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Developing a Customer Value Proposition for OEM Products

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Writing this preface is a real pleasure for me. After the hard year of Industrial Management studies and thesis writing, it is finally done. When looking back at the previous year, I have learned many new things. The IM program was as good as I expected it to be. One year of studies is a compact set with highly motivated lecturers, nicely organized schedule, well working school premises and tools, and most of all, good team spirit with friendly and professional fellow students.

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<p>The objective of this thesis is to develop a customer value proposition (CVP) for the case company's OEM products. It uses one new product intended to be used in an automated laboratory liquid handling system as a case product to which the CVP is built for. With the differentiated CVP compared to the main competitors, the case company should be able to enter into the automation markets and challenge the competition.</p> <p>This thesis is conducted using the qualitative case study research approach for two reasons. For one, the researcher is not part of the case company's marketing organization and thus does not face the problem in his every day work. Secondly, this research is done with one product segment, a case product, in mind. The case product is part of the case company's strategy and so it warrants a systematic research project to improve the CVP of the product segments.</p> <p>The outcome of this thesis is the CVP for the new OEM product. The CVP is positioned in relation to the main competitors and it should contain elements not just for the physical product but also elements to satisfy customer needs in their value chain. The CVP is used for marketing purposes when the new product is ready for launch. In addition to the CVP, a Conceptual Framework on how to build CVP is provided. The case company can use the conceptual framework to build CVPs for other OEM products later on.</p>	
Keywords	value proposition, value chain, competitive landscape, value proposition canvas, strategy canvas

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1 Introduction

The technological evolution over the past 20 years has made almost all business global regardless of the industry. Companies can easily find potential customers from every continent, yet they have problems increasing their market share by taking business from their competitors.

One of the main reasons for this is the lack of differentiation of their product or service offerings. Because of the data transfer and information sharing, customers are more and more aware what kind of products or services are available. People are living in the so called age of information (Bodine, K. 2013). In addition, in B2B markets customers are becoming increasingly sophisticated about purchasing and seeking suppliers that will meet their basic specifications at a competitive price (Anderson et al. 2014: 91).

To be able to differentiate from competitors and focus on the customers, companies should have a clear understanding of what their customer segments are and the value the customers expect in each segment. Once the segments and values are clear, the company can start to build a segmented customer value proposition (CVP) to each product line. This thesis focuses on building a CVP for the case company's original equipment manufacturer (OEM) products. The CVP should include technical aspects of the products and also the marketing and sales elements how to bring and market the new products for its customers.

1.1 Key Concepts

Customer value proposition (CVP) is a potential value that the company promises to deliver to the customer with the product or service. The company as a supplier tries to highlight the benefits the customer will have or how it solves the customer's problem if they choose the supplier product and not the next best alternative, i.e. their competitors' product. The value offering may have technical, economic or social benefits for the customer.

Original equipment manufacturer (OEM) concept has several meanings. One is that the name OEM is used for the company that makes parts or subsystems for other company's

products. It is also used for the company which includes other companies' parts as components to its end product. Either way, companies usually work as partners during the whole product lifecycle and the end product is labeled with the brand of the end product manufacture company.

Pipettes are tools used in different laboratories to transfer a small amount of liquid from one place to another. There are several designs of pipettes for various purposes with different levels of pipetting performance i.e. accuracy and precision. Normal pipettes are handheld mechanic or electronic pipettes with adjustable volumes from 0.1ul up to 10000ul. Pipettes can be used also in liquid handling automation devices where the control is taken care by a computer.

1.2 Case Company Background

Case company is a rather new company but its roots can be traced back to the 1970s when the first precision pipettes with adjustable volumes were invented. In 1988, the case company was formed and a couple of years later the world's first high precision electronic pipette was introduced and it has been on the market ever since. New generation pipettes (both mechanic and electronic) expanded the case company's product portfolio over the years along with the company growth. The case company has headquarters in Helsinki, Finland and manufacturing plants in Kajaani, Finland and Suzhou, China.

As the case company grew and became successful in liquid handling, it opened subsidiaries all over the world in order to be closer to the customer. The case company also entered into OEM cooperation with some of the world's biggest laboratory instrument companies from Europe and United States. The case company became the leader of mechanical and electronic pipettes when it comes to market shares. Most of their competitors are located in Central Europe and North America.

In 2011, the case company was acquired by a 145-year-old German company focusing on laboratory instruments and bioprocess technology and solutions. A new subsidiary was established and it is now part of the German case corporate's division. The division is responsible for designing and manufacturing typical laboratory instruments such as lab balances, pipettes and laboratory water purification systems for research and quality assurance laboratories for the pharmaceutical, chemical and food industries. The case

corporate revenue in 2014 was close to 900 million euros and it has approximately 6500 employees around the world.

1.3 Business Challenge, Objective and Outcome

Along with the corporate long-term strategy, the case company's vision for revenue increase in 2020 is 100% comparing with 2014 figures. In addition to the case company's core products and business, its OEM business has a vital role in achieving that vision. OEM products are mainly used as a component of larger, more complex measurement or diagnostic systems. Currently, OEM products are developed and sold focusing more or less only on the physical product not taking into consideration customers' overall needs in terms of the total offering including service elements. Also, the process of gathering customer needs as well as offering suitable value proposition is missing. The case company has just started a project with the aim of bringing a new OEM product to the market. The product is intended to be used as a dispensing head component in the customers' automated solutions across industry segments. In this project the case company both wants and needs to broaden its focus beyond the physical product toward a total offering thinking.

The objective of this thesis is **to build a CVP for the new OEM product reaching beyond the boundaries of just the physical product.**

With the differentiated CVP compared to the main competitors, the case company should be able to enter into the automation markets and challenge the competition. In order to reach this objective, this thesis is constructed in the following manner. First, the current state of the case company's OEM business and products will be analyzed by interviewing the company's OEM key stakeholders (R&D, marketing and sales) and reading the company's internal documents. Second, customer needs and competitor products with their CVP's will be analyzed by reading public documents and participating in industry fairs. Third, based on best practices from the literature and workshop with the key stakeholders, a proposal for the new CVP will be created. Fourth, the new CVP will be presented to the case company's top management and feedback will be collected. According to the feedback, changes to the initial proposal will be made.

The outcome of this thesis is **a CVP for the new automation OEM product which will be used for marketing when the product is ready for launch.**

1.4 Thesis Restrictions and Structure

Although all the case company's OEM products and customers have the same kind of needs and problems, this thesis focuses on one practical OEM product under development and the outcome will be the CVP for that product line only. However, later this CVP can be used with other OEM products as well with the modifications according to the product and customer segment. Although the liquid handling consumables, disposable tips, are very important for the customers and the case company, they are excluded from the thesis and the CVP.

The structure of this thesis consists of seven sections. Section two overviews the research design and the data collection methods. Section three covers the case company's Current State Analysis with the current OEM business and products, including a market and competition analysis. Section four covers the theoretical background and best practices on how to build a good customer value proposition for marketing purposes. Section five combines theory and practice and creates a proposal for the new customer value proposal. Section six validates the proposal and makes modifications to the proposal according to feedback. Section 7 summarizes the thesis and gives recommendations for further actions to develop the OEM business.

2 Research Design and Methods

This section overviews the research design and data collection methods used in this thesis. It gives an overview of how this thesis was constructed, what the steps to reach the objective were and what kind of data and from where data was collected and analyzed.

2.1 Research Approach

Qualitative research is a research method where the focus is to get a deep understanding of a specific and single phenomenon with the limited number of participants (Thomas, E. and Magilvy, J. K. 2011). It is usually used together with the quantitative research method. On the contrast to the qualitative method, quantitative method is for collecting a variety of information, numerical or computational, from the broad number of participants. In simplicity, the main difference between the quantitative and qualitative methods is the level and focus of research or like Thomas and Magilvy (2011) quoted “The fox knows many things, but the hedgehog knows one big thing.”

Two types of research approaches are prevalent in management research. One is an action research and another is a case study. In the action research, the research is done systematically and iteratively and it is intended for finding solutions to practical problems. Usually, the research is carried out by the person facing a problem or considering adopting a practice in everyday work (French 2009: 188).

According to Yin (2003), the case study approach should be considered when the four key statements are true. First, the focus of the study is to answer “how” and “why” questions. Second, you cannot manipulate the behavior of those involved in the study. Third, you want to cover contextual conditions because you believe they are relevant to the phenomenon under study. And fourth, the boundaries are not clear between the phenomenon and context. In the qualitative case study, data collection is supported from multiple sources like interviews, workshops and documents or like Baxter and Jack (2008: 544) noted: “a qualitative case study is an approach to research that facilitates exploration of a phenomenon within its context using a variety of data sources.”

This thesis is conducted using the qualitative case study research approach for two reasons. For one, the researcher is not part of the case company’s marketing organization

and thus does not face the problem in his every day work. For another, this research is done for one product segment, a case project, in mind. The case project is part of the case company's strategy and so it warrants a systematic research project to improve the CVP of the product segments.

2.2 Research Design

Like the case study research process indicates, this thesis research started with identifying current business challenges the case company has and selecting one challenge to focus on. There are many challenges in different areas in the organization and business environment but the one with the new automation OEM concept gives a reason to study further. In the past, OEM products have suffered from the lack of proper productization and CVP. Also, the liquid handling automation and its components have been selected as part of the case company long term strategy. After all, the timing of the new product development and creation of CVP for that product couldn't be better. New product development started at the end of the year 2015 and is scheduled to be finished by the end of the year 2016.

After deciding the business problem to focus on and creating the objective and outcome of the thesis, the research design was created. Overview of the research design is illustrated in Figure 1.

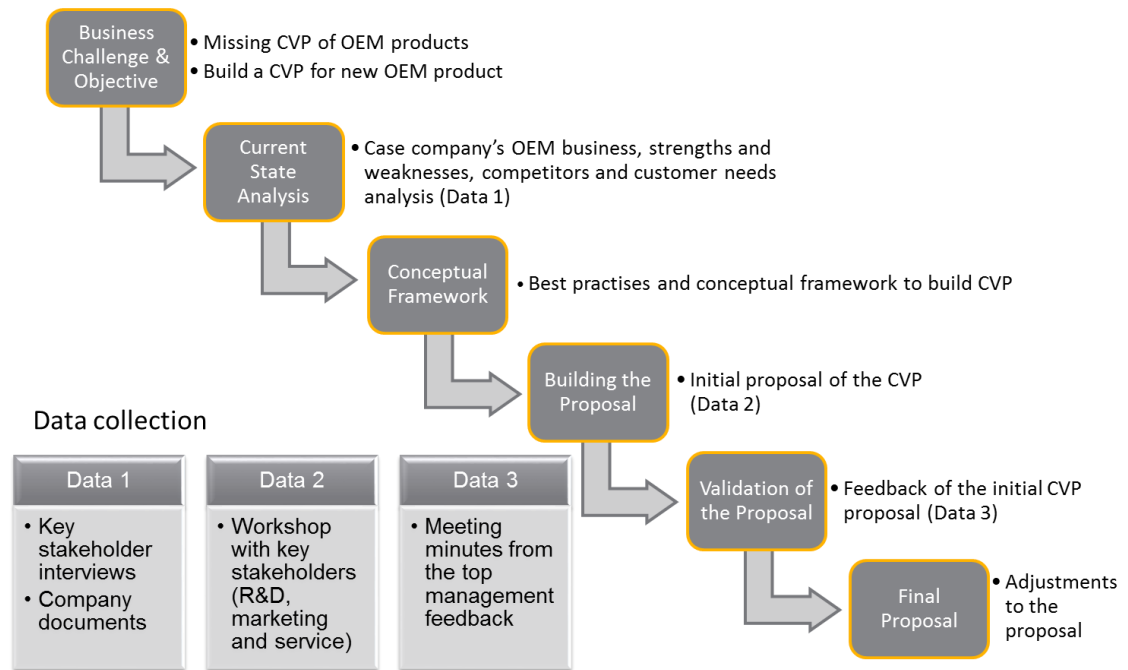


Figure 1. Research Design

As seen in Figure 1, the research design used the following steps. The current state of the case company and the business are analyzed. In the Current State Analysis (CSA), there were three main topics which needed attention. First is the case company's current OEM business and its products. In this analysis, thesis tried to find out how and who runs the OEM business inside the case company, what challenges it has in general and are those challenges related to products or processes or both. That analysis was done by interviewing the company's OEM key stakeholders like R&D, marketing and sales department employees and reading company internal documents. Second is the competitors CVP analysis. In this analysis, thesis tried to identify few main competitors and what are their customer value proposition in the OEM automation business. Data sources for competitor analysis are mainly public product and company documents from competitors and information gathered from international fairs. Third is the customer needs analysis. In this analysis, potential customers and their processes were analyzed. Customer value chain was build and analyzed each phase of the value chain. Data sources for customer analysis is mainly the case company's internal market and customer research documents.

According to the CSA and especially the weaknesses found from the case company, one weakness was selected to focus on, missing CVP of OEM products. A literature review

of the best practices and existing knowledge on CVP was done. A Conceptual Framework to build the CVP was created based on best practices.

After conducting the CSA as well as the literature review and building the Conceptual Framework, an initial CVP proposal was formed. This was done in a workshop together with the key stakeholders. In the workshop, stakeholders tried to come up with new ideas what are the values to be promised to the customers and how to do it. Ideas were collected and then analyzed further against the conceptual framework. Best ideas formed the initial CVP proposal.

Since the new OEM product is ready to be launched at the end of the year, the validation of the initial CVP proposal could not be done using real customers. Instead, the validation was done by the case company's top management. Initial CVP proposal was presented to the management and they gave feedback what is good and what needs to be changed. That feedback was used to modify the initial proposal and to create a final version of the CVP. The final version is then used to market the product when the product is launched.

2.3 Data Collection and Analysis

As seen in the Figure 1, there are three phases where data was collected and analyzed. Data 1 in current state analysis consists of key stakeholder interviews and company documents. Interviews were one-to-one interviews with predetermined questions (Appendix 1) and send beforehand to the interviewees. Questions were divided into three main categories: a history of the OEM business, typical customer needs and fears and competitors' products. Interviewees were from the different areas of the organization but they all are or have been involved in OEM business. All interviews were conducted in Finnish language using audio recording and notes. Recordings and notes were then translated into field notes (Appendix 2) in English language. Details of the interviews and interviewees are in Table 1.

Table 1. Data 1 interviews

<i>Interviewee</i>	<i>Position in the company</i>	<i>Date</i>	<i>Duration</i>	<i>Recorded</i>
1	Mechanic Engineer	2.2.2016	40 min	Audio + notes
2	Design Manager	2.2.2016	60 min	Audio + notes
3	R&D Director	3.2.2016	55 min	Audio + notes
4	Product Manager, OEM	4.2.2016	55 min	Audio + notes
5	Service Manager	8.2.2016	35 min	Audio + notes
6	Project Leader, OEM	9.2.2016	45 min	Audio + notes

As seen in Table 1, there were six interviewees. One director, three managers, one project leader and one design engineer. Only one product manager was from the marketing department and other interviewees were from the R&D. That is due to the fact that OEMs are very technical projects. The other reason is that persons involved in OEM projects from the other departments are not working for the case company anymore.

Data 1 documents about OEM markets, competitors and customers were collected from company's internal storage and/or directly from the document author. Some documents are research studies implemented by external company or researcher. Details of the documents used in this thesis are listed in Table 2.

Table 2. Data 1 documents

<i>Document</i>	<i>Title</i>	<i>Type</i>	<i>Accessed</i>	<i>Analysis</i>
1	xxxxxxxxx	Market re- search study	5.2.2016	In section 3
2	xxxxxxxxx	Presentation	10.2.2016	In section 3
3	xxxxxxxxx	Presentation	10.2.2016	In section 3
4	Competitors' products	Competitors' web pages, data sheets, brochures	5.2.2016	In section 3

From Table 2 can be seen the internal and external documents used in this thesis. There were three internal documents, one market research study, and two presentations. External documents (web pages, datasheets, and brochures) consists mainly of competitors' products and their CVPs.

Data 2 in building CVP proposal consist of workshop ideas. The workshop was done with the key stakeholders by brainstorming in groups to come up with totally new ideas about what kind of features or new extended products can be added to the new OEM product in order to differentiate the from the competitors. Workshop participants and their positions in the organization are listed in Table 3. The workshop was kept at 31 of March 2016.

Table 3. Data 2 workshop participants

<i>Participant</i>	<i>Position in the company</i>
1	Design Manager, Mechanic Pipettes
2	Mechanic Engineer, Pipettes
3	Software Engineer
4	Service Manager
5	Chief Designer
6	Design Manager, Product Engineering
7	Test Team Leader
8	Software Team Leader
9	Marketing Assistance, MarComs
10	Electronic Engineer
11	Product Manager, OEM Solutions
12	Mechanic Engineer, Robotics

As seen in Table 3, there were totally 12 participants in the workshop, 10 from the R&D and two from the marketing. Participants were divided into three groups, which all were

assigned with the same task - to think from two to five new features or extended products/services and create the chain (product/feature - a benefit to the customer - actual value to the customer) how each product/feature will create value to the customers. After the workshop, each group presented their ideas to other groups and all ideas were collected. Afterward, ideas were analyzed against conceptual framework and best ideas forms a new CVP proposal. Workshop group presentations can be found from appendix 3.

Data 3 from the validation of the initial CVP proposal consists of top management feedback. Feedback session was held in the form of normal design review group (DRG) meeting with company's top management. Initial CVP proposal was presented and feedback was written down in meeting minutes. After validation meeting, feedback was analyzed and used to build final CVP. Meeting minutes with the feedback can be found from appendix 4. Validation feedback meeting participants and their roles are listed in Table 4. Validation meeting was kept at 13 of April 2016.

Table 4. Data 3 feedback participants

<i>Participant</i>	<i>Position in the company</i>
1	Chief Executive Officer
2	Director of R&D
3	Director of Operations
4	Director of Quality
5	Director of MarComs

As seen in Table 4, there were five participants in the validation meeting. CEO, directors of R&D, Operations, Quality, and Marketing Communications. Unfortunately, directors of marketing and sales were not able to participate, but they commented the proposal offline. Meeting started by presenting the research design of the thesis and the results of the current state analysis and conceptual framework. After the CSA and CF, the initial CVP proposal was presented. Participants discussed and commented the proposal in order to adjust the CVP for the final proposal.

2.4 Validity and Reliability Plan

Validity or credibility of the study relates to the outcome of the research. The outcome is valid if it responds to the question originally asked (Quinton, S., and Smallbone, T. 2006: 127). The validity of the outcome reflects also to the ability of the researcher and the accuracy of the data collected during the research (Golafshani, N. 2003: 600).

Reliability is all about quality of the results. High-quality results are got when multiple data sources are used in a different point of time. Also, in the reliable study, the same results should be achieved even using different research methods or even different researcher conducts the research (Golafshani, N. 2003).

To ensure validity and the reliability of the thesis, multiple data sources were used. For example in current state analysis, relevant interviewees have selected in a manner that at least two interviewees have the same kind of background what comes to the existing business challenge. All the internal company documentation should support the outcome of the interviews. In addition, in building the new CVP, key stakeholders in a workshop must have a real connection to the OEM business in order to get the valid results. The validity and reliability of this thesis are evaluated in section 7.3.

The next section analyses the case company's current state in OEM business as well as the customer needs and competitor offerings.

3 Current State Analysis

This section discusses the history and the current state of the case company's OEM business and products. It analyses the CVPs of competitors' products as well as the customer needs now and in the future. It also takes a snapshot of the future of the laboratory automation market, focusing on what the key drivers, restraints, and possibilities in the market are in general. This section utilizes Data 1 collected from the interviews and the case company's internal and external documents.

3.1 OEM Business and Products

There are three main co-players in the laboratory instruments OEM business. The first is the component manufacturer which designs the OEM component for some bigger instrument used in a special application. The second is the instrument manufacturer which integrates the OEM component into the instrument. The third is the end customer, the user of the instrument in a laboratory. The case company's role has been the first one, an OEM component manufacturer. Its customers have been larger, mostly global instrument manufacturer companies. The end customers have a variety of different applications where special instruments are needed. Mostly in clinical diagnostics, but also in pharmacy and food industries.

3.1.1 History

The case company has had three different eras so far in their OEM business. OEM business eras are illustrated in Figure 2.

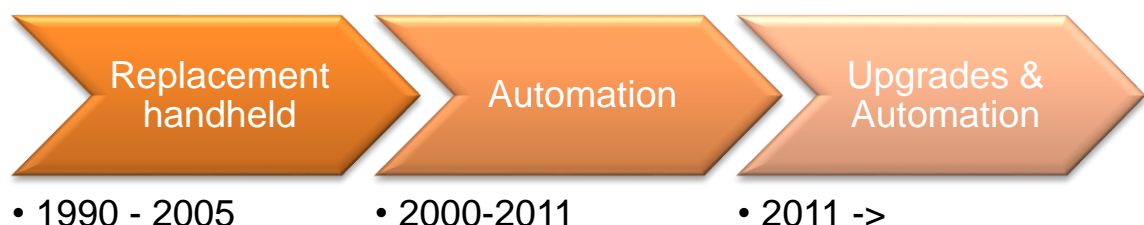


Figure 2. OEM business eras

As seen in Figure 2 , the case company started the OEM business in early 90's, right after they launched the world first electronic handheld pipette. The first OEM products were electronic handheld pipettes which were designed to replace existing mechanical pipettes used in a special application. Mechanical pipettes were mostly specially designed for the application. One application could use two or more mechanical pipettes with fixed volumes in order to avoid user related errors in the process. Those pipettes could be easily replaced with one electronic pipette with preprogrammed workflows and volumes. OEM pipettes were based on the case company's normal electronic pipettes with mainly software and layout changes according to the applications and customers. Every OEM pipettes and projects were different and they were done with the close co-operation with the customers. There were no off-the-shelf OEM products for any customers.

There were a few reasons why customers wanted to do co-operation with the case company. First, the case company had the first, attractive enough and user-friendly, electronic pipette that customers wanted to customize for their application. Second, the electronic pipettes itself had much better accuracy and precision than mechanic ones. That gives a much reliable result which is very important especially for clinical diagnostics applications. Third, using one electronic pipette could be less expensive than special mechanical pipettes. Fourth, the agility of the case company. Due to the organization structure, it was easy to allocate resources and start new projects and get the prototypes for the customers.

We didn't create new business in pipette wise but we created new business in electronic and OEM pipettes field. We had good timing, madness, and agility. In many cases, the company's purchase managers were our customers.

Data 1: Interviewee 3

Our agility is the main reason why the customer chose us for OEM partner. We can make prototype very fast comparing to our competitors. Price would be the other reason.

Data 1: Interviewee 2

The case company also saw an opportunity to take a lead in electronic pipettes markets and with OEMs to increase the pipettes volumes and brand value. The case company went through all their old and competitors customers one by one and made the replacement. The customer value proposition on those OEM products was mainly the products

technical performance and in some cases, the price benefit compared to old systems. Figure 3 shows one application with the case company's handheld OEM pipette as a component.



Figure 3. Blood hemostasis analyzer with OEM pipette (source: www.rottem.de)

In Figure 3, there is an application used for blood hemostasis analyzer in surgeries. Case company's OEM handheld pipette is part of the application.

When the handheld OEM pipettes markets saturated and no new customers were found, the case company started to focus more on automation components. They had already made one computer controlled dispensing head for the automated liquid handling process for one customer. That project was canceled due to the customers' management change and the case company got all the rights to use that component. It needed an upgrade to a new technology and mechanical layout. The case company intentionally made the product as the first off-the-shelf OEM component. The component was very small and rather cheap comparing to the competitors offerings. Some customers integrated the component into their application but it never got a large scale of market attention. One reason is that the component was never finalized i.e. it was not productised properly. Another reason is that even the component technical performance (accuracy and precision) was good, it wasn't suitable for a special automation application where, for example, very steady dispensing at very low speed was needed. That kind of requirements does not exist in normal, handheld pipetting and thus was a problem for the case

company. Figure 4 shows the OEM dispensing head for automated liquid handling system.



Figure 4. Dispensing head for automated liquid handling system

As seen in Figure 4, the dispensing head for automate does not include any user interface to control the pipetting. There is only an electrical connection to the computer which controls the dispensing head.

Later the case company decided to make its own small footprint automated liquid handling system and sell it with the case company own brand. The OEM dispensing head was integrated into automate which were designed for general liquid handling purposes. After a while, it turned out that it wasn't so easy to sell such a small device as an automation instrument. The biggest competitors for the small footprint system was the normal handheld electronic multichannel pipette. If the end user process does not require the same routine in every day, it is faster to do with multichannel pipette occasionally. Fortunately, there was one customer who wanted more automation to their instruments and so the case company was able to sell the whole automate with modifications as an OEM component. Figure 5 shows the automated liquid handling system as the OEM component in the customer's application.



Figure 5. Automated liquid handling system as an OEM component (www.proteinsimple.com)

As seen in Figure 5, the whole automated liquid handling system (top box) can be part of an application as an OEM component.

Since 2011, the case company has focused on its current OEM partners product upgrades with the new handheld electronic pipettes and modified dispensing head. New customers have been difficult to get. That is mainly due to the organization changes after the case company acquisition and therefore a low priority for OEM business.

Due to the history of the case company's OEM business, the weaknesses relates to the missing customer total value thinking, the internal processes how the OEM projects were run through and the knowledge of the end customer application. In every current OEM products, there are not add-on products (starter kits, good documentation etc.) available which could add the total customer value during the product lifetime. All the products are sold using mainly technical and economical features (size, performance, and price) as CVP and not consider the overall value to the customer and to the case company as well. A proper process including the whole customer journey touchpoints from pre-purchase to the post-purchase and renew co-operation should be considered.

I would make the totally own process for OEM projects. Not necessary any fundamental difference to current R&D process but the example we haven't thought how to create customer requirements differently in OEM cases and how the information sharing is done internally and externally.

Data 1: Interviewee 2

We should concentrate more on the extended product (ecosystems) thinking. We don't have demo kits, application specific manuals, validity materials (CE, UL, and FDA etc.), partner programs and maintenance documentation. This is because of our laziness and it has not been our focus before. Now it should be.

Data 1: Interviewee 4

OEM should be in higher priority in strategy point of view. It used to be in when we were xxx and it has changed many times over the years until recently. Now it has decided that we do OEMs but the priority is not at the level it should.

Data 1: Interviewee 6

Although the weaknesses the case company has, it still has almost all of its original OEM partners and in 2015, the OEM business was over 10% of the case company's total revenue. To make better processes and focus more on the customer total value, revenue would be much higher.

3.1.2 Organization

According to the OEM business eras, the case company's OEM organization and processes have changed as well. Figure 6 illustrates the main key stakeholders of the OEM business during 1990-2015.



Figure 6. Key stakeholders of the OEM business during 1990 - 2015

As seen in Figure 6, between years 1990 and 2005 the OEM business was driven by the R&D organization. The R&D Director projected all cases. As OEM projects were and still are very technical, he easily allocated resources from the R&D to do the projects. He also was the contact person to the customers. Subsidiaries did a good groundwork for customer profiling and scouting and basically, R&D did the rest.

After the year 2005, marketing has been involved more in the business. There was a dedicated Product Manager (PM) for OEM products who took the customer contact responsibilities from the R&D as well as products life cycle management. Unfortunately, PM has changed many times since then which has caused confusion both internally and externally.

Since the case company acquisition in the year 2011, the corporate sales department and agents were allocated to OEM business as well. Their responsibility is the new customer acquisition. The problem is that it will take time for new organization and people to learn the case company's basic products and business, handheld pipettes, not to mention the very application-specific OEM components. That is why the OEM business is in trouble.

In the year 2011 with R&D and marketing, we had also sales for OEMs. Sales were for the new customer acquisition but they have enough troubles to sell our normal products. Also, R&D commitment wasn't so big anymore. And if this is not fixed soon, we are in trouble. We can kiss goodbye for OEM business.

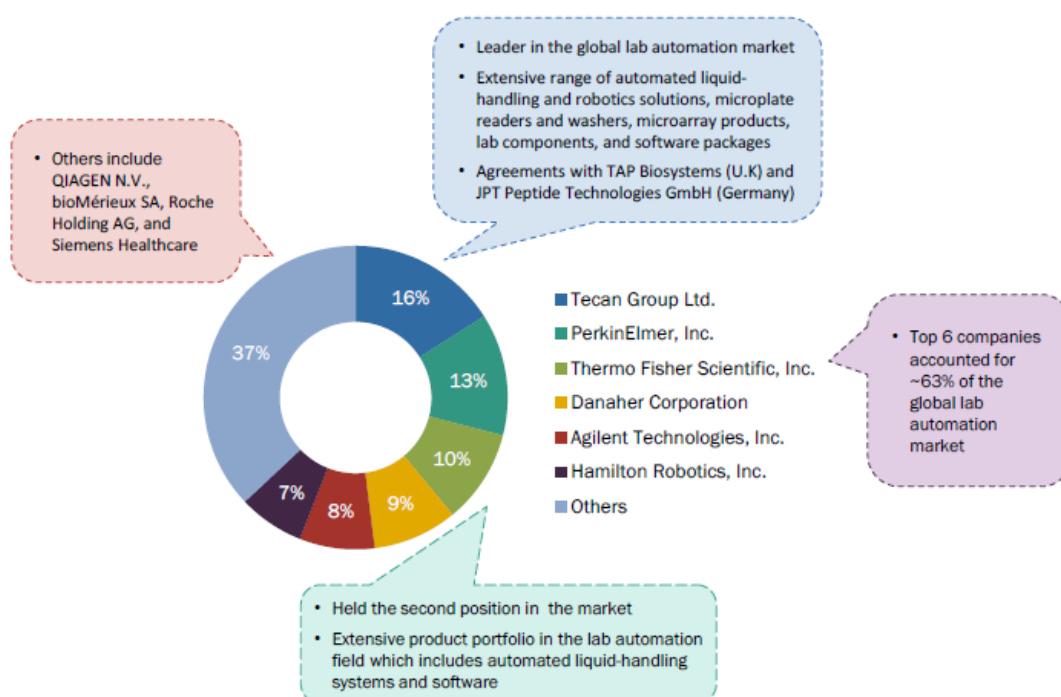
Data 1: Interviewee 3

As a summary, the case company's strengths are the expertise of the liquid handling and very agile organization to modify their products according to the customer needs. On the other hand, weaknesses are the missing OEM product development process and customer total value thinking i.e. no value proposition for the whole customer value chain.

3.2 Competitors Analysis

3.2.1 Competitive Landscape

The laboratory automation market is very competitive by the large multinational companies. Most of the leading companies are manufacturing large laboratory automation systems like automated liquid handling and robotics solutions. Figure 7 shows the market shares by the key players in 2014.



Source: Annual Reports, SEC Filings, Press Releases, Investor Presentations, Expert Interviews, and MarketsandMarkets Analysis

Figure 7. Market shares by the key players in 2014 (source: Markets & Markets 2015)

As seen in Figure 7, top 6 companies' accounts around 63% of the total lab automation markets. The rest 37% is divided into smaller companies or companies traditionally focusing on other technology markets.

According to the market research study made by the Markets and Markets (Markets and Markets 2015: 140), the key strategy to maintain or grow markets shares adopted by the top companies is the new product launches. That is because of the technology-driven industry where product portfolios should meet the needs of the customers. The second strategy is via agreements, partnerships, and collaborations. Some companies focus on

their core business and skills and outsource other technology by partner programs. The third strategy to growth is by acquisitions and off-shoring to expand their global presence.

Despite the fact that the automation market is heavily competitive, only a few companies manufacture and market their technology as OEM components. However, there are small start-up companies as new entrants coming into the market all the time. Also new or other technology-based products can be seen as substitutes for “normal” technology and thus be in a competition.

3.2.2 Competitors' Products

As there are only a few direct competitors to the case company's new OEM product, competitor analyses concentrate to the two biggest and well-known companies and the customer value proposition they offer with their key products. Competitors' products use the same air displacement pipetting (ADP) technology as the case company's new OEM product. ADP technology is used also in handheld pipettes because of the high-performance requirements.

Competitor X

Competitor X is a Swiss company founded in 1980 and focusing on automated laboratory instruments and solutions (Competitor X 2015). It also has a wide partnering program for OEM manufacturers with off-the-shelf components, customized development, contract manufacturing, services and support and co-marketing activities. Company's annual revenue in 2014 was \$ 417 Million and it has over 1200 employees. It has subsidiaries in France, U.S., Japan and Singapore and it is focusing its growth strategy on new product launches (Markets and Markets 2015: 169-171).

*Competitor X makes almost everything. Big systems with the huge portfolio. Not for start-ups because of rigid organization.
Data 1: Interviewee 6*

The main OEM liquid handling component is called Product X. It is a dispensing head for automated liquid handling system instrument manufactured by other company. Product X is available in one model (volume range 1 - 1000ul) but with a couple of different con-

figurations, base, and full configuration. The full configuration differs from the base configuration with integrated liquid level detection sensor and tip ejection mechanism. Figure 8 shows the Product X base configuration module.



Figure 8. Product X base configuration

As seen in Figure 8, Product X is a compact module at least what comes to its width. Narrow width makes it possible to mount multiple modules right next to each other and have a standard width of a maximum of 8 channels multichannel liquid handler.

With Product X, Competitor X offers also other add-on products like integration kits, evaluation softwares, and extension hardwares. Main reason for that is to speed up the customer integration process and thus shortens the end products time-to-market.

Product X uses a few key messages in its CVP. Behind the key messages are the component's technical features and the messages are translated into the customer benefits. Table 5 lists the key messages, technical features behind the messages and what are the benefits (values) for the customers.

Table 5. Competitor X Product X CVP

Messages	Features	Benefits
The Product X is a fully programmable pneumatic pipetting module	<ul style="list-style-type: none"> Adjustable aspiration and dispensing volumes Slender design 	<ul style="list-style-type: none"> Modular for different purposes Small footprint in automate
The Product X offers excellent pipetting performance	<ul style="list-style-type: none"> Using range of disposable tip sizes Factory calibrated Tip sensor Liquid level detection 	<ul style="list-style-type: none"> High accuracy and precision -> better results Sample integrity and process security
The maintenance-free design of the Product X represents a cost-effective, compact automated pipetting solution	<ul style="list-style-type: none"> Onboard liquid level detection and diagnostics to monitor correct operation Use of high-quality long-life components Probe assembly can be removed for washing, autoclaving or replacement 	<ul style="list-style-type: none"> Fewer shortages on operation Reliable results, no contamination
One way to simplify validation of your instruments is to use OEM components	<ul style="list-style-type: none"> Extensively tested and approved (UL, EMC, EMI, ESD) Constructed to meet ISO13485 and ISO9001 requirements 	<ul style="list-style-type: none"> Easier end product certification -> shortens time to market Reliable functionality

As seen in Table 5, Product X CVP consists of four key messages and the benefit the customer will have if uses Product X component. The CVP messages are:

“The Product X is a fully programmable pneumatic pipetting module. The Product X offers excellent pipetting performance. The maintenance-free design of the Product X represents a cost-effective, compact automated pipetting solution. One way to simplify validation of your instruments is to use OEM components.”

The main reason for the customer using Product X as an OEM component is the Competitor X well-known brand which represents high quality. Competitor X also offers part-

nering programs which include very visible marketing actions like “Empowered Competitor X.” slogans in instruments labeling. Product X component itself represents high-quality dispensing head in small size and with affordable price. More detail analysis about the Product X is described in section 5.

Competitor Y

Competitor Y is a private U.S. company founded in 1947 and is engaged in developing, manufacturing, and commercializing liquid handling workstations and robotic arms for lab automation (Markets and Markets 2015: 154). The company has a headquarters in Reno, Nevada and subsidiary offices around the world (Competitor Y 2015). The key strategy to mark its presence in the lab automation market is by the new product launches (Markets and Markets 2015: 155).

The main OEM component for liquid handling is called Product Y. Product Y is available in one model (volume range of 1-1000ul) but with three alternative layout configurations. Figure 9 shows the Product Y module.



Figure 9. Product Y module

As seen in Figure 9, Product Y difference to its competitors is the Z-axis movement integrated into the module. That reduces one axis movement design and components from the instrument manufacturer and thus makes it easier. The Z-axis movement can be used also to compensate the decline of the liquid level in order to avoid loss of liquid in aspiration.

Like Competitor X, Competitor Y also offers for Product Y add-on products like test platform for rapid testing and integration. Main reason for that is to speed up the customer integration process and thus shortens the end products time-to-market.

Product Y uses a few key messages in its CVP. The key messages emphasize the pipetting performance was done with the qualitative pipette monitoring (QPM) technology. QPM offers mean to detect if the tip is clogged during aspiration if there is insufficient liquid in the tip and to detect foam in liquid during aspiration. Table 6 lists the key messages, technical features behind the messages and what are the benefits (values) for the customers.

Table 6. Competitor Y Product Y CVP

Messages	Features	Benefits
Pipetting performance guaranteed	<ul style="list-style-type: none"> • Qualitative pipetting monitoring • Tip presence sensor • Z-axis movement 	<ul style="list-style-type: none"> • High accuracy and precision -> better results • Sample integrity and process security
Intelligent liquid handling by design	<ul style="list-style-type: none"> • Z-axis movement • Three configurations in product layout 	<ul style="list-style-type: none"> • Easier and faster instrument design -> decreased time to market
Reduced instrument maintenance and service	<ul style="list-style-type: none"> • No valves, syringes or tubing required 	<ul style="list-style-type: none"> • Fewer shortages on operation
No carryover and cross-contamination	<ul style="list-style-type: none"> • CO-RE (compressed O-ring expansion) disposable tips 	<ul style="list-style-type: none"> • Reliable results, no contamination

As shown in Table 6, Product Y CVP consists of four key messages and the benefit the customer will have if uses Product Y component. The CVP messages are:

“Pipetting performance guaranteed. Intelligent liquid handling by design. Reduced instrument maintenance and service. No carryover and cross-contamination.”

The main reason for the customer selecting Product Y as an OEM component is the pipetting performance assured by the QPM. QPM offers high accuracy, precision and level of error detection especially with abnormal liquids containing foam or gas. Product Y component itself is a very expensive compared to others. More detail analysis about the Product Y is described in section 5.

As a summary, the two biggest competitors are Competitor X and Competitor Y with their products Product X and Product Y respectively. Both competitors are very well known especially in liquid handling automation industry and have very high-quality products. Their CVP concentrates on to the technical features of the products and the benefits it creates to the customers.

3.3 Customer Needs Analysis

In the lab automation instrumentation OEM business there are two kinds of customers which needs have to be taken into account. One is the instrument manufacturer which integrates the OEM component (module) into the instrument used in the special application. Second is the end customer, the user, who uses the instrument in the special application in a laboratory. The case company's first and main customer is the instrument manufacturer (later the customer). The customer has a solid understanding of the application to which they are developing a new instrument. The end customer needs are known, or at least the processes in the technical level.

The new instrument development project consists of several phases which can be seen also as a customer value chain. A typical customer value chain is illustrated in Figure 10.

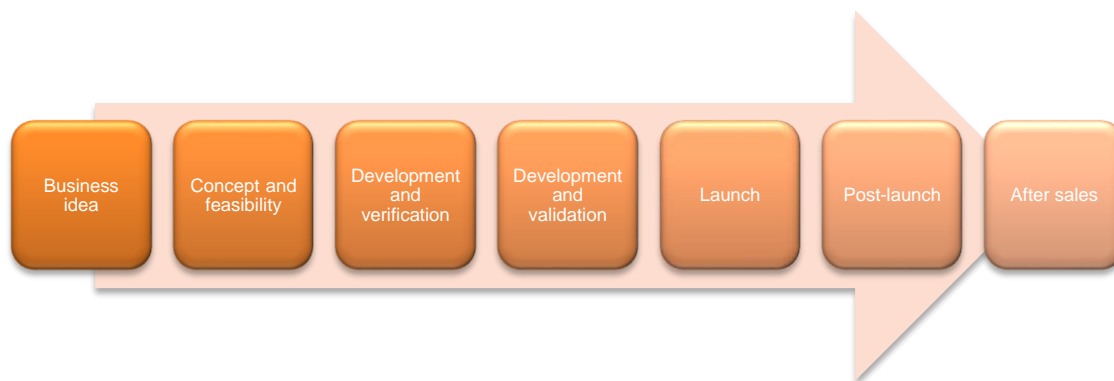


Figure 10. Typical customers value chain

As seen in Figure 10, there are several phases in a customer value chain. First, the customer has an idea or request from the end user to develop a new product. Second, the idea is processed further as a concept which is used to make a feasibility study. Third, after a feasibility study, the actual development process begins. During the development, there are also verification and validation processes which, of course, have a high impact on product overall quality. The fourth is the launch and post-launch processes. And the fifth is the end customer product lifecycle management with after sales activities like service and maintenance.

During the product development and the product life cycle, there are different profiles from the customer to participate, influence and make decisions to the process. Table 7 shows the typical customer profiles in a value chain.

Table 7. Customer profiles in a value chain

	Product Manager	R&D Engineer	Quality Manager	Purchasing Manager	Service Manager
Role	Owns instrument concept to be developed	Develops HW & SW for instrument, using OEM component	Needs to validate instrument into use	Negotiates prices	Designs the service program and give training
Needs	Reliability of results Rapid time-to-market	Good technical documentation Easy trialing & testing Rapid support response	Full quality/compliance documentation	Annual price decreases Good delivery terms Excellent delivery reliability	Replacement part numbers Service documentation & SW
Fears	Failure / delay of launch Quality issues in use	Component not fit for intended use Mechanical issues/hidden problems	Quality/reliability issues Non-compliance with regulations	Cost increases Supply delays	Part supply delays Cost increases Changes in products
Ways to influence	Prove how the OEM component fits best to their solution	Convinced of technical excellence and suitability for use	Documentation, documentation documentation	Pricing, supply terms, assured delivery	Documentation Good service SW Support from OEM
Has most influence in phases	Business idea Concept and feasibility	Concept and feasibility Development and verification	Development and validation	Launch Post launch	After sales

As seen in Table 7, there are five typical profiles in a customer value chain during the development process. Profiles are a product manager, R&D engineer, quality manager, purchasing manager and service manager. Each profile has its own role with different needs, fears and ways how to influence to get the person convinced to use the OEM product.

Basic needs during the process across in all profiles are the reliability of results, rapid time-to-market, good documentation and price and delivery terms. Reliability of results

is related to the component's technical performance. In most cases, the performance is the key factor which the customer wants or even could use in its instrument to fulfill the application requirements. Almost as important as the performance is the instruments rapid time-to-market. The investments to the instrument development and the cost of the instrument are many times higher than the single OEM component. If the integration of the component is difficult or there are problems during the verification and validation, product time-to-market extends unnecessarily because of the one "small" component and cash flow could not start.

Usually, our component is a very small part of the cost of whole end product. Every delay costs a lot for end customers, not so much for us.

Data 1: Interviewee 4

Related also to the rapid time-to-market, a good documentation shortens the time-to-market. When all the technical specifications and user manuals are in good shape, it helps the integration process. Depending on the application, some regulatory requirements are needed from the instruments. If the OEM components are tested and certified independently, the instrument certification process is easier and thus affects to the time-to-market.

The most customer fears are delays of the project which could cause of unsuitable product. Also, quality and reliability problems could have issues. Promised regulatory requirements are not fulfilled.

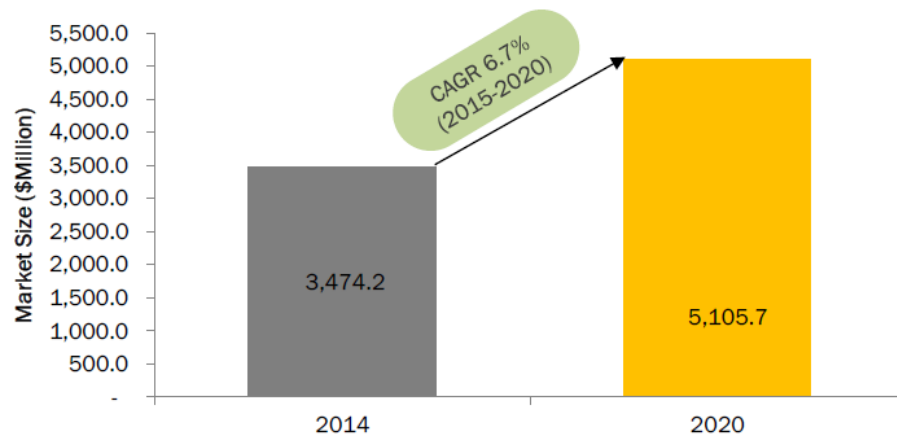
Data 1: Interviewee 4

As a summary of the customer analysis, typical customer needs are the reliability of results, rapid time-to-market, good documentation, and price. Delivery terms and reliability of supply affects also how the customer values the OEM partner. Any delays during the development or component supply are fear for the customer.

3.4 Future of the Laboratory Automation Market

The lab automation market is foreseen to be growing at a steady rate of approximately CAGR (Compound Annual Growth Rate) 6.7% at least till the year 2020 becoming totally over \$ 5 Billion industry. Key drivers to the growth are miniaturization of processes, progressing drug discovery and clinical diagnostics, greater productivity and cost reduction

and high reproducibility and accuracy (Markets and Markets 2015: 34). Emerging markets in Asia-Pacific regions has the highest growth rate potential as the industry is at the beginning of its life cycle. However, North America is still the biggest market region having almost 50% of the total market share. Figure 11 shows the market value and growth between years 2014 and 2020.

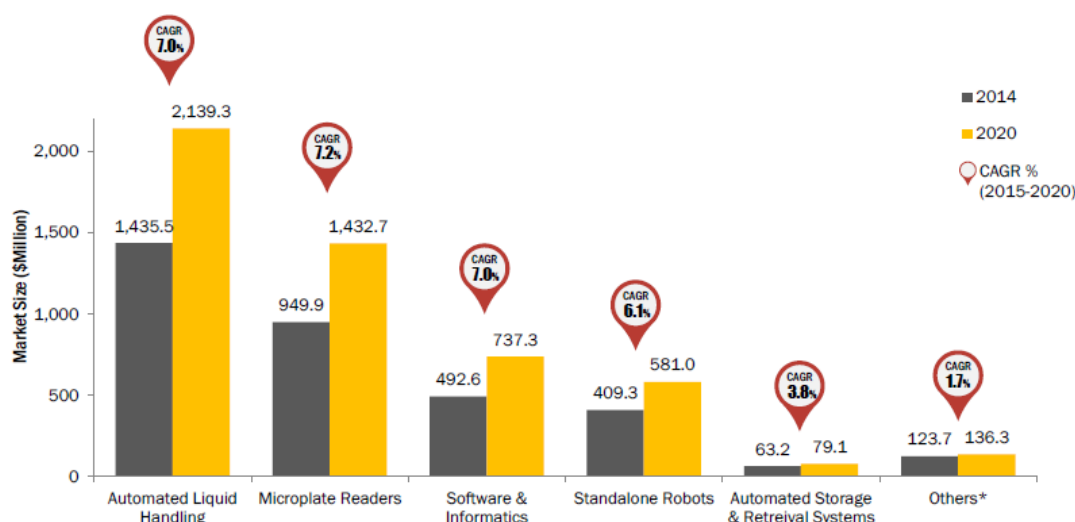


Source: Annual Reports, Press Releases, SEC Filings, Investor Presentations, SLAS, ALA, Journal of Laboratory Automation, Expert Interviews, and MarketsandMarkets Analysis

Figure 11. Lab automation market growth (source: Markets and Markets)

As seen in Figure 11, the lab automation market is expected to grow steadily during the following years from ~\$ 3, 5 Billion to ~\$ 5, 1 Billion within 2014-2020.

To divide the lab automation market into segments by the equipment and solutions, few segments rise up by their values. Figure 12 illustrates the division of the segments and their shares of the total market value.



Source: Annual Reports, Press Releases, SEC Filings, Investor Presentations, CLSI, SLAS, ALA, Journal of Laboratory Automation, Expert Interviews, and MarketsandMarkets Analysis

Figure 12. Lab automation market by equipment & software (source: Markets and Markets)

As seen in Figure 12, automated liquid handling dominates the lab automation market having over 40% of the total market value. The CAGR of the liquid handling is 7% which is slightly above of the total lab automation market growth rate. The second biggest segment is the microplate readers having around 27% of the total market value.

3.4.1 Restraints

The restraints of utilizing the market potential are considered to be a lack of planning for technology development, small and medium-sized laboratories priority to automation and indefinite communication standard between lab instruments. The lack of planning for technology development at the end-user level results in improper utilization or decisions regarding the purchase of lab automation systems. At the management level where the key concerns are human recourses, fiscal responsibility, and productivity, there is no collective view of technology development and integration. Hence, there is no planning for future project requirements or evaluation of implementation proposals.

As many small and medium-sized laboratories prioritizing their expenses, they also find it difficult to evaluate the risks behind the cost-effectiveness of the automation systems because the low number of the installed systems and determination of the payback time

of those systems. Thus, the global economic environment and the lack of evidence of cost-effectiveness restraining the growth.

Due to the lack of communication standards between the lab instruments, there is no synergy between different instruments. In one laboratory there are several instruments from several suppliers. In such case, lack of interconnection between devices makes the process difficult and needs human recourses for data exchange not to mention all the available data from each device gathered over the years is not utilized properly. In complex applications and processes, there is no one supplier that can provide the whole systems and thus co-operation between suppliers is needed. With applicable device communication and data storage standards, those restraints can be removed and, especially small instrument manufacturers can be part of the evolution.

3.4.2 Opportunities

The growth opportunities for instrument manufacturers are low penetration in emerging markets in Asia-Pacific regions, growth in aging population and wide scope and emerging adoption in microbiology. In emerging markets (China, India, Brazil, and Middle-East), increasing spending power, growing healthcare awareness and favorable government initiatives the attributes to the growth.

The forecast of the global aging population is set to increase from 800 Million in 2011 to 2 Billion in 2050 (Markets and Markets 2015: 47). Along with the increase, chronic diseases like diabetes and hypertension is expected to increase as well. This will lead to an increase in the number of diagnostic tests performed. As automation increases the productivity of the laboratories and handles larger volumes of samples without compromising the quality of results, the demand for automated systems will rise.

Due to the manual intensive nature of procedures in microbiology laboratories, there is a low adoption of automation systems in this field. Growing awareness about the risks of hospital-acquired infections, to ensure the quality of results and growing numbers of laboratories opting accreditation increases the need for automation. This will result in better control of infections and ensure better patient care.

3.5 Key Findings from the Current State Analysis

The Current State Analysis of the case company's OEM business was done by interviewing the case company's key stakeholders related to OEM business, analyzing company's internal documents about the past and current OEM products and customers and analyzing the competition from external documents, competitors' web pages, and product brochures.

According to the analysis, there were four topics to focus on. The first was the case company's history in OEM business, how they have developed the business, what the story behind the products is and what are the company's strengths and weaknesses regarding the liquid handling and processes. The second was the competitors' analysis, what the competitive landscape is, who the main competitors are and what kind of CVPs' the competitors use in their products. The third was the customer needs analysis. In customer needs analysis, customer value chain was conducted and analyzed the customer profiles in each value chain phases. The fourth was the general trends, opportunities, and threats, in the lab automation markets in the future.

The key findings from the analysis are illustrated in Figure 13.

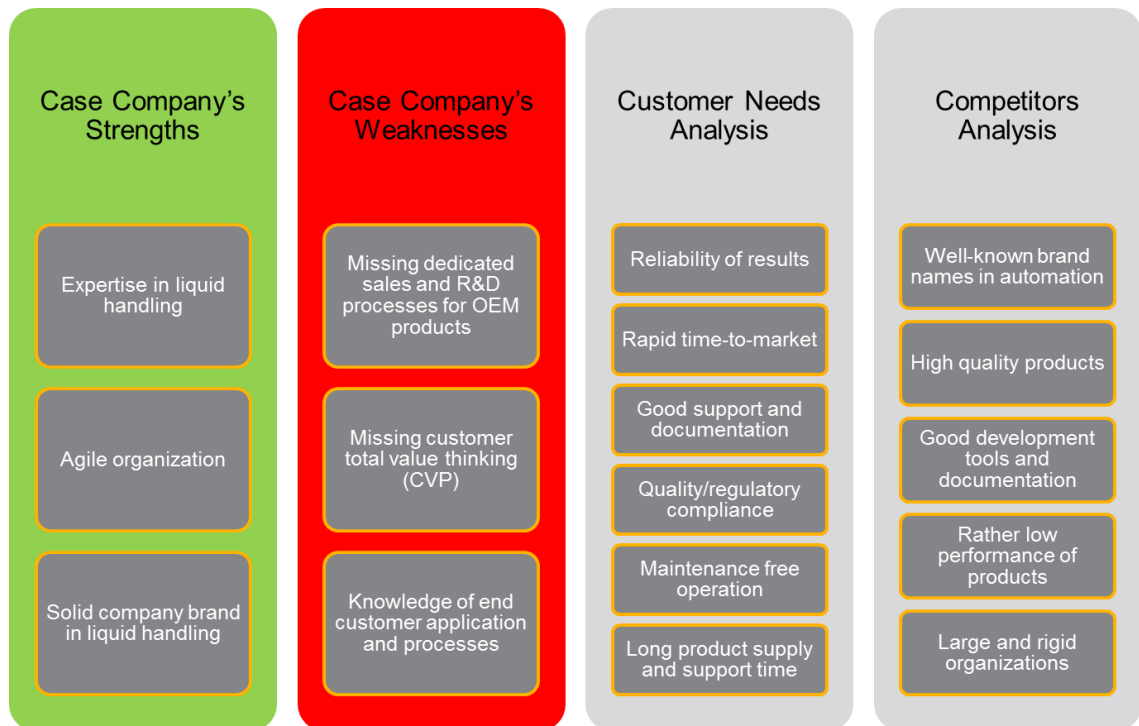


Figure 13. Key findings from the current state analysis

As seen in Figure 13, the key findings of the current state analysis were divided into case company's strengths and weaknesses and customer needs and competitors analysis.

The case company's internal strengths are the strong expertise in liquid handling, very agile organization and the long history and solid company brand name in the field. The agile organization has been an advantage for the case company in the past that they have got OEM projects which competitors' could not do because of their rigid organization. On the other hand, the case company weaknesses relate to the lack of the dedicated R&D and sales processes, missing customer total value thinking and the knowledge of the end customer application.

According to the customer needs in the typical customer value chain, there are several different needs. If summarized, the main needs are the reliability of results, rapid time-to-market, good product documentation and support from the OEM partner, easy integration, and regulatory compliance, maintenance-free operation and long supply times of the products. To fulfill those requirements plus having something extra compared to the competitors, there is a chance to challenge the competition.

The competition in the liquid handling automation is mainly between the few big international companies. However, small startup companies are coming as new entrants into the competition. The case company can be seen as a new entrant in the lab automation field, although it is very well known in the handheld liquid handling business. As a new entrant to the business, there are a couple of the Porter's five forces that are as obstacles for rivalry from the case company point of view (Porter, M. E. 2008). One is the low threat of new entrants. The market is dominated by the key players with advanced technologies and strong distribution channels. Highly regulated market with time-consuming certification process lowers the customers' desire to change the OEM component from the rival supplier. Two is the low bargaining power of suppliers. As there are many suppliers with similar product offering, the differentiation factors are mainly the price, quality and after sales services. To enter this market and to beat the competition, competitors' CVP should be taken seriously into account to creating own product offering.

As the competition is hard, there are, however, the market potential for new entrants. In emerging markets in Asia-Pacific regions, the low penetration of lab automation is the key opportunity. Also, the increase of people aging and the productivity needs in microbiology for disease discovery testing are the future opportunities. If the planning of the technology development in the end user application and the standardization of the communication between the instruments increases, the new entrants have a better opportunity to be in the competition.

Based on the key findings and especially the case company's weaknesses, this thesis focuses on the total customer value thinking. The next section covers a literature review of best practices on how to build a unique customer value proposition.

4 Best Practices to Build CVP

This section discusses the best practices and available knowledge on how to build a unique customer value proposition. It covers four main areas of customer value proposition building. The section begins by defining the concept of value and a discussion on who the actual value creators are. In the second section, the focus moves onto presenting different types of CVPs and what the pros and cons of each type are. The third section describes how to fit the company's products or services to the customer needs and satisfy the customer. The fourth section shows how to compare and position the company's CVP against the competitors' CVP. At the end of the section, the main areas of knowledge are combined as a Conceptual Framework (CF) to be used to build the CVP.

4.1 Definition of Value

What is value? Value is an intangible concept that is rather difficult to define. Nevertheless, in the literature, there are many different definitions of value. Customer value is typically conceptualized as a trade-off between the benefits and costs involved in an exchange (Keränen, J., and Jalkala, A. 2013: 1308). On the other hand, Töytäri and Rajala (2015: 105) wrote that value is defined as bundles of benefits and sacrifices and value propositions communicate potentially favorable changes in customer value as either improved benefits or reduced sacrifices. Value in business markets is the worth in monetary terms of the technical, economic, service, and social benefits the customer receives in exchange for the price it pays for the offering (Anderson, J. C., and Narus, J. A. 1998: 54).

Nevertheless, value is not a value that is achieved only with the offering i.e. with the products. O'Cass & Ngo (2011) divides the value into two main categories, product advantages (performance value) and relational advantage (co-creation value and relationship value). Product advantage can be obtained via product performance superiority with products that have innovative features and high quality while relational advantage can be built upon developing and nurturing customer relationships (O'Cass, A. and Ngo, L. V. 2011: 126). Customer centricity is the key point to become a real market-oriented company and deliver co-creation and relationship value to the customers.

Who creates value? During the last decades, the definition of value creation schemes has varied. In recent years, it is said that value is determined by the customer and the

supplier can only make value propositions (Vargo, S. L. and Lusch, R. F. 2004: 11). The supplier is only the value facilitator. Depending on the suppliers' logic how their organization culture is aligned with the customers, value creation differs. Goods-dominant logic (G-DL) typically describes an organizational mindset where goods (or products) include tangible and/or intangible units of output that are embedded with value during the manufacturing process (Vargo, S. L. and Lusch, R. F. 2006: 2). Customers are isolated from the supplier's value creation process and value is exchanged as a singular entity at a given point of time. Supplier only creates potential value and, therefore, the real value is created by the customer itself during the usage of the products and it is accumulating over time (Grönroos, C., and Voima, P. 2012).

In service-dominant logic (S-DL), products (goods and services) still play an important role, but they are seen as a delivery mechanism of service (knowledge and skills) for another party. While G-DL sees services as units of outputs, S-DL sees service as a process – doing something for another party (Vargo, S. L. and Lusch, R. F. 2006: 2). In addition, the S-DL oriented suppliers have a direct interaction with the customers and thus can influence the value creation process by co-creating the value. Accordingly, the supplier is able to generate real value together with the customer as an all-encompassing process.

To design a value proposition and to deliver or co-create the real value is an optimization exercise between impact and practicality (Töytäri, P., and Rajala, R. 2015: 105). Next sections cover the definition of customer value proposition and its main building blocks.

4.2 Customer Value Proposition

To be able to convert the supplier's core competence and the knowledge of the customer needs into the customer value, the customer should be convinced to select the supplier's product or services and not the competitor's product. Customers compare the products from different suppliers and the one product which do the job the customer needs and thus creates the most value to the customer, whether it is technical, economical or sociological, gets selected. To convince the customer the supplier should create a customer value proposition for the product i.e. how the product solves the customer problem or what savings or other benefits it has to the customer. Value proposition is a potential value that the supplier promises to deliver to the customer with the product or service. In addition, the supplier should also demonstrate and document the claim that the value

proposition states. Customer managers, increasingly held accountable for reducing costs, don't have the luxury of believing the supplier's assertions without some proof about the potential value (Anderson et al. 2006: 91).

In order to create a proper customer value proposition, Anderson et al (2006) presents a systematic approach for developing three different types of value proposition: *all benefits*, *favorable point of difference*, and *resonating focus*.

The most general value proposition type, *all benefits*, lists all the features and the benefits the supplier believe that their product could deliver to the customers. The more features it has, the better. Although the list of the features is easy and relative simple to construct, features may not provide benefits at all to the target customers. In fact, many, even most of the benefits may be points of parity with those of the next best alternative, diluting the effect of the few genuine points of difference (Anderson et al. 2006: 93). Points of parity are elements with the same functionality and value as those of the next best alternative i.e. the competitor's product. Points of difference elements, on the other hand, make the supplier's features superior compared to the next best alternative. All benefits value proposition type requires the least knowledge of both about the customers and about the competitors. The only requirement is to know the own market offering.

The second value proposition type, *favorable points of difference*, recognizes the competitors and features are compared to the next best alternative. Value proposition is defined by the features superior to the next best alternative. This value proposition type requires at least some knowledge of the competitors and their offering. The pitfall is that despite the points of difference in favor of the supplier, there may be not at all or relative little value to the customers if the customer requirements are not understood. Furthermore, several points of difference might complicate the supplier understanding of which ones deliver the greatest value to the customers (Anderson et al. 2006: 94).

The third value proposition type, *resonating focus*, is considered to be the gold standard according to Anderson et al. (2006), which every supplier should aim for. Although the supplier's offering may contain several favorable points of difference, the resonating focus concentrates one or two key points that the customer value the most. The superior value is well documented, justified and communicated to the customer. In addition, resonating focus may also contain some points of parity to point out that the competitor's value element is not superior compared to the supplier's. This value proposition type

requires deep knowledge about the customer value creation and the competitors' products.

In Table 8 is the summary of the three different types of CVPs and their pros and cons.

Table 8. Different types of CVPs (source: Anderson et al. 2006)

<i>Value Proposition</i>	<i>Consists of</i>	<i>Answers the customer question</i>	<i>Requires</i>	<i>Has the potential pitfall</i>
All benefits	All benefits customers receive from a market offering	"Why should our company purchase the supplier's offering?"	Knowledge of own market offering	Benefit assertion
Favorable points of difference	All favorable points of difference a market offering have comparing to the next best alternative	"Why should our company purchase the supplier's offering instead of the competitor's?"	Knowledge of own market offering and the next best alternative	Value presumption
Resonating focus	The one or two points of difference (and perhaps a point of parity) which will deliver the greatest value to the customer	"What is most worthwhile for our company to keep in mind about the supplier's offering?"	Knowledge of how own market offering delivers superior value to the customers compared to the next best alternative	Requires customer value and competitor's offerings research

As seen in Table 8, it is good to test the three CVP types *all benefits*, *favorable points of difference* and *resonating focus* by thinking from the customer perspective and asking the questions: "Why should our company purchase the supplier's offering?", "Why should our company purchase the supplier's offering instead of the competitor's?" and "What is most worthwhile for our company to keep in mind about the supplier's offering?" respectively. In most cases, the later question should open minds of the supplier and get the supplier to focus on to build resonating focus CVP which fits the customer needs and creates the most value to the customer.

4.3 Value Proposition to Satisfy the Customer Needs

As the complexity of the customer needs and the supplier's offering are increasing, the design of a value proposition and the communication of its content to the customer with a common language becomes challenging. Osterwalder et al. (2014) present a visual model, Value Proposition Canvas (VPC), for creating or further improving value propositions based on supplier's offerings and customer needs. VPC is a tool to link supplier's products and services to the different customer profiles. Figure 14 shows an example of the VPC canvas.

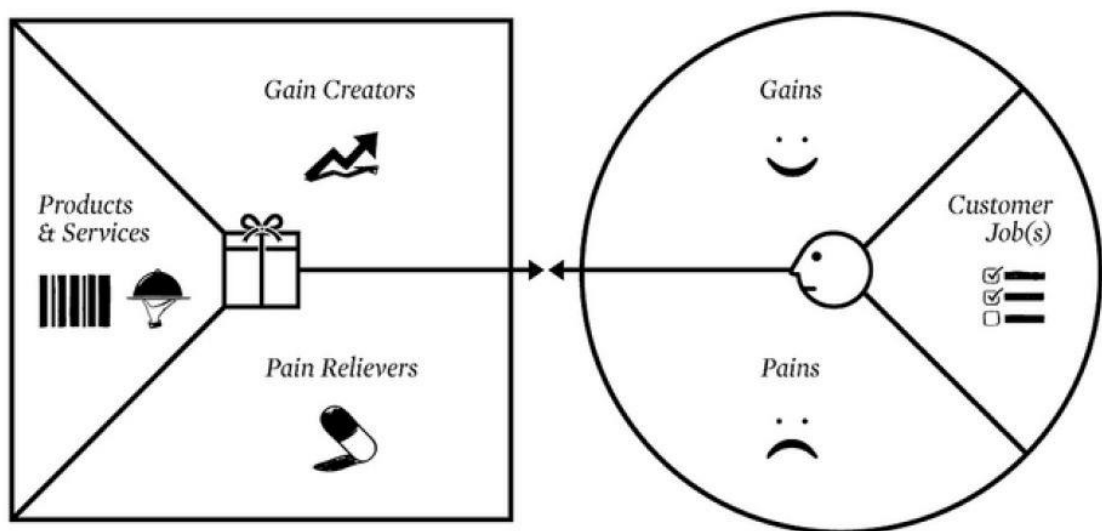


Figure 14. Value proposition canvas (source: Osterwalder et al. 2014)

As seen in Figure 14, the VPC consists of two sides. On the right-hand side is the customer side and on the left-hand side is the supplier's products side.

In the customer side, the most important concept is the list of the *Customer Jobs*. The customer jobs are something that the customer wants to do or problems that the customer need to solve or needs that the customer wants to be satisfied. Or like Christensen et al. (2007: 38) wrote "Customers simply has a job to be done and he/she is seeking to "hire" the best product or service to do it." Linked to the jobs, the two other concepts on the customer side are *Pains* and *Gains*. *Pains* are the negative feelings, unnecessary costs and risks and other things that prevent the customer to do the jobs. *Gains*, on the

other hand, are the benefits that the customer expects, wants or be positively surprised on receipt of. Gains include functional, social, emotional benefits as well as cost savings.

The supplier's products side presents how the supplier's offerings propose to relieve the customer pains and create customer gains. The most important concept is the list of *Products & Services* i.e. offerings. The list contains all the products, services or features of the product that enable the value creation and makes the value proposition real. The other concepts in the supplier's products side are *Pain Relievers* and *Gain Creators*. Pain relievers describe how the offerings decrease the customer pain, how they eliminate negative feelings, unnecessary costs and risks that the customer may experience. Gain creators, on the other hand, describes how the offerings create benefits to the customer.

If the value proposition addresses all the important jobs, decreases or removes the pains and creates the benefits the customer wants it is said to have achieved a fit, which is the point of the good customer value proposition (Osterwalder et al. 2014: 42). Of course designing the value proposition using the VPC is an iterative process which needs a rather deep understanding of the customer value chain, the profiles in it and their needs. The value chain is a chain where every person, process, product or brand adds value to the end product or service the company is producing (Mascarenhas et al. 2004). In the best case, the value proposition takes the customer value chain and every profile, processes, and products in a value chain into account and both, the supplier and the customer, benefit from the supplier's product or service.

Although the fit between the supplier offerings and customer needs has been achieved, the next thing is to compare the offerings to the competitors and position the offerings in the competitive landscape.

4.4 Position in Competitive Landscape

In order to compare all the features between the supplier's and the competitors' products and positioning the supplier's offering to the wanted customer segments, a *Strategy Canvas Tool* can be used. Strategy canvas is a visual tool which lists all the factors of the products that need to be compared. All the factors have been scored with some suitable logic and graphical chart, usually, line or column is drawn. An example of the strategy canvas is illustrated in Figure 15. It shows the comparison between traditional circuses and Cirque du Soleil, a Canadian extraordinary circus.

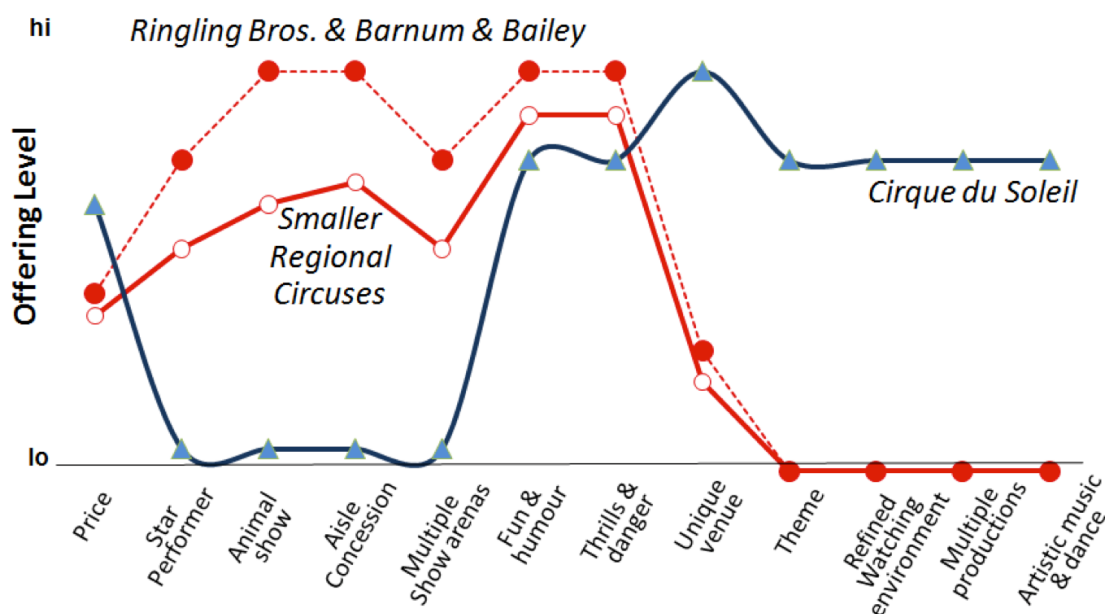


Figure 15. Strategy canvas of circuses (source: <http://bergconsulting.com.au>)

As seen in Figure 15, Cirque du Soleil is compared to smaller traditional circuses. Competing factors are listed on the horizontal axis and each factor is scored on the scale from low to high and drawn a level on the vertical axis.

With the strategy canvas tool, it is easy to see the competing factors for products and services. In addition, the level of the competing factors gives a visual outlook of the competition areas or the areas where there is no competition at all. The supplier can use the strategy canvas tool for two purposes. First, to align the created CVP with the competitors and to see which features are the points of parity and which ones are the favorable points of difference. It visually identifies the strengths and weaknesses of the offerings. Second, to check even before the product and CVP creation that is there a market space where there is no competition – the unknown market space. Kim and Mauborgne (2004) call these spaces as *Blue Oceans*. In blue oceans, industries do not exist today and demand are created rather than fought over. There is ample opportunity for growth that is both profitable and rapid (Kim, W. U. and Mauborgne, R. 2004: 77). The known market space, on the other hand, is called *Red Oceans*. Red oceans represents all the industries in existence today and the industry boundaries are defined and accepted, and the competitive rules of the game are well understood (Kim, W. U. and Mauborgne, R. 2004: 77).

In the example of Cirque du Soleil, Cirque did not make its money by competing within the existing industry (red ocean) or by stealing customers from others. Instead, it created uncontested market space (blue ocean) that made the competition irrelevant (Kim, W. U., and Mauborgne, R. 2004: 77). That can be seen from the right-hand side of Figure 15 where Cirque created totally new factors (unique venue, theme and artistic music and dance) to focus on and ignored the traditional circus factors like star performer and animal show. Cirque attracted the whole new group of customers for an unprecedented experience.

Kim and Mauborgne (2004) propose a few concepts to think about when trying to build strategy toward the blue ocean. First, blue oceans are not about technology innovation. Even in the industries that are technology intensive, blue oceans are rarely the result of technological innovation. Instead, blue oceans can be raised from the knowledge what the customers value or just founding the different customer segments. Second, incumbents often create blue oceans and usually within their core businesses. Most blue oceans are created from within red oceans and thus challenges the view that new markets are in distant waters (Kim, W. U. and Mauborgne, R. 2004: 81). Third, company and industry are the wrong units of analysis. Every company rises and falls over time. Same do the industries. The appropriate unit of analysis is the strategic move – the set of managerial actions involved in making market-creating business offering (Kim, W. U. and Mauborgne, R. 2004: 81). Fourth, creating blue oceans builds brands. Blue oceans strategy move can be so powerful that it can create brand equity that could last forever. Even if created a small part of the blue oceans long time ago, a brand can be remembered for decades (Kim, W. U. and Mauborgne, R. 2004: 81).

Table 9 summarizes the differences between the red ocean and blue ocean strategies.

Table 9. Red Ocean vs Blue Ocean Strategy (source: Kim & Mauborgne 2004)

<i>Red ocean strategy</i>	<i>Blue ocean strategy</i>
Compete in existing marketplace.	Create uncontested market space.
Beat the competition.	Make the competition irrelevant.
Exploit existing demand.	Create and capture new demand.
Make the value/cost trade-off.	Break the value/cost trade-off.
Align the whole system of company's activities with its strategic choice of differentiation or low cost.	Align the whole system of a company's activities in pursuit of differentiation and low cost.

As seen in Table 9, in the blue ocean, there is no competition because the focus is to create and capture new demand. Blue ocean also break the value and cost trade-off and successful companies pursue differentiation and low cost simultaneously (Kim, W. U. and Mauborgne, R. 2004: 82).

As a summary, the strategy canvas is an easy tool to visually compare the supplier's offerings to the next best alternatives and align the CVP into the specific customer segments. Features which ones are the points of parity and which ones are the favorable points of difference can be seen. In best cases uncontested market spaces i.e. blue oceans can be found. The strategy canvas tool can be used to compare product technical features as well as marketing aspects.

4.5 Conceptual Framework to Build CVP

To build a unique CVP which is superior to competitors, right positioned towards the customer segments and well fitted to the customer needs, three building parts need to be used. Each building part is divided into key concepts and tools with the literature source information. The three parts and associated tools are illustrated in Figure 16.

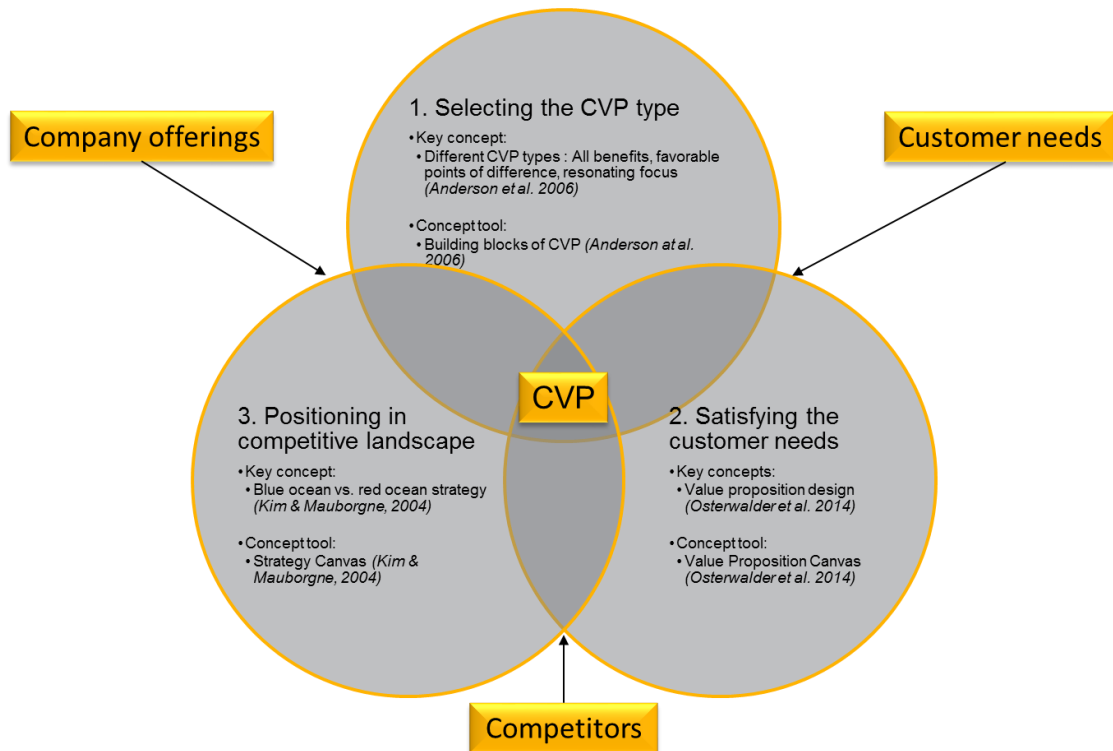


Figure 16. Conceptual framework to build CVP

As seen in Figure 16, there are three different parts in the CVP building. First, selecting the CVP type. The aim for the type is the resonating focus, but sometimes it is not possible to create such a CVP if for example there is not possible to make a deep research what the customer value. That could be because of the time restraints or the supplier does not want to reveal its tensions. Second, satisfying the customer needs. If the customer needs are known, i.e. the customer jobs, pains and gains, the supplier must find a way to fit the product features and benefits to do the jobs and create gains to the customer. Osterwalder's (2014) value proposition canvas can be used as a tool to help illustration of the proposition building. Third, positioning the CVP in the competitive landscape. To differentiate from the competitors and/or to segment the products differently, the product features should be compared against to the competitors. A strategy canvas tool visually shows every factor and the value of the factors to be compared.

This section proposed a conceptual framework to be used to build unique customer value proposition. The framework consists of three parts with the concepts and guidelines from the literature of best practices and tools that can be used. In the next section, the conceptual framework is used to build proposal of the CVP for the new OEM product.

5 Proposal of the CVP

This section builds the proposal of the customer value proposition for the new OEM product intended to use as a dispensing head in the customers' automated liquid handling system. It combines the results of the current state analysis and the conceptual framework to create CVP that fulfills the customer needs in the customer value chain. It utilizes the data 2 results from the workshop held with the key stakeholders. The section is divided into three subsections. The first subsection describes the steps of building the proposal. What has been done so far and what are the next steps in order to build a proposal. Second subsection lists and analyses the development ideas from the workshop. The third subsection builds the CVP proposal according to the product features and new ideas and the conceptual framework.

5.1 Steps of Building the Proposal

In order to build a proposal of the CVP for the new OEM product, few steps have been conducted beforehand. First, the case company's current state has been analyzed by interviewing the key stakeholders of company's OEM business and collecting data from the internal and external materials. The idea of the interviews and material collection was to collect qualitative data (data 1) about the case company's OEM business from the beginning of the business till the recent days, some insights about the typical customer needs and the features of the two main competitors' products. Second, according to the result of the current state analysis and especially the weakness found and later focus on (missing customer total value thinking), a literature review about the best practices of creating customer value and differentiate from the competitors was conducted. A conceptual framework to build unique CVP based on the literature review was created. Third, a workshop with the key internal stakeholders was held in order to get new development ideas (data 2) what kind of new features or totally new extended products or add-on services can be developed around the new OEM product, a dispensing head for the customers' automated liquid handling system. Workshop participants got a review of the results of the case company's current state, competitors and customer needs. Based on the review, participants thought ideas how to fit different customer needs against case company's offerings.

The next steps of building the proposal are to analyze the development ideas from the workshop and to select few, very practical and most important ideas for further development. Based on all the product features, new ideas, competitors' product features and customer needs, a CVP is built using the key concepts and tools described in the conceptual framework in section 4.5. The most important tool is the strategy canvas to compare the total offering (product features and add-on products/services) against competitors to be able to see which value factors are the points of difference and which are the points of parity. After the comparison, factors that will create most value to the customers and/or differentiates the offering from the competitors will be selected to the value proposition.

As stated in Figure 16, input data for the CVP building are case company's offerings, customer needs, and competitors' offerings. Customer needs and competitors' offerings come from the data collection in the current state analysis (data 1). The case company's offerings, on the other hand, derive from the development workshop (data 2). The next subsections build the CVP step by step starting from analyzing the data 2 from the development workshop.

5.2 Development Ideas from the Workshop

In the workshop, all participants were divided into three groups. All groups had to think of development ideas what kind of new features to add into the new OEM product or what else can be sold with the new product as an extended product or services. In addition to the ideas, groups had to think what benefits and actual values for each idea adds for the customer and its value chain. After the workshop, each group presented their ideas, benefits and values to other groups. As a summary, development ideas are listed in Table 10.

Table 10. Development ideas from the workshop

Product/Feature	Benefits to the customers	Actual value
Advanced self-diagnostics	<ul style="list-style-type: none"> Enhanced reliability Flexible maintenance interval Automated maintenance Easier performance diagnostics Easier maintenance scheduling 	<ul style="list-style-type: none"> Cost savings from avoiding unnecessary scheduled maintenance
Configuration tool for order process	<ul style="list-style-type: none"> Fulfill better customer needs, no extra features Faster development 	<ul style="list-style-type: none"> Rapid time to market -> cost savings in R&D Product price point in line with customer needs -> no extra costs
9 mm dispensing head module width	<ul style="list-style-type: none"> Enables 8 modules in parallel -> 96 well plate handling Better performance and diagnostics for each channel 	<ul style="list-style-type: none"> Small instrument size with 8 channel module
Demo kit for trials	<ul style="list-style-type: none"> Easy start to development Shows performance and functionality 	<ul style="list-style-type: none"> Rapid development and integration cycles -> time-to-market
Device parameters library for different liquid types	<ul style="list-style-type: none"> Better performance for each liquid types and applications 	<ul style="list-style-type: none"> No need to trial which is good parameters -> time and cost savings in development
Easy maintenance	<ul style="list-style-type: none"> Customer can make maintenance by itself Fast and easy maintenance 	<ul style="list-style-type: none"> Cheaper maintenance costs Short instrument out-of-order time
Standardized components	<ul style="list-style-type: none"> Better delivery certainty Shorter delivery time Easier maintenance 	<ul style="list-style-type: none"> lower COGS and inventory costs -> lower price
Customized plastic parts design (3D printing)	<ul style="list-style-type: none"> Modify component to fit better own instruments Configurability 	<ul style="list-style-type: none"> Co-creation with supplier
Feature-based pricing	<ul style="list-style-type: none"> More flexibility in pricing More tailored product/price feeling 	<ul style="list-style-type: none"> Low initial investment Pay only for what you need
Preventive maintenance service	<ul style="list-style-type: none"> Care-free 	<ul style="list-style-type: none"> Less interruption in production -> cost savings
Documentation/support material package	<ul style="list-style-type: none"> Less need for verification & testing More credible product 	<ul style="list-style-type: none"> Faster time to market Better perceived quality More competitive product, more sales
Wide tip range	<ul style="list-style-type: none"> Single source for consumables 	<ul style="list-style-type: none"> Less production/research interrupts

As seen in Table 10, there are 12 different development ideas. Most of the ideas are new products or services (wide tip range, feature-based pricing etc.) which can be sold as an

add-on with the OEM product. Some ideas are product internal features (device parameters library, self-diagnostics etc.) which can be used as is and also as an enabler for the future services.

After the workshop, the ideas were analyzed more deeply and they were categorized into three groups. The first group presents the ideas that are mandatory in order to be able to compete with the competitors and must be available when the product is launched. The second group represents the short-term future ideas. Those ideas need development effort (both technical and business) and can be launched later in the near future. The third group covers long-term development ideas which need major further research and investments and can be part of the case company's long-term strategy. Same kind of ideas were also combined and named accordingly. Table 11 illustrates the group division and the features in each group.

Table 11. Workshop ideas divided into three groups

<i>Group</i>	<i>Product/Feature</i>
1 Mandatory	Development kit
	Easy maintenance
	Documentation package
2 Short-term	Advanced self-diagnostics
	Configuration & service tool
	Application parameters library
3 Long-term	Wide tip range
	9 mm module width
	Customized design
	Standardized components

As seen in Table 11, the ideas are combined into 10 different products/features and divided into three groups, mandatory, short- and long-term development ideas. This thesis focuses on the mandatory and short-term ideas which will be used also in competing factors to positioning against competitors. The long-term ideas are left out from the value proposition.

The next subsection compares the case company's offerings to the competitors' offerings and positions the factors in the competitive landscape.

5.3 Positioning the Factors in Competitive Landscape

According to the customer needs (data 1 in CSA), product features (both present and future) and competitors' product features, an initial CVP proposal for the new OEM dispensing head can be built. First, product features are compared to competitors' in order to see which features are the points of parity and which are the points of difference. The comparison is made between the two main competitors described in section 3. It includes also the new development ideas, both mandatory and short-term, which will be implemented in the near future. Table 12 shows the product comparison which lists the features (factors) to be compared. Each factor is scored from 0 to 5 depending how those are positioned against each other.

Table 12. Product comparison list

<i>Feature</i>	<i>Case company's product</i>	<i>Competitor X Product X</i>	<i>Competitor Y Product Y</i>
Price	4	3	1
Size	5	3	1
Performance	4	3	3
Reliability	3	3	5
Consumables	4	3	4
Compliance	2	3	4
Connectivity	3	3	2
Configurability	3	2	3
Easy maintenance	3	4	3
Development kit	3	3	3
Documentation	3	3	4
Self-diagnostics	5	3	3
Application parameters	4	2	3

As seen in Table 12, there are 13 different factors in comparison with scores. Seven factors are specific for product features (price, size, performance etc.), four add-on products or services (consumables, development kit etc.) and two support materials (documentation, regulatory compliance certificates).

The product feature comparison list can be converted into graphical form as a strategy canvas to visually see how features are positioned against the competitors. The higher the score is, the better. Figure 17 illustrates the strategy canvas how the case company's product positioning against its competitors.

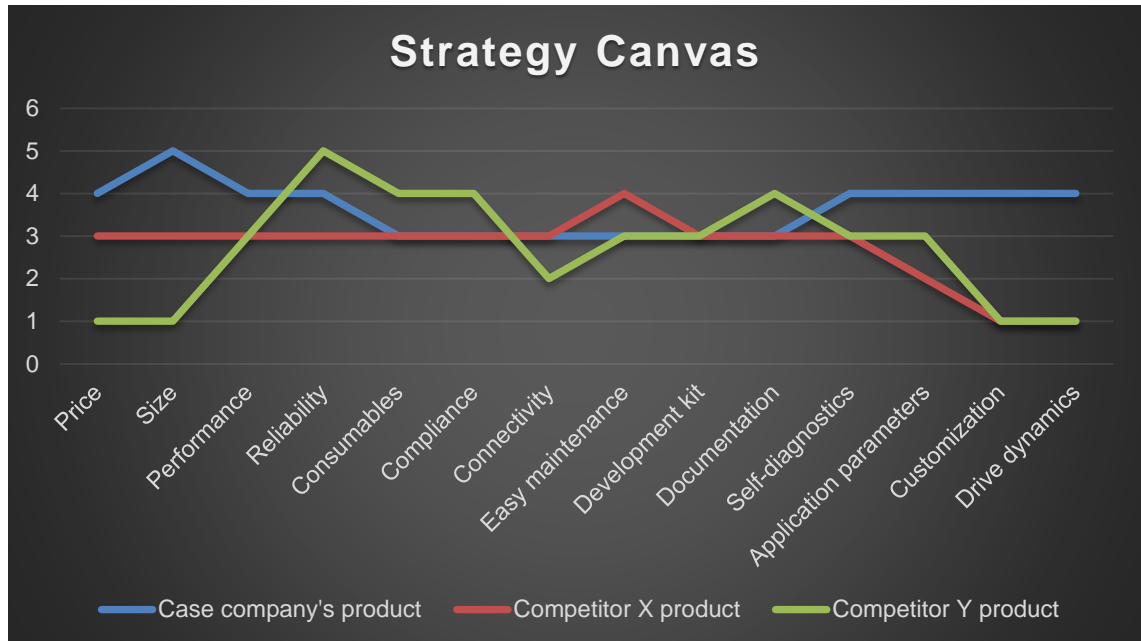


Figure 17. Strategy canvas of product comparison

Figure 17 shows which factors are the points of parity and which are the points of difference. For example, the points of difference in favor to the case company are the dispensing head price, size, performance, self-diagnostics, application specific parameters, product customization and drive dynamics. The points of parity are, for example, consumable i.e. tips, development kit, easy maintenance, and documentation. Where the case company is behind the competitors are reliability and compliance certificates. Good reliability of pipetting results can be achieved with better sensor technology and self-diagnostics. Regulatory compliance for different markets needs to be obtained in order to help customers in their own validation process and thus speed the instrument time-to-market.

After product comparison and sorting out which features are the points of parity and which ones are the favorable points of difference, the next step is to find which products and features satisfy the customer needs.

It is rather difficult to find any blue ocean areas when comparing mostly technical features. Blue oceans could be found by developing services for specific customer segments. However, new features like the application specific parameters could enable services that competitors' are not enabled to provide.

5.4 Satisfying Customer Needs

According to the conceptual framework, the next logical step to build the CVP is to find the products and features that fulfill the customer needs, in other words, fit the offering to the needs. The Customer needs analysis was conducted in section 3 where typical customer value chain was illustrated (Figure 10) with the needs and fears of each customer profiles in a value chain (Table 7).

The customer needs can be shown using the terminology of the value proposition canvas, customer jobs, pains, and gains. Likewise, supplier offerings can be shown with the terminology of products/features, pain relievers, and gain creators. Table 13 shows the case company's value proposition canvas of new OEM product.

Table 13. Value proposition canvas of new OEM product

Supplier Offerings		Customer Needs	
Products/Features 1. Small and high performance dispensing head 2. Development kit for integration 3. Documentation package 4. Configuration and service softwares	Gain Creators <ul style="list-style-type: none"> High accuracy and precision in every application Easy and rapid integration Adaptive drive controls Versatile customization 	Gains <ul style="list-style-type: none"> Reliable results Rapid time-to-market Money saved by avoiding unnecessary maintenance Custom designs 	Jobs 1. Design reliable high-performance products 2. Provide maintenance services with low shortage of operation time 3. Product regulatory compliance validation
	Pain Relievers <ul style="list-style-type: none"> Self-diagnostics makes product much reliable Maintenance only when needed Development supports with documentation and tools 	Pains <ul style="list-style-type: none"> Unreliable products Unscheduled maintenance Difficult to integrate into application Cost increases Delay of supply 	

As seen in Table 13, the main customer jobs are to (1) design reliable and high-performance products, i.e. automation instruments, (2) provide maintenance services with low shortage of operation time and (3) product regulatory compliance validation. Most of the pains the customer has that prevent doing the jobs are unreliable products, unscheduled maintenance and difficult to integrate components into the instruments.

To relieve the pains and create the customer gains, the case company offers products that fit the needs. Product portfolio contains (1) small and high performance dispensing head, (2) development kit for easy integration, (3) documentation package for product integration, verification and validation and (4) configuration and service software tools.

In order to build the actual customer value proposition, products or features that create the most value to the customers and are superior comparing to the next best alternatives must be selected to the value proposition. The next section creates the CVP with a detailed description of each factor how they create value to the customer.

5.5 Creating the Customer Value Proposition

After comparison of the products and product features and selecting which ones fit to which customer needs, the most valuable products and features must be selected to build the actual value proposition. The aim is to build a CVP that is the type of resonating focus, in other words, have only one or two favorable points of differences and couple of points of parity which have the actual real value to the customers.

According to the strategy and value proposition canvases, the strengths of the case company's new OEM dispensing head are the pipetting performance with the drive dynamics and product customization. Pipetting performance, i.e. accuracy and precision, is in totally different level than in competitors' products and has a real value to the customers. More accurate and precision product is the more robust results from the application. High performance comes from the liquid handling knowledge the case company has as a core competence. Drive dynamics means product ability to control and change its drive profile (speed, acceleration, braking) in real-time during aspiration and dispensing. Competitors have some ability to change its drive profiles but only with predetermined parameters, not in real-time "on-the-fly". This feature makes it possible to adapt in a different situation which could happen during dispensing. Product customization according to customer needs has been the case company's strength because of the agile organization and willing to offer solutions for low margin customers as well. In most of the cases where the customer needs an OEM solution, there are not ready, off-the-shelf, products available in the market. At least some modification needs (software, assembly fixings, electrical interfaces etc.) to be done to the product in order to fit the customer's application.

Other strengths of the product are its small size and low price. Size does matter in automation where liquid volumes and thus the needed instrumentation gets smaller all the time. More important than the size is the price of the product. Although the price of the liquid handling dispensing head could be over ten times lower than the instrument where it is used for, it is a very critical factor in order to win the tenders. The customers' purchasing managers are held responsible for decreasing costs of goods sold (COGS).

The short-term new development ideas include both, points of difference and points of parity products or features. Favorable points of difference features are the dispensing head internal self-diagnostics properties and the application specific parameters library. The self-diagnostics properties could be very useful during both in case company's and

customers development phases and in maintenance activities. The self-diagnostics can also prevent the scheduled yearly maintenance process if the product fulfills the required regulatory specifications. If so, the instrument can be in real use without any unnecessary shortage of operation not to mention the cost savings from the maintenance. The application specific parameters library, however, enables customers to configure their dispensing head liquid handling properties according to the application. It saves a lot of development and testing time from the customer for not have to try out and test different parameters by themselves. Another benefit is the high performance obtained from the dispensing head for using the validated parameters. A typical mistake from the customers is the misuse of the dispensing head and thus decreasing the product performance.

Consumables like tips and filters, development kit and proper documentation are the points of parity and are needed as mandatory products in order to get the same level with the competitors and speed up the customers' development projects.

According to the points of difference and points of parity, the value proposition takes the product high performance, dynamic drive control, and the case company's agility to offer customized solution as the key factors to emphasize. With high performance and dynamic drive control, instrument manufacturers can provide high accuracy liquid handling automation for versatile applications. On the other hand, customized solutions enable wide range of customers to partner with the case company. Afterward, customization also provides good "customer lock-in" with the case company. Figure 18 illustrates the proposed customer value proposal and the factors that fit to customer needs and position against the competitors.

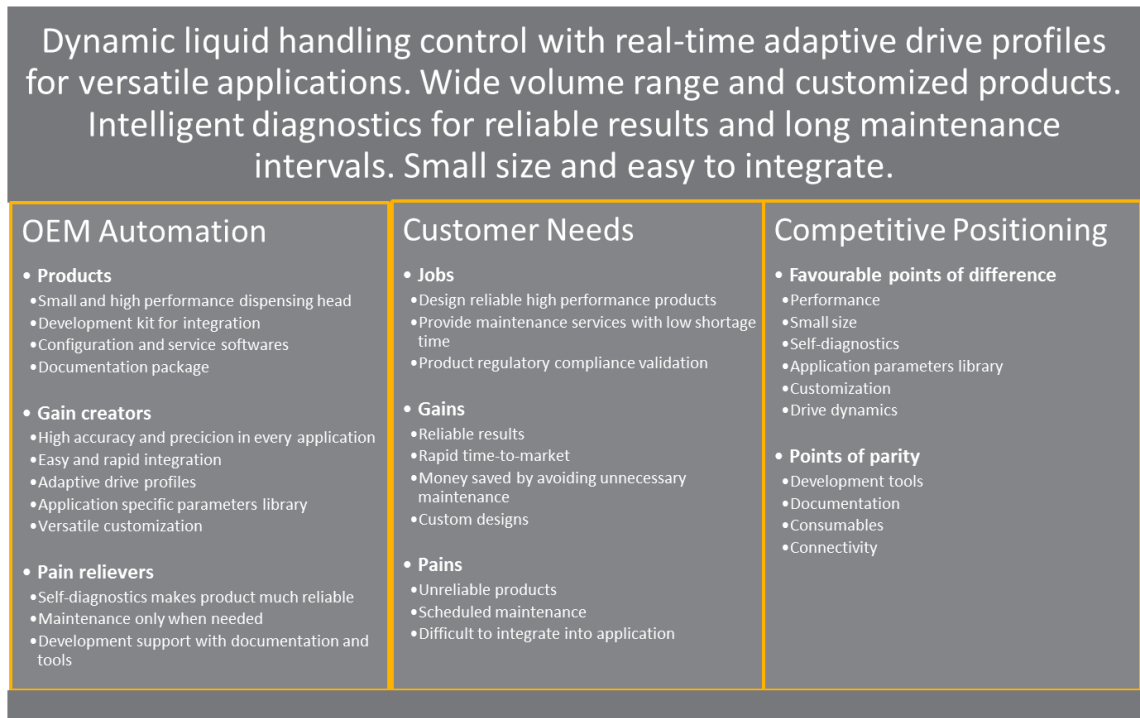


Figure 18. Initial proposal of the customer value proposition

As seen in Figure 18, the initial customer value proposal contains four key messages.

Dynamic liquid handling control with real-time adaptive drive profiles for versatile applications. Wide volume ranges and customized products. Intelligent diagnostics for reliable results and long maintenance intervals. Small size and easy to integrate.

The initial CVP type is more favorable points of difference than resonating focus. To change the CVP type, more focus on the customer value needs to be done.

5.6 Summary of the Initial Proposal

The CVP building process started by the workshop with the case company's key stakeholders in order to come up new development ideas what other features or add-on products/services can be sold with the new OEM product to fulfill customer needs and be superior comparing to the competitors. After the workshop, new ideas were divided into three groups (mandatory, short-term and long-term) depending how important those ideas are concerning the value creation.

After compiling the list of all products and features (factors) to be implemented in the near future, the factors were compared and positioned against the competitors' offerings using the strategy canvas tool. With the strategy canvas, points of parity and points of difference were easily recognized. Favorable points of difference of the new OEM product are product performance, small size, customization, dynamic drive control, and intelligent self-diagnostics features. Points of parity are the development kit and documentation package.

According to the customer needs analysis in section 3, points of parity and favorable points of difference features were fit to the customer needs using value proposition canvas. In value proposition canvas, customer needs were divided into pains and gains the customer might get by trying to do the jobs. The case company's offerings, on the other hand, were divided into pain relievers and gain creators to fit the customer needs, pains, and gains.

Based on the offerings that best fit to the customer needs and are the most valuable to the customer, the initial customer value proposition was build. The CVP contains four messages as a value proposition of the new OEM product.

“Dynamic liquid handling control with real-time adaptive drive profiles for versatile applications. Wide volume ranges and customized products. Intelligent diagnostics for reliable results and long maintenance intervals. Small size and easy to integrate.”

According to the research design of this thesis, the CVP needs to be validated. The next section describes the validation process and makes the improvements to the initial CVP.

6 Validation of the CVP Proposal

This section discusses the feedback obtained from the CVP validation process and the modifications to be done for the final CVP proposal. The section is divided into three parts. The first part describes the validation process, how the validation was conducted in detail and who were involved in the process. The second part lists the feedback and the development needs to the CVP and the further studies regarding the CVP and the OEM business itself. The third part describes the modified final CVP proposal based on the development needs according to the validation process. This section utilizes Data 3 collected during the validation.

6.1 Validation Process

Due to the time restriction of this thesis and the confidential information of the new OEM product under development, the validation was conducted using the case company's top management, i.e. board of directors, as a "customer" to give a feedback (data 3) of the initial CVP proposal. The feedback session was a normal design review group (DRG) meeting held in the case company's premises. Meeting minutes was done by using audio recordings and later recordings were translated into the meeting minutes which can be found from the appendix 4.

The feedback session was constructed into following manner. First, the research design with the business challenge and the expected output of this thesis were presented. All phases of the research design were covered roughly in order to give an overall picture about the research process during the last months. Second, each phase was explained in more detail. Especially the results of the current state analysis, highlighting the case company's weaknesses, customer needs, and competitors. Third, theory and the best practices of the CVP building process were presented to give an idea how the initial proposal was constructed. Fourth, after the building process, the initial CVP proposal was presented preceding the building steps according to the best practices and conceptual framework.

During the presentation and especially after the initial proposal, top management was able to ask questions and give a feedback. Moreover to the questions and feedback, the presentation and the proposal raised lots of discussion about the OEM business in general, what kind of information were got from the competitors and does the case company

knows enough of the customers' processes and needs in order to develop suitable products and make valid value propositions.

The next subsection covers the top management feedback and development needs in more details.

6.2 Feedback and Development Needs

The initial CVP proposal consisted of four key messages to be telling to the customers about the new product. The first one was a *“Dynamic liquid handling control with real-time adaptive drive profiles for versatile applications.”* The feature behind the message and the value proposition is the adaptive real-time drive control during the aspiration and dispensing, which is a unique feature comparing to the competitors. Top management challenged the need for the feature as competitors have not included such a feature so far.

Is that feature really a customer need? If so, why our competitors have not done it already? I guess it should not be so hard to do. What kind of customer will use it?

Data 3: Top management

In addition to the need for the feature, top management commented the message itself as there is no mention what the actual value to the customer is. It only says that the feature fits in versatile applications but not why. If the feature is used as favorable points of difference, actual value “reliable results” should be stated in the message. Despite the feedback, management recommended to keep it in value proposition which will be later evaluate if it is valuable or not.

The second key message was *“Wide volume range and customized products.”* It refers to the agility of the case company to customize products according to the customer needs and the wide product portfolio with the different volume ranges. As competitors have only one volume range product, the feedback from the top management was that is there a need for multiple products with different volume ranges. Product performance is increased if low volumes are handled with a separate product instead of large volumes.

If competitors have only one volume range with specific performance, maybe that performance is enough for the customers. There is no need for different products for different volumes or at least it is not a feature to be mention in the value proposition.

Data 3: Top management

The case company's agility to make product customizations raised a discussion how the agility is shown to the customers. Agile customizations are mainly done in R&D, but the rest of the organization, including sales and maintenance services, should be as agile as R&D to get most out of the value proposition. It is something that the case company recommended as further studies to develop.

If we are agile, where is it in sales organization? It is more internal, R&D, agility.

Data 3: Top management

The third key message was "*Intelligent diagnostics for reliable results and long maintenance intervals.*" As maintenance of the products is a "waste" for the customers, top management thought that this is worth to mention in a value proposition. If diagnostics can be made very thoroughly, there is a clear advantage for the favor of the case company, not to mention the money saved by the customers for avoiding the unnecessary maintenance and shortage of product operation.

The fourth message was "*Small size and easy to integrate.*" It was a point of parity that emphasizes the fast product integration and thus rapid product time-to-market. Top management's feedback about the fourth message was neutral and should be used in a value proposition. On the other hand, the message itself should state the speed of the integration, not the size. Product customization gives better speed value than the size and therefore should be mentioned in the message.

In addition to the feedback to the initial CVP proposal, top management was discussed lots of about the customer needs and how they can gather the real needs from the field, especially from the end customers, their application, and processes. In order to develop unique products and propose reliability and performance values, customer application knowledge is essential to see where they have potential problems (pains) and how to create value (gains) for the application. It was recommended that after the launch of the first version of the new product including the all the mandatory new features and add-on

products, the second step would be to make a study about the automation customer processes in detail and check which of the future features and products are applicable and creates the most value.

Mandatory features ready before the end of the year. Documentation must be good. All technical and regulatory compliance. Technical datasheet with MTBF and application notes with different parameters for different applications.

Data 3: Top management

The next subsection sums up the feedback of the validation process as a final proposal of the customer value proposition.

6.3 Final Proposal

According to the feedback of the initial CVP proposal from the case company's top management, a few messages were modified to express more clearly the actual value the customer will get. Likewise, some of the features which were not as unique as originally expected or have no value to the customers were removed from the CVP. The CVP takes the mandatory and short-term new features and add-on products into account. However, if those features are seen as unnecessary when further and deeper customer needs studies will be conducted, those can be removed from the CVP. The final proposal of the customer value proposition of the new OEM product is illustrated in Figure 19.

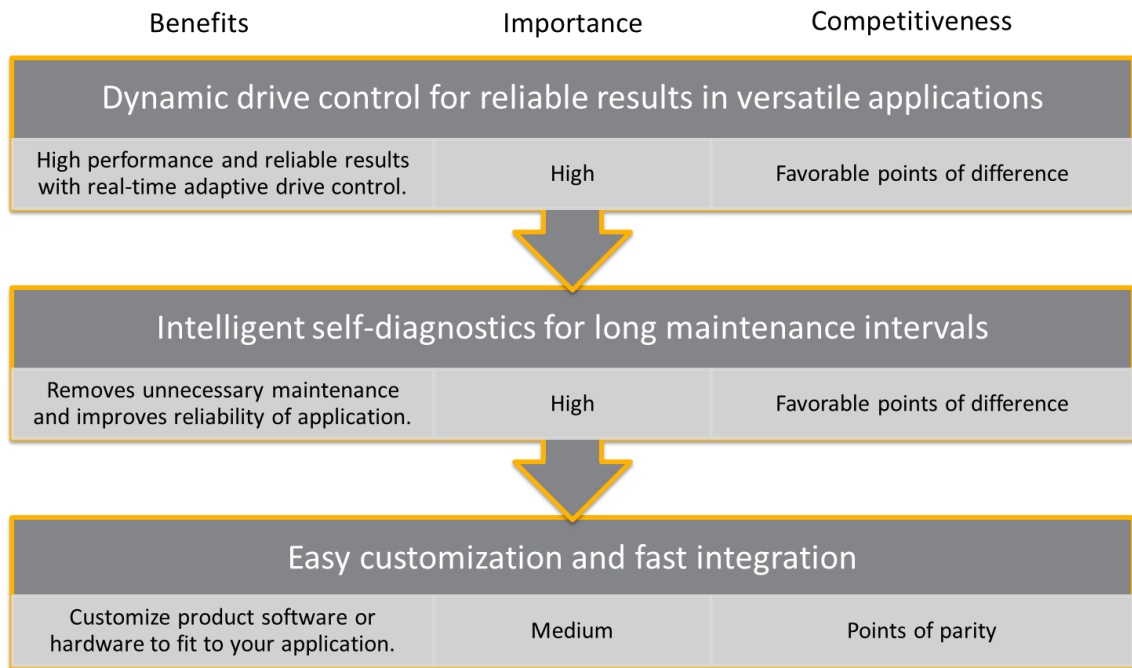


Figure 19. Final proposal of the customer value proposition

As seen in Figure 19, the final proposal consists of three key messages and their benefits and importance to the customer and comparison in the competitive landscape. The three key messages are (1) *Dynamic drive control for reliable results in a versatile application*, (2) *intelligent self-diagnostics for long maintenance intervals* and (3) *easy customization and fast integration*.

Dynamic drive controls for reliable results in versatile application

The benefits for the customer with the dynamic drive control are the high performance and reliable result of the application. As customer needs analysis, the reliable results of the products were the key customer need and thus the importance is very high. Adaptive real-time control is a unique feature which makes it points of difference in favor to the case company.

Intelligent self-diagnostics for long maintenance intervals

With the self-diagnostics, product unnecessary scheduled maintenance can be avoided which leads to the better product utilization and saves costs from the maintenance and application validation after the maintenance. In a case of a product malfunction, diagnostics can be used to locate the root cause of the defect which also speed up the maintenance process. Importance to the customer is high and if done properly, it is a favorable points of difference against competitors.

Easy customization and fast integration

One of the case company's strengths is the agility of the organization to customize their products according to the customer needs. In addition to the agility, the new add-on products like development kit, documentation package, and different regulatory compliances make the new product easy to take to use and fast to integrate into the customer's application. Excluding the easy customization, competitors also have add-on products that help the integration process and thus making this value proposition as points of parity.

As a summary of the final proposal, the CVP type is a resonating focus with two points of difference and one point of parity. Although the resonating focus, a monetary value of the proposition is difficult to calculate. It depends on of the customer application and their process for example how often the current instruments are needed to maintain and validate. Further studies are needed to tests the CVP in the real customers and in co-operation calculate the monetary value of the cost savings.

The next section summarizes the thesis and makes recommendations for further studies. It also evaluates the credibility of the data and research methods used in the thesis and how the final outcome compares to the objective set at the beginning.

7 Discussion and Conclusions

This section contains a summary of the thesis. It recaps the thesis research design, compares the research objective to the achieved outcome and makes recommendations for further studies. In addition, thesis credibility is evaluated from the reliability and validity point of views.

7.1 Summary

This thesis concentrated on developing a customer value proposition (CVP) for the case company's original equipment manufacturer (OEM) products. The objective of the thesis was to create a CVP for one of the new OEM products the case company has under development. The CVP is purposed to be used in the new product marketing once the product is ready for launch. Later, the CVP and its building process are meant to be used for other OEM products with the product and customer specific modifications. In addition to the CVP creation, OEM business in general, the main competitors and typical customer needs were covered.

The Thesis research started by analyzing the case company's history and current state in the OEM business, case company's OEM products during the last decades and the competitors' products in a specific industry segment, laboratory liquid handling automation. The Current State Analysis (CSA) were conducted by interviewing the case company's OEM key stakeholders and collecting both case company's internal and external data about the customers and competitors (data 1). The key findings from the CSA indicating strengths included the case company's liquid handling expertise and agility to respond to different customer needs. The weaknesses identified included the missing total customer value thinking and dedicated R&D and sales processes for OEM products. From the competition point of view, there are a few large companies that dominate the liquid handling automation markets. Two of them have high-quality OEM products as well and are thus the main competitors for the case company. The customer needs analysis revealed that the typical customer value chain contains several different profiles which all have different needs and fears that must be fulfilled to satisfy the customer as a whole.

After the CSA, best practices about the CVP and CVP building was studied from the literature. The result from the literature review was the Conceptual Framework (CF) to build the CVP according to best practices modified to suit the case company's needs.

The CF contains three main blocks: selecting CVP type, satisfying customer needs and positioning in the competitive landscape.

Together with the findings from the CSA and the CF, an initial proposal of the CVP was built. The building process consisted of a brainstorming workshop together with the key stakeholders from R&D, marketing and service departments. The idea of the workshop was to create new development ideas (Data 2) about what other features the new product should include or add-on products or services the case company should sell in addition to the new product in order to better fulfill the customer needs. After the workshop, the ideas were analyzed and categorized into mandatory, short-term and long-term development ideas. The initial proposal took only mandatory and short-term ideas into account and the CVP was based on the most valuable and highest priority ideas.

Due to the time restrictions and the confidential project information, the initial CVP proposal was validated by the case company's top management. In the validation of the proposal, the CSA, CF, and CVP were presented to the top management for evaluation and feedback collection. Based on the feedback and recommendation for next steps (Data 3), the final proposal of the CVP was created. The final CVP consists of three key messages as value propositions for the new OEM component.

“Dynamic drive control for reliable results in versatile applications. Intelligent self-diagnostics for long maintenance intervals. Easy customization and fast integration.”

First, two value propositions are the points of difference in favor to the case company and the third value proposition is a point of parity. According to the validation feedback and top management's recommendations, some value propositions need further studies to evaluate how valuable the features actually are for the customers.

In addition to the final proposal as the outcome of this thesis, another contribution of this thesis for the case company was that there were some new weaknesses found from the OEM business which need immediate attention. The most important one is the missing processes for OEM development. Fortunately, the case company has recognized the flaw and has already started to put some effort to improve it.

7.2 Limitations

This outcome of this thesis, the Customer Value Proposition, is limited to one OEM product. In order to use the outcome of this thesis in other OEM products, the CVP must be modified according to the product line and the focus customer segments. Although the CVP itself is not usable directly, the Conceptual Framework to build the CVP is valid. Another limitation is the missing focus of the consumables, i.e. disposable tips from the CVP. Tips are a crucial part of the case company's business. Considering the customer total value, somehow tips should be included in the value proposition.

7.3 Managerial Recommendations

To finish this thesis project and get the new OEM component into the market, a few further steps are recommended to follow. The recommended future steps are illustrated in Figure 20.

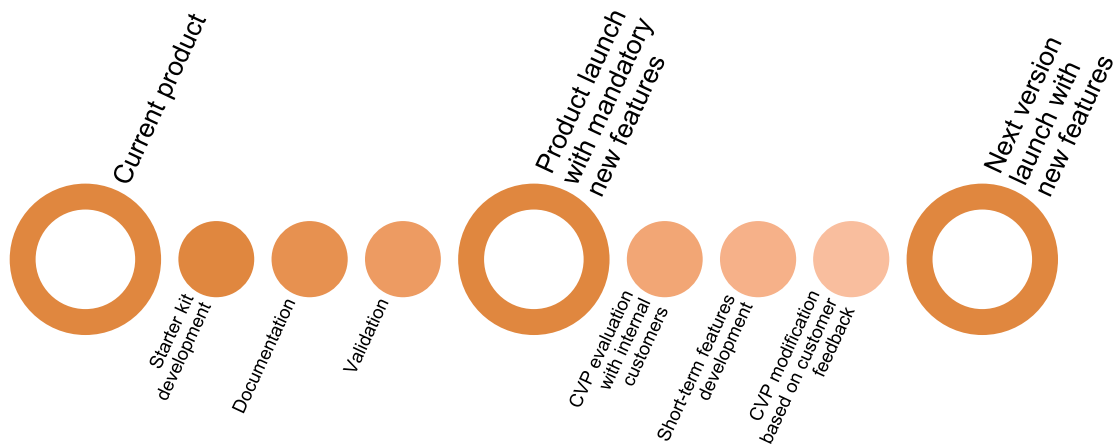


Figure 20. Recommended future steps

As seen in Figure 20, there are a few future steps that are recommended to follow. First, it would be advisable to develop the product under development using all of the mandatory new features stated in section 5. Second, before the short-term features development, the CVP needs to be evaluated with the customers to see which features are indeed valuable to the customers and which they are ready to pay for. After the evaluation, the new features and CVP can be changed accordingly.

As stated in the Current State Analysis, one of the case company's weakness is the missing dedicated R&D process for the OEM products. As agile as the case company is, it could be even more so with a proper process starting from the first contact to the customer to the shipment of the ready product. Similar to the R&D, the sales organization should be agile in reacting to different customer needs if such needs become apparent from the field. A good process helps to identify the needs and makes sure the product is productized well.

In addition to the OEM process, the marketing of the OEM products and partner programs should be taken into use as a normal procedure. Of course, all customers do not want to disclose their product ideas and cannot be used as a reference. But on the whole, the possibility to OEM partnering with the case company should be visible in the company's general marketing materials, web pages, brochures and industry fairs.

7.4 Evaluation of the Thesis

7.4.1 Outcome vs. Objective

The objective of the thesis was to create a CVP for the new OEM product the case company has under development for the automated liquid handling systems. The outcome was the CVP that consists of three key messages, value propositions, based on new product features. Although the result is the CVP which can be used for marketing purposes, the total customer value thinking is not clearly visible in the CVP. The outcome only proposes value to be gained if using the physical product, not the overall total value if using the case company as a partner during the product life cycle. Nevertheless, it can be considered that the result of this thesis met the objective set at the beginning of the research. The real business impact and value of the CVP for the case company can be evaluated later when the new product is launched and customer feedback is collected.

7.4.2 Reliability and Validity

The validity of this thesis was ensured by documenting all the data collected during the research. Each interview was tape recorded and made notes. Interviews were held in

the Finnish language and audio recordings translated into field notes in English and thus that might affect the validity of the thesis. However, the translated field notes were showed to the interviewees to verify the correctness of the field notes. The case company's internal and external data used in this thesis were rather new and so can be assumed that the information is not changed since then. Customer data was based on the case company's database collected during the years of co-operation and experience with the customers. On the other hand, competitor data was based on public materials which leave some doubt about the validity. For example, there is no financial data available about the competitors' OEM businesses.

The reliability of this thesis was ensured by using multiple data sources collected at different points of time. The key stakeholders in the interviews, workshop and validation meeting were selected so that they have a real connection and understanding the OEM business. The researcher is not part of the case company's OEM business and thus, should not affect the reliability of the results. Using a different research method would produce the same results.

7.5 Closing Words

As competition in laboratory liquid handling and especially in the laboratory automation market is intense, the value proposition of the products and services are more and more important to be done well. Big competitors have large market shares and they can sell more just by using their well-known brand names. To be able to enter into the laboratory automation market, something must be done differently. Just developing high precision and reliable products is not enough. The overall needs in the customer value chain must be taken into account and a value proposition that creates customer gains and relieves customer pains is mandatory.

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Research Interview Questions

TOPIC: CSA of the customer value proposition of OEM products

Information about the informant

Table 1

Details	
Name (code) of the informant	
Position in the case company	
Date of the interview	
Duration of the interview	
Document	Field notes

Field notes

Table 2

	TOPICS	QUESTIONS	FIELD NOTES
1	Interviewee background	How are you or have been involved in OEM products and/or business?	
2	OEM products, their key benefits, and customers	Which OEM products you have been working with? Who were the customers and what were their processes? What were the key benefits of the products?	
3	OEM internal process	How the OEM process (R&D, marketing, sales) usually works? How would you like to improve the process? How are customers involved in the process?	
4	Customer needs and trends	What kind of customer needs there usually are? Do you see any trends what customer needs are in the future?	
5	Customer concerns and fears	What are the biggest concerns customers have in products or process?	
6	Competitors and their products	Which are the biggest competitors in OEM field? What are their competitive advantages?	
7	Future development	What would be the main thing we should concentrate on OEM business?	

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