

# CHALMERS



## Technology Comparison, Customer Value and Market Strategy of a Radical Innovation

A Case Study of MicVac AB

*Master of Science Thesis in the Master Degree Programme Management and  
Economics of Innovation*

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Sofie Hjelmberg and Madeleine Larsson

## Abstract

MicVac AB is a company which offers a technological solution, MicVac, for production of chilled ready meals. MicVac AB has developed successfully since its start in year 2000, but the company believes that its sales potential is far from reached and that a more focused market strategy is needed.

The purpose of this Master's thesis was, in light of this (1) *to investigate how MicVac AB, a small growth company with an innovative technological solution, should segment its market, differentiate its offer and position itself and (2) to discuss, in the light of the applied study, important challenges that pertain to the commercialization and marketing of radical innovations.*

In order to fulfill the purpose, Customer Value Analyses were performed. The main sources of value creation were low production costs, high production efficiency and chilled ready meals with good taste, nutrition values, texture and color. Also the competitive advantage of MicVac was established. MicVac's main competitive advantage is short pasteurization/cooking time that leads to better taste, nutrition values, texture and color. MicVac also leads to low production costs and high production efficiency. MicVac was further defined as a radical innovation for producers of chilled ready meals.

By combining the acquired knowledge segmentation, differentiation and positioning strategies were formulated:

**Segmentation:** *Producers of chilled ready meals who can afford an initial investment of X MSEK, who has an annual turnover of at least Y MSEK, who values food quality and who operates in a suitable geographical market.*

**Differentiation:** *MicVac AB should differentiate itself by being a competent mentor offering a technological solution for gentle, industrial production of chilled ready meals.*

**Positioning:** *For producers of chilled ready meals, who are dissatisfied with the inefficiency of Cook and Chill, MicVac AB's product is a technology for industrial production of chilled ready meals that provides gentle heat treatment unlike Autoclave and Sous Vide. MicVac AB has assembled a complete solution that incorporates both technical knowledge and the technology itself.*

Challenges that pertain to the commercialization and marketing of radical innovations were found to be obtaining information about customers and knowing when to start targeting the mainstream market.

Key words: radical innovation, techno-economic analysis, segmentation, differentiation, positioning, chilled ready meals

# Contents

- 1. Introduction..... 8
  - 1.1 Background..... 8
  - 1.2 Purpose..... 8
  - 1.3 Limitations..... 8
  - 1.4 Research Questions..... 9
  - 1.5 Disposition..... 10
- 2. Literature Review ..... 11
  - 2.1 Crossing the Chasm ..... 11
  - 2.2 Blue Ocean Strategy ..... 13
- 3. Methodology ..... 17
  - 3.1 Empirical Study for Techno-Economic Analysis..... 17
  - 3.2 Empirical Study for Customer Value Analysis Producers ..... 18
  - 3.3 Empirical Study for Customer Value Analysis Wholesalers..... 19
  - 3.4 Empirical Study for Analysis of MicVac’s Competitive Advantage ..... 19
  - 3.5 Additional Interview with Ready Meal Researcher ..... 20
  - 3.6 Additional Study of Models for Product Costing..... 20
  - 3.7 Validity and Reliability ..... 20
- 4. Theoretical Framework ..... 22
  - 4.1 Different Types of Innovations..... 22
  - 4.2 Techno-Economic Analysis ..... 22
  - 4.3 Segmentation, Differentiation, and Positioning from the Traditional Marketing Perspective ..... 24
    - 4.3.1 Segmentation ..... 24
    - 4.3.2 Differentiation ..... 26
    - 4.3.3 Positioning..... 27
  - 4.4 Segmentation, Differentiation, and Positioning from the Commercialization and Marketing of Innovations Perspective ..... 29
    - 4.4.1 Segmentation ..... 29
    - 4.4.2 Differentiation ..... 31
    - 4.4.3 Positioning..... 32
  - 4.5 Theoretical Comparison of Different Perspectives on Segmentation, Differentiation, and Positioning..... 33
- 5. Results and Analyses ..... 35
  - 5.1 Techno-Economic Analysis ..... 35

5.2	Additional Study of Models for Product Costing.....	35
5.3	Research Question 1 - How is Value Created for Producers, Wholesalers and End Customers of Chilled Ready Meals? .....	36
5.3.1	Customer Value Analysis Producers.....	36
5.3.2	Customer Value Analysis Wholesalers .....	40
5.3.3	Additional Interview with Ready Meal Researcher .....	40
5.3.4	Conclusions Customer Value .....	41
5.4	Research Question 2 – What Value does MicVac Create in Comparison to Existing, Competing Technologies .....	43
5.4.1	Comparison – Value Parameters that Relate to Producers.....	44
5.4.2	Comparison – Value Parameters that Relate to Wholesalers .....	46
5.4.3	Comparison – Value Parameters that Relate to End Customers.....	46
5.4.4	Investment and Production Cost Adjusted with Respect to Production Volume .....	47
5.4.5	Efficiency Adjusted With Respect to Production Volume .....	49
5.4.6	Pay-Back Time and Net Present Value Adjusted With Respect to Production Volume .....	50
5.4.7	Conclusions MicVac’s Competitive Advantage.....	51
5.5	Research Question 3 - What Type of Innovation is put forward by MicVac AB?.....	52
5.6	Research Question 4 - How should MicVac AB Preferably Segment its Market, Differentiate its Offer, and Position itself? .....	53
5.6.1	Segmentation .....	53
5.6.2	Differentiation .....	54
5.6.3	Positioning.....	57
5.7	Research Question 5 - What Challenges have been Identified that Pertain to the Commercialization and Marketing of Radical Innovations?.....	57
6.	Conclusions.....	59
	References.....	61
	Appendix I – Interview Guide Techno-Economic Analysis .....	63
	Appendix II – Interview Guide Customer Value Analysis Producers .....	65
	Appendix III – Interview Guide Customer Value Analysis Wholesalers .....	70
	Appendix IV – Interview Guide Additional Interview with Ready Meal Researcher .....	72
	Appendix V - Interview Guide Analysis of MicVac’s Competitive Advantage .....	73
	Appendix VI – Result Techno-Economic Analysis.....	75
	Appendix VII – Result Empirical Study for Customer Value Analysis Producers .....	80
	Appendix VIII – Result Empirical Study for Customer Value Analysis Wholesalers .....	87
	Appendix IX – Result Additional Interview with Ready Meal Researcher.....	90

Appendix X – Explanation of Customer Value Parameters .....	94
Appendix XI – Segmentation Variables .....	96
Appendix XII – Evaluation of Segmentation .....	98
Figure 1. The Value Chain.....	9
Figure 2. Techno-Economic Analysis (Lindmark, 2006, p. 2).....	23
Figure 3. Parameters from Techno-Economic Analysis.....	35
Figure 4. Customer Value in the Value Chain.....	43
Figure 5. Labor Cost.....	48
Figure 6. Output per Production Hour .....	49
Figure 7. Output per Work Hour .....	50
Figure 8. Competitive Advantages .....	51



# 1. Introduction

In this chapter, background information will be given about MicVac AB. Moreover, the purpose, the limitations and the research questions of this Master's thesis will be presented.

## 1.1 Background

MicVac AB is an entrepreneurial company whose actions are focused on selling and developing a patented, technological solution for production of chilled ready meals. MicVac AB's technological solution will henceforth be referred to as MicVac. MicVac AB is a complete solution provider that sells all equipment and technological competence necessary for producing chilled ready meals. The main difference between MicVac and other technologies for producing chilled ready meals is that MicVac performs in-pack pasteurization and cooking in about ten minutes using a microwave tunnel and a purpose made package including a special MicVac valve.

According to the report Ready Meals in Europe (Datamonitor, 2009), the European market for ready meals has developed positively during 2004-2008. The annual growth rate, in terms of revenues, was 4.6% during this period. The ready meal segment consists of frozen ready meals, chilled ready meals, dried ready meals and canned ready meals. Frozen ready meals generated 45.5% of the overall revenue in 2008. Chilled ready meals generated 28.8% of the overall revenue in 2008. United Kingdom is the largest market for ready meals and accounts for 21.9% of the European ready meals market value. Germany is the second largest market for ready meals and accounts for 18.3% of the European ready meals market value. Supermarkets and hypermarkets represent the leading distribution channels and account for 72.7% of the market value. The largest ready meal companies are Unilever and Nestlé, which account for 4.4% and 4.1% of the market value.

Since MicVac AB started selling its technological solution, MicVac, in 2000, the company has been developing rather successfully. The company increased its turnover substantially over the years 2004-2009. However, MicVac AB believes that the actual sales potential is far from reached and it has been proved challenging to acquire new customers. This can partially be explained by MicVac AB's marketing strategy, which is somewhat lacking in strategic focus. MicVac AB is very aware of all the positive aspects of its own technology. However, when it comes to which of these aspects that create most customer value the company is more uncertain. Moreover, the technological solution's performance in relation to other technologies is not completely clear to the company. As a result, MicVac AB has not been able to develop a clear and unified market strategy and therefore the company's sales efforts are somewhat lacking in focus.

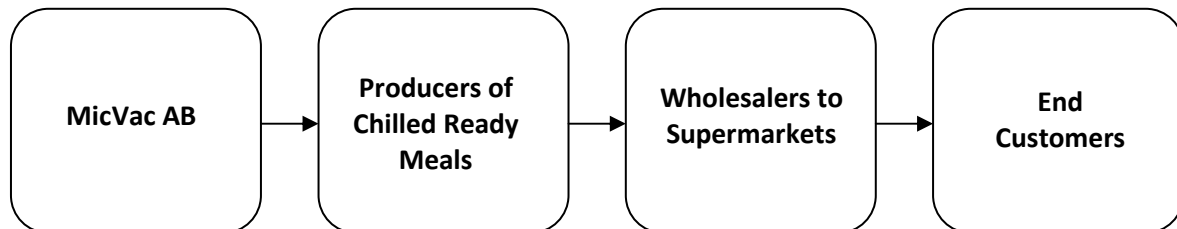
## 1.2 Purpose

The purpose of the present Master's thesis is twofold; namely *(1) to investigate how MicVac AB, a small growth company with an innovative technological solution, should segment its market, differentiate its offer and position itself and (2) to discuss, in the light of the applied study, important challenges that pertain to the commercialization and marketing of radical innovations.*

## 1.3 Limitations

Due to limited resources and a limited timeframe, customer value was only investigated for the central actors in the value chain consisting of producers of chilled ready meals, wholesalers to supermarkets and end customers of chilled ready meals. This value chain was chosen because of the fact that chilled ready meal producers can be considered to constitute MicVac AB's natural

mainstream market. At some point in time it is likely that MicVac AB will wish to sell to these actors. Also due to limited resources and a limited timeframe, customer value was only investigated for producers of chilled ready meals and wholesalers to supermarkets in Western Europe. Western Europe was chosen as geographical limitation due to its geographical closeness to MicVac AB. It is important to state that it is the chilled ready meal producers, not wholesalers to supermarkets or end customers, who are considered as being MicVac AB's direct customers; they are the ones that buy its technological solution MicVac.



**Figure 1. The Value Chain**

The fact that customer value was only studied for the value chain consisting of producers of chilled ready meals, wholesalers to supermarkets and end customers of chilled ready meals imposed a constraint upon the analysis of how MicVac AB should segment its market. Since the only direct customers about whom data existed were producers of chilled ready meals, they had to be the target segment. Moreover, the fact that the chilled ready meal producers were considered the target segment had to be taken into account when formulating the differentiation and positioning strategies.

Moreover, the technologies which were experienced as competing technologies by MicVac AB were Autoclave, Sous Vide and Cook and Chill. It was decided together with MicVac AB that MicVac was to be compared only with these three established technologies.

Furthermore, only the two books *Crossing the chasm: marketing and selling high-tech products to mainstream customers* (Moore, 1991) and *Blue ocean strategy: how to create uncontested market space and make competition irrelevant* (Kim & Mauborgne, 2005) were used as references for investigating how a radical innovation can be segmented, differentiated and positioned. Concerning the techno-economic analysis, only the parts of this framework that were deemed relevant to the thesis have been explained in *Theoretical Framework*.

Finally, due to limited resources and a limited timeframe, a study of potential geographical markets for MicVac AB to enter lies outside the scope of this Master's thesis.

## **1.4 Research Questions**

Research question 1: How is value created for producers, wholesalers and end customers of chilled ready meals?

Research question 2: What value does MicVac create in comparison to existing, competing technologies?

Research question 3: What type of innovation is put forward by MicVac AB?

