what is given, namely money, time and effort (Zeithaml 1988; Monroe 1990; Chen and Dubinsky 2003; Lappierre 2000; Huber et al. 2001). Figure 17 illustrates value simply.



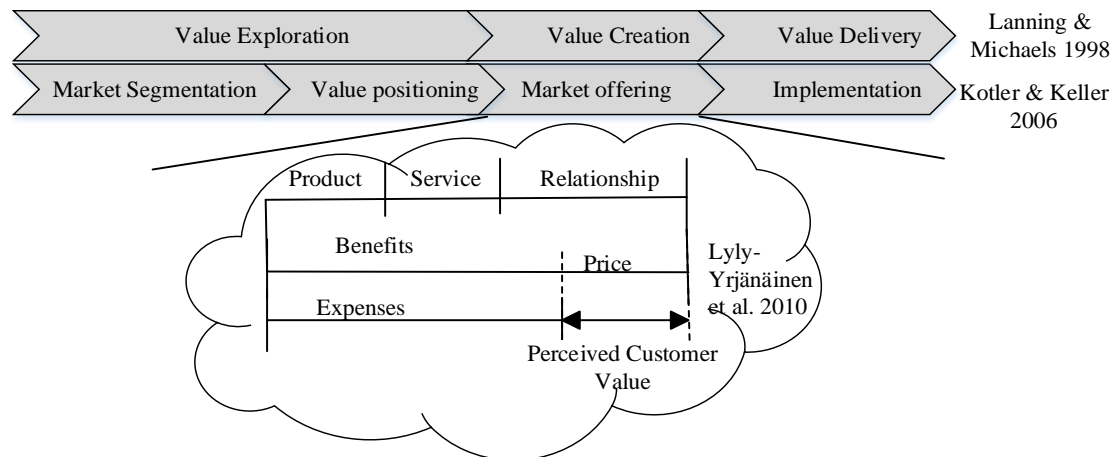
**Figure 17.** Customer perceived value (Adapted from Lyly- Yrjänäinen et al. 2010).

Uлага and Chacour (2001) state that such customer value analysis rises beyond a pricing technique or a research method. It is a strategic level marketing tool that can be utilized for investigating customer needs, positioning the company and measuring the gaps in value perception. Customer perceived value is rooted in three key concepts:

- The multiple components of value
- The roles and perceptions

- The importance of competition

Value components, namely benefits and sacrifices must be taken into account for customer perceived value analysis. These elements are the criteria that the market offering that is the result of the market process is evaluated through. Figure 18 depicts the value analysis in the marketing process.



**Figure 18.** *The value construct of the offering.*

The same offering can be perceived of a different value to different customers or segments. Different customers have various purchase organizations. It is crucial to identify the value perception of key members of the organization in a customer value audit. Last, value is always assessed alongside the competition. Hence customer value analysis must be done in comparison to competitors as seen by current and potential customers. Competition is studied further in the following chapter.

The value offering can be constantly improved through feedback. There are challenges to value improvement as introduced by Miles (1961). The challenges are from the following perspectives:

- Time shortage
- Lack of measurement
- Human factors
- Impact of new processes, products and materials

First, time shortage is mentioned because in the cycle of a product, the quick pace gives little time for the customers' requirements to be known. Second, tests and measurements reveal performance and quality. However, measuring value is not as easy as performance measurement. Third, the human biases, misunderstandings and frictions inherent in human communication make value analysis more complicated. Fourth, the constant introduction of innovative products and processes makes value obsolete.

In today's era of information technology however, this challenge can be overcome. By means of connectivity tools data acquisition is easier than ever. What is more, with the shift of marketing paradigm towards relationship marketing, the customer requirements are more and more transparent. These ideas are further studied in the next chapters.

### 3.2 Customer value

Customer perceived value is value of the market offering as seen by the customer. They tend to accept the one that they perceive offers the best value relative to the competitive offerings. Value itself was studied according to literature in the past section. A variety of aspects have been studied when it comes to value literature. The concepts are as follows:

- Subjectivity of customer value (Ravald and Grönroos 1996)
- Benefits and sacrifices trade-off (Day 2002)
- Multifaceted nature of benefits and sacrifices (Anderson and Wynstra 2010)
- Relativity of perceived value to competition (Ulaga and Chacour 2001)

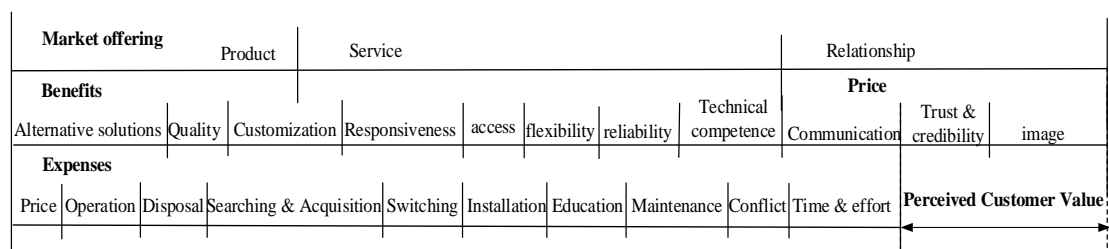
The firm builds value elements around the core product in an attempt for greater returns. However, there might be a chance that by disregarding the customers' perspective the value added is not aligned with actual customer needs (Ravald and Grönroos 1996). Hence it is crucial to assess value the way customers see it as well. As confirmed by Zeithaml (1988), evaluation of quality takes place in the context of a comparison. The same can be said about value. Value must be analysed in order to be explored, created and delivered in the marketing process.

An offering is a bundle of benefits and costs. Benefits and costs are not all monetary and are not easily comparable at times (Anderson and Wynstra 2010). To assess value, the benefits and costs must be clearly defined, either tangible or intangible, monetary or nonmonetary. They must also be translated into monetary terms as much as possible so as to be comparable. Anderson and Narus (1998) suggest making an inclusive list of all the value elements. In this section an attempt has been made to gain an insight into what scholars propose as benefits and costs. A study of benefits and costs can be utilized to find the most rewarding positioning for the company and its offering. It is important to keep in mind that here, just as mentioned before, the benefits and costs are as perceived by customer (Day 2002). Table 4 summarizes the elements that constitute benefits and sacrifices from customers' perspective categorized as product, service and relationship benefits and sacrifices.

**Table 4.** *The benefit sacrifice elements of the three sides of offering.*

	<b>Product</b>	<b>Service</b>	<b>Relationship</b>
<b>Benefit</b>	Alternative solutions (Lapierre 2000) Product quality (Lapierre 2000) Product customization (Lapierre 2000)	Responsiveness (Lapierre 2000; Ulaga and Chacour 2001) Flexibility (Lapierre 2000) Access (Parasuraman et al. 1985) Reliability (Lapierre, 2000; Ulaga and Chacour 2001) Technical competence (Parasuraman et al. 1985) Service customization (Lapierre 2000)	Image (Lapierre 2000; Ulaga and Chacour 2001) Trust and credibility Solidarity (Ravald and Grönroos 1996) Communication (Parasuraman et al. 1985)
<b>Expense</b>	Price (Lapierre 2000) Searching, order and acquisition cost (Khalifa 2004) Operation cost (Khalifa 2004) Switching cost (Khalifa 2004) Cost of disposal (Khalifa 2004)	Installation cost (Ulaga 2003) Education cost (Ulaga 2003) Maintenance and repair cost (Ulaga 2003)	Time and effort (Lapierre 2000) Conflict (Lapierre 2000)

The benefits can be tangible and intangible and the costs can be monetary and non-monetary. Wilson and Jantrania (1995) categorizes value elements into economic, strategic and behavioural elements in the business market context. The purchase decision is made by an evaluation of the trade-off between costs and benefits (Zeithaml 1988). Karimian Pour (2015) has disseminated value elements. Figure 19 integrates the benefit and expense elements described above in the value framework.

**Figure 19.** *Benefit and expense breakdown in value analysis (Adapted from Karimian Pour 2015).*

In an empirical analysis of value, Ulaga and Chacour (2001) associate importance in form of a percent to each of the attributes that the offering is made of. The evaluation of benefits is done from two dimensions:

- The importance of the benefits
- The performance of the firm in delivering the benefit

For measurement the two dimensions are multiplied (Kothandaraman and Wilson 2001). They are then compared to rivals alongside the costs. Value dimension assessment can be done through direct and indirect survey questions, conjoint analysis and focus groups and field tests, all of which give the company an insight into the customers' perception of functionality, performance and worth of the offering (Anderson and Narus 1998). One of the purposes of marketing research is for determining customer value by discovering the different elements of benefits and sacrifices. This information acquisition is elaborated on more in the following chapter. Once the supporting data is gathered, the monetary value of each element is estimated. (Anderson and Narus 1998)

Value models clarify what characteristics the customer is willing to pay for. The core and basic offering can be suggested as what Anderson and Narus (1998) call naked solutions. These offerings can then be complimented with features that provide value to each customer without costing both the company and the customer for value drains. Interestingly costs and benefits do not seem to carry the same weight for the customer. Cost reduction is valued more than benefit increase. For different customers, each element has a different significance as well because of their different needs, values, preferences and financial resources. In order to investigate customer value, the firm must start by viewing the customers' value chain to provide a performance enhancing link in the value chain. (Ravald and Grönroos 1996)

As Anderson et al. (2006) point out, customer value is sometimes, through short-sighted view, considered beneficial only for advertising and promotion. However, this prevents the company from reaping the benefits that value can bring to superior business performance. The value-based marketing process introduced in the beginning of this study ensures that the importance of value does not get overlooked. Value based marketing process renders the firm more successful because it highlights what can be leveraged, where and how. (Anderson et al. 2009)

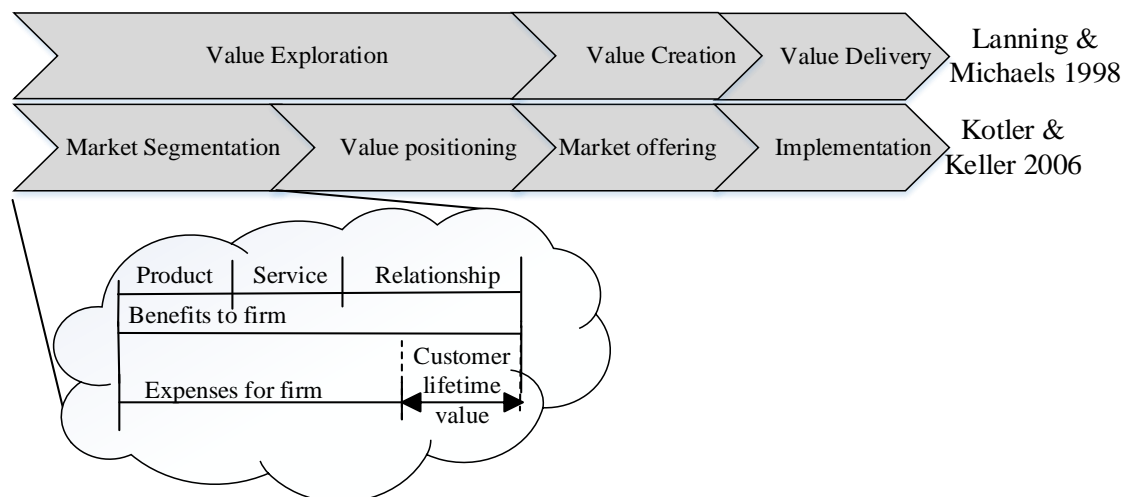
Once the information needed is outlined, a subjective, theoretical approach is issued. This approach clearly outlines what is of significance and must be measured. Through research design a blueprint of the research method is issued. Then, the fieldwork is done through either secondary or primary data collection. These data collection methods can target quantitative or qualitative data.

### **3.3 Customer lifetime value**

While customer value is the value of the offering as perceived by the customer, customer lifetime value is the value of an individual customer to the organization. Hence, these views on value co-exist, with customer value at the core (Treacy and Wiersema 1995).

Customer lifetime value is one side of the coin. It is studied further because it contributes to the target market selection (Reichheld 1994) and resource allocation. Value is a convincing guideline to support the decision to invest in serving a certain customer.

Customers are not equally profitable. Some customers are more profitable. On the other hand, some supplier relationships allow more effectiveness. Such interaction eventually leads to a competitive edge for both entities. There is always a chance that customers do not find an in-depth relationship with the supplier very appealing. They might prefer having several suppliers for either variety or leverage. Some might find relationship management activities by the supplier company too much. Another concern might be about confidentiality issues. (Lovelock and Wright 1999) These complications clarify the importance of the selection of high value customers. Customer's value to the firm has been studied in literature as customer lifetime value. Customer lifetime value, simply put, is the trade-off between the benefit that the customer has for the firm and the expenses it imposes. Figure 20 depicts this concept.



**Figure 20.** Customer lifetime value as a tool for segmentation and targeting.

Customer lifetime value analysis seems to be a quite valuable tool for segmentation and segment selection. Customer lifetime value analysis is very useful in strategic decisions such as identifying customers, their characteristics and the targets. It is fruitful in tactical decisions such as resource allocation decisions. (Jain and Singh 2002) The assessment of a customer's value starts with the economic value, is followed up by the strategic value and is concluded with a qualitative evaluation of the value of behavioral elements (Ravald and Grönroos 1996). Customer lifetime value can be analyzed with the following criteria (Doyle 2008):

- Strategic importance
- Customer significance
- The loyalty coefficient
- Customer profitability



First, strategic importance means the customers' desired value proposition matches the firm's core capabilities and vision. Besides they must be an important opinion leader in the market or a growing member. Second, customer significance is determined by the percentage of total revenue and gross profit that the customer brings in. It is important to note that it is not about the size of the customer necessarily. Third, the loyalty coefficient is mentioned because if a company is seeking long-term partnerships, such customers must be identified. Customer loyalty is measured with retention rate (Doyle 2008). The more loyal the customers, the longer the relationship is. Last, customer profitability, measured with realistic cost based accounting is crucial to customer importance investigation. Focus must be on profitable accounts to guarantee growth. In principle, customer profitability is the net present value of the net cash flow that the customer is expected to generate over time (Berger and Nasr 1998).

The customer profitability is a good starting point for customer analysis, since it is a crucial element and relatively easy to determine. Reichheld (1994) suggests that the net present value of a customer can be calculated by knowing how long the customer will remain with the company, and estimating how much profit they bring and their net present value. There are four ways a long-term customer can provide value for the supplier, which must be considered when customer value is being contemplated (Reichheld 1994):

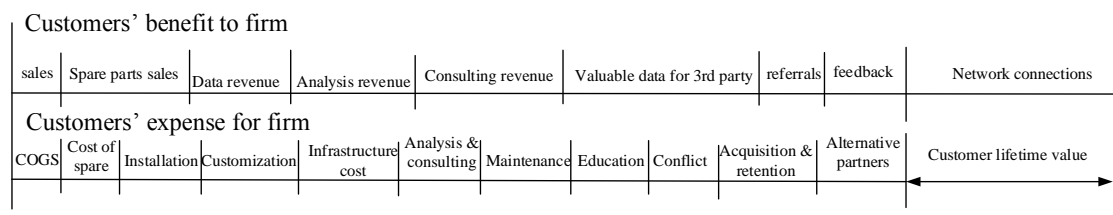
- Increased purchases
- Reduced operating costs
- Referrals
- Price premium

The business customers grow and so does their purchase quantities. With a relationship view, the orders go to one single supplier. The profit can come because of the experience the customers acquire, so there is less resource demand on the supplier. Besides, the operations become more routine and as a result less mistakes will occur. The marketing costs go down by retaining the most profitable customers (Gummesson 2004). The long-term partners can act as a promotion agent by referring the company to the other actors (Lovelock and Wright 1999). Last, Doyle (2008) claims that the new customers are more price sensitive until the trust is established. However, there is always the possibility that the partner customers would ask for privileges. The benefits and costs from the customer to the company are summarized in Table 5.

**Table 5.** Customers' benefit cost trade-off for the firm.

Benefits	Expenses
Sales revenue	Cost of goods sold
Spare parts sales	Cost of spare
Data revenue	Installation
Analysis revenue	Customization
Consulting revenue	Infrastructure
Valuable data for 3rd party	Analysis and consulting
Referrals	Maintenance
Valuable feedback	Education
Network connections	Conflict
	Acquisition and retention
	Alternative customers

These benefits and expenses are integrated into the value framework to demonstrate the analysis of customer lifetime value. This analysis is depicted in Figure 21.



**Figure 21.** Customer lifetime value analysis.

This analysis assists target selection and results in a more beneficial target market for the resources to be focused upon. Kim et al. (2006) have categorized the methods for customer segmentation based on lifetime value as follows:

- Segmentation using only LTV values
- Segmentation using LTV components
- Segmentation using LTV values and other information

First, the customers are sorted based on their lifetime value. The list is divided by percentiles. The second method considers the components used in LTV calculation, for instance current value, potential value and customer loyalty. These components are then used to segment the customers. The last method is introduced as the most meaningful method for segmentation. In this method LTV segmentation is paired with other information such as managerial information of socio-demographic information and transaction history.

The customer choice is the choice of not only the customer but also its surroundings, whether it is political, technological, competitive or social. Segment choice is as much about the customer as it is about the strategic group to compete against (Doyle and

Saunders 1985). The macro environment effects the industry dynamics and customer behavior and goals. The political, economic, social, technological, environmental, and legal factors compose the macro environment. The ideal customer adds significant value to the offering whilst carrying minimum risk. (Kothandaraman and Wilson 2001) Successful partnerships between entities in the value chain happens based on the following eight principles (Kanter cited by Christopher et al. 2008):

- Individual excellence
- Importance
- Interdependence
- Investment
- Information
- Integration
- Institutionalization

First, individual excellence matters because there are strengths and capabilities that both parties possess and contribute to the mutual benefit. Second, importance is key since both parties must invest in the relationship for strategic reasons. Third, interdependence is importance given that both firms must complement each other in value creation. Fourth, investment is essential and the two parties must be willing to commit financial or other resources to the fulfilment of the shared goal. Fifth, information is crucial so parties must be willing to have open communication. Sixth, integration means there must be linkages, connections and communication interfaces between the parties. Seventh, what is meant by institutionalization is these interfaces must be across the company and in several levels. Eighth, both parties must make an effort to keep the mutual trust. The final decision to forsake a customer is one of the following reasons:

- Incompatibility with core competence (Frank et al. 1972)
- Lack of cost-effectiveness (Anderson et al. 2009; Mohr et al. 2005)
- Market domination or monopoly (Anderson et al. 2009; Mohr et al. 2005)
- Incompatibility with past segments (Viardot 2004)
- Segment size, growth and stability (Viardot 2004)

Eventually the analysis of customer's value for the firm clarifies which segment or even individual customer to target. These targets are the most potentially profitable target customers. In the following section the communication of value is elaborated on.

### **3.4 Value proposition**

The success of the value created is in communication of the offering. Value proposition is a statement of benefits offered and costs expected, as presented to not only the prospective customer but any constituent. It is a value offering crafted by the supplier with

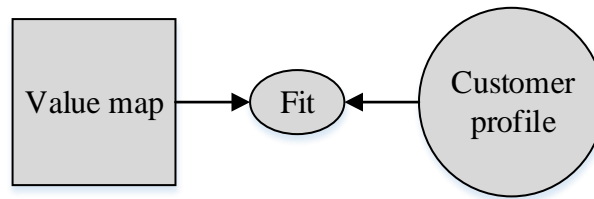
promises of benefits for the customer. It explains how the features of the elements of the offering relate to the customers' needs and wants. (Ballantyne et al. 2011) The supplier's offering seems to be capable of different effects:

- Operative efficiency enhancement
- Cost decrease
- Increased sales
- Mitigated risks

These effects can be validated, documented and communicated. This can be done with trials in cooperation with partner or potential customers. This process exposes the company to real customer insight. This model can then be used for both informed decisions and convincing sales. A value model is a demonstration of how an offering creates value for them. The understanding of value for customer can help the company make decisions about how to modify the offering further for current and potential customers alike. (Anderson and Narus 1998)

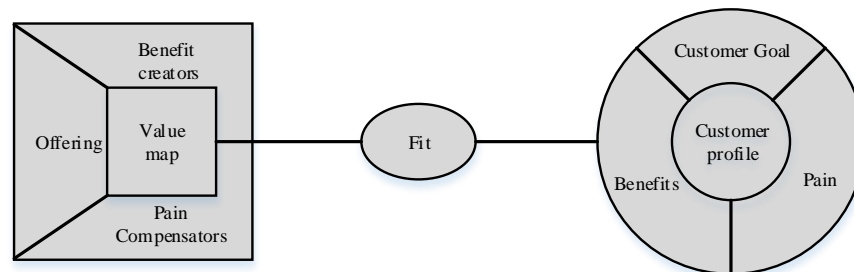
In the traditional marketing view for product offerings, value proposition is crafted by the supplier and communicated to the customer. The value proposition describes what the supplier believes is of value to the customer. The offering's superior value proposition is expressed in terms of product performance and how it is related to customer needs and costs (Ballatyne et al. 2011). Value creation in business markets is specially complicated. This complexity arises from the multiple purchase organization members who are interested in subsets of benefits rather than the bundle. (Kothandaraman and Wilson 2001)

Customers are mostly aware of their needs as Anderson and Narus (1998) investigate. But they are ignorant of the worth of their fulfilment. This gap in knowledge is the suppliers' opportunity to convince the customer of the value and provoke the urge for them to make the purchase. In order to do that, the suppliers develop a customer value model. Customer value model is the data-driven representation of the value of suppliers' offering in monetary terms. The data seems to be attained through customer cooperation or independent research. The value model can be built for an individual customer or a market segment. Osterwalder et al. (2014) introduce the value proposition map as a framework for value proposition creation in a structured way. This framework takes the elements illustrated in Figure 22.



**Figure 22.** Value canvas (Adopted from Osterwalder et al. 2014)

The customer profile is the description of the specific targeted customer and its role in the business model. The customer profile is gathered in the segmentation stage. The value map is the features of the proposition in details. A value proposition fits the customer when the customer profile and value map match. In order to determine this fit, the two elements of customer profile and value map are further broken down as Figure 23 demonstrates.



**Figure 23.** Value canvas elements (Adapted from Osterwalder et al. 2014)

From customer profile perspective, goals are what the customer is trying to accomplish in the business. Expenses are what create nuisance before, during or after the job is being done. It includes the problems, obstacles and risks. The benefits are expected by the customer. They can also include those that are not expected but are a pleasant surprise. Osterwalder et al. (2014) use the terms gain and jobs but these words have been altered to be in tune with this study, since the concepts are the same.

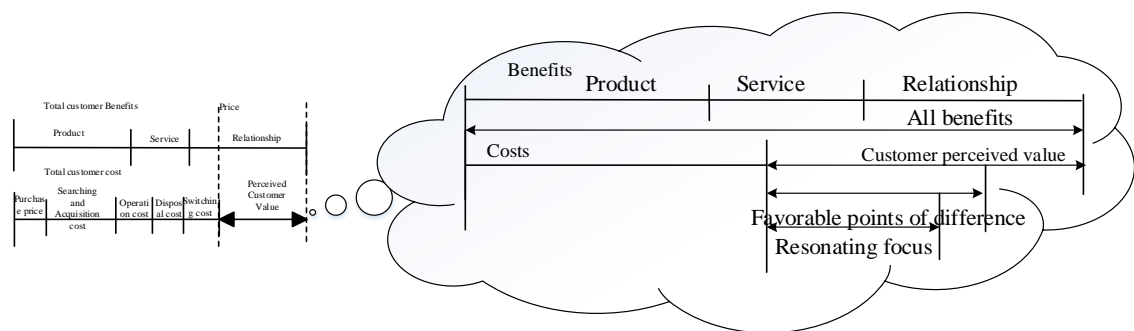
On the value map side, the products are the list of everything offered. They can include core offerings as well as the supporting ones. Pain compensators clearly explain how the offering solves the customer pains that are most significant. Gain creators describe how the product makes a difference for enhanced gain. This framework guides the creation of value. (Osterwalder et al. 2014) The value must then be communicated. The suppliers communicate the value proposition in three manners (Anderson et al. 2006):

- All benefits
- Favourable points of difference
- Resonating focus

First, most value propositions are done by listing all the benefits of the offering to the target customer. Without the need for knowledge of customer and competitor, the formation of this value proposition communication is quite straight forward. The drawback is benefit assertion. The advantages that are communicated are not beneficial for the customer in reality. Another drawback is the point of parity that might be similar to the second best alternative, which block the customers' view of the unique point of difference.

Second, in favourable points of difference the customers' alternatives are considered. The offering is differentiated from the alternative. This communication practice needs more knowledge of the competing offerings. It is important to note that, if there is a point of difference, it does not necessarily have more value for the customer. In order to prevent value presumption, knowledge of the target customers is needed.

Third, resonating focus is claimed to be the gold standard. For value in the rapid pace of businesses these days, the critical issues of the business must be known and addressed. The few elements that are significant to the target customer must be crafted into the offering and demonstrated. These few elements will continue to deliver the value to customers. The elements might include some points of parity, either to convince the customer of the validity of the offering, or the mediocrity of a competitors' point of difference. (Anderson et al. 2006) To make this communication convincing, they must be documented and demonstrated. Figure 24 illustrates the communication methods as a part of the value analysis.



**Figure 24.** Value proposition communication methods.

Value word equations show points of difference and points of contention in a clear and persuasive manner. The value is expressed in the specific industry jargon and simple mathematics. In order to convince the prospective customer of the efficiency of the solutions, value case histories and value calculators are used. The former demonstrated the cost savings or added value attained by the actual use of the suppliers' offering.

The value calculators are a consulting approach to demonstrate the likely value of the suppliers' offering. Maintaining the relationship with the customer and tracking and recording the actual effect of the offering on the customers' business increases credibility

and enhances supplier's understanding of its offering (Anderson et al. 2006). The differences are shown in dollars.

In practice, value propositions in one network are not always aligned. For different partners, the value proposition might reflect conflicting interest. The firm's responsibility is to detect these differences between value propositions for different partners and efficiently manage them (Payne and Frow 2011).

In several industries, the creation of superior value has proven to be possible through the choice of the right customers. Superior value creation is possible through exploiting the capabilities beyond those owned by one single entity (Kothandaraman and Wilson 2001; Ulaga 2003). The turbulences in the market is also pushing the firms from transaction oriented marketing to relationship marketing. Different entities in the value network might have the potential to become value partners. In the earlier studies, value chain was viewed from the individual firm perspective. In the present business environment, the paradigm is shifting towards cooperation. The collective value-creating potential of the network is taken into consideration (Kothandaraman and Wilson 2001).

Viewing the business system as one entity can highlight prospective value creation. Value co-creation can be achieved with different stakeholders working together as partners. This can be achieved by parties understanding and working towards creating mutual value for each other (Payne and Frow; 2011). The number of customer partners a firm can be involved with is limited (Kowalski 2011).

It must be decided how the firm captures value through the co-creation of value in a network. Based on the company's strategy, resources and core competence and business model, the customers and other business partners are chosen, either horizontally or vertically. At times relationship are more profitable when serving a mutual customer.

## **4. VALUE IN THE CONTEXT OF SMART AND CONNECTED**

### **4.1 The value bundle**

Bonnemeier et al. (2010) explain how a solution is a bundle of physical goods and added services that are aimed to meet customer needs. Products have always been the core of marketing, but recently, service has made its way into the picture as the element that enhances the offering. When talking about market offerings, service has been a controversial topic relative to physical products due to its intangible nature. Physical products are the outcome of a closed process while the service co-creation happens in an open interactive process.

Grönroos (2006) uses the analogy of a black box for goods marketing. Service creation happens in an open shared space with mutual contribution from the supplier and customer. Services are the processes that take form in the interaction between the customer and the company in an effort to combine and exploit the resources, systems and infrastructure to attain mutual benefit. The goods can be the distribution mechanism for the value in use to be captured from services (Lovelock and Wright 1999).

Such transparent co-creation of service results in certain characteristics specific to service offering. These characteristics raise certain challenges that cannot be overcome with the product logic. These special characteristics, the challenges raised by them and possible solutions are summarized in Table 6 (Cooper and Edgett 1999; Lovelock and Wright 1999).



**Table 6.** *The characteristics unique to service.*

<b>Traits</b>	<b>Challenges</b>	<b>Solution</b>
<b>Intangibility</b>	Prone to being copied Difficulty in R&D Difficulty in quantitative market research Measurement difficulties for cost, price and value Slow introduction	Tangible cues Communication and promotion tools Strong organizational image Cost accounting Personalization and customization
<b>Inseparability</b>	Customer involvement necessary	Customer relationship management Multisite locations Emphasize service staff training
<b>Heterogeneity</b>	Difficulty in standardization Difficulty in concept testing Difficulty in quality control	Industrialize service Customization Development of quality control processes
<b>Perishability</b>	Difficulty in demand supply management	High integration of internal operations
<b>Ownership</b>	Confidentiality issues	Communication of merits

In single episode decisions, superior product attributes might convince the customer to make a purchase. Single episode decisions are made about products or services. However, in service product mixes, if trust is built over the long run relationship marketing becomes a part of the co-creation. In long-term view, safety, credibility, security, continuity which lead to customer satisfaction and loyalty are more significant. (Ravald and Grönroos 1996)

Over time as the sales point focus has shifted toward co-creation (Grönroos and Voima 2013), the sales focus (Anderson et al. 2007; Haas et al. 2012; Terho et al. 2012) has turned into relationship focus (Grönroos and Helle; 2012). The importance of customer relationship and loyalty in service offering co-creation leads to relational marketing. Relationship emerges out of service and industrial marketing.

In one stream of literature value has been studied as value in exchange and value in use. Value in exchange has been associated with the traditional, goods-dominant logic. The value offering is created by the company and distributed until it reaches the market through exchange of products and money. However, it has been recognized that the real returns lie in solving customers' problems as opposed to selling them products (Doyle 2008). Value in use on the other hand makes sense in the service dominant logic, where the producer and consumers co-create value reciprocally by integrating their resources and competences. (Vargo et al. 2008) Table 7 Summarizes how value differs in these two views.

**Table 7.** *G-D logic Vs. S-D logic in value creation (Adapted from Vargo et al. 2008).*

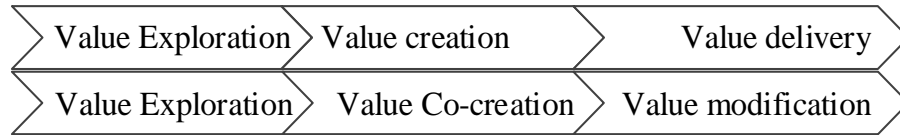
	<b>G-D logic</b>	<b>S-D logic</b>
<b>Value driver</b>	Value-in-exchange	Value-in-use
<b>Creator of value</b>	Firm, input from other supply chain members	Firm, Network partners and customers
<b>Process of value creation</b>	Embedded value in goods or services by the firm	Firms propose value and customers co-create value by usage
<b>Purpose of value</b>	Increase wealth for firm	Increase wellbeing for different members
<b>Measurement of value</b>	Nominal value, price received in exchange	Adaptability and survivability of the beneficiary system
<b>Resources used</b>	Operand resources	Operant resources
<b>Role of firm</b>	Producer and distributor	Proposer and co-creator
<b>Role of goods</b>	Units of output as goods with value embedded	Means for operant resources
<b>Role of customers</b>	User of value	Co-creator of value in partnership with firm

The table above summarized how value differs for goods and services. As value from services is co-created by the partners, the value is realized in use as opposed to in exchange. First the value is proposed by the firm and must be accepted in order to create value for both parties in cooperation. The resources used for drawing value from goods are the operand resources, or the ones that are the subject of action. The operant resources in service co-creation act on other resources. As in service, value is created in cooperation between the different entities, which means a different marketing process is required. If the offering is a mix of product and service, the value proposition is mostly based on intangible results. This lack of clarity is due to the following reasons:

- The product is not developed.
- The service options are not designed.
- The specific target segment is not known.
- The effect of product and service is mostly intangible.

First, in an innovative product, although the basic function of the product is known, the product is not yet designed. The only fact is that the technology can meet the customers' need more efficiently than the technologies implemented so far. It is crucial to add features only if they contribute to the value proposition profitably. Second, the service options must be formed differently for different customers. For a new innovation, the segments that can be targeted are known in the beginning. Through research into what segments the competitors target, the potential customer segments are found. However, until the product-service mix is fully designed and marketed, the most profitable segments cannot be pinpointed. The different segments might be equally profitable but

need different promotion methods when it comes to value proposition. Last, the product and services might have a wider effect on the customers’ product and process than it is evident on the surface. These effects must be accounted for in the study of value proposition. Marketing as a holistic philosophy for service is illustrated in Figure 25.

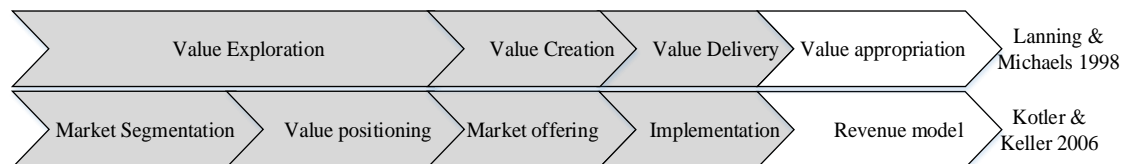


**Figure 25.** *Marketing services vs. traditional marketing.*

In service marketing, there are complexities inherent in their nature that can be overcome through communication. The difficulty in the evaluation of intangible service can be offset by offering free trials, advertisements, successful past engagements (Lovelock and Wright 1999), simulations and word of mouth. Although the service element adds complexity to the bundle, it comes with great rewards. In the service-based business, there is a prospect for a relationship to be developed, for a more advanced offering to be designed and for both parties to draw better benefit from the transaction.

## 4.2 Solution revenue

A firm’s value proposition to the customer reflects how it plans to exploit an opportunity by creating value for all entities (Zott and Amit 2010). The revenue model determines the value appropriation. In the marketing process the firm must take into account the revenue model design just like it pays attention to offering design. Figure 26 then integrates this supplier view on how they capture value into the process.



**Figure 26.** *Supplier centered view of the marketing process.*

The revenue model is the monetization of the value proposition to the customers, for the benefit of the firm. Revenue model is a series of different revenue streams directed at various segments, with different pricing models. (Osterwalder and Yves 2002). Revenue model to business is similar to price to the product. The more value created for customers, the more potential for value creation for the firm. However, how much value is actually appropriated, depends on the firm’s revenue model. (Zott and Amit 2009) For every innovative value proposition, there must be an innovative approach to revenue generation. The way prices are set determines the value generation. There are certain realities in the business world that change the way revenue management works:

- The payer versus user
- The price carrier

First, the payer is not necessarily the user. Second, there is only a part of the whole offering that the price tag is hung on. This affects the way the offering is bundled. (Michels 2014) Through innovative bundling of the offering, the company can secure a unique position in the market and make comparison challenging. The service is categorized as follows:

- Basic installed
- Maintenance
- Professional
- Operational

First, the installation services include repairs, spare parts, transportation and clearly, installation. Second, Maintenance means preventative measures, spare parts management and condition monitoring. Third, professional services such as process oriented engineering and R&D, training and consulting. Last, operational services include managing maintenance operations. (Olivia and Kallenberg 2003)

The nature of the value proposed through product and service bundles related to two aspects of customers' business, the internal efficiency and external effectiveness. The value proposition of a product service bundle then is the transformation of client's business. (Bonnemeier et al. 2010)

The service element of the bundle means that the delivery of value has a certain duration. The revenue planning for an offering that is a bundle of product and service elements is a challenge. As a rule of thumb the more risk is transferred to the supplier, the more value they can capture from the offering (Suomala et al. 2011). Bonnemeier et al. (2010) have categorized revenue models according to performance parameter and supplier's value proposition. This is summarized in Table 8.

**Table 8.** Revenue models (Adapted from Bonnemeier et al. 2010).

Performance Parameter	Supplier's value proposition	Revenue model
Supplier's amount of work	Product	Product sales Rent, leasing or licensing
Supplier's amount of work	Service	Fixed fee Cost plus
Usage time, intensity	Input for the customer	Usage based
Performance level Performance result	Output for the customer	Performance-based Value-based

As Table 8 demonstrates, from top to bottom, the revenue model's focus transitions from supplier's cost to customer value. The product-centric value proposition follows a product sales or rent, leasing and licensing model. It includes the property or possession right transfer to customers. As far as the service element is concerned, the revenue can be generated through a fixed fee model. This model has nothing to do with the actual utilization of the service. If the service cannot be explicitly described prior to purchase contract, this model might not be valid. The cost plus model then can be considered. In this model, the supplier ensures profitability through charging the client for all its effort.

As the focus of revenue shifts towards customer value, the value proposition transcends the product or the service and they are about the value added. The value added is determined through how the customer's efficiency changes. The usage-based revenue model suggests that the customer pays relative to the utilization of the solution. The more the client's output matters, the revenue is generated from the customer's enhanced performance or optimization value of the offering. The supplier then captures a part of this benefit generated for the customer. In reality, these models are combined by the company to ensure optimum value capture from the product-service bundles offered to the market. (Bonnemeier et al. 2010)

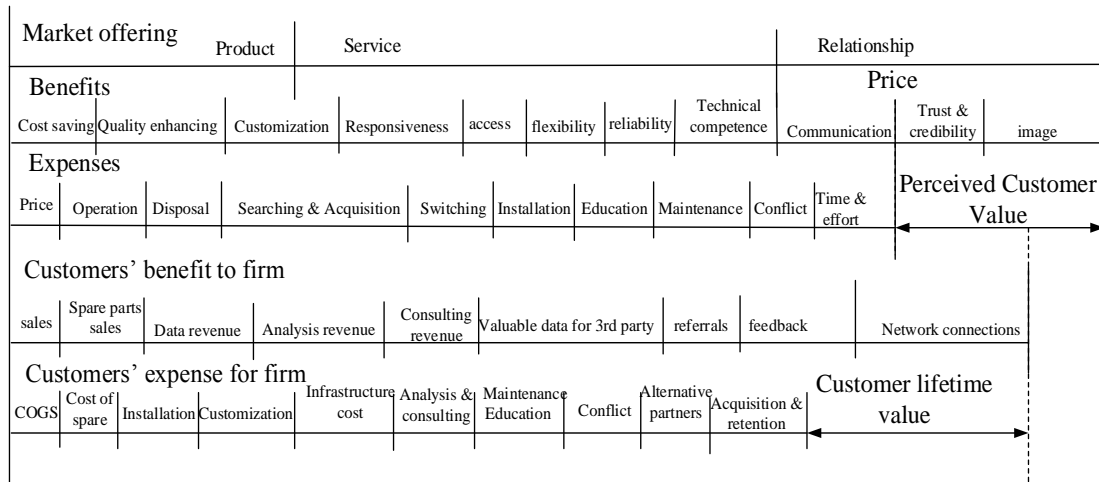
### **4.3 Mutual value appropriation**

When the parties come to the realization that the goals they pursue are complementary as opposed to conflicting, the idea of value co-creation is born. With service dominant logic, where the needs of the customer are communicated to the company in order for a solution to be developed (Ballatyne et al. 2011), the promises of potential benefits are the initiators for the exchange. The value offering is then modified through negotiations and resources are pulled together so that mutual value is co-created. It is important to acknowledge what is of benefit and expense for the customer and the company.

During these negotiations, information flows easier by each party determining what provides value to them and openly communicating it. A value proposition is devised. Some elements are accepted and form the promises of value generation. In the co-creation of value both parties evaluate the benefits and costs. The terms of value co-creation are decided in agreement either formally or casually, as a relational long-term contract or a transactional exchange. In case a wide array of reciprocal value propositions across a network of partners are involved, equitable exchange must exist for every partner. Even the negotiation process might be of value to the parties (Ballatyne et al. 2011).

The crafting of the value proposition starts with one of the parties inviting the other to discuss mutual complementary objectives. A preliminary value proposition is then prepared by one party. Through a process of negotiations, it is adjusted and agreed on. The value concept is then tested to develop an actual action plan. In the co-creation of value,

the supplier’s value proposition is not the final offer but the initiation of a dialogue. The value is then modified until favorable results are created for both parties. In some cases the value emerges out of a long process of communication and is not specified in the initial value proposition. In some cases however, the value proposition is devised through cross-functional cooperation of the parties (Ballatyne et al. 2011). In the product-service mix, it is still a complicated matter that needs more analysis (Tuli et al. 2007; Ulaga and Reinartz 2011). Lappierre (2000) groups benefits into those from product, service and relationship. The sacrifices are then grouped as price and relationship. The multi-faceted nature of a reciprocal value proposition is illustrated in Figure 27.



**Figure 27.** Dual perspective of value.

Value proposition must clarify the reciprocal exchange of value in terms of the benefits or reduced costs. It must be clear who the value goes to and through what process. (Ballatyne et al. 2011) In complex offerings that are composed of products, services and relationships, there are expenses imposed on both customers and company as illustrated. The difference between the value offerings and the customer cost is the perceived customer value, as elaborated on earlier in this thesis. The difference between the value to the company and the customers’ cost to the company is the customer lifetime value. The benefit of the whole offering must be more compared to the cost for both parties, for value co-creation to be initiated.

According to Payne and Frow (2011), value proposition can be used to align value creation for different market entities. In order for value to be created for both entities, a dialogue must be created through extensive communication and sharing of knowledge. This dialogue has its roots in collaboration and absorption capabilities. Collaboration is based on trust. Absorption is due to awareness to information and the ability to learn from feedback and modify (Payne and Frow 2011).

Kowalski (2011) claims that one of the main challenges in the process of value co-creation is the complexity of the purchase organization. The buying organization is

composed of different entities. During the value proposition and delivery process, the communication is carried out between different people at different levels of the organization and in various roles in the purchase process. The users in the buying organization are concerned with value in use and the payers in value in exchange.

The complexity happens due to the lack of authority of the users who engage in value creation on one hand. On the other hand, the users might not have the strategic insight required for crafting the value proposition (Kowalski 2011). What might create even more complexity is how the business model is designed so that users and payers are even in different organizations. In today's age of data, the data gathered from one client might form the basis for the service that is sold to another in order to generate revenue.

Crafting the value proposition by establishing interfaces between the partners at different levels and between different members of the purchase organization can mitigate this challenge. By means of different interfaces between the two partner companies, it is easier to craft a value proposition that is deemed valuable by different members of the purchase organization. Besides, the opportunities for a new value proposition can also be detected.

Hogan (2001) introduces a new construct called expected relationship value (ERV). ERV is the perceived net worth of the tangible benefits that are to be driven over the relationship period. ERV considers the following matters:

- Both partner organizations
- Net worth including the costs
- Time element
- Future outcomes of the partnership

First, ERV is an organizational construct that concerns both entities. The assessment of value is done in both organizations, although differently, due to the difference in perspective. Second, value is the net worth of current and future benefits. Hence, the costs such as capital investment, managerial time, transaction cost, product and operating costs must be considered. Third, ERV actually concerns the future implications of the relationships. The future benefits such as product quality, technology transfer and increased process efficiency are worth contemplating. ERV carries uncertainty because it is in the future. Hogan (2001) names chance, opportunism or insufficient information as reasons for uncertainty. In his study, probability distribution of expected relationship value is drawn to depict the uncertainty inherent in the value in a relationship.

Due to the multi-level nature of business to business relationships, value analysis is also complicated. The information needed for such analysis is scattered throughout the organization. The data collection hence is best done through a structured research all over

the companies. The concept of value based on a relationship, according to Möller and Törrönen (2003) can be conceptualized in three dimensions:

- Efficiency
- Effectiveness
- Network function

Efficiency function is the efficient use of resources in a business relationship. Effectiveness is the partners' ability to be innovative and increase the value to each other. The network function is the value creation potential of the more extensive value creation network. Value in a relationship can be access to technology, markets and information.

#### **4.4 Smart and connected phenomena**

In the fast pace of information technology development, products and services alone are not enough. The internet has resulted in a revolution in the nature of things leading to new capabilities, industry dynamics and competitive landscape. Intelligence and connectivity must be built into the offering (Allmendinger and Lombreglia 2005). The smart and connected phenomena is when products are connected and the data they provide is put to use.

In the present day, every electrical device has the capability to save and analyze data due to sensors, controllers and microprocessors. With the advent of clouds there is a lot of potential for innovation, productivity gains and economic growth (Porter and Heppelmann 2014). The data about current status, usage history and performance can be put to use to yield greater results. By changing the business model the firms can increase the margin from their service activity. (Allmendinger and Lombreglia 2005)

According to Porter and Heppelmann (2014), smart and connected paradigm creates a new era of strategy on how value is created and captured. The companies that are pursuing this paradigm are establishing the new industry benchmarks and standards. It affects how the data is generated, utilized and managed and its impact on relationships with business partners and the firm's position in the channel. The intelligence inherent in connecting smart products serves the following functions (Almendinger and Lombreglia 2005):

- Status
- Diagnostic
- Upgrade
- Control and automation
- Profiling and behavior tracking
- Replenishment and commerce
- Location mapping and logistics



First, the status on operation, performance and use of a device or environment is monitored and reported. By diagnostic features the device can be monitored, repaired and maintained remotely or through self-optimization. The device can be upgraded by use of version control to prevent technology obsolescence and device failure. The sequenced activity of several devices can be controlled, automated and coordinated to perform discrete actions. The performance, usage and sales in different settings can be profiled and tracked to create more customized or predictive responses for end-users. The consumption of a device and buying patterns of the end-user can be tracked for replenishment and commerce. Purchase orders and other transactions can be initiated by the intelligence embedded. The service support system, supply chain and sales activities are supported through location mapping and logistics. According to Porter and Heppelmann (2014) performing the above functions smart connected products fulfill the following needs:

- Monitoring
- Control
- Optimization
- Autonomy

First, smart connected products monitor the condition, performance and external environment. The data generated can be applied to design, segmentation and after-sales services. Second, these products can be controlled remotely or in response to a change in conditions. This results in better customization. Third, the data gathered from smart, connected products and the capability for control open up opportunities for optimization. The historical data can be used to improve output, utilization and efficiency. This feature also allow smart and connected products to act preemptively and lessen the risk by foreseeing problems before they arise (Allmendinger and Lombreglia 2005). As a result of all these functions, there is a significant level of autonomy. This can prove very beneficial in certain circumstances where human presence is risky.

The smart and connected products can be connected to a cloud for data collection, which is the vision the project team has. As the cloud based data storing becomes more developed, it forms the basis for new service innovations. Porter and Heppelmann (2014) hence introduce four strategies to adopt when it comes to connected products:

- The embedded innovator
- The solutionist
- The aggregator
- The synergist

First, the embedded innovator is the most product-centric strategy, where the product is still the main source of value. Communication features are built into the products and they become the source of optimization, waste elimination and efficiency. Second, in

the solutionist business model, a single product is still in the center with a broader array of high-value activities. Third, the aggregator model uses the collective data generated by different devices. Fourth, the synergist model provides valuable data to other connected products.

As lucrative as this new business model is, there are certain drawbacks. The two concerns of the smart and connected age are the IT infrastructure and the dominant product mentality. The data generated by the devices must be validated, stored and analyzed. This requires sophisticated IT infrastructure. In addition, product centric mentality is a challenge when the value creation is to be done based on a connected service basis.

The smart and connected services transform the cost structure of the firm. They require high fixed costs and low variable costs. There is high up-front cost of software development, complex product design, data storage analytics and security (Porter and Heppelmann 2014). This highlights the importance of opting for customers who provide more value over their lifetime. This important topic is further discussed in the following chapter in an attempt to develop a framework for analysis.

Smart, connected products are a great opportunity for product differentiation. As a result competition happens beyond price alone. The insight gained through smart and connected products help firms segment customers and offer more added value. Due to the data storage and transparency, there is more need for building a relationship with customers. There is another side to this data transparency though. The transparency might give the customers leverage to be more independent and compare performances across suppliers. Besides, since in service business there is no ownership, the switching costs might actually be lower for the customers.

In the design stage of smart and connected offerings, there is a lot of potential. It would be easy to fall victim to feature creep. Given the low marginal costs of the incremental modifications once the large initial fixed investment is made (Porter and Heppelmann 2014). The development must be done in cooperation with the most profitable customers to make sure the initial investment, which is quite significant, will pay off. Only because more features can be offered does not mean that it will offer value to the customer, which they will willingly pay for.

In the competitive landscape giving into features arms race destroys strategic differences and creates zero-sum competition (Porter and Heppelmann 2014). Hence the value proposition must be clearly defined. Only those capabilities and features must be invested in that are in line with the strategic positioning the firm has defined for itself. The value of features and capabilities vary by segment (Porter and Heppelmann 2014). They might also vary by customer in industrial markets.

Once the whole value proposition is investigated it is important to decide what capabilities are embedded in the product itself, leading to more cost (Porter and Heppelmann 2014). Besides cost, the following factors determine the extent of the product features:

- Response time
- Automation
- Network availability, reliability and security
- Location of product use
- Nature of user interface
- Frequency of service or product upgrades

First, if quick response is needed, the feature must be built into the product. This way, lost or slow connectivity would not affect the response. Second, the more automated the device, the more features must be built into it. Third, the risk exists that sensitive or confidential data is compromised during transmission due to network issues. Fourth, depending on the location of the device and how hazardous or accessible it is, the amount of application can be decided. Fifth, depending on the complexity and stability of user interface, customer's level of interaction with the product can be designed. Sixth, service and upgrades can be done more easily if they are more cloud-based than product based.

In the design of the offering, given how security becomes important in the information era, it must be given extra attention. Authentication processes, secure storage of product data, protection against hackers, control of access privileges must all be considered in the design. Access to data and right to use the data must be discussed and approved in the contracts and initial negotiations. When making the decision about what devices to invest in connecting, certain items must be taken into consideration. The role and importance of the device in the process is crucial (Allmendinger and Lombreglia 2005):

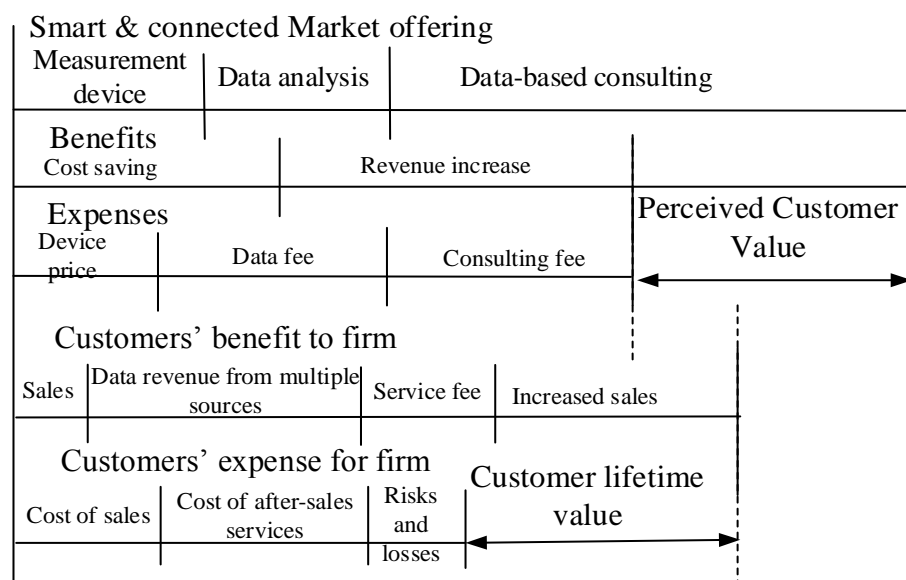
- The impact of device failure
- The value of device information
- The impact of networking
- The cost and ease of connectivity
- The device turnover rate
- The service needs
- The importance of information
- The location of the device

What is more, the data generated can be used to make improvements to the offering. The product design can be modified to reach standardization as data from different key customers are saved and analyzed. The information can also be used as a validation for warranty claims (Porter and Heppelmann 2014). The data generated can give a clear view of the company's value proposition as time goes by. It can also serve as a commu-

nication tool when the company approaches new clients. The advent of information technology has added a new side to relationship marketing. The key tasks of relationship marketing has been facilitated by information technology as follows (Porter and Heppelmann 2014):

- Tracking the buying pattern and existing customer relationships
- Customization of services, prices and promotion to customer requirements
- Coordination or integration of multiple services to one customer
- Two-way communication channel between company and customer
- Minimizing service errors and breakdowns
- Augmenting core service with value-adding extras
- Personalizing service encounters

To sum up, for bundling the offering for different customers the customer value must be investigated by doing a thorough research into each customers' process. On the other hand the customer's value to the firm must be studied to make sure the most profitable targets are selected. The partner customers are not sole sources of costs but have certain benefits for the company. In case the company wishes to enter the market cautiously and one segment or one customer at a time, viewing each of them from a cost benefit point of view clarifies the path that the company should take. Figure 28 is too elaborate. The value elements are different in various cases, but they can all be summarized as Figure 28 demonstrates.



**Figure 28.** Simplified dual perspective of value

The list of benefits as seen by the customers either enhance the quality of the final product or improve the customers' processes and efficiency. In both cases, the customer experiences either cost saving or revenue increase.

The customer expenses can be broken down with regard to the time of the cost being imposed. In the service product mixes, as described before, value is created through a collaboration and over time. Hence, the expense might be imposed on the customer as the value is created. The expenses are then categorized time-wise. The initial stage of the acquisition of the market offering includes searching, purchase and installation besides education. These stages can be categorized as the sales expenses. The operation, maintenance and conflict are the costs of the use era. Eventually the switching and disposal costs are imposed after the value is created. These costs can be monetary or the cost of time and effort which must be translated into monetary costs in order to be considered.

On the other hand from the company point of view, the customers' benefits to the company can be simplified. At the time of sales, the price of sales is a direct benefit. Later, as the service creates value, based on how the pricing decision is made, the service generates revenue for the company. The data created through collaboration with one client might be a part of an offering creation to another client, perhaps the suppliers or the customers of the initial client. This revenue generation of course must be with the customers' consent and within previously agreed terms.

As discussed earlier, value can be viewed from the customer or the company perspective. In the relationship based marketing of the modern business environment, the value creation happens in the collaboration of different entities. Hence, it is crucial to have a complete view of value. This illustration of the value analysis helps clarify to both entities the terms of the partnership and the expectations of the result. The analysis is then fruitful for the following purposes:

- Targeting the most appropriate customer
- Communication of mutual value both internally and externally
- Analysis of the elements of value
- Value maximization possibilities

This kind of analysis is crucial in targeting the most appropriate customer segment. Specially for entering a market it is very important to start with the customers whose expected benefits are in tune with the company's capabilities and can be met within their means. It is then also beneficial for the company to consider how the relationship with this primary customers and their data eases further development of their business. If the customer is a big player in the industry or is in a network related to numerous prospective customers, easier future expansion is guaranteed.

The value analysis diagram aids in the communication both internally, between the members of the organization and externally, between the organization and the clients. The members of the organization can discuss which customer segment to target based on the benefits sought by them. They can also design the offering based on the price that

would appeal to the customer, with their knowledge of the customer after negotiations. The expenses that are imposed on the client can also be determined based on how valuable a client is to the company. If the client is a major one and their data and relationship has value for the company, the value offered to them must be maximized by the best combination of benefits and costs.

## 5. THE CASE STUDY

### 5.1 The case company

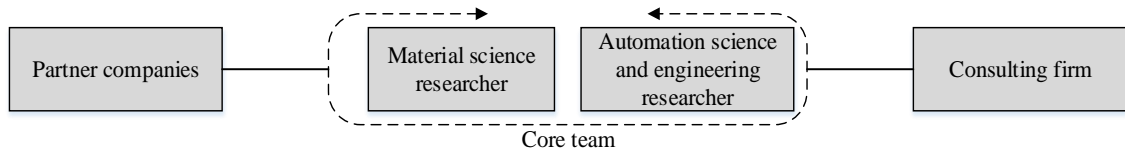
The case to be discussed in this study is a research-based business venture. The project was initiated in Tampere University of Technology, in the Department of Material Science. This part will discuss the team and the formation of the idea.

The team behind this innovative idea is composed of members with Material Science and Automation Science and Engineering background. The material science researcher also engages in management of the project. The automation science and engineering researcher is the mind behind the signal processing and electronics side of the project. The development of the product is hence, their responsibility. Some electronics and project tasks have been delegated to other people as well. The team has strong connection to industry besides the laboratory, which is how the idea was initiated.

The project was a spin off from another industry project that had started in 2011. Due to the core focus of that project, by the end, the industry partners and the funding institutions were no longer interested in further development of the idea. The team however, seeing the potential in further development, applied for a two year funding. Tekes funded this project for 2013-2014. This second project worked on signals used for material and suspension measurement as a more focused study compared to the first project. By the end of that project, three of the collaborating companies in the board of the industry expressed their interest for measurement of colloidal suspensions. The project leader says:

*“Initially, when talking with the three partner companies, I saw it in their eyes that they were serious about this project.”*

He also mentions that when the project had just started, without any marketing efforts, he was receiving phone calls from potential clients, asking for further information. This was a living proof that the idea was valid and carrying on with the project was a wise step. This project was then initiated and funded by Tekes also. As a result, the project has been narrowed down from a more extensive research that had been going on, to one focused on the industry needs. The project organization is depicted in Figure 29.



**Figure 29.** *Project organization and entities.*

The outside consulting firm carried out market research. They validated the idea. They also determined the market attractiveness and the competitive landscape. Through studying the competition, the product concept was also focused on a more lucrative offering, as this project describes further. The consulting firm then assisted the project manager in breaking down the project and setting deadlines. There are three partner companies that had a significant role in the development of this project. As mentioned before, they approached the team to begin with. Interestingly, the customers are from different industries, when viewed from the product perspective. However, it is believed that they all work with the same raw material and through the same processes, which is why they form a valid segment. The client-partner companies are in the following industries:

- Mining
- Sanitary porcelains
- Lime-stone based products

Although on the surface these client companies do not bear similarities, they all work with ceramics. The ceramic components are increasingly used in several applications due to resistance to the following unique characteristics (Salpavaara et al. 2015):

- Wear
- High temperature
- Corrosive environment

In the manufacturing process for all three clients, ceramic particles need to be suspended in liquid. The properties of this suspension determines the properties of the final components. The homogeneity of the suspension and the content level are then important to keep a track of.

The segmentation was not done in the initial phase of this project. This was due to the interest of the partner companies and how they approached the project team. The target clients were already there. However, given that the research team is aiming to establish a company, further segmentation must be carried out for the development of the business in the market. The segmentation happens afterwards in a build-up approach. Similarities in the processes of the customers are found. The companies that use suspensions in their processes, which relates them all to the research area of this team, are all potential future clients. Due to the similarity of the suspensions, they form a strong customer



base. A segmentation method similar to the nested method was used in this study. The different segmentation levels are summarized in Table 9 in two separate levels.

**Table 9.** *Segmentation bases.*

<b>Stage</b>	<b>Characteristic</b>	<b>Goals</b>	<b>Behavior</b>
<b>Initial stage</b>	Industry membership Geographic location Network position	Benefits Usage and application End-user requirement	Reciprocity Risk and uncertainty
<b>Later stages</b>	Number of plants Financial capability Profit potential	Order size Derived demand Technical assistance	Purchase strategy Purchase organization Loyalty

In the initial stage the partner companies' proposition for cooperation were accepted because they were all in the ceramic industry. They are located in Finland, which makes the research and development easier. Their position in the network is the promise of a smooth distribution of the offering. The benefits sought by all the companies is a result of the end use of what they manufacture. The reciprocal behavior of the companies is the reason for the cooperation that is essential to the development of the offering. Their certainty was the validation the project founders needed to develop the idea further.

Once the offering concept is developed, it might be beneficial to aim for market growth. In the build-up approach to segmentation, customers that share certain attributes with the partner companies are found for further market development. It seems as though the size of the company, besides their financial state is a good starting point for the company to choose new customers to form partnerships with. The value of the customer to the firm matters because the firm is a new establishment with limited means that must be exploited fully.

The order size is also a crucial point because of the service nature of the offering. The technical assistance needed by the companies, in case the assistance is a revenue stream is also worth consideration. With the offering being developed at a relatively lower cost, the purchase strategy and organization of the customer company matters. It is important for the project founders that the users are able to make the purchase decision. Due to the relationship nature of the service offering, customer loyalty finds significance. With the data-based service offering the loyalty factor is crucial.

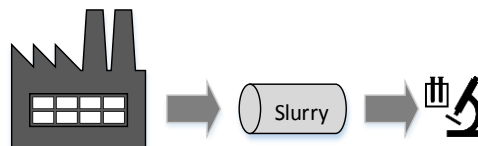
This study was done in the development stage of the project. The aim of this project has been to combine the laboratory processes and industry specific measurements with the technological trends, due to the interdisciplinary activities of the core team. The project manager acknowledges that:

*“It is the age of big data. However, it has not yet been integrated into this particular industry.”*

The team is looking forward to found an enterprise eventually to take advantage of the technological advances of the smart and connected era in the realm they are familiar with. The next section elaborates on the idea further.

## 5.2 The weak link

Particle control in suspensions is a crucial step in certain industrial processes. The homogeneity, or even dispersion of particles in the suspension, is essential (Salpavaara et al. 2015). Many industrial processes involving particle-liquid mixtures are improperly monitored because they cannot be measured. There are very few devices that can be installed in the process to provide real time data on the mixtures, each with certain technical shortcomings. In the industries these days, the investigation of mixtures is done by taking samples from the process and running tests on them inside the laboratory, as shown in Figure 30.



**Figure 30.** *The control method widely used.*

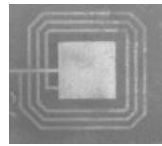
This method has certain drawbacks. The most evident of which is the speed and convenience of the testing. The unfavorable results of the traditional measurement methods are as follows:

- Inefficient use of resources
- Low product quality
- Testing complications
- Unstable production process

By the time a sample is taken from the process and tested in the laboratory, the process has gone on for some time. The tests might demonstrate unfavorable characteristics in the mixture, but the process has been going on, consuming raw material and energy. These push the production away from lean production. The company incurs extra cost and produces waste, or substandard quality. Getting samples from large vessels, transportation to laboratories for testing is a challenge all by itself (Salpavaara et al. 2015). Laboratories also require resources to be built and maintained. Besides, the laboratory staff need a certain skill set. What is more, the result of the testing cannot provide real time feedback for the process to help make it more efficient.

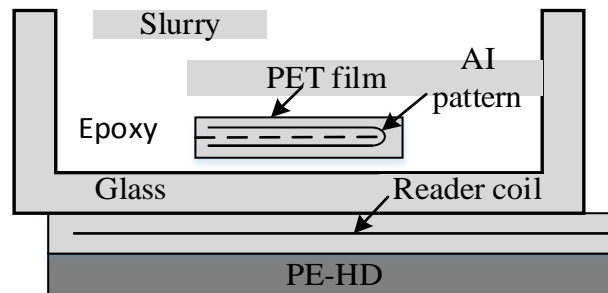
The laboratory analysis of slurries that flow through the process, is a weak link in production process. Laboratory testing takes time and resources, and is still not efficient. This process need is an opportunity for innovative thinking. The need for a non-invasive, inexpensive, fast in situ measurement has always existed. (Salpavaara et al. 2015)

There are different methods for testing the slurries. The method developed and put to practice in this project is based on the concept of passive resonance sensors. A reader coil generates a magnetic field. This field induces an electrical current to the sensor coil. This electric field passes through the suspension being measured. The suspension composition and its changes affect the equivalent capacitance of the sensor. The sensor is shown in Figure 31.



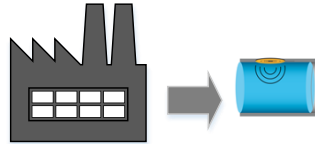
**Figure 31.** The sensor embedded in epoxy (Salpavaara et al. 2015).

The passive resonance sensor can monitor particle suspensions. This method does not require a very complex test setting. The instruments are not costly and can be transferred to an industrial setting easily. It is simple but effective. The ease of installation and maintenance make it a perfect choice for industrial purposes. Figure 32 shows the cross section of the measurement container.



**Figure 32.** The cross-section of the measurement container (Salpavaara et al. 2015).

In this particular case the client companies spotted that the solution could be applied to the weak link in their process. The client companies and the research team then started working on a task oriented solution (Drucker 2007). The passive resonance sensor that was developed in earlier projects for controlling the particle suspensions were considered for these client companies as Figure 33 shows.



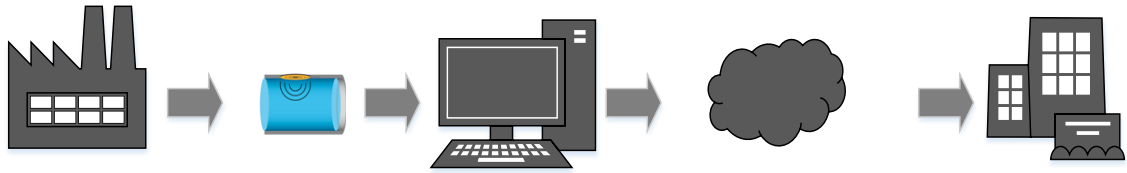
**Figure 33.** *The innovated method.*

In this innovative method, an electrical analyzer was developed. The metering device developed in this project is less sensitive than necessary for laboratory application. This innovation makes possible the cost effective observation of the amount and state of micron size particles in liquids. The following measurements are done with this device:

- Homogeneity
- Particle size and changes
- Electrical state of particles

The particle suspension measurement is done by using passive resonance sensors. The information provided by this measurement can be used as feedback for the preparation process. The measurement instrument is simple and seems to be appropriate for online measurement in industrial processes. (Salpavaara et al. 2015) This innovation is aiming to provide online monitoring for solid content and suspension homogeneity. The feedback provided is on process status and raw material purity. The research team does not wish to stop at the development of the measuring device. Seeing the potential in this device and the data it produces, it can be put to even greater use.

According to the project manager, the research team is aware that big data analysis has never been integrated into monitoring of suspensions. With the constant development of cloud services into different industries, the team is hoping to integrate this technological advance into their field of research. The raw data generated from this measurement device does not have any specific implication for the company. The team here, contributes by analyzing the data and making it more meaningful. The mass of data generated is refined into data that the client wants and can put to use. Figure 34 depicts how the sensor collects data from a process. The data is then saved and aggregated and sent to clouds. The aim is to analyze the data in the firm itself. Based on the analysis then feedback, solution and consulting is offered to the company.

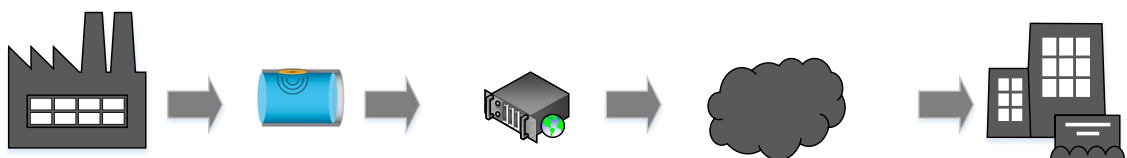


**Figure 34.** *The current process.*

Smart connected products are composed of three elements: physical components, smart components and connectivity components. Physical components are the mechanical and electrical parts. Smart components are the sensors, microprocessors, data storage, controls, software, operating system and user interface. These components amplify the physical components. Connectivity components are the protocols that enable connection with the product and amplify the performance of the smart components. Connectivity allows information to be exchanged and also enables some functions to exist outside. Connectivity can be to one or many other products or even between numerous products in a network for data transmission (Porter and Heppelmann 2014). In this innovation's case there are also three elements.

- The electrode
- The signal generator
- The raw data collector

The sensor, which is the electrodes and the signal generator has been developed. These elements are the physical and smart components of the offering. The connectivity component is the raw data collector which is the next challenge to be overcome. Industrial computers are now being used for collection and communication of raw data. In order to make the device cheaper, the team is trying to eliminate all the unnecessary features and make a small efficient low cost device for this purpose. All that is expected from the raw data collector is to minimize the data a bit. However, the industrial computers with their graphic interface are too complicated and too expensive for such simple matter. Figure 35 depicts the final vision of the team for the offering.



**Figure 35.** *The process aimed for.*

In this offering, the sensor and the signal generator are inside the company. The data is then sent to the cloud and the analysis is done by the firm. The development of smart and connected devices has inspired this marketing mix. This new paradigm is quickly making its way to every industry. It is discussed further in the next section.

### 5.3 The project

This study is done in the very initial phase of the third project. The technology was already developed. Owing to the previous projects, its robustness and simplicity of use was proven. The marketing process started right away with the customers approaching the research group. As explained earlier, it was decided that the firm proceeds with the three demo customers to develop the product and test the service concept. The research group decided not to target any other customers and segments until the marketing mix was fully developed. The focus in this phase of the product was on development and commercialization of the innovative technology at hand. The project was divided into five packages summarized in Table 10.

*Table 10. Project plan.*

<b>Work packages</b>	<b>Activities</b>
<b>1.Commercialization study</b>	Market analysis Competitor analysis Identification of customer needs
<b>2.Intellectual property rights</b>	Preparations for patenting Similar patent search
<b>3.Prototyping</b>	Prototype design Prototype manufacturing Prototype testing
<b>4.Measurement and data analysis</b>	measurement points for company process University and industry data sharing Installation of the measuring equipment Data analysis
<b>5.Planning the commercialization</b>	Legislative matters for startup clearance Financial planning Production planning Marketing strategy planning

This study was done as a part of the first work package. The purpose of the first working package was to find the best commercialization route for the technology. Given that the funding was limited and the most certain route would be the most appropriate. The matters that are to be analyzed in this work package are summarized in Table 11 Questions to be answered in the first work package.

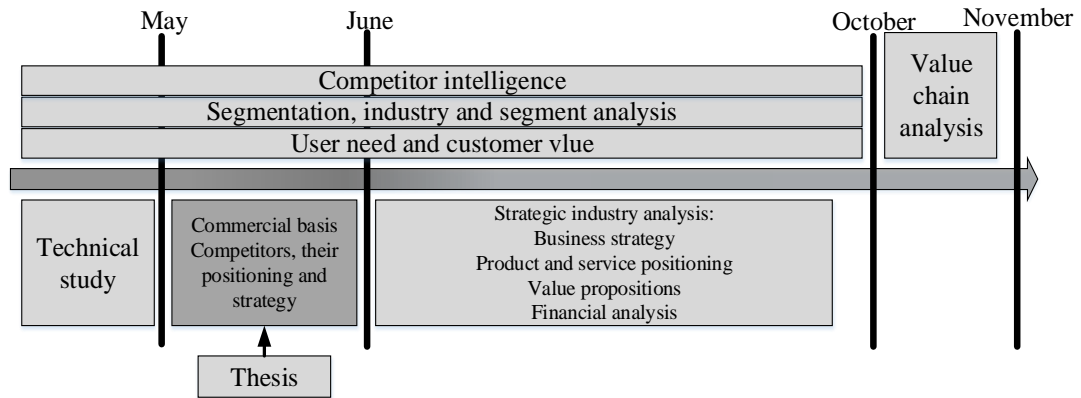
**Table 11.** *Objectives of the research.*

<b>Research topics</b>	<b>Important matters</b>
<b>Market need</b>	Potential customers Customer needs Market size and growth
<b>Business model</b>	Value capture Product/ service to sell
<b>Value proposition</b>	Technological benefit Customer solution Strengths Weaknesses
<b>Competitor landscape</b>	Existing rival solutions Competitor's market share Competitor strength Competitor weakness

The important matters above are researched through secondary resource research. The customers and lead users can be interviewed for the understanding of the current and emerging customer needs, besides how they have been met so far. The lead users' inputs are valuable inputs to the concept development process. Financial analysis of companies and industries is beneficial to the understanding of market potential, size and growth. Interviews with competitors if possible, creates a knowledge of their limitations, value propositions and positioning. The outcome that is expected of this work package is the following items:

- Potential target market
- Customer needs and quantified benefits in target markets
- Competitive situation
- Product-service value proposition positioning

After determining the topics for research, the timeline of the project was devised. The end of each month, the team had a meeting to share the outcome of the research and control the progress. Given that in the initial phase of the project, the market offering is not developed, it goes through constant changes. These monthly meetings help focus the activities on the vision of the core team, as new discoveries are made. The focus of this thesis is highlighted in the timeline in Figure 36, the commercial basis and competitor positioning and strategy.



**Figure 36.** *The first phase timeline.*

The founders of the project have the following vision for the market offering:

- Technology embedded in an online measurement device
- Cloud-based data collection
- Data analysis and service

First, the passive resonance sensor technology must be developed into an affordable measurement device. It is meant to measure the same characteristics that the available laboratory and online devices do without the extra features. The extra features, besides being complex to learn, add to the cost for the customer. Second, the present days' development in cloud-based big data analysis can be integrated into the marketing mix. The new knowledge has created an opportunity for an innovation. Last, the founders wish to top the service product mix consulting services based on the data analysis done in the headquarters.

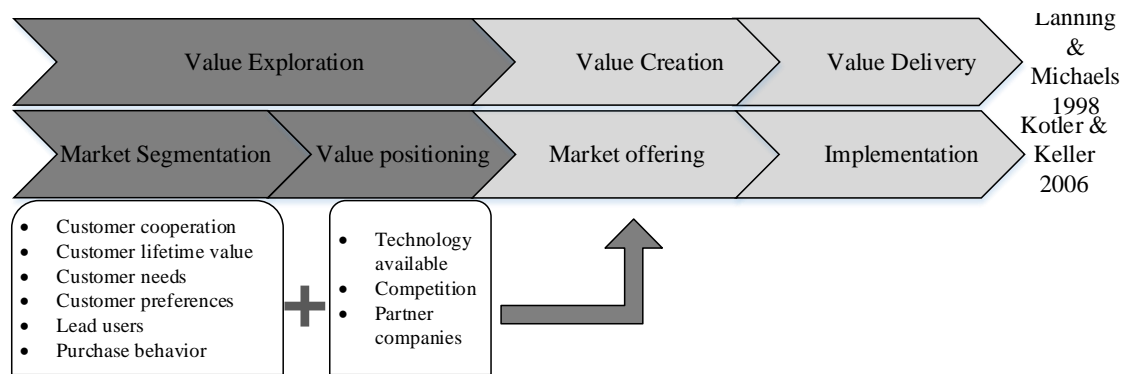
The project founders wish to opt for both an undifferentiated and differentiated strategy, for the product and service respectively. The offering is a mix of product and service. They wish to design the offering so that they can target an expansive market. The product can be designed in a way that is it compatible in all industrial processes that need suspension control and analysis. The device's cost hence would be lower. The customization of the offering can be through the service offering. This topic is elaborated on in the next section.



## 6. VALUE ANALYSIS OF SMART AND CONNECTED

### 6.1 The offering

The offering was developed and crafted throughout this project. In order to design the offering, the product and the service must both be taken into consideration. Besides, the value creation and the value appropriation are to be planned for a successful product development. This study happens through the elements summarized in the value exploration phase of the marketing process as highlighted in Figure 37.



**Figure 37.** *The scope of this study in the marketing process.*

The product is a smart and connected device. It can be considered on three different levels, the measurement device, the data collector and the cloud system. The service needs a different kind of research since it has never been used in the ceramics industry. The process through which this study was carried out is as follows:

- The competitive analysis
- The target market study

First, the passive resonance sensor technology and how it compares to the other methods is how the project started in the first place. Besides, the advent of cloud systems and how they facilitated service design. These technological advances can be applied to the current processes innovatively to make a change. The competitor analysis was done on a very vast basis, entailing all levels of competition to ensure a better view of market potential. In order to innovate based on the new technology, it must be considered how things are done differently if the new technologies are put to work. Second, the target market was studied, their needs and lifetime value. The partner companies are the reason for focusing on the ceramics industry. In addition, their network is very promising

for the sales of the offering in the long run. Hence, their needs are to be considered carefully in the design of the offering.

In order to design the product, the other methods of measurement were studied. The technology is very interesting compared to the other measurement methods. As shown in Table 11, there are three measurements that are essential for suspension control. The passive resonance technology, contrary to the other methods, measures all three. Table 12, positions the methods based on what attributes they measure.

*Table 12. The positioning of methods.*

Method	Homogeneity	Particle size and changes	Electrical state of particles
Atomic Force Microscopy		×	
Digital video Microscopy Particle tracking analysis	×	×	
Dynamic light scattering		×	
Electrophoretic light scattering			×
Electroacoustic analysis		×	×
Electrical resistance topography	×		
Ultrasound Spectroscopy		×	

The other part of the product, which the project team is focusing on right now is the data collector part of the device. The challenge at this point is to omit the extra features to make the device cheaper, more compact and user friendly. The project team is aiming to reduce the size of the data collection device by focusing only on the basic function and eliminating all the unnecessary features that are expensive to the customer but do not have value added by embedding them in the clouds.

Once this challenge is overcome, the cloud part can be planned. The cloud system is the most expensive investment as admitted by the project manager. It is crucial for the cloud system to be confidential and reliable. The cloud system will store the data that has been collected and aggregated to a certain extent by the data collection device. This data base is the foundation for the service offering for the project team.

The data collection is not the biggest challenge though. The problem is not knowing what kind of analytics must be run on the data and how they must be used. The analytics must lead to valuable information that increases efficiency. It must also add value to the customer's process and product.

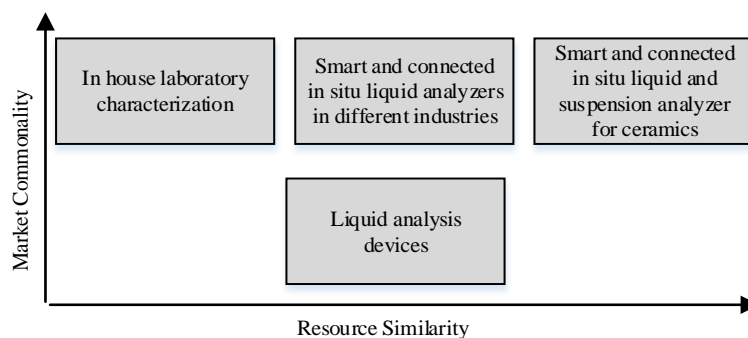
The data becomes of value once it has implications for the business process. Analysis of trends, forecasting and standardized reporting are crucial in the big data analysis service offering. Cases, analytics, solutions, optimization, work flow and simulations communicate the value to the customers. Data visualization, possible scenarios and statisti-

cal analysis can have significant impact on the value added for business processes. (Lavelle et al. 2010) Lavelle et al. (2010) provide a set on techniques to exploit big data:

- Pick the prior challenge
- Propose the value
- Implement the full solution

The customer base's highest priority challenge that is relevant to the technological competence of the firm must be outlined. The data and models that would address it are then pointed out. The biggest challenges are where the opportunities lie. Then, the value is proposed by use of benchmarks, trial runs, simulations and financial analysis. The value proposition model developed in this study can be used as a value proposition tool. Last the complete business vision must be implemented. In the long run, feedback and control of the results determines how the model and business vision is improved.

This innovative solution is the mix of a measurement device for ceramics industrial processes and the service offering based on data analytics. The competitor identification was hence quite complicated. Since the offering is a quite unique mix offered to the ceramics industry. The framework for competitor detection was hence used to find them based on resource similarity and market commonality as Figure 38 shows.



**Figure 38.** *The positioning of the method.*

The rival offerings span from the least technologically advanced ones such as laboratory characterization to fully customized project based solutions. In the middle there is smart and connected analyzers that have taken advantage of the cloud technology but have not made their way into the ceramics industry specifically. The research of laboratory measurement devices clarified what kind of measurement the customers needed.

The research of the more innovative online devices clarified where the innovations were headed. The cross industry competitor analysis can help idea generation. Besides, by viewing how the same function is being offered to different industries, the product can be designed so that it aims for more than one industry.

The competitor analysis is done for different purposes alongside the project. During this phase the focus was on the development of the concept of the offering. The elements of the marketing mix at this point were very flexible. They were constantly measured up against the competition and the customer preferences. The competitor analysis hence was done for the following purposes:

- Finding the most favorable segment
- Determining the value-adding features
- Designing the service concept

The project was initiated by the interest expressed by the partner companies. The project team was then wondering how to define their target segment. The decision to be made in this respect was the decision about the following segmentation bases:

- Geography
- Industry
- Benefits

First, geography wise the project team was contemplating how expansive the market should be. The competitor analysis was essential at this point. Due to the co-development of the product concept that the company was aiming for, it was crucial for the partner companies to be in the same geographic location. However, in the long run, the project team would consider expanding the market. In this case, the geographic location of the competitors finds significance. Due to the relationship nature of the marketing used in this particular case, it is crucial to analyze the market share and strength of the competitors in different countries. Nevertheless, the project team decided to postpone this decision to the time when the concept of the offering is developed.

Second, as far as the target industry is concerned the measurement device was meant to be developed as a generic, low cost device which is compatible with different processes in different industries. The competitor analysis then focused on the industries as well. In the study of how rival offerings were devised for different industries, how they were differentiated was also taken into account. The project team wished to know whether the design of the product could be so that the product follows an undifferentiated strategy and is applicable in different processes for characterization. Their differentiation would then be due to their service offering. In the competitor analysis, the rivals with market commonality were studied.

Last, the benefits required by each segment and client were considered. The long list of industries that can be targeted was an initial understanding of how the market has the potential to be developed. However, the project team preferred to focus on the concept development on a smaller scale. They saw it more appropriate to then expand into different industries. The study of the product specifications gave the project team an ap-

appropriate benchmark though. It clarified what the product needed to be able to be applied in such different industries. The product was hence decided to be easy to clean and maintain and applicable in the process setting. The customization element emphasized by the rival offerings would then be the focus of the service concept.

The service offered by the rivals was also considered. As supposed by the project team the concept of data base analysis and service is not yet a part of value proposition in the liquid characterization offered in the market. The differentiation was then decided to be the unique mix of a robust measurement device and the service offering based on big data analysis.

The specifications of the rival offerings clarified what the benefit sought by the customers. The specifications of the offering that the project team considered as important are as follows:

- Ease of maintenance
- Laboratory and process application
- Customization
- Remote service

The sales of the rival offerings was also a great benchmark for the company. Due to the difficulty of proving the value proposition in service offerings, the techniques used by the other rivals was an eye-opener. The following methods are used by the rivals:

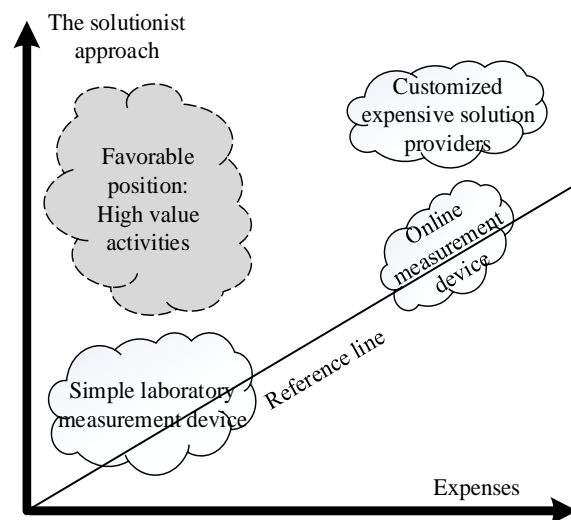
- Trial runs
- Virtual demos
- Short time rent

The presence of the partner customers was a great opportunity for the company. They can help prove the value proposition by being references for the offering. The effect of the offering on their processes can be recorded and used as a proof of concept. Especially since they have offered to be the distribution partners as well as explained above.

Given that the product is being designed as an affordable element of the offering, it does not create value for the company alone. It is crucial for the project team to fully analyze how they plan to create and capture value. Benchmarking the service was a whole other story. Since the same service is not yet established in this industry, the benchmarking must be done globally and cross industry. The service design around smart and connected products must be studied to give the project team an idea of the potential opportunities in smart and connected products.

## 6.2 The service

The project team is aiming to found their own company where the data gathered by the sensor is analyzed. Based on this analysis then they plan to offer service in addition to the measurement device. They are keen on basing their value appropriation on the service rather than the device. The closest service offering in the market is the one that offers a full solution for process control. This customized solution takes a minimum of two years and is very expensive. The idea of a customized service with a generic measurement device that can be implemented easily and quickly is hence validated. Besides there are no firms that base their business on big data analysis, while the world is moving towards that direction. However, the big data phenomena is not yet integrated with the industry in question, as the competitive analysis confirmed. Figure 39 illustrates how the competitors are bundling their offering and at what price.



**Figure 39.** A schematic of the competitive landscape.

As the clusters exhibit, the most common market offerings are the measurement devices. The previous generation of measurement devices were the simple laboratory ones with tedious use processes with little efficiency. The newest generation of these devices are those with online measurement devices. These offerings still have the product at the core. They also have a higher cost because of the complexity of the measurement and data saving device. The newest solutions are the highly customized ones that come at great cost for the client and over a long period of preparation time.

The gap detected here was the solutionist approach with the measurement device at the core with an array of high value added activities such as big data analysis and consulting. The cost of the device would be significantly lower due to the simplification of the measurement device. Besides, moving the data saving and analysis to the clouds decreases the cost for the client.

The service offering requires a certain infrastructure at the company's future headquarters. Software and hardware for storing and analysis in addition to the cloud are needed. This technology requires huge initial investment and a set of skills to build, use and maintain. The human resources are to be skilled in data analysis and data based consulting.

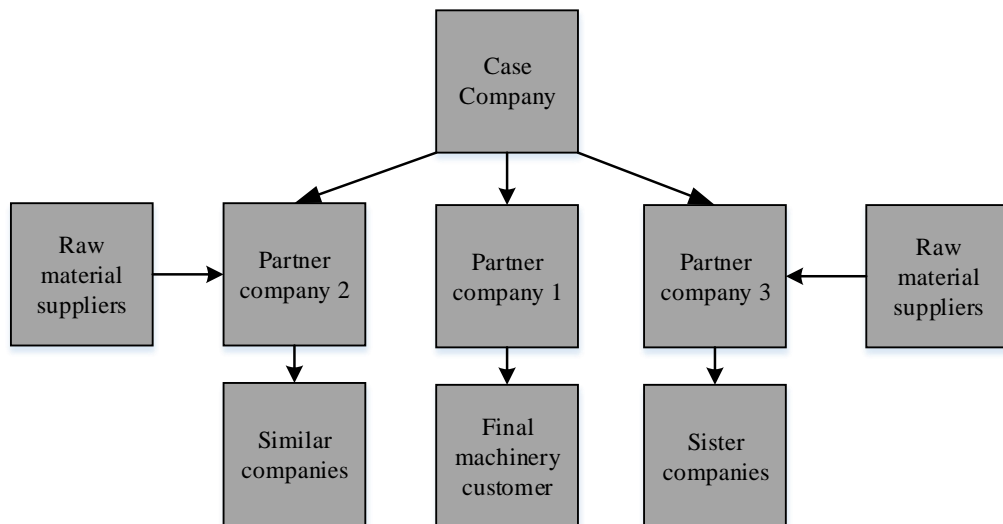
The low price of the measurement device requires the value capture to happen through customizable service offering. Hence it is really important to plan the value capture and appropriation model. In service based on smart and connected devices, there are several ways to use and monetize the data generated. In this business model it is crucial to answer the following questions:

- Where is the data generated?
- What kind of implication does the data have for different network constituents?
- Which network constituent would deem the data valuable?

The advent of the cloud concept is leading to fundamental changes in the way value is created and captured. There are new opportunities for all the industries that are otherwise established. The emergence of sensors and the generation of big data combined with the possibilities offered by cloud is what motivated the project team in the first place. The project team's initial analysis was that a mix of the following elements would be a lucrative and differentiated offering:

- An easy to use yet robust measurement device
- Data-based analysis, control and feedback for increased efficiency

The measurement device was the first step in the development of the offering. The mere fact that the technology was already developed and tested was a start for the measurement device. The features of the device were determined based on the positioning of the current offerings and their specifications. This only goes so far as to the generation of data from measuring the characteristics of the process liquid. However, until this data is put to analysis and results in action, it has no innovation to offer to the market. As mentioned before the smart and connected phenomena can be used for monitoring, control, optimization and autonomy. In order to decide what use the data can have, the constituents of the company must be taken into consideration as shown in Figure 40.



**Figure 40.** *The case company network.*

The demo companies are interested in devising a delivery chain. Partner company number one manufactures mining devices. The idea is to install the measurement device and sell them alongside their own product. This has a bright horizon of hundreds of devices per year. Partner company number two is planning to use this system for their very innovative and clearly confidential project. Once successful, they are planning to sell the device to other similar companies who can put it to use. The third partner company is a daughter company to a more global and significant company. They have also suggested that the offering will be marketed to the sister companies.

The service can be offered to the company, the end customer or the material supplier. The case company can monetize their service offering by offering monitoring, optimization, control and autonomy to each of these three constituents. The following analysis discusses how these functions can generate value for each entity, while considering how the project team can appropriate value.

The data and its analysis can be the basis for a different value proposition to each entity. Since all the partner companies are multinational ones with production all around the globe, the data collection from the different sites can assure consistency. In multinational companies the raw material suppliers might not be similar, which might change the consistency of the quality of the final product. Besides, the measurement device can be installed at different points in the process to pinpoint the origin of the problem in the process.

The first partner company manufactures mining machinery and is planning to install the measurement device on the machinery. This could offer the case company two areas for service. On one hand, based on the data generated, it can monitor the mining machine's performance and give feedback to the partner company for improved after sales service.



On the other hand, it can partner with the raw material suppliers of the end users of the mining machinery.

In addition, they can become partners with the end users themselves. Getting data from such numerous end customers helps the case company benchmark different users against each other. By means of partnership the case company can detect the best practices, which can give them a leverage for consulting the whole customer base for enhanced performance. What is more, the mining machinery might require remote control due to the lack of safety in their environment. This might be feasible through integration of certain features in the measurement device.

As far as the second customer company is concerned, the measurement device assists with the efficiency of the process. In this application, the measurement device tracks the process until it reaches the desired state. The time required for this state to be reached is different. The measurement device ensures that as soon as this state is reached, the process stops to ensure efficiency. The data collected from the process, the suspension and the environment can give the company insights into how the process can be developed. The different trends and process data collected at the case company's site can give them a rich background for analysis and process benchmarking.

If the case company wishes to monetize the service by offering data based services to different entities, there are certain considerations. First, the data access must be fully discussed. The consent of different entities for data use and sharing must be obtained. Confidentiality issues must be resolved before they lead to complexities in the relationship with partners. In order for the data based service to be the point of differentiation in this case, two sides of it must be taken into account:

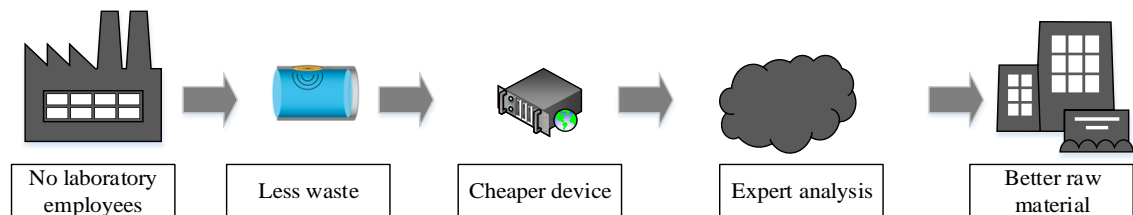
- Data presentation and visualization
- Consulting for improvement

The company must decide, perhaps even together with the client, what data is shared. Since the case company has decided that the data analysis is done in their headquarters, the raw data is not presented to the client except for special cases, in which it must be discussed. The visualization of the analysis then must be clear and useful for different members of the purchase team. It must be helpful for the users of the machines to be able to discuss improvement points with the top managers.

The consulting service based on the data, is a lucrative business for the case company. The company can then gather different data, from different clients. The learning from each client, can be utilized indirectly for improvement of the others. The efficiency of the processes, the raw material and the environment on one client site can inspire the team to provide some insights that would enhance the other client's processes.

### 6.3 Smart and connected value analysis

The double-sided view on value is a well-rounded analysis at this point in the project. The company is in the commercialization stage, which means their means are limited and taking the right approach can make a huge difference. Opting for the right target market can help flourish their business and smooth the path to future development. This offering can improve the client processes immensely. The benefits of this offering once put to use in the client process results in improvements as illustrated in Figure 41.



**Figure 41.** *The offering's impact on the process.*

The easy to use and maintain measurement device does the job done previously by laboratory employees through time, this removes the need for laboratory procedures and work force. As a result of real time monitoring, any fault in the process is known. The process is halted just in time which leads to less waste of time and material. Since the data saving and analysis components of the system is located in the company and the client only owns the simple measurement device, it is a cheaper investment to begin with.

Given that the experts in the company analyze the data, they have a broader view on the matter. They analyze data from different clients and can provide better insights compared to an in house analyst. The analysis can help the client choose better raw material for their processes and all in all results in better final product quality. The perks of this offering are known.

The expenses imposed on the client are a result of the value appropriation model crafted by the company. The device is practically free due to its low development cost. Besides, crossing out the data storage and analysis components results in a cheaper measurement device in general. The client is then charged for data storage on the cloud base owned by the company. They are then offered consulting to the extent that they find helpful and are charged accordingly.

The customer on the other hand must also be valuable over its lifetime for the company to pursue. The sales make up a small part of the benefit the customer offers since the measurement device is not priced so highly. What matters most is how valuable the data analysis and consulting that the company offers to the client based on the measured data is and how much they are willing to pay for them. This is the service fee that the company later charges the client over the lifetime of their cooperation.

There are certain indirect benefits that the client company has. First, the data from the client company can be put to use for consulting offered to a third party, for instance the raw material suppliers. This is of course with regard to the terms of agreement about the data confidentiality. In order for the company to exploit the data they have fully by offering service to other entities, the data does not have to be shared even. They can offer consulting without disclosing the data generated from the processes. If a client's data creates opportunities for the company to offer service to other entities, the client is more valuable to pursue for the firm.

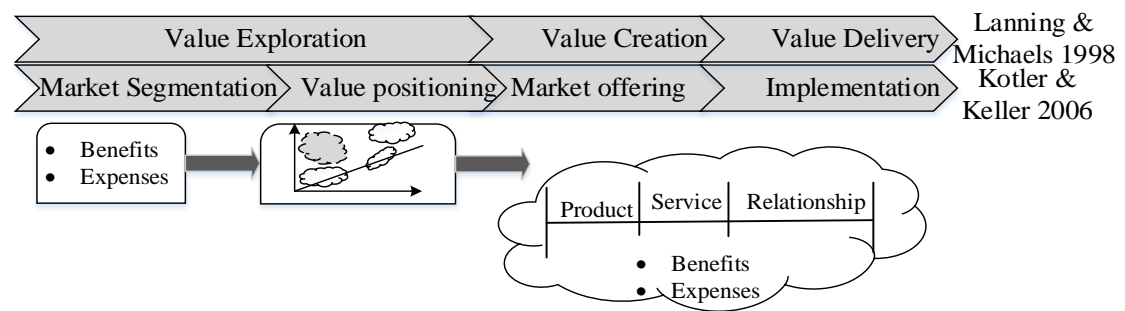
Another indirect benefit that having a strong player as a client has is the references and access to new clients or delivery chain that it offers to the company. The partner clients chosen so far have created a delivery method for the company's products by featuring them on their machines and referring to their sister companies.

The expenses that are inherent in the business for the company are to be considered as well. The firm needs a significant initial investment for the cloud platform and the storage and analysis computers. The development of the measurement device is also an expense in the initial phase. Once the measurement device starts running there is need for people who do the analysis and consulting and hence impose a service cost on the company. There is also an indirect cost, which is the sales and prospects that the company loses by choosing one client. The client rivals might choose not to partner with the company anymore, in which case the client company's lifetime value must compensate for it.

## 7. DISCUSSION

### 7.1 Overview of the problem and framework

Success in markets is oriented around value (Slywotzky 1996; Woodruff 1997; Doyle 2008). A firm must find a unique way to create value and capture it in return. Value, simply put, is the difference between the benefits sought and the expenses imposed (Doyle 2008; Kotler 1972). A value proposition is unique when it fills a gap in the market. Offering superior value then, is a result of understanding the customer's perspective on benefits and costs and developing a mix that has a position, unique among those available (Hooley et al. 2012). Figure 42 illustrates the framework developed in this study for focusing on value in the marketing process.



**Figure 42.** Value-focused marketing process.

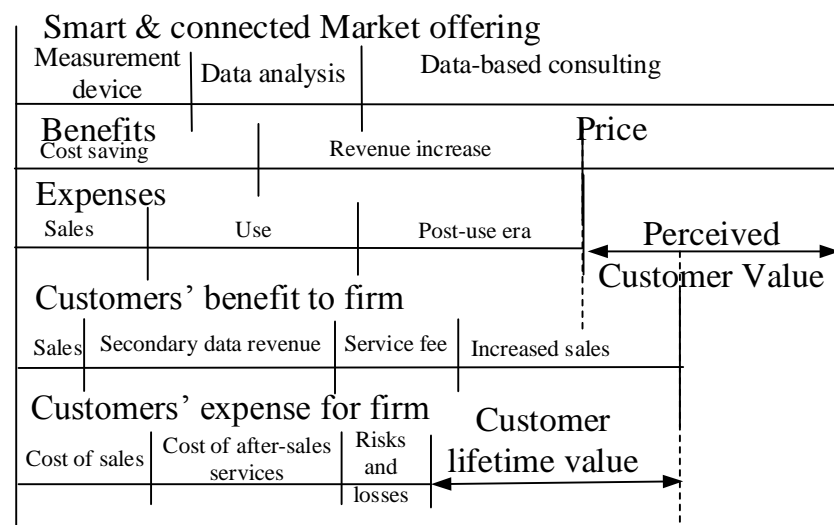
This framework uses the segmentation process to investigate the two segmentation bases that are derived from the definition of value. It later uses these bases to position the different competing offerings on a perceptual map to find the gap in the market. Eventually, this framework assesses benefits and expenses in the three elements of the offering, product: service and relationship. This analysis forms the basis for the more intricate analysis of value.

Services are the new value adding elements in the modern marketing paradigm. Services are different than products in that they are co-created and their value is experienced through use. Services then, can be customized for each customer or segment (Viardot 2004). Hence, marketing a service successfully requires a compelling value proposition that is accepted by a prospective customer (Payne and Frow 2011). It is then created by both parties cooperating in a relationship based context (Woodall 2003; Liu 2006; Han and Sung 2008; Woodall 2003). Value proposition must be compelling enough for the prospective customers to agree to cooperate with the firm in a relation-

ship-based co-creative attempt. The relationship marketing of services requires firms to target their market carefully.

Value must be co-created with partners who can create value for the firm in return. The importance of segmentation and targeting is then realized. The relationship marketing partners for the service must be chosen considering the costs and benefits they have for the firm (Reichheld 1994). If the service concept is to be developed for each partner customer, it is crucial that they have a lucrative lifetime value. For newly founded businesses this is even more important. They have limited means and the choice of partner can enhance their business both in the present and in the future.

The partner's means must create favorable financial returns for company. The relationship must also create value for the firm. During the crafting of the offering, the client insights can have major effects on the success of the final offer. For market development of the product and services, the client network can be a great asset for the company. This is where the customer lifetime value and the value offered to the customer are intertwined. This study developed a framework that brings the two analyses together. This thorough analysis is illustrated in Figure 43.



**Figure 43.** A dual perspective analysis of value.

The centrality of value to development of a market offering highlights the importance of having a holistic view of value. The value framework must give an understanding of the following:

- Which customers have high lifetime value as partners?
- What are the value elements for the prospective partners?
- How to create superior value through a product- service concept?

In the modern paradigm of marketing then, the firm must segment the market. The segmentation is done based on value. The benefits sought by both customers and the firm

form the basis for segmenting the market. Judging by the firm's competences then, one segment is targeted. The target segment is the one that is reachable and profitable for the firm. The firm's resources and competences are then positioned against the rivals, in search for a gap in the market. The gap then defines how the company can create superior value offering for the prospective customers. A holistic value framework can support decision of what customer to target and how to create value for both entities. This thesis reorganizes the marketing concept around the relationship based value co-creation. It builds a holistic value framework that guides the firm in the customer selection and marketing mix development process.

There are great opportunities for value creation in the modern day. With the marketing mix being an intricate combination of products and services, there are different elements that can contribute to a superior value offering. In the product-service mix, there can be different benefits and costs for each element. They can contribute differently to differentiation of the firm's offering. Each of these elements can be positioned against different rivals for the creation of a truly distinctive value proposition.

## **7.2 Case reflection**

This project was initiated in an attempt to get a complete view of value. It was carried out in the commercialization stage of an offering. At that point the core technology was available. The team was seeking to design the whole offering around this groundbreaking technology. This technology is unique due to the possibility of instant online measurement. The rest of the offering to be designed is as follows:

- The device
- The service

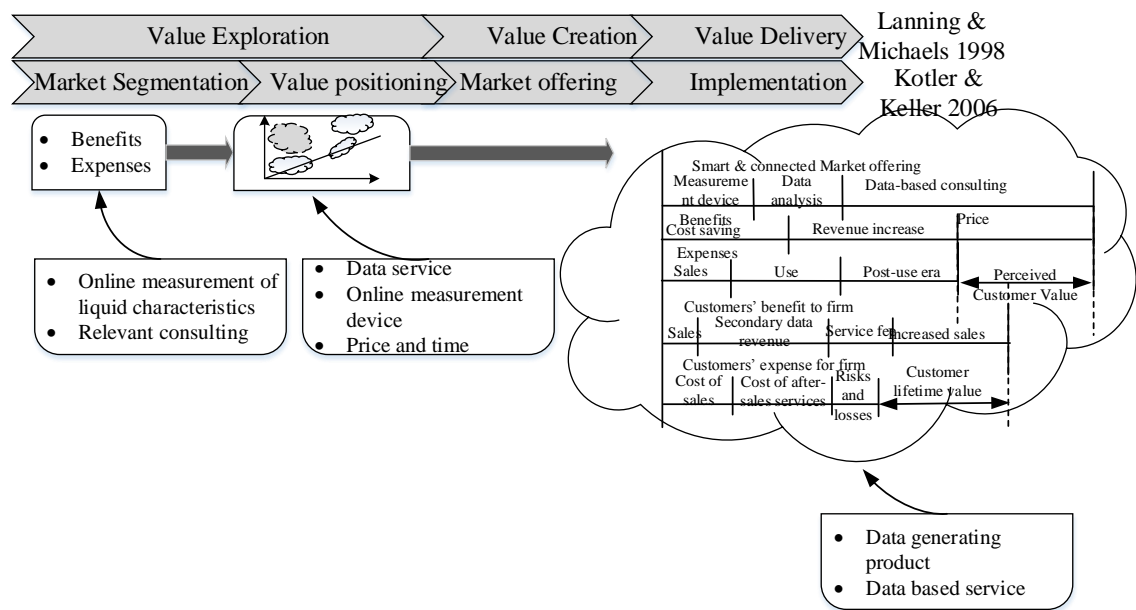
The device in which the technology is embedded must be designed in a way that is simple and cheap, in order to be given for free. It has to be accurate though, since the data it produces is the basis for the revenue generating source, the service. The service must be designed carefully with all of its elements. The data analysis and consulting that is where the team wishes to differentiate themselves is clarified in this stage.

The analysis of value was required to make this analysis based on facts. Throughout this project first the capabilities of the technology were studied. Next, the competing market offerings were researched. The value they offer and the target market they pursue were analyzed. This analysis brought to light the prospective customers that can be targeted in later stages. The offerings in the market clarified the kind of value offering that is expected.

According to the findings of this study, the path to commercialization was designed. The study of the market, namely the customers and the rivals, gave the company a great

insight. They brought to light the gaps in the market where there was also potential for a technology with such capabilities. What is more, the partner companies validated the idea.

The analysis of the competing offerings showed a gap in service. It proved that the infinite possibilities offered by the development of cloud technology are not exploited in this industry yet. The team believes that exploiting the cloud technology gives them a considerable edge in the competition. The integration of cloud system into their product and service offering is an innovation in the market, according to the study. Figure 44 illustrates how the framework developed so far applies in this particular case.

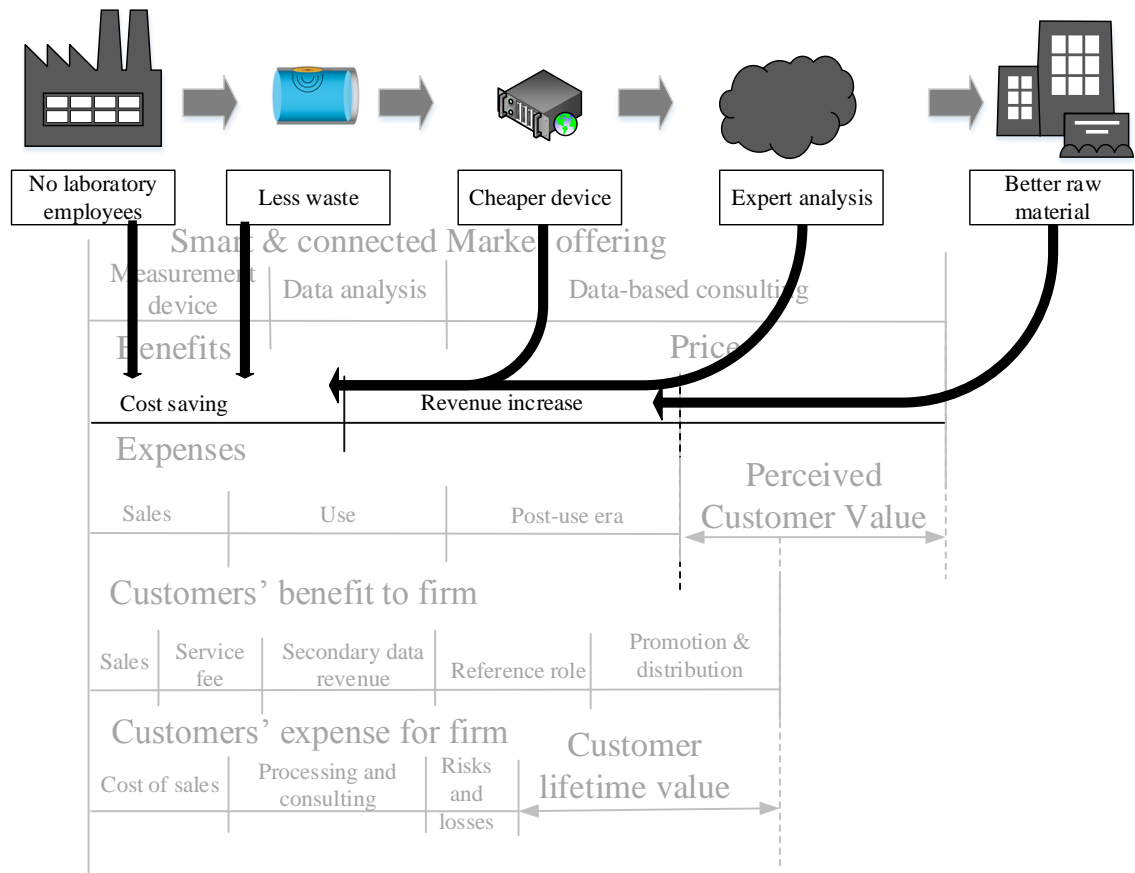


**Figure 44.** The application of the marketing model to this case.

The study of the market clarified how there is need for online measurement in the processes that have liquids and suspensions as their material. Online measurement could result in less downtime and more accurate and on time information that can optimize the process. The market could also benefit from some expert consulting based on the information acquired through online measurement. The team, comprised of material scientists, is capable of analyzing the measured data and provide insights on the efficiency of the process, the suitability of the raw material and improvement potentials.

The team realized that with the innovative measurement system they could decrease the price of the measurement device while significantly increasing the efficiency by online measurement. The case team also knew that the cloud systems and big data analysis is being integrated in all industries with great results. They knew that this particular industry had not taken advantage of this technology yet, and wished to be the pioneer. The analysis of the competition clarified that there was a favorable position for this offering. They aimed to offer a measurement device paired with analysis of the data stored in cloud. In other words, a product-service mix. This product-service mix is then analyzed

from the value point of view according to the thorough value framework introduced in this thesis. This analysis is presented in Figure 45.



**Figure 45.** The dual value analysis of the project.

The case project of this thesis proved the importance of value analysis in the development stage of a service and product solution for the cost-reduction and efficiency increase of an industrial process. The value analysis brings to attention certain matters that assist the company in planning their commercialization and entrance to market. It also determines how their marketing plan unfolds as time goes by.

The value analysis demonstrated how perceived customer value and customer lifetime value are closely interrelated. The analysis of this relationship can help the decisions about the following matters:

- Partner clients
- Future clients
- Offering mix

First, the clients who believe in the technology are chosen as partner clients. What is more, their company must allow information to flow freely in the process of the development. It is preferred also that they are strong players in the market so that later in the marketing process their reputation and network can be used for the development of the



offering. The company could also consider how the partner client's data could be used as a basis for service offering to the other members of their network. Their rivalry with other players in the industry must not pose as a threat to the company's future growth. Their processes must be suitable for the generic design of the measurement device to be developed so that it can be utilized in different industries.

Second, the value analysis can form a background for future client selection. Considering how the company has limited means it is important to target clients with the most lifetime value. The value analysis puts forth a method for comparing clients on a general scale in order to prioritize them.

Last, the value analysis can guide the design of the offering. The clients who have the most customer lifetime value are the ones who dictate the product design. Their insights and processes must be taken into account throughout the design. Besides, their needs and preferences are to be taken into account in the service offering paired with the product.

### **7.3 Analysis of the results**

The framework proved applicable in the new data-based service development. Throughout the project, the analysis of different levels of competition ensured a value proposition with a unique position for customers with high lifetime value. The project only lasted in the first phase of the project. Hence, the product and service development was still ongoing.

The analysis of the value that is being offered in alternative solutions was a great eye-opener for what value must be offered. The competition at different levels and for different elements of the offering, clarified what customers perceived as value. The technology was developed prior to this project. Through this phase of the project, named commercialization, the details surrounding the technology were worked out. Hence, in the beginning the whole value concept was in a blur.

The idea of value the company wanted to offer went through changes during this phase. In the very beginning the focus was on the measurement device to generate some revenue. As the studies went on and the value of service became clear, the revenue source also became the service part of the offering, because it was the differentiation factor.

As the competing offerings were analyzed parallel to working alongside the partner client companies, the value elements were then clarified in more details. A directory of the industries that the competitors were targeting was made. Once presented to the project, the exhaustiveness of the list was pointed out. Nevertheless, this list will be useful in the future steps of the company and their market expansion. In order to make the choice of the next clients easier, the customer lifetime value analysis was suggested.

The reviews of similar rival products and their evolution from laboratory testing devices to full solutions, brought to light the benefits sought for. Through the study of smart and connected products and characteristics exclusive to them, their potential for creating different revenue sources was discovered. The idea of having multiple revenue sources from the same data set was presented to the project team.

In spite of the impact of this study on the direction of the project there were certain limitations. During the running time of this thesis, there were still some improvements being carried out on the measurement device and technology. This did not allow for the framework developed to be put in practice fully. It was merely a tool for idea generation. Perhaps, in practice, value elements change.

Besides, the competitor analysis and working with the partner client companies were being done by two different members of the team. Although through meetings and discussions, the observations were shared, there was a certain barrier between the practice and the theory. As a result this framework might be too preliminary and simplified compared to a real life situation.

## 8. CONCLUSION

The importance of value has been known ever since the emergence of marketing. The marketing process revolves around value exploration, creation and delivery. Understanding how having value in consideration in the segmentation, positioning and designing the market offering brings about better offering that is of more value to the target segment. With a carefully devised business model and value appropriation plan, this results in a better value for the company itself as well. As the offerings are shifting from ones with product focus to ones with elements of service and relationship, business models and marketing processes are changing. With the advent of revolutionary technologies such as the cloud systems, the value appropriation and delivery is going through changes as well. In the past value used to be created by one entity and delivered to the client. Nowadays, value is being created cooperatively by the two entities. This emphasized the need for a thorough view on the value of this cooperation for both.

The objective of this study was to attain a dual perspective of value. In order to attain this goal customer value and customer lifetime value are studied and put together in one single but complete framework. To manage to introduce the concept a theoretical literature review was carried out for the development of a framework. Then the framework was applied to a real life project for the value analysis of an innovative product-service mix in its commercialization stage. This product-service bundle is of smart and connected nature. This thesis discusses how this nature effects the components of value in the analysis. This value analysis guides the whole marketing process towards a more efficient business development.

By visualizing customer value and customer lifetime value in one figure it creates a comparison tool that serves decision making at different stages of the marketing. It helps segment selection by determining which segment has more value to the firm. The resources and endeavors of the firm are then focused on the segment and the client that offers more lifetime value.

What makes this framework even more interesting is that it was developed for an offering with the different elements of product, service and relationship. Being all inclusive it brings to light all the benefits and expenses of the offering that might otherwise be overlooked. In the specific case it is applied to service made possible by the cloud technology which is even more useful in the present era. The specific service capabilities of the cloud systems are analyzed through benefits and expenses lists. The value appropriation and capture model and how it changes for cloud based services were also dis-

cussed. How the data gathered from one entity can be a great resource for the firm to generate separate income.

However, this framework has been developed in one specific case in one industry. The framework is simplified to the benefit and expense elements that are exclusive to this specific case. For different cases there might be more elements that can be exploited as benefits or must be focused on for reduction as expenses. The framework can then be generalized further. A general framework applicable for any product-service mix can be beneficial to the analysis of value in modern marketing processes.

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