Research question 4: How should MicVac AB preferably segment its market, differentiate its offer, and position itself?

Research question 5: What challenges have been identified that pertain to the commercialization and marketing of radical innovations?

## **1.5 Disposition**

This Master's thesis is divided into six major chapters. The first chapter, *Introduction*, aims at providing a general background of MicVac AB and at presenting the purpose, the limitations and the research questions of the Master's thesis.

The second chapter, *Literature Review*, positions this Master's thesis in relation to previous research. *Literature Review* also gives a general background to information presented in *Theoretical Framework*.

The third chapter, *Methodology*, explains how the empirical studies of this Master's thesis were conducted and discusses their validity and reliability.

The fourth chapter, *Theoretical Framework*, provides the theoretical knowledge on which the analyses of this Master's thesis are built.

The fifth chapter, *Results and Analyses*, outlines the results from the empirical studies and analyzes them.

The sixth chapter, *Conclusions*, summarizes the answers to the five research questions, which have been analyzed in chapter five.

Thereafter follows *References* and *Appendix I-XII*. The appendices contain the interview guides that were used in the conducted interviews, more detailed presentations of the results of the empirical studies, a more detailed description of the customer value parameters that were used when comparing customer value and information regarding the segmentation of the market of MicVac AB.

## 2. Literature Review

Much research has been conducted on the topic of commercialization and marketing of innovations. Jolly (1997) describes the entire commercialization process of a new technology, and has developed a model for how to successfully bring a new technology to market. This model consists of five sub processes that should be conducted in an iterative manner. The first sub process is about imagining a techno-market insight; the new technology must be matched with an attractive market opportunity. The second sub process is about incubating the technology to define its potential to be commercialized, that is, the technology and the market opportunity should be proved in some unequivocal manner. This is necessary for resources and venture capital to be dedicated to the technology's further development. The third sub process is about demonstrating the technology contextually in products and/or processes, that is, the technology must be developed into a sellable product and/or process. The fourth sub process is about promoting the developed product and/or process to facilitate market acceptance. The fifth and final sub process is about sustaining commercialization in order to prolong the presence on the market.

Moreover, Rogers (2003) describes the manner in which an innovation spreads in the market. According to Rogers (2003) there are certain characteristics of an innovation that facilitate and speed up the diffusion rate. Firstly, a high relative advantage compared to the market alternative facilitates and speed up the diffusion rate. Compatibility with the current market alternative has the same effect. Moreover, a less complex innovation enjoys a faster diffusion rate than a more complex innovation. Trialability and observability are other aspects that speed up the diffusion rate. Finally, opinion leaders play a role in the diffusion rate of an innovation; their endorsement can speed up the diffusion significantly.

Further, Chesbrough & Richard (2002) discuss how the business model can be designed to facilitate the adoption of an innovation. Based on their extensive investigation of Xerox, they argue that the business model and its design is a major factor affecting the commercial success of an innovation.

Also Moore (1991) and Kim & Mauborgne (2005) have treated the topic of commercialization and marketing of innovations. They have written the books *Crossing the chasm: marketing and selling high-tech products to mainstream customers* and *Blue ocean strategy: how to create uncontested market space and make the competition irrelevant*. The basic ideas of these books will be explained in more detail below.

In the more traditional marketing perspective, which does not take into consideration commercialization and marketing of innovations specifically, segmentation, differentiation and positioning are central concepts. However, not much literature exists in the interface between traditional marketing literature regarding segmentation, differentiation and positioning and literature regarding commercialization and marketing of innovations. The authors of this Master's thesis believe that new insights can be gained by studying the intersection of traditional marketing literature regarding segmentation, differentiation and positioning and Moore's (1991) and Kim's & Mauborgne's (2005) literature about commercialization and marketing of innovations.

### 2.1 Crossing the Chasm

Market diffusion of a radical, technological innovation is the central topic of *Crossing the chasm: marketing and selling high-tech products to mainstream customers* (Moore, 1991). More specifically,

the *Crossing the chasm* framework outlines a strategy for how to bring a radical, technological innovation from the early market to the mainstream market. The strategy is built on an insight into the Technology Adoption Life Cycle, firstly presented by Everett M. Rogers in 1962. The Technology Adoption Life Cycle is a marketing model that describes the market penetration of a radical innovation with respect to the type of customers the innovation attracts. Five distinct types of customers are identified on the basis of their responses to the innovation. Each type of customer group has a particular psychological and social profile. The different types of customer groups are innovators, early adopters, early majority, late majority, and laggards.

Innovators represent the first customer group to adopt an innovation. This customer group is interested in the technology itself. They pursue technological innovations actively since technology is a central interest in their lives. Innovators are not very concerned with the benefits created by the technological innovations. The innovators account for only 2.5% of the total market and are not a source of high profit; rather they are good alpha and beta testers. Their most important contributions are that they allow for a new technology to reach the market and that they work as references for the next adoption group; early adopters.

Early adopters account for 13.5% of the total market and represent the second customer group to adopt a new technology. The early adopters buy a radical innovation to match a strategic opportunity and to leapfrog competition. Early adopters accept high costs, risk, and an incomplete product because they see high potential benefits with the radical innovation. The early adopters have a short term orientation and high requirements and may soon move on to another radical innovation project that attracts their attention. It is important that the venture, related to the radical innovation, designs development projects to suit both its own interests and the early adopters. In this way, a more complete product that will be accepted by the next adoption group, the early majority, can be developed.

The early majority represent the third adoption group and accounts for 34% of the market. The early majority buys an incremental productivity enhancing improvement after the radical innovation has been de-bugged and proven reliable. This group is risk adverse and they want to buy from the market leader, since this will ensure that complementary services will be developed and that the venture will be around for a long time. The early majority is a hard customer group to win over but they are loyal once having become customers.

Next in the Technology Adoption Life Cycle one finds the late majority. This group accounts for 34% of the total market. The late majority has the same characteristics as the early majority apart from one major difference: whereas the early majority is comfortable with handling technology, the late majority is not. They need a lot of technical support and will not buy the radical technological innovation until it has become standard in the market.

The last customer group to adopt a radical innovation is the laggards. They account for the final 16% of the market. The laggards do not want to have anything to do with a new technology.

According to the original Technology Adoption Life Cycle by Everett M. Rogers from 1962, the adoption by the different customer groups is a continuous process starting with the innovators and ending with the laggards. A group that has adopted a radical innovation functions as a reference for the next group and thereby facilitates the adoption of the next group. Moore (1991) argues that this

view is subject to two fallacies. Firstly, the adoption process is not continuous and secondly, customer groups do not always function as references to consequent groups. Between each customer group there is a gap. A gap represents the “*dissociation between the two group- that is, the difficulty any group will have in accepting a new product if it is presented in the same way as it was to the [previous] group*” (Moore, 1991, p. 16). The gap is especially large between the early adopters and the early majority, and this gap is what Moore (1991) refers to as a chasm. The early adopters and the early majority do not want to buy the same thing when buying a radical innovation: early adopters want to buy a change agent and the early majority wants to buy an incremental improvement. Thus, the early majority does not recognize the early adopters as suitable references. The early majority does not want to disrupt their current organizations and therefore they require references ensuring that a certain radical innovation is reliable. The problem then, is that no suitable references exist before an actor from the early majority has bought the radical innovation, and no actor from the early majority will buy the radical innovation before having consulted several suitable references.

The early majority is the beginning of the mainstream market for a radical innovation and as such it is an attractive market for ventures that aspire to benefit from high revenue streams. As mentioned at the outset of this section, Moore (1991) has developed a strategy for how technology ventures can go about when crossing the chasm.

## **2.2 Blue Ocean Strategy**

The *Blue ocean strategy* framework can be described as a business strategy innovation designed to eliminate competition. The objective of a blue ocean strategy is to create new market space where currently no competition exists, so called uncontested market space. As claimed by Kim & Mauborgne (2005, p. 4) “*the only way to beat competition is to stop trying to beat competition*”. The creation of new market space is achieved through value innovation. Value innovation occurs when one aligns innovation with value, i.e. utility, price and cost. Normally, actors within an industry focus on either differentiation at the expense of low costs and low price, or on reducing costs and price at the expense of reduced utility for the consumers. Kim & Mauborgne (2005) argue that such a trade-off not only can be avoided, but should be avoided in order for a company to maintain success in the long run. By questioning the industry standards a company can create a leap in value for both the company and the consumers, i.e. value innovation.

In the book *Blue ocean strategy: how to create uncontested market space and make the competition irrelevant*, (Kim & Mauborgne, 2005) a methodology is presented for the creation of a blue ocean strategy. This methodology consists of frameworks that are used together with four guiding principles in order to create a blue ocean strategy.

The first framework presented by Kim & Mauborgne (2005) is the strategy canvas. The strategy canvas is used to describe the current state in the known market space and to identify opportunities for the creation of blue oceans. The strategy canvas consists of two axes. On the horizontal axis the factors that the industry competes on and invest in are presented. On the vertical axis the level of what a company offers its customers, across the competing factors, is presented. By plotting the industry actors, including one’s own company, along these two axes one obtains so called value curves, which display a company’s relative performance across the factors of competition of the

industry. The value curves illustrate if and how a company differentiates itself from the competition, as well as identifies other differentiation opportunities.

The second framework, the four actions framework, aims at making a company ask itself which of its industry's factors of competition that should be eliminated, reduced well beyond the industry standard, raised well above the industry standard, and created. By reducing and eliminating certain factors the company can reduce its costs in relation to the industry standard. Similarly, by increasing and creating certain factors of competition the company can increase the value of its offer in relation to the industry standard and create new demand. By applying the four actions framework to the strategy canvas one can gain new insights on old perceived industry truths.

The third framework, the eliminate-reduce-raise-create grid, pushes a company not only to ask the four questions in the four action framework but also to act on all four.

The fourth framework is designed to evaluate the attractiveness of a certain value curve. *"When expressed through a value curve [...] an effective blue ocean strategy [...] has three complementary qualities: focus, divergence, and a compelling tagline. Without these qualities, a company's strategy will likely be muddled, undifferentiated, and hard to communicate with a high cost structure."* (Kim & Mauborgne, 2005, p. 37). A focused strategy directs a company's limited resources towards a specific purpose, something that keeps costs down. A divergent strategy is required to differentiate oneself from the competition. If a strategy is not divergent it is likely to be a "me-too" strategy and does not have the potential to unlock a blue ocean. A compelling tagline is required in order to be able to communicate a clear message that will be remembered by the customers in a beneficial way. If a compelling tagline cannot be formulated, the strategy is likely to be internally driven with limited customer value.

Moreover, the four guiding principles that should be applied when formulating a blue ocean strategy are: reconstructing market boundaries, focusing on the big picture (not on numbers), reaching beyond existing demand, and finally getting the strategic sequence right.

The first guiding principle, reconstructing market boundaries, is about identifying new rules of competition. In an industry, actors tend to define themselves in a similar way. Thus, a way to stand out from the competitors is to define oneself in a different way. The reconstruction of market boundaries should be conducted from six different paths. The first path refers to looking across alternative industries. When following this path one should identify substitute and alternative industries and focus on the key benefits that lead buyers to trade with these industries and eliminate or reduce everything else. The second path refers to looking across strategic groups within the industries. A strategic group is a set of actors within an industry that pursue a similar strategy. These groups are normally arranged according to price and performance. An increased price is accompanied by a similar increase in performance. As when following the first path one should identify the key benefits within the different strategic groups and focus only on these and reduce or eliminate everything else. The third path refers to looking across the chain of buyers. Three distinct buyer roles are identified, namely purchasers, users, and influencers. If all actors in an industry focus on a particular buyer role, new market space can be identified by focusing on another buyer role. The fourth path refers to looking across complementary products and service offers. One should define the total solution buyers seek when choosing a product or service as well as the pain points that occur before, during, and after a product or service is used. Also through this fourth path, new

potential for value creation can be identified. The fifth path refers to looking at functional or emotional appeals to buyers. If an industry has a particular appeal, a blue ocean could be created by shifting this appeal. That is, if an industry has a functional appeal new market space could be created by using an emotional appeal and vice versa. The sixth path refers to looking across time. Here, one should identify a decisive and irreversible trend that affects one's own industry and assess if this trend can be used to unlock new market space.

The second guiding principle is about focusing on the big picture, not on numbers. Often large corporations have an extremely complex strategy that is largely made up of individual and independent tactics. Instead, one should focus on the big picture that will allow for a focused and divergent strategy with a compelling tagline. This should be done by drawing the strategy canvas. The process of drawing one's strategy canvas proceeds through four different stages. Firstly, one should draw the current strategy canvas. Secondly, one should engage in a visual exploration where customers, noncustomers, and users and their use of one's product or service are investigated on the basis of the six paths discussed in the previous paragraph. Thirdly, one should evaluate six different canvases, composed on the basis of the six different paths, and pick one. Fourthly, the chosen strategy should be communicated, through visual aid, to all parties to which it applies.

The purpose of the third guiding principle, reaching beyond existing demand, is to maximize the size of the blue ocean. One should focus on noncustomers and identify commonalities in what buyers value. Focusing on differences between current customers in order to make an as narrow and precise segment as possible is not recommended. Desegmentation, rather than segmentation, is the ideal. Kim & Mauborgne (2005) justify this claim by arguing that noncustomers are the ones that have not accepted the downsides that current customers are also dissatisfied with but have taken for granted. Therefore, by identifying the demands of noncustomers one can simultaneously attract new customers and increase sales to current customers. Kim & Mauborgne (2005) identify three different types of noncustomers, namely first tier noncustomers, second tier noncustomers, and third tier noncustomers. First tier noncustomers are soon-to-be noncustomers. These customers use the current offer as little as possible to get by as they search for a better alternative. These customers are customers only because nothing better exists on the market. Second tier customers are refusing customers. They refuse, or cannot afford, to use the current offer and their needs are either fulfilled by other means or ignored. Third tier noncustomers are unexplored customers that are not thought of as potential customers. By handling the reasons these noncustomers have for not being customers one can unleash latent demand and open up new market space.

Finally, the fourth guiding principle put forward by Kim & Mauborgne (2005) is getting the strategic sequence right. The fourth guiding principle represents a method for both validating the commercial viability of the blue ocean and to build a robust business model that will allow one to profit from the blue ocean. The strategic sequence outlined by Kim & Mauborgne (2005) starts with an evaluation of the buyer utility of the identified blue ocean. Different types of buyer utilities should be evaluated over the entire life time of one's product or service. One should identify the largest obstacles to buyer utility across the buyer experience cycle for customers and noncustomers, if the blue ocean effectively eliminates these obstacles it creates exceptional buyer utility. Given that one finds that the blue ocean creates exceptional buyer utility one can move forward to the next step in the strategic sequence, namely price. A strategic price level should be set to quickly capture the target mass of buyers. A suitable strategic price allows for a rapid growth of the customer base. Moreover,



a suitable strategic price has three main benefits. Firstly, high volume generates high returns since the fixed costs often are much higher than the variable costs. Secondly, the value of one's product or service may be closely linked to the total number of people using it, it might have network externalities. However, the most important benefit of a suitable strategic price is that it prevents other companies from copying the blue ocean strategy. A suitable price level attracts and retains customers since the customers have no reason to change to an alternative service or product, given that the buyer utility is maintained. Having specified the strategic price, one should ensure that the costs can be kept at a level where an acceptable profit margin can be attained. Costs can be kept down by streamlining operations, cost innovations, partnering, or by using an alternative payment model. Finally one needs to ensure that the blue ocean will be accepted by employees, business partners, and the general public.

Now an overview has been given of Moore's (1991) and Kim's & Mauborgne's (2005) literature about commercialization and marketing of innovations. In *Theoretical Framework*, the parts of this literature that relate more specifically to segmentation, differentiation and positioning will be presented together with the more traditional marketing literature regarding segmentation, differentiation and positioning.

### **3. Methodology**

In this chapter, a description will be given of how the four empirical studies of this Master's thesis were conducted. The four different empirical studies provided information for the following four analyses:

- Techno-Economic Analysis
- Customer Value Analysis Producers
- Customer Value Analysis Wholesalers
- Analysis of MicVac's Competitive Advantage

In addition to the four empirical studies, a separate interview was conducted with the ready meal researcher Mia Prim. Also, a minor additional study of what parameters that are normally included in a model for product costing was performed.

The Techno-Economic Analysis, and the separate study of what parameters that are normally included in a model for product costing, were performed in order for their results to function as input when creating the interview guides for the Customer Value Analyses and for the separate interview that was conducted with the ready meal researcher Mia Prim.

The Customer Value Analyses, and the separate interview with the ready meal researcher Mia Prim, were conducted in order to answer the first research question: how is value created for producers, wholesalers and end customers of chilled ready meals? It is important to note that the outcomes of the Customer Value Analyses and the interview with Mia Prim, were also used to construct the interview guide for the Analysis of MicVac's Competitive Advantage.

The Analysis of MicVac's Competitive Advantage was conducted in order to be able to answer the second research question: what value does MicVac create in comparison to existing, competing technologies?

The empirical studies have been evaluated according to construct validity, external validity, ecological validity and reliability. Construct validity refers to whether the correct operational measures are established for the concept that is being studied (Holmén, 2010). External validity refers to question of whether the results of a study can be generalized beyond the specific research context (Bryman, 2004, p. 73). Ecological validity refers to the question of whether the findings are applicable to people's every day, natural, social settings (Bryman, 2004, p. 29). Reliability is concerned with the question of whether results are repeatable (Bryman, 2004, p. 28).

#### **3.1 Empirical Study for Techno-Economic Analysis**

The purpose of the empirical study for the Techno-Economic Analysis was to understand MicVac in order to be able to carry out the Techno-Economic Analysis. A qualitative case study was carried out in order to understand how MicVac functions in a profound and exhaustive manner.

The data was gathered through three, one hour interviews conducted in person with four employees of MicVac AB. One interview was conducted with Philip Nordell (CEO), one interview was conducted with Johan Zetterberg (Head of Sales) and Hanna Rüdell (Sales Manager) and one interview was conducted with the founder of the company, Joel Haamer. The interviews were semi-structured and the interview guide can be found in Appendix I. In order to construct the interview guides, as many

technical performance parameters as possible were constructed with the help of the framework described in section 4.2, *Techno-Economic Analysis*.

The acquired data is presented directly in the Techno-Economic Analysis, which can be found in Appendix VI.

### **3.2 Empirical Study for Customer Value Analysis Producers**

The purpose of this study was to understand how value is created for chilled ready meal producers. Because of the fact that profound and exhaustive data was desired from several chilled ready meal producers, a qualitative and comparative case study was designed.

Interviews were conducted with producers of chilled ready meals in Western European countries. Because it was considered reasonable to believe that it would be more difficult to obtain exhaustive information from the countries outside the Nordic countries, two separate samples of producers of chilled ready meals were created. One sample consisted of 16 producers of chilled ready meals in the Western European countries Belgium, France, Great Britain, the Netherlands, Spain and Switzerland. The other sample consisted of eight producers of chilled ready meals in the Nordic countries Finland, Norway and Sweden. For the Western European sample, an interview guide was constructed for a 20 minutes interview. For the Nordic sample, an interview guide was constructed for a 45 minutes interview.

The interviewed Nordic producers were Carolines kök, Gooh, Guldfisken, Hot Cuisine, Lunch Express, Måltidslösningar and Rieber & Søn. One additional Nordic producer wished to remain anonymous. The interviewed Western European producers were 2 Sisters Food Group (Great Britain), Bischofszell (Switzerland), Bonarea (Spain), Charal (France), Deliva (Belgium), Fleury Michon (France), Greencore (Great Britain), Hot Cuisine (Belgium), Irvai (Belgium), CC (Netherlands), Le petit cuisinier (France), Lustucru (France), Noel Alimentaria (Spain), Pescasana (Spain), Precocinados Fuentetaja (Spain) and S&R Foods (Great Britain).

The interviews were semi-structured and the interview guides can be found in Appendix II. Most of the interviews were performed over the telephone; however, four interviews with Nordic producers of chilled ready meals were performed in person due to possibilities of arranging meetings.

The samples were constructed in an as structured manner as possible. All chilled ready meal producers that were found in the databases Sveriges största företag and MarketLine at Chalmers' library were added to the sample. Added to the sample were also all chilled ready meal producers that participated as exhibitors at the Anuga exhibition in Köln 2009. Producers that were found on the internet when performing structured search queries were also included in the sample. Finally, friends in different European countries were asked to go to supermarkets and look for brands/producers of chilled ready meals. Also, names of European producers of chilled ready meals were provided by MicVac AB. It was not always easy to know whether a company actually produced chilled ready meals or not, but unless it could be excluded that a company was a chilled ready meal producer it was added to the sample. Then the producer was contacted and asked about whether it produced chilled ready meals or not. It was requested by MicVac AB that the producers should produce at least 500,000 chilled ready meals each year. If they were found to produce less than this amount they were excluded from the sample. The production volume was often not known until the chilled ready meal producers were actually contacted.

The data was put together in circle diagrams showing the scope of possible answers to the generally open questions. When several producers gave the same answer, this resulted in a higher percentage of that answer. These circle diagrams were thereafter translated into a text that describes the answers of the chilled ready meal producers.

### **3.3 Empirical Study for Customer Value Analysis Wholesalers**

The purpose of this study was to understand how value is created for wholesalers of chilled ready meals. Because of the fact that profound and exhaustive information was desired from several wholesalers, a qualitative and comparative case study was designed.

Interviews were conducted with eight wholesalers of chilled ready meals in Denmark, Germany, Great Britain, Norway and Sweden. Three of the interviews, with the Swedish wholesalers, were conducted in person. These interviews took about 1.5-2 hours to perform. The rest of the interviews were conducted over the telephone and took about one hour to perform. The interviews were semi-structured and the interview guides can be found in Appendix III. The sample was constructed from material from the Swedish Trade Council, which had information on the web regarding wholesalers to supermarkets in different European countries.

The interviewed companies were ICA (Sweden), Coop (Sweden), Axfood (Sweden), ICA (Norway), NorgesGruppen (Norway), Dansk Supermarked Gruppen (Denmark), Real (Germany) and Sainsbury's (Great Britain).

Each wholesaler interview was summarized before a comparison of all interviews was conducted and presented in *Results and Analyses*.

### **3.4 Empirical Study for Analysis of MicVac's Competitive Advantage**

The purpose of this study was to answer the second research question: what value does MicVac create in comparison to existing, competing technologies? In order to answer this question a quantitative and comparative case study was conducted. The reason for why the comparison was quantitative was the desire of making an economic comparison between different competing technologies.

Interviews were carried out in person with one chilled ready meal producer for each of the technologies Autoclave, Sous Vide, Cook and Chill and MicVac. All producers were located in the Nordic countries and factory visits were made just before or after the interviews were conducted. The interviews and visits lasted for about two hours. The interviews were structured interviews and the interview guides can be found in Appendix V.

It was difficult to persuade producers to participate in an analysis of MicVac's competitive advantage. The strategy for choosing companies was therefore simply to accept any producer that had a specific technology and who was not too small in terms of number of chilled ready meals produced each year. The required number of chilled ready meals to produce each year was 500,000, a minimum number requested by MicVac AB.

The data was collected into a matrix in an Excel sheet where it was easy to compare the different technologies along parameters that had been found valuable to customers in the Customer Value Analyses and in the additional interview with the ready meal researcher Mia Prim.

### **3.5 Additional Interview with Ready Meal Researcher**

An interview was performed with the ready meal researcher Mia Prim, author of the dissertation thesis *Ready meals from the consumers' perspective- attitudes, belief, contexts, and appropriateness* (Prim, 2007). The purpose of this interview was to investigate how value is created from the end customers' perspective. The interview was a semi-structured interview that lasted for about 1.5 hour. The interview guide can be found in Appendix IV.

### **3.6 Additional Study of Models for Product Costing**

Three Swedish food production companies were contacted over the telephone in order to investigate how these three companies' models for product costing were constructed. The question that was asked was "What parameters are included in your models for product costing". The names of the companies are confidential.

### **3.7 Validity and Reliability**

The concept of construct validity does not make sense in the case of the Techno-Economic Analysis, since this study does not aspire to measuring anything else than exactly what was asked for.

However, the Customer Value Analyses aim to measure how value is created for customers and it is therefore reasonable to ask whether the construct validity is high or low. The construct validity can be considered to be relatively high since the potential customers were asked different kinds of questions regarding the same subject of how value is created for them. They were asked straight and open questions regarding what they value when buying chilled ready meals or production equipment for production of chilled ready meals. They were also asked straight, but more closed, questions where they could state whether a pre-specified factor actually creates value for them. Also, they were asked indirect questions about their operations and strategies in order to understand how value is created for them. The reason for why the construct validity cannot be considered high is however that it is difficult to know, in a relatively short interview situation, whether the answers do actually reflect reality. The customers may not want to reveal too much information and may not have enough time to think through the questions. Since the interviews were semi-structured, it was however possible to have a discussion with the customers and this reduced the risk of customers not understanding the questions.

In the Analysis of MicVac's Competitive Advantage, the construct validity can be considered high since the questions asked were very specific and most often required a quantitative answer. However, since it was not always possible to obtain the same information from all producers, estimations had to be made in order to compare the information. Since the estimations that were made are considered reasonable there is though no reason to believe that they have affected the construct validity.

The external validity is relatively low in all four studies. The results from the Techno-Economic Analysis can naturally not be generalized, since the results only do refer to MicVac. However, also the external validity of the Customer Value Analyses can be considered low due to the relatively small samples. The reason for choosing relatively small samples was however that fewer, but deeper, interviews were believed to give more extensive information, something that was considered important since the scope of possible answers to our questions were not known in the beginning of the study. The results from the Analysis of MicVac's Competitive Advantage are certainly not possible

to generalize due to the fact that only four competing technologies were studied and only one company was interviewed for each technology.

The ecological validity of the Techno-Economic Analysis can be considered high since the Techno-Economic Analysis was reviewed by the interviewees, who stated that they agreed about the analysis. The interviewees are the people who are best suitable to state whether the findings are applicable to the general experience of how MicVac work and what benefits and drawbacks the technological solution has. Also the ecological validity of the Customer Value Analyses can be considered high. Since the interviews were rather long, it was possible to understand the producers and wholesalers in a deeper way and make better estimations regarding which results that are reasonable. It is most difficult to know whether the ecological validity of the Analysis of MicVac's Competitive Advantage is high since the results were not double checked with the interviewees. However, due to the knowledge of employees at MicVac AB it is believed that the calculations are not completely wrong.

The reliability of the Techno-Economic Analysis is high; if the same study was performed again the result would be the same. However, it is not certain that the reliability of the Customer Value Analyses is high since a sufficiently large number of companies may not have been interviewed. Therefore, the result could turn out somewhat different if performing the study again. The answers could also vary over time since the interviews partly were asked questions about current trends. It is not certain that the Analysis of MicVac's Competitive Advantage is reliable. If other producers were studied at another point in time, the results may be different.

## **4. Theoretical Framework**

In this chapter, the theoretical framework on which the analyses and conclusions are based is presented.

### **4.1 Different Types of Innovations**

Throughout the academic literature, innovations are typically considered being either incremental or radical. An incremental innovation introduces relatively minor changes to existing products and exploits the potential of the established design (Henderson & Clark, 1990). Incremental innovations reinforce the current knowledge and capabilities of the customer, the customer can continue operating in the same manner as before, using the same capabilities, just more efficiently. Improvements along one product performance criterion, or shorter production time, are examples of incremental innovations (Olleros, 1986).

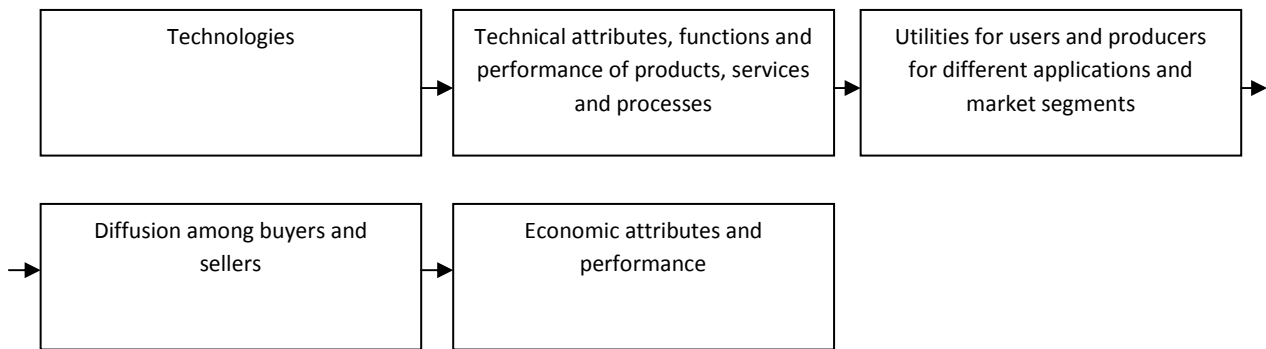
On the other hand, radical innovations are innovations that are very new and different from prior solutions (Schilling, 2008, p. 44). Radical innovations can sometimes result in the emergence of a completely new industry; they can open up new markets. The knowledge base and the capabilities of the established firms may no longer be relevant to compete effectively when a radical innovation enters the market (Henderson & Clark, 1990). Also Olleros (1986) argues that a radical innovation undermines the established competencies. As a result, a radical innovation generally favors newcomers, that is, firms that are free from any interests in protecting the old technology and who are equipped with new, relevant knowledge and skills (Olleros, 1986). As compared to incremental innovations, radical innovations tend to disrupt rather than to reinforce the status quo.

One might have the impression that an innovation could only be either incremental or radical. Indeed this was a commonly held belief until Henderson & Clark (1990) demonstrated that the traditional categorization of innovations as either incremental or radical was incomplete. They classified innovations along two dimensions. One dimension represented the changes of the components in a technology, whereas the other dimension accounted for the changes among the linkages between the components. According to this framework, a radical innovation would be an innovation that has radical changes in both of the dimensions, whereas an incremental innovation would only represent minor changes in both of the dimensions. The new type of innovation identified by Henderson & Clark (1990) has minor changes along the component dimension, but major changes along the linkages dimension. Innovations of this type are known as architectural innovations.

### **4.2 Techno-Economic Analysis**

According to Kotler & Armstrong (1996, p. 545), customers choose the product or service that they believe will give them the highest customer value. Therefore, an essential part of forming an attractive customer offer is to have insight into what customer values one's technology actually creates. The purpose of a techno-economic analysis is just that.

The purpose of performing a techno-economic analysis is, more specifically according to Lindmark (2006, p. 1), to analyze and map the relations and interactions between technical and economic variables. A general framework to use when performing a techno-economic analysis is shown in Figure 2 below. Figure 2 is based upon a picture from Lindmark (2006, p. 2) which in its turn is based on Granstrand (1994b) and Granstrand (1999).



**Figure 2. Techno-Economic Analysis (Lindmark, 2006, p. 2)**

A technology is defined as a body of knowledge that can transform material, energy or information from less desirable forms to more desirable forms. Different sets of technologies typically allow for different sets of performance of functions of products, services and processes. The performance of the functions of the products, services and processes moreover leads to utilities for users. Depending on the price and the utility that is perceived, a product, service or process diffuses through the economy. Finally, there is an economic outcome of this diffusion. (Lindmark, 2006, p. 3)

According to Lindmark (2006, p. 5), it is suggested to start with getting an overview of the actor system when performing a techno-economic analysis. Examples of actors are suppliers, distributors, resellers, service providers, buyers and end users. Thereafter, it is suggested to map the technical system. Every product, service or production process can be seen as a technical system. A technical system can be described by its structure (that is, the set of components and the relations between them), its functions and its state. A function represents how a system purposefully should behave. The state refers to a set of properties. Thereafter, applications and complementary and competing technical systems could be mapped. The reason for mapping applications and complementary and competing technical systems is that products and services must not be viewed in isolation; they are being consumed and used in interaction with other products and services.

When the actors, the technical system and the applications and complementary and competing technical systems have been mapped it is time to identify technical performance parameters. Technical performance parameters could for example be how fast something is or how much it weighs. According to Lindmark (2006, p. 19) it is important to identify performance parameters that are also economically relevant and that are linked to customer utility. Some performance parameters can be found in any system, namely size, complexity, efficiency, capacity, density and accuracy. These performance parameters could be combined with the generic functions storing, processing, transporting and matter, energy and information. This gives 54 combinations that can be used for starting to identify technical performance parameters.

The utility can be defined as the pleasure or satisfaction that a customer experiences from consuming goods or services (Lindmark, 2006, p. 24). In order to identify utility dimensions, the Kim and Mauborgne (2000) Buyer Utility Map in (Lindmark, 2006, p. 24) can be used. The basic idea of that framework is to consider the six utility levers productivity, simplicity, convenience, risk, fun, image and environmental friendliness and the six stages of the buyer experience cycle purchase, delivery, use, supplements, maintenance and disposal. By combining the six utility levers and the six



stages of the buyer experience cycle, 36 areas where it is possible to offer a new value proposition have been created.

### **4.3 Segmentation, Differentiation, and Positioning from the Traditional Marketing Perspective**

The concepts segmentation, differentiation and positioning, and kindred concepts such as market targeting, are well established concepts that are described in basic books about marketing. In this section segmentation, differentiation and positioning will be treated from this traditional marketing perspective. More specifically, the traditional marketing perspective refers to general marketing literature about segmentation, differentiation and positioning, where especially the topic of commercialization and marketing of an innovation is not discussed.

In general, the concepts segmentation, differentiation and positioning represent strategies for dealing with the problem that an organization cannot appeal to all buyers in a market, or at least not to all buyers in the same way (Kotler & Armstrong, 1996, p. 196). The reason for this is that buyers have too differing needs and buying patterns.

It is important to point out the interrelatedness of the concepts segmentation, differentiation and positioning; one cannot perform segmentation without having an idea of the differentiation and vice versa. Anderson (1997, p. 7), for example, writes that when a company decides what customers to serve it generally also decides what it will offer.

#### **4.3.1 Segmentation**

In this section, the concept segmentation will be explained and information will be given regarding how segmentation can be put in practice.

##### **4.3.1.1 Definition**

According to Anderson (1997, p. 5), segmentation is based upon the assumption that customers differ from each other and that different parts of a market have different needs. The closer a company can match its offer to a customer need, the more likely the customer is to buy (Anderson, 1997, p. 5) and the objective of segmentation is therefore to find the best possible fit between a company's knowledge and resources and the customers' needs (Anderson, 1997, p. 7). Conclusively, segmentation can be said to be about deciding for who to be the best (Anderson, 1997, p. 3).

Other authors have more or less described market segmentation in the same way as Anderson (1997). For example Dunbar & Malcolm (1995, p. 10) have defined market segmentation as "*the process of splitting customers into different groups or segments, within which customers with similar characteristics have similar needs*". By splitting customers into different groups, each segment can be targeted with a distinct marketing mix. Webster (1984, p. 99) states that market segmentation is about matching company capabilities with unsatisfied customer needs.

##### **4.3.1.2 Segmentation Put in Practice**

Several authors have elaborated upon the subject of how to actually perform segmentation and have mentioned different kinds of so called segmentation variables that are suitable to perform the segmentation according to.

According to Anderson (1997, p. 7), there is no standard procedure for picking the right segments to concentrate upon. But some of the most widely used segmentation variables for dividing a total business market into manageable segments are applications, decision makers, type of industry or business, size of company, geographical location, user benefits, new or replacement market, price sensitivity, need for service, buying habits, time sensitivity, and type of competition. The most prevalent segmentation variables are stated to be industry, size of company, applications and receptivity to a product's specific advantages. The author suggests that it is generally needed to use two or more segmentation variables simultaneously to describe a segment in a meaningful way.

Other authors suggest other segmentation variables. Kotler & Armstrong (1996, p. 213) suggest demographics, operating variables, purchasing approaches, situational factors and personal characteristics. Demographics refer to type of industry, company size or location. Operating variables refer to how the customer is operating with respect to what kind of technology it is using, to whether the customer is a heavy, medium or light user or to how much service the customer will need. Purchasing approaches can refer to how the purchasing function is organized, to how the power between for examples engineers and marketing is distributed and to the general nature of the existing relationship. Situational factors can be how quick delivery is needed, the size of the order etc. Personal characteristics can be for example loyalty or attitude towards risk.

However, it is not a necessity that segmentation is carried out according to customer characteristics. According to Datta (1996) segmentation can also be carried out according to product characteristics. This idea tries to integrate the internal resource-based view on strategy with the external orientation of marketing in order to focus both on customer benefits and on the resources available to satisfy them. The message of Datta (1996) is that it is easier and more actionable to start out with a company's resources and then think about what customer needs the company could satisfy with those resources.

When it comes to actually picking the right segment, Anderson (1997, p. 7) suggests that a segment should be a group of customers who have the same needs and values, who can be expected to react in the same way to an offer and who command enough buying power to be of strategic importance to the company. Moreover, a segment should satisfy as many as possible of the following requirements (Anderson, 1997, p. 10):

- *Servable* – the company must have the resources to serve the segment better than its competitors.
- *Defensible* – it must not be too easy for competitors to counteract and neutralize the company's efforts.
- *Identifiable* – it must be possible to describe the market segment in simple terms. Everybody in the company should be aware of who the customer is and who the customer is not.
- *Communicable* – it must be possible to reach decision makers in the segment by marketing communications and personal selling.
- *Comfortably large* – the segment must have the potential to be big and profitable. But it must not be too big, because then a company's resources will not be enough to capture a high market share in the segment.

- *Receptive* – the potential customers in the segment should be interested in what the company offers and react favorably.
- *Measurable* – it must be possible to determine the number, the size, the buying power, the buying patterns etc. of the customers in the segment with reasonable accuracy.
- *Stable* – the segment should be stable for a length of time.
- *Accessible* – the segment should be accessible to the company. The customers should not be tied to other suppliers or other technologies. It is good if barriers to trade do not exist.

### **4.3.2 Differentiation**

In this section, the concept differentiation will be explained and information will be given regarding how differentiation can be put in practice.

#### **4.3.2.1 Definition**

According to Dickson & Ginter (1987), differentiation is about differentiating a product offer from the competition (Dickson & Ginter, 1987). Anderson's (1997) definition of differentiation is similar to that of Dickson & Ginter (1987); according to him differentiation is about developing and/or highlighting differences in one's offer as compared to competition. Grant's (1991) definition of differentiation also bears resemblance with the other authors' definitions. According to Grant (1991), differentiation encompasses everything about one's offer that influences the value customers derive from it. Differentiation is the way in which one offers uniqueness to one's customers.

However, differentiation is perhaps most known as one of Porter's (1979) three strategies for the creation of a competitive advantage. Porter's (1979) two other strategies are cost leadership and focus on a niche market. According to Porter (1979) one must pursue one, and only one, of the strategies. Lower cost is inadvertently connected with lower utility and vice versa. If one pursues both a cost and a differentiation strategy one will not succeed in either and be stuck in the middle offering no distinct value for one's customers.

#### **4.3.2.2 Differentiation Put in Practice**

Grant (1991) proposes a methodology for how one to arrive at an attractive differentiation strategy. *"Successful differentiation involves matching customers' demands for differentiation with the firm's capacity to supply differentiation."* (Grant, 1991, p. 244). Therefore, one must analyze the demand from one's customers and one's capability to deliver what is demanded.

In order to identify one's own capability one needs to examine the activities performed and the resources one has access to. Grant (1991, p. 249) lists nine different types of capabilities, that were originally outlined by Michael Porter, that one should examine as these are potential differentiation factors. The different types of capabilities are:

1. Product features and performance
2. Complementary services
3. Intensity of marketing activities
4. Technology embodied in design and manufacture
5. Quality of purchased inputs
6. Influencing procedures
7. Skills and experience of employees
8. Location

## 9. Degree of vertical integration

Further, Anderson (1997) emphasizes that it is becoming more and more difficult to create a physical differentiation feature that cannot be imitated, given that it is not patented. In connection to this Anderson (1997) makes a distinction between hard and soft differentiation, where hard differentiation is the physical features of one's offer whereas soft differentiation is the extra services that are included in the offer. Soft differentiation represents an essential part of building a strong brand, which can never be copied. Therefore, it is becoming increasingly important to have an attractive soft differentiation.

### **4.3.3 Positioning**

In this section, the concept positioning will be explained and information will be given regarding how positioning can be put in practice.

#### ***4.3.3.1 Definition***

A positioning strategy is a communication strategy whose aim is to influence the mind of the customer. The positioning strategy is designed by a company to capture and maintain a favorable position in the minds of its customers. (Anderson, 1997).

The concept of positioning was firstly introduced by Al Ries and Jack Trout and is summarized in their book *Positioning: the battle for your mind* (1981). Ries & Trout (1981) argue that the battle of market shares and profitability is won inside the mind of the consumer. People have a limited attention span, and they need to be aware of a company's offer before considering purchasing it. Out of the vast amount of information that exists in an over communicated society, there is only a small fraction that enters the minds of the consumers.

Both Ries & Trout (1981) and Anderson (1997) describe positioning in terms of selecting which category one should operate within. In order to handle the vast amount of external stimuli that people are exposed to they organize the information into different categories. Within each category there are a limited amount of actors that compete for the attention of the consumer. The different categories are referred to as mental ladders.

Within each category, Anderson (1997) identifies different types of archetypical positions. Firstly there is the leader; this is the actor with the largest market share that offers an expensive and reliable product. The leader is the actor people first think of within a category. The next archetype is the alternative, this is a smaller, often more adept actor, that is not considered being as reliable as the market leader. Further, one has the maverick. This is an upcoming, unconventional and flexible actor that is not quite reliable yet. The price-cutter is a cheap alternative that cannot provide the same reliability as the other actors. The final archetype is the faceless one; this actor gives a weak and/or confused impression.

#### ***4.3.3.2 Positioning Put in Practice***

According to Ries & Trout (1981) and Anderson (1997), the most favorable position one can have is the position as leader. This is associated with large market shares, high revenue streams, and loyal customers. The actor that occupies the position as market leader within a category is the one that has won the battle for market shares and profitability. The easiest way to become a market leader is to establish a new category where one can be first. Since, according to Ries & Trout (1981), a normal person can accept being told something new which he or she knows nothing about, but cannot

accept being told that he or she is wrong, it is easier to convince customers that you are leader in a category they have no knowledge of than to convince them that you are leader in an already established category.

When formulating a positioning strategy it is not only important to be first, but also to have an oversimplified, clear, and appealing message. (Ries & Trout, 1981). In order to achieve this, one must first identify to whom one will sell, segmentation, and how one will create value for the chosen target customer, differentiation. *“The prime rule is not to position until [one has] segmented and differentiated. Otherwise [one will] be forced to communicate unclear messages to unclear target audiences, and [one] will never get results that way”* (Anderson, 1997, p. 27).

Given that segmentation and differentiation have been carried out, one can proceed with Anderson’s (1997) method for developing a positioning strategy. This method includes nine steps that will be presented in the following paragraphs.

Firstly, one should survey the macro environment in which one intends to position oneself. It is important to identify and adapt to prejudices that exist since these are generally immovable.

Secondly, one should survey the micro environment in terms of customer needs and customers’ perceptions of competing offers. This should be done through market research performed by oneself.

Thirdly, one should survey oneself to identify one’s strengths and weaknesses. Positioning requires self awareness.

Fourthly, one should pick the best available position. If the desired position is available, and not occupied by a competitor, one should grab this position as fast as possible. However, it is very seldom that this is the case. If the desired position is occupied one has three alternative options. Firstly, one can try to find a position that is almost as good, namely creating a new category in which one can be first. This is the logical alternative following from the previous discussion. Another alternative is to outposition the competitor and take his place. This requires much more resources than the first alternative, but can be attractive if the customers are not too set in their preferences. If one has developed an innovative technology for a known function one can try to outposition the market leader by representing its technology as outdated and soon to be obsolete. The third alternative is to force the competitor out of its position, by a frontal attack. This is an unattractive alternative which is almost always foredoomed to failure, due to the established perceptions that customers have.

Fifthly, one should write a positioning statement. This statement should contain a description of the position one intends to occupy in the mind of one’s target segment, as well as a strategy for how one intends to capture and defend that position. The positioning statement should be written in a simple and consistent manner and should not exceed one type written page.

The sixth step is about evaluating the positioning. Anderson (1997) lists the criteria according to which the position should be evaluated:

1. Evaluate if the position is an attractive position from the customer's perspective
2. Evaluate if the positioning statement is clearly formulated so that everyone understands it in the intended manner
3. Evaluate if the positioning conveys the essence of the company's value offering
4. Evaluate if the positioning is consistent with one's overall business strategy
5. Evaluate if the positioning is consistent with one's corporate culture
6. Evaluate if the positioning is honest and truthful
7. Evaluate if effective marketing communication can be built around the positioning

The seventh step is about communicating the positioning internally so that everyone directs their resources in accordance with it. This should be done continuously through a number of different communication channels.

The eighth step is about communicating the position externally. All external communication, be it marketing campaigns or personal sales pitches, must be based on the positioning strategy.

The ninth and final step is about adjusting the position to account for developments in the market.

#### **4.4 Segmentation, Differentiation, and Positioning from the Commercialization and Marketing of Innovations Perspective**

The concepts segmentation, differentiation, and positioning have so far been discussed from the traditional marketing perspective. In this section, literature regarding commercialization and marketing of innovations, more specifically *Crossing the chasm: marketing and selling high-tech products to mainstream customers* (Moore, 1991) and *Blue ocean strategy: how to create uncontested market space and make the competition irrelevant* (Kim & Mauborgne, 2005) will be presented in terms of their views on segmentation, differentiation and positioning. It is important to state that neither of the books have treated the concepts segmentation, differentiation and positioning explicitly, but both have treated the meaning of segmentation, differentiation and positioning as defined in the traditional perspective.

##### **4.4.1 Segmentation**

In this section, segmentation will be discussed from the commercialization and marketing of innovations perspectives of the *Crossing the chasm* framework and the *Blue Ocean Strategy* framework.

##### **4.4.1.1 Crossing the Chasm**

An attractive segment is one that is small enough for one to be the market leader and thereby be leveraged to long term success. *"The fundamental principle when crossing the chasm is to target a specific niche market as [one's] point of attack and focus all one's resources in achieving the dominant leadership in that segment."* (Moore, 1991, p. 89). The attractiveness of choosing a narrow and small segment is understood by looking at two characteristics of the early majority. Firstly, the early majority wants to buy from the market leader and the larger the segment, the more resources and time need to be invested before becoming the market leader. Secondly, the early majority wants confirmation on the reliability of a radical innovation from actors within this early majority group before buying, thus, one of the keys to breaking through is to establish a strong word-of-mouth effect. Again, this is much more resource and time intensive in a large segment as compared to a small segment. The goal when choosing a segment is then, to become a *"big fish in a small pond"* (Moore, 1991, p. 105). However, one should realize that a small segment has a limited revenue

potential. Therefore, one should “*target a segment that, by the virtue of its other connections, creates an entry point into larger segments*” (Moore, 1991, p. 73).

Moore (1991) outlines a method for how one can go about to identify a suitable market segment. The method is a scenario approach which allows using informed intuition. The appropriateness of such an approach can be explained in terms of the limited time and resources one typically has when attempting to cross the chasm. The resources and time needed to perform extensive marketing surveys are simply not available. Therefore, one needs to use one’s intuitive knowledge to construct scenarios that capture the different target customers’ characteristics.

A scenario should be limited to one type written page and contain:

1. Header information: Information about the user, the technical buyer, and the economic buyer.
2. A day in the life before: Information about a particular problematic situation, the desired outcome of that situation, the attempted approach to solving the problem, interfering factors when solving the problem, and the economic consequences of not being able to solve the problematic situation.
3. A day in the life after: Information about the new approach enabled by the radical innovation, the factors enabling this, and the economic reward of solving the problematic situation.

Once all the possible different scenarios, based on different types of target customers, have been constructed, they should be evaluated according to:

1. Target customer: Evaluate if a buyer can be identified that will pay the price for the whole product.
2. Compelling reason to buy: Evaluate if the economic consequences suffered are large enough to motivate a purchase.
3. Whole product: Evaluate if a whole product that solves the entire problem can be delivered.
4. Partners and alliances: Evaluate the potential for partnerships and alliances.
5. Distribution: Evaluate the resources needed to establish sales channels.
6. Pricing: Evaluate if the price is consistent with the target customer’s budget.
7. Competition: Evaluate if the problem has already been addressed by another company.
8. Credibility: Evaluate if one is a credible provider.
9. Next target customer: Evaluate the segments’ connections with other segments.

The scenario that performs best according to the evaluation factors is the one that should be chosen as the target niche segment.

#### ***4.4.1.2 Blue Ocean Strategy***

According to the *Blue ocean strategy* framework, one should focus on noncustomers and on identifying commonalities in what buyers value, when creating market space where no competition exists.

By identifying the demand of noncustomers one can simultaneously attract new customers and increase sales to current customers. Kim & Mauborgne (2005) identify three different types of noncustomers, namely first tier noncustomers, second tier noncustomers, and third tier

noncustomers. First tier noncustomers are soon-to-be noncustomers. These customers use the current offering as little as possible to get by as they search for a better alternative. The first tier noncustomers are customers only because nothing better exists on the market. Second tier customers are refusing customers. They refuse, or cannot afford, to use the current offer and their needs are either fulfilled by other means or ignored. Third tier noncustomers are unexplored customers that are not thought of as potential customers. By handling the reasons these noncustomers have for not being customers one can open up new market space.

Focusing on differences between current customers in order to make an as narrow and precise segment as possible is not recommended. Desegmentation, rather than segmentation, is the ideal. Kim & Mauborgne (2005) justify this claim by arguing that noncustomers are the ones that have not accepted the downsides that current customers are also dissatisfied with but have taken for granted.

Conclusively, the target segment should be as large as possible. *“No company wants to venture beyond its existing demand only to find itself in a puddle”* (Kim & Mauborgne, 2005, p. 101). Commonalities among many different customer groups should be a start off point when identifying an attractive segment. It is important to reach a large market because that increases the value for customers, through network externalities, and for the company, through creation of higher margins and barrier to competition.

#### **4.4.2 Differentiation**

In this section, differentiation will be discussed from the commercialization and marketing of innovations perspectives of the *Crossing the chasm* framework and the *Blue Ocean Strategy* framework.

##### **4.4.2.1 Crossing the Chasm**

A differentiation strategy should aim for providing a whole product solution, since the early majority evaluate and buy whole products. Assembling a whole product solution is a marketing strategy to ensure satisfied customers that will communicate the benefits of the product further. Another argument for having one target niche segment can then be identified: every additional target customer will put additional requirements on the whole product solution, something that will increase the costs of ensuring satisfied customers.

Moore (1991, pp. 108-110) describes the whole product solution as consisting of four different perceptions of a product. These perceptions are:

1. Generic product: What is physically delivered and covered by the purchasing contract?
2. Expected product: What did the customer think it was buying when it bought the generic product?
3. Augmented product: What is offered to provide the maximum chance of achieving the buying objective?
4. Potential product: What is the product’s potential for growth as more and more products enter the market.

According to Moore (1991), the minimum product required to start the communication effect is the generic product plus the additional features required to fulfill the compelling reason to buy. Compelling reason to buy was mentioned in section 4.4.1.1.



#### **4.4.2.2 Blue Ocean Strategy**

Kim & Mauborgne (2005) emphasize the importance of a differentiated strategy. One should have a blue ocean strategy that is both focused and divergent from the competition. Having a focused strategy means directing a company's limited resources towards a specific purpose which in turn keeps costs down. A divergent strategy is required to differentiate oneself from the competition. If a strategy is not divergent it is likely to be a "me-too" strategy and does not have the potential to unlock a blue ocean.

Moreover, one should disregard the fallacy that increased utility is correlated with increased costs. The differentiation should simultaneously increase utility and decrease cost; this is what Kim & Mauborgne (2005) refer to as value innovation.

#### **4.4.3 Positioning**

In this section, positioning will be discussed from the commercialization and marketing of innovations perspectives of the *Crossing the chasm* framework and the *Blue Ocean Strategy* framework.

##### **4.4.3.1 Crossing the Chasm**

The aim when designing a positioning statement is both to create the competition and to rig the competition, so that one's own offer will be the rational choice. Positioning is about mapping out the competition and one's own position in relation to it. The early majority does "*not like to buy until there is both established competition and an established market leader, for that is a signal that the market has matured sufficiently to support a reasonable whole product infrastructure around the identified centerpiece*" (Moore, 1991, p. 133).

Typically, there exists no competition in early markets, and when moving to the mainstream market one therefore has to create the competition. Moore's (1991) method for creating the competition is to identify a market alternative and a product alternative to position one's own offer against. The market alternative is the method currently used by one's target segment to solve the same problem as one's own offer intends to solve. The product alternative is another actor's solution for solving the same problem as one's own product solves. What is important when choosing the market and product alternatives is that one's own offer has an undisputable benefit that is both attractive and credible to the early majority. The goal is to occupy the position "best buy for this type of situation" in the target customers' minds.

Having identified the market alternative and the product alternative one can formulate the positioning claim. This claim should be constructed according to the following structure:

1. For (target customer)
2. Who are dissatisfied with (the market alternative)
3. Our product is a (new product category, as described in section 4.3.3.1)
4. That provides (key problem solving ability)
5. Unlike (product alternative)
6. We have assembled (the whole product solution)

Once the claim has been formulated it is important that enough evidence exists to make the claim undisputable. The next step is to communicate the claim. One should use business press and media specifically directed towards a certain industry to communicate the whole product story. This type of

media has a high credibility. The whole product story implies that the technology is linked to an opportunity or a problem. Finally, the claim should be adjusted according to market feedback.

It is important that the positioning claim is constructed in the described manner not only to create and rig the competition but also to impose some control over the word-of-mouth effect, described in section 4.4.1.1. By having a short and clear message one increases the probability that one's offering will be described in the same manner by different actors. Thus, the probability that the positioning claim will not be diluted increases.

#### **4.4.3.2 Blue Ocean Strategy**

A blue ocean strategy is designed to identify a unique position in the marketplace. One is to define its own market in which one can dictate the rules of competition. "*Blue oceans denote all the industries not in existence today.*" (Kim & Mauborgne, 2005, p. 4). Moreover, when formulating one's positioning strategy it is important that it can be summarized in a compelling tagline. As such, customers will be able to remember the position without being exposed to extensive and expensive advertising campaigns.

### **4.5 Theoretical Comparison of Different Perspectives on Segmentation, Differentiation, and Positioning**

Much of the differences between the different perspectives can be understood by looking at their main purposes. The *Crossing the chasm* framework (Moore, 1991) is designed to start a word-of-mouth effect. As described earlier, the lack of references is the main challenge when attempting to cross the chasm, Moore's (1991) solution to this problem is to construct the segmentation, differentiation, and positioning with the overall purpose of getting the early majority talk to each other about the benefits of the radical innovation and thus start a word-of-mouth effect that provides the early majority with the references they want to make a purchasing decision. The purpose of the traditional marketing perspective, on the other hand, is to match one's limited resources with the market demands. Segmentation, differentiation, and positioning is then a methodical approach designed to imposing a sense of security in making the recourse allocation decision. Both the *Crossing the chasm* framework (Moore, 1991) and the traditional market perspective use one's own resources as the start off point. The goal is to identify a market need that fits one's own resources. Naturally, the resources might be developed to better fit the identified market need. The *Blue ocean strategy* framework (Kim & Mauborgne, 2005) on the other hand, uses the market as the start off point. The resources are then shaped and allocated in accordance with the market. The purpose of a blue ocean strategy is to avoid competition, and therefore the segmentation, differentiation, and positioning is designed as creative tools that will help indentifying new ways of competing.

Moreover, the *Crossing the chasm* framework (Moore, 1991) and the traditional view of marketing have more deterministic views of the market place than the *Blue ocean strategy* framework. The current industry structure is taken for granted, and segmentation, differentiation, and positioning is conducted to identify and occupy the most attractive space within the current market structure. The *Blue ocean strategy* framework (Kim & Mauborgne, 2005), on the other hand, challenges the current market structure. One could therefore argue that the value creating potential of a blue ocean strategy stem from the fact that the mass of actors within an industry follow the traditional marketing perspective. Thus, a company that defines the market place in an innovative way will be

able to overturn old perceived thrust within an industry and thus enhance the value of its offer compared to other actors. In fact, one could argue that a blue ocean strategy is a radical innovation on the strategic level.

It should also be noted that the *Blue ocean strategy* framework (Kim & Mauborgne, 2005) applies to actors active within the mainstream market, whereas the *Crossing the chasm* framework (Moore, 1991) applies to actors that aim to enter the main market but who have not yet succeeded in their endeavor.

## 5. Results and Analyses

In this chapter, the results and the analyses are presented. The chapter is basically structured according to the research questions that were presented *Introduction*. However, the chapter starts with a presentation of the Techno-Economic Analysis and a typical model for product costing.

### 5.1 Techno-Economic Analysis

The Techno-Economic Analysis can be found in Appendix VI. The analysis reveals a number of parameters along which utilities and disutilities of different technologies for production of chilled ready meals can be measured. Those parameters were used when creating the interview guides for the Customer Value Analyses, including the additional interview with the ready meal researcher Mia Prim. The parameters are:

Ability to retain freshness of ingredients during production	Ease of handling the production line	Possibility of full transport load	Risk of costly law suits
Accurateness of serving temperature	Energy consumption	Possibility of hydrated surface	Risk of negative publicity
Amount of education needed for employees	Health risk for employees	Possibility of production to stock	Scrap (wholesaler and end consumer)
Amount of manual labor needed	Homogeneity of production output	Possibility of vertical display	Shelf life
Amount of production planning needed	Need for preservatives	Production cost	Standard of work environment
Amount of wasteful labor	Number of different dishes that can be offered	Production environment investments	Taste
Amount of wasteful transport	Number of shopping trips	Production time	Texture of food
Color of food	Nutrition values	Raw material cost	Time needed to compose recipes
Cost for radiation monitoring equipment	Possibility of centralized production	Raw material input/output ratio	Transport reach
Cost of materials of consumption	Possibility of centralized stock	Ready to eat signal	Variety of presentation of food
Cost of preparatory machinery	Possibility of confident marketing	Risk of bad reputation	Visual attractiveness of chilled ready meal
Ease of handling package for customer	Possibility of evenly heated meal	Risk of contamination	

Figure 3. Parameters from Techno-Economic Analysis

### 5.2 Additional Study of Models for Product Costing

The result from the interviews with the three Swedish food production companies is presented below. The result consists of parameters that are included in the companies' models for product costing and they were used when designing the interview guides for the Customer Value Analyses, including the additional interview with the ready meal researcher Mia Prim.

### **Production Costs (variable costs)**

#### *Direct material*

Raw material cost

Packaging material cost

#### *Material Expenditures*

Packaging material loss

Raw material loss

Inbound logistics

Outbound logistics

Stock

#### *Direct labor*

Labor costs

#### *Manufacturing Expenditures*

Energy costs (water, steam, electricity)

Indirect labor costs

Maintenance costs (service and spare parts)

Inventory of consumption

Materials of consumption

Insurance

Production stops

#### *Other direct costs*

## **5.3 Research Question 1 - How is Value Created for Producers, Wholesalers and End Customers of Chilled Ready Meals?**

In this section, the results from the Customer Value Analyses and the additional interview with the ready meal researcher Mia Prim will be presented and analyzed.

### **5.3.1 Customer Value Analysis Producers**

The data obtained from the interviews with the producers of chilled ready meals is described in detail in Appendix VII. In this section, a summary of the most important findings is presented.

#### **5.3.1.1 Nordic Producers**

The Nordic market consists of relatively small producers of chilled ready meals who most commonly use the Cook and Chill technology. The producers generally sell their chilled ready meals on their domestic markets, to wholesalers that are distributing to supermarket chains. About half of the producers sell both under own label and under private label.

The Nordic producers mention a wide variety of aspects that are important to consider when buying new production equipment. What seem to be most important is the quality of the final products (quality will henceforth refer to taste, texture, color, and nutrition values) and the efficiency of the production in terms of both time and cost efficiency.

When evaluating the production process, how large volume that can be produced per time unit seems to be what is most important for the Nordic producers. This is also what the producers most of all want to improve.

When evaluating their products, the chilled ready meals, what is most important to evaluate is the taste. However, the taste does not seem to be a problem for the producers, since more than 50% of the producers state that good taste is what differentiates them. Some producers have however mentioned that color and texture are problematic food quality aspects. The second most important evaluation criterion is the visual attractiveness of the chilled ready meals. In general, the producers see no great need to improve their products; three of eight producers see no need at all. The most common thing to want to develop is new recipes.

Some product features are not considered bases for differentiation by the producers. For example low prices and ease of preparing the chilled ready meal is not considered important bases for differentiation. The ready to eat signal is not considered important at all by the producers.

Offering chilled ready meals without preservatives does not seem to be an issue, since nobody has got any preservatives in the food (however it might exist to some extent in the raw material). Everybody seems to think that ecological raw ingredients are important, but nobody has it today. Producers also think that offering healthy dishes is important, but nobody really focuses on it. Safe products are not considered being a differentiator either; it is only a minimum requirement.

To be able to offer visually attractive chilled ready meals is important, but the producers do not state that this is a differentiator. Producers have the same view when it comes to offering a large dish variety. This can be important, but not differentiating and too high variety might be expensive. In the producers' opinions, long shelf life (henceforth long shelf life refers to a shelf life above 14 days) might be good for the wholesalers, but it is not considered positive since it is believed that end customers want fresh products.

When it comes to the distribution system, there is no single thing that the Nordic producers seem to want to improve. In general it is, however, possible to conclude that the producers want more control over the distribution. For example producers have mentioned that they want more control over the supply for the shelves in the stores, control over the temperature during transportation and more information about the final customers. It is generally not mentioned as a problem that the shelf life is too short or that it is a problem that they have to deliver too often. Often the producers think that the customers want fresh products and they think that their shelf life is sufficiently long.

When it comes to the work environment, the producers do not seem to believe that any major problems exist. It is not considered problematic to comply with for example HACCP (Hazard Analysis and Critical Control Points) certification requirements. On the contrary, HACCP compliance is considered as something positive that helps the producers to improve food safety. However, the impression is that producers would regard it as positive not having a cold working environment for the employees. Nevertheless, this is not taken into consideration when deciding whether or not to invest in production equipment.

The relationship to the wholesalers is defined as close by all producers. A couple of producers also state that the wholesalers help them to understand the end customer. However, four producers

state that the wholesalers do not help them to understand the end customers. Three of eight companies state that the wholesalers have too much power due to the limited competition in the market.

Most Nordic producers believe that they have a close enough relationship to the suppliers of production equipment. However, some opinions were expressed regarding the need for better help with service and maintenance.

Almost all Nordic producers believe that the market for chilled ready meals will grow in the future. However, generally they do not have a clear picture of who their end customers are and they do not seem to have very well specified long-term goals for their companies. Neither do they have any clear strategies for how to differentiate themselves, most companies just state that they differentiate themselves by high quality products. The companies who wish to grow plan to do so mainly by expansion on their current market.

The producers who use MicVac state that the benefits are the gentle handling of the raw material, that the food has high nutrition values, that the food is close to the taste and texture of home cooked food, and that the shelf life is relatively long. In addition, MicVac AB's involvement during the start-up phase was considered very positive. The drawbacks mentioned were considered to be the visual attractiveness of the meals, the low production output (only one producer mentioned this), that it is an expensive technological solution, the limited type of meals that can be produced, and that the trays only contain one compartment and are not environmentally friendly.

What the producers who use Cook and Chill appreciate most is that it is not an industrial process. When asked about drawbacks with Cook and Chill, one producer mentioned that the shelf life is too short, other producers stated that it is difficult to deal with the hygiene, that the food moves around in the tray during transport, and that there is condensation on the plastic film. The producer that used the Autoclave and Sous Vide technologies stated that benefits with the technologies were food safety aspects. The drawback with Autoclave is that the package is not always sealed. The drawback of Sous Vide is experienced to be that the color of some food changes.

### ***5.3.1.2 Western European Producers***

The Western European producers were generally larger than the producers in the Nordic countries and it is more common in this sample that the producers use the Autoclave and Sous Vide technologies. The shelf life of the chilled ready meals is, in more than half of the producers' cases, 21-40 days. Only one of the producers' chilled ready meals have a short shelf life, its products expire after ten days. Most companies only extend the shelf life with the help of their production technology, but some also use MAP. Just as in the Nordic countries, most Western European producers sell their chilled ready meals on their domestic market, however, a larger percentage than in the Nordic countries sell their products outside their home country.

Also the Western European producers mention a wide variety of aspects that are important when buying new production equipment. It can be said that what is most important is the same as for the Nordic producers, that is, the production efficiency in terms of time and cost efficiency and a high quality product.

Just as the Nordic producers, most of the Western European producers believe that the market for chilled ready meals will grow, but a number of producers also believe that the price competition will intensify. The impression is that the Western European producers are insecure about how the market will develop. The Western European producers' insecurity is due to the general suspiciousness against the industry, to the fact that there are many actors in the market, and to the fact that private labels can offer lower prices. In addition, the general impression is that the market will become more diversified, for example in terms of price and types of products offered.

However, just as the Nordic producers, the Western European producers do not seem to have a very clear picture of who their end customer is and it is difficult to obtain a clear picture of what the long-term ambitions of the Western European producers are. However, many Western European producers mentioned that a possible obstacle to future growth is the suspiciousness against chilled ready meals in general, vacuum packaged food and too long shelf life. Just as the Nordic producers, the Western European Producers have no clear picture of how to differentiate themselves; most of the producers say that they differentiate themselves with superior food quality. The companies who wish to grow primarily focus on growing within their own country, however 16% of the companies state that they have plans for expanding to new geographical markets and 12% say that this might be a good idea in the future.

The opinion of the Western European producers of chilled ready meals is that frozen ready meals are less expensive mainly because of logistics advantages due to their extended shelf life.

### ***5.3.1.3 Summary of Value Creation for Producers***

Conclusively, it can be said that what creates the most important customer value for the producers is high production efficiency, both in terms of production costs and output per time and labor unit, and quality of the chilled ready meal. However, most producers believe that they already have got a high quality product, mainly in terms of taste. The retention of texture and color has been mentioned as problematic by some producers. Concerning nutrition values, this is not considered being a very important aspect of food quality for other than MicVac producers. Concerning the production cost, this is, as stated, an important issue for the producers. However it is not as important as producing good tasting food. One can say that the producers are cost aware, not cost obsessed. In addition, a visually attractive presentation of the dishes creates customer value for the producers.

The main problems experienced today are that the wholesalers have too much power, that it is difficult to produce visually attractive chilled ready meals, and that there exists prejudice against chilled ready meals. The producers would also like more service and maintenance from the suppliers of production equipment. MicVac AB's customers expressed a desire for MicVac AB to be more active in meeting their needs for incremental product improvements. On the positive side, MicVac AB's involvement during the start-up phase was appreciated.

Some aspects that MicVac AB believed were problematic for the producers of chilled ready meals proved not to be problematic. To begin with, the interviewed producers believe that they are already offering safe products since this is a minimum requirement for being in the business. They do not consider it problematic to comply with the HACCP or other certification requirements, those requirements are even considered helpful since they help the producers to produce safe products. No problems seem to be related to the distribution system either and it is not considered a problem that the shelf life is too short. Nor are there any major problems related to the work environment,



even though it is considered somewhat positive not having to work in a cold environment. The ease of preparing the meals is considered very important, but it is not considered as a problem since basically all producers do already believe that their products are easy to prepare.

Another interesting finding was that the ready to eat signal that MicVac AB's meals are equipped with is not considered being worth paying extra for. Moreover, the dish variety is considered important to some extent, but too large variety is not necessary and would also be expensive to produce. Further, producers state that they wish to offer healthy and ecological dishes, but nobody seems to make a great effort to focus on this issue in practice yet.

Finally, the producers are generally not aware of who their end customer is. They have very little contact with the end customer market.

### **5.3.2 Customer Value Analysis Wholesalers**

The result from the wholesaler interviews can be found in Appendix VIII. In this section, the most important findings are summarized.

What can be considered creating most customer value for the wholesalers is the ability of offering fresh products; four out of eight wholesalers mention this as important. Also the taste of the food and the visual attractiveness is very important.

Important is also to sell health dishes with high nutrition values, and the purchasing price of the products. It is also important for the wholesalers to be able to offer a certain range of chilled ready meals. Two wholesalers believe in creating new concepts related to chilled ready meals or going for ready meal components. So, there seems to be innovativeness among the wholesalers.

Problems experienced by the wholesalers today are that there is a very limited shelf space in the stores, the scrap resulting from expired chilled ready meals, and that the chilled ready meal market is sensitive to economic recessions.

Not very important issues for the wholesalers are that the chilled ready meals are easy to cook, because this is taken for granted for all chilled ready meals. Also the safety of the products is taken for granted, this is nothing that differentiates one chilled ready meal producer from another, it could only disqualify producers. However, the producers need to be quality certified in order to be able to sell their products.

The ability of having vertical display has not been expressed as very important by the wholesalers. Nor are they fixed on costs, even though they are aware of the costs and prices. Nor is it yet an important focus upon ecological products. Moreover, it is the opinion of the wholesalers that some preservatives in the ready meals are necessary to allow for industrial food production at a reasonable cost level.

The answers given from the wholesalers turned out to be very dependent upon the wholesalers' geographic location.

### **5.3.3 Additional Interview with Ready Meal Researcher**

The results from the interviews with the ready meal researcher Mia Prim can be found in Appendix IX. In this section, a summary of the most important findings is provided.

The taste, the nutrition values and the texture of the food create value for the end customers. Women care more about the nutrition level than men do. End customers want spicy food that contains vegetables and complete meal solutions in the supermarkets (for example to also offer salad next to the chilled ready meals). According to Prim the chilled ready meals should live up to the standards of a Saturday night dinner, since this is a big competitor to the chilled ready meal. Moreover the visual attractiveness of the chilled ready meals is important for the end customers. End customers do not want chilled ready meals where the ingredients have been mixed too much together and have a too uniform color. That being said, end customers do however appreciate stews.

What is not considered very important for the end customers is low price. Also, long shelf life is not very important to end customers since they mostly buy the food for immediate consumption. Ecological ingredients and healthy dishes are not very important to all customers yet. The possibility of having a vertical display is not considered being very important either.

What is taken for granted by end customers is that the chilled ready meals are easy to prepare and that they are evenly heated. Sous Vide, however, is not considered very convenient. The major convenience of the Gooh food, the ready to eat signal, is often missed by the end customers. Many of the participants in Prim's focus groups missed how the Gooh ready meals should be prepared and just ran the fork through the plastic film. Prim thinks that the ready to eat signal of Gooh is "fun". However, Prim does not think that end customers experience it as problematic to determine when the chilled ready meal is ready to be eaten. Moreover, it is taken for granted that the chilled ready meals represent safe products. A certain number of different chilled ready meals need to be included in the product range in order for any chilled ready meal to be considered attractive to buy.

It is also important to remember that what is valued by customers can differ from market to market.

Problems that are related to chilled ready meals today are that they are not spicy enough and that the visual attractiveness of the food is low. In addition, the chilled ready meals are poorly exposed in the stores. Moreover, the supermarkets do not offer complete meal solutions, such as offering the possibility of complementing the chilled ready meal with salad or coffee, this fact reduces the attractiveness of buying a chilled ready meal instead of going to a restaurant. Finally, it is considered shameful to serve ready meals to others.

#### **5.3.4 Conclusions Customer Value**

By combining the results from the Customer Value Analyses and the additional interview with the ready meal researcher, one obtains the matrix presented below. In this matrix, different value parameters that can create value for producers, wholesalers and end customers of chilled ready meals are presented. The value parameters are further explained in Appendix X. In the matrix below, the value parameters are organized according to parameters that relate to production, parameters that relate to the chilled ready meals and parameters that relate to the business model of a supplier of production equipment.

The scale used in the matrix is the following:

- Factors that were identified as important in purchasing situation, (+)(+)
- Factors that were taken into consideration, but not critical in purchasing situation, (+<sub>1</sub>)
- Minimum requirement in purchasing situation, (+<sub>2</sub>)

- Factors that were not considered important in purchasing situation, (-)
- Factors for which no information could be obtained, (0)

To clarify the matrix even further, colors were used to highlight what value parameters that were considered important (green), important to some extent (yellow) and not important (red) by the producers, wholesalers and end customers of chilled ready meals.

Naturally, producers buy production equipment for chilled ready meals while wholesalers and end customers buy the actual chilled ready meals.

	Producers	Wholesalers	End Customers
<b>Value Parameters</b>			
<b>Production</b>			
Investment	(+ <sub>1</sub> )	n.a.	n.a.
Production Cost	(+)(+)	n.a.	n.a.
Work Environment	(+ <sub>1</sub> )	n.a.	n.a.
Distribution	(-)	(+)(+)	n.a.
Production Efficiency	(+)(+)	n.a.	n.a.
Quality Certification	(+ <sub>1</sub> )	(+ <sub>2</sub> )	n.a.
<b>Chilled Ready Meal</b>			
Vertical Display	(0)	(+ <sub>1</sub> )	(-)
Visually Attractive Meal	(+)(+)	(+)(+)	(+)(+)
Nutrition Value	(+ <sub>1</sub> )	(+ <sub>1</sub> )	(+ <sub>1</sub> )
	MicVac producers; (+)(+)		
Taste	(+)(+)	(+)(+)	(+)(+)
Texture	(+)(+)	(+)(+)	(+)(+)
Color	(+)(+)	(+)(+)	(+)(+)
Preservatives	(+ <sub>2</sub> )	(+ <sub>1</sub> )	(+)(+)
Salt Content	(+ <sub>2</sub> )	(-)	(-)
Choice of Serving Temperature	(-)	(-)	(-)
Ease of Preparing Meal (including ready to eat signal)	(+ <sub>2</sub> )	(+ <sub>2</sub> )	(+ <sub>2</sub> )
Evenly Heated Meal	(+ <sub>2</sub> )	(+ <sub>2</sub> )	(+ <sub>2</sub> )
Hydrated Surface	(-)	(-)	(-)
Purchasing Price	n.a.	(+ <sub>1</sub> )	(+ <sub>1</sub> )
Scrap	(+ <sub>1</sub> )	(+)(+)	(-)
Safe Products	(+ <sub>2</sub> )	(+ <sub>2</sub> )	(+ <sub>2</sub> )
Variation of Dishes	(+ <sub>2</sub> )	(+ <sub>1</sub> )	(+ <sub>1</sub> )
Long Shelf Life (above 14 days)	(+ <sub>1</sub> )	(-)	(-)
<b>Business Model</b>			
Incremental Product Improvement Support	(0)	n.a.	n.a.
	MicVac producer: (+)(+)		
Maintenance Support	(+)(+)	n.a.	n.a.

Education and Involvement during Production Start-Up Phase	(0) MicVac producers: (+)(+)	n.a.	n.a.
Payment Options	(-)	n.a.	n.a.
High Flexibility	(+ <sub>1</sub> )	n.a.	n.a.
Low Uncertainty and Risk	(+ <sub>1</sub> )	n.a.	n.a.

**Figure 4. Customer Value in the Value Chain**

It is evident from the matrix that the main sources of value creation for producers of chilled ready meals are low production costs, high production efficiency, visually attractive dishes, good taste and texture, retained color, and maintenance support. For producers using the technological solution MicVac, good nutrition values, support with incremental product and process improvements, and education and involvement during the production start-up phase are also important sources of value creation.

For the wholesalers and the end customers visually attractive dishes with retained color and good taste and texture are sources of value creation. Moreover, wholesalers value efficient distribution and low scrap levels. End customers, on the other hand, want ready meals without preservatives.

Furthermore, the factors that are not a source of value creation for the producers are distribution, choice of serving temperature, a hydrated surface, and payment options. The wholesalers derive no value from low salt content, choice of serving temperature, hydrated surface, and long shelf life. The attitude of the wholesalers is shared by the end customers. However, the end customers derive no value from vertical display and low amounts of scrap either. A comment should be made with regards to the long shelf life. Wholesalers and producers not only place no value on this, in their opinion this reduces the value of the chilled ready meals.

#### **5.4 Research Question 2 – What Value does MicVac Create in Comparison to Existing, Competing Technologies**

In this section, the results from the comparison of the existing, competing technologies for production of chilled ready meals will be treated. However, due to the high confidentiality degree of the comparison, no empirical data will be presented. Rather, an explanation of what data that was collected will be given. Nonetheless, in the last parts of this section, diagrams will display a comparison of labor costs, output per production hour and output per work hour for the different technologies. It is important to note that data has been collected on the basis of the value parameters that were treated in the Customer Value Analyses and the parameters that were presented in the model for product costing.

As previously mentioned, the investigated technologies were Autoclave, Sous Vide, Cook and Chill, and MicVac. Meals produced with Autoclave and Sous Vide are pasteurized and chilled in a machine called autoclave. However, the meals produced with Autoclave are packaged in a tray that is sealed with a plastic film, whereas meals produced with Sous Vide are packaged in plastic bags (different ingredients are packaged in different bags). Cook and Chill resembles a large kitchen. The meals are prepared by chefs, then the meals are chilled, and finally the meals are packaged in a tray with modified atmosphere and sealed with a film. Autoclave, Sous Vide and MicVac are industrial production methods, whereas Cook and Chill is a manual production method.

### 5.4.1 Comparison – Value Parameters that Relate to Producers

In this section, the performance of the existing, competing technologies is compared according to the value parameters that affect the production performance.

#### General Information

	Autoclave	Sous Vide	Cook and Chill	MicVac
Production volume (n° chilled ready meals 2009)				
Revenue per chilled ready meal (SEK)				
Margin per chilled ready meal (SEK 2009)				

Firstly, general data was collected from the different producers. This was done in order to get an overall impression of the general state of the company. It was especially important to ask for the production volume, since large differences in production volume could lead to important biases in the final comparison.

#### Investments

	Autoclave	Sous Vide	Cook and Chill	MicVac
Investment (SEK)				
Investments per chilled ready meal (SEK)				

Then information about the producers' initial investments in their production equipments was collected. The investment levels were related to the number of chilled ready meals produced per year in order to get a picture of the investment in relation to the size of the company.

#### Production Costs

	Autoclave	Sous Vide	Cook and Chill	MicVac
Production cost per chilled ready meal (SEK)				
Cost of packaging material per chilled ready meal (SEK)				
Direct labor cost per chilled ready meal (SEK)				
Indirect labor cost per chilled ready meal for method (SEK)				
Education cost per chilled ready meal related to method (SEK)				
Maintenance cost per chilled ready meals related to the method (SEK)				

Cost of inventory and material of consumption per chilled ready meal related to the method (SEK)				
Cost of insurance per chilled ready meal related to method (SEK)				
Cost of detection of defect products per chilled ready meals related to product (SEK)				
Scrap per chilled ready meal related to method (SEK)				
Water loss per chilled ready meal (SEK)				
Cost of energy per chilled ready meal (SEK)				
Cost of production facility per chilled ready meal (SEK)				

Henceforth, the production costs associated with the different technologies were investigated. The parameters used to measure the production costs were identified in the model for product costing, which was presented in section 5.2.

To obtain results that represent the average performances of the technologies, cost data was collected for the entire production year 2009. These figures were then divided by the annual number of produced chilled ready meals.

### Efficiency

	<b>Autoclave</b>	<b>Sous Vide</b>	<b>Cook and Chill</b>	<b>MicVac</b>
Number of chilled ready meals per direct labor unit (n° chilled ready meals/paid minute)				
Number of chilled ready meals per effective production time (n° chilled ready meals/minute)				
Machine utilization (%)				
Changeover time between dishes (minutes)				
Cost of stock chilled ready meals related to method (SEK)				
Number of ready meals per EUR-pallet				

Moreover, the production efficiency proved to be important for the chilled ready meal producers and therefore data was collected to measure the efficiency of the different technologies. The first

parameters were designed to measure production efficiency, whereas the two last parameters were designed to measure distribution efficiency.

**Complementary Data**

	<b>Autoclave</b>	<b>Sous Vide</b>	<b>Cook and Chill</b>	<b>MicVac</b>
Shelf life (days)				
Hygiene zones				
Complaints				
Health risks				
Work environment				
Handling production line				
Time required to pasteurize meal (min)				

To account for other parameters that might affect the production performance, but that do not relate directly to production cost or efficiency, complementary data was collected. Most of the factors measure how challenging it is for the employees to work in the production. The factor “time required to pasteurize meal” is included because this factor has a great impact on how much of the raw materials’ texture, taste, nutrition and color that is preserved (Zetterberg, Head of Sales, 2010). On this particular factor, MicVac performs much better than the competing technologies. Generally it can be said that the pasteurization time with MicVac is about 10 minutes, whereas the pasteurization time with Autoclave and Sous Vide is about 60 minutes (MicVacAB, 2009).

**5.4.2 Comparison – Value Parameters that Relate to Wholesalers**

The value parameters that are compared in this section are those that create direct value for wholesalers. Naturally, these value parameters also create indirect value for the producers.

	<b>Autoclave</b>	<b>Sous Vide</b>	<b>Cook and Chill</b>	<b>MicVac</b>
<b>Presentation</b>				
Vertical display				
<b>Costs</b>				
Purchasing price (SEK)				
Scrap				
<b>Product</b>				
Quality certification				

What is meant by “Vertical display” is that the chilled ready meals can be placed vertically without ruining the composition of the meal. “Quality certification” refers to the type of certification that is obtained by the chilled ready meal producer, such as BRC (British Retail Consortium) or HACCP (Hazard Analysis Critical Control Points).

**5.4.3 Comparison – Value Parameters that Relate to End Customers**

Finally, the existing, competing technologies were compared according to value parameters that create direct value for end customers. These value parameters do also create indirect value for the

wholesalers and producers, since these value parameters are what ultimately create the revenue streams.

	<b>Autoclave</b>	<b>Sous Vide</b>	<b>Cook and Chill</b>	<b>MicVac</b>
<b>Meal</b>				
Health risks				
Close to look of homemade meal				
Preservation of nutrition				
Close to taste of homemade meal				
Close to texture of homemade meal				
Close to color of homemade meal				
Preservatives				
Salt content (%)				
Variation of dishes				
<b>Preparation</b>				
Ease of preparing the meal (including a ready to eat signal)				
Evenly heated meal				
<b>Costs</b>				
Purchasing price (SEK)				

The value parameters in the matrix above are divided into three main groups. The first group consists of value parameters that measure characteristics of the actual meal. The second group consists of value parameters that measure how easy it is to prepare a meal at home. Finally, the third group consists of the value parameter “Purchasing price”. It can be clarified that “Variation of dishes” refers to how many different dishes that are offered by one chilled ready meal producer.

#### **5.4.4 Investment and Production Cost Adjusted with Respect to Production Volume**

The investigated producers differed significantly in terms of annual production volume of chilled ready meals. Therefore, it was hard to compare the collected data across the different producers, since some producers may have benefited from economies of scale. In this section the investment levels and the production costs have been adjusted to account for the producers’ difference in production volume.



	Autoclave	Sous Vide	Cook and Chill	MicVac
Production volume (n° of chilled ready meals)				
Investment (SEK)				
Production cost per chilled read meal (SEK)				

In these adjustments, costs that were deemed to depend on the production volume were recalculated. Models for how this recalculation could be done were constructed. One specific cost that was deemed to depend on the production volume was labor cost. In Figure 5 below, it is displayed how the labor cost varies with the size of the production equipment, and thereby with the production volume, for the different technologies.

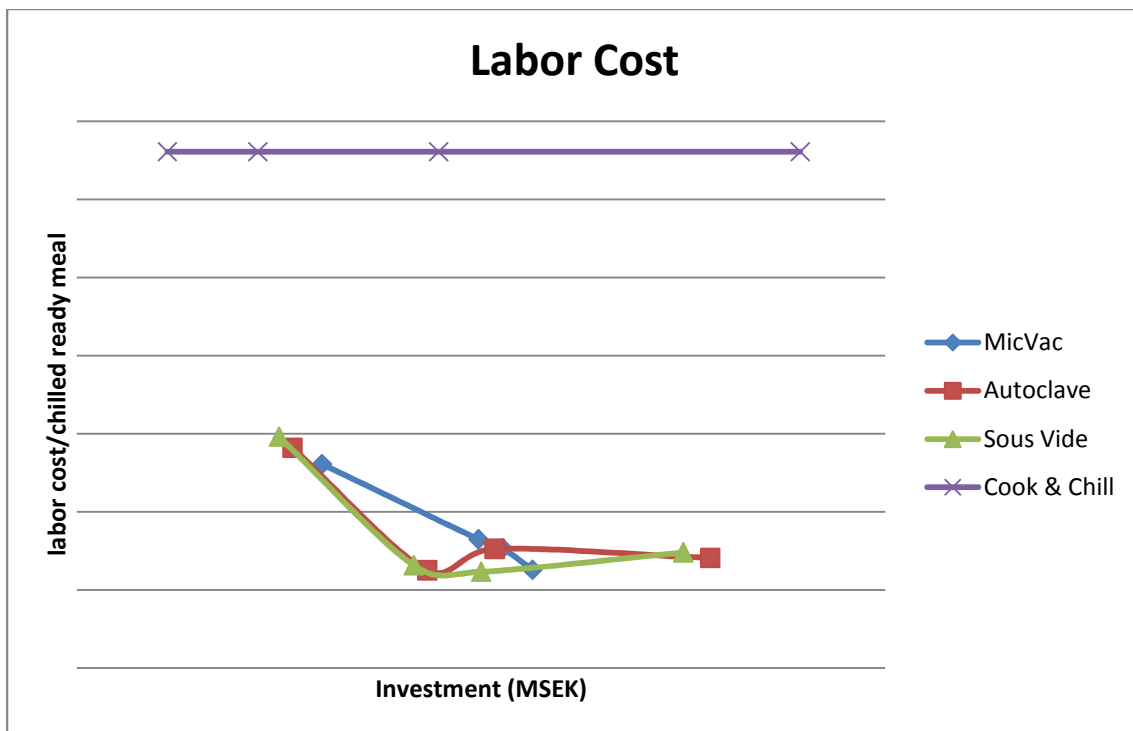


Figure 5. Labor Cost

As can be seen in Figure 5, the results of Autoclave, Sous Vide, and MicVac are similar. MicVac's labor cost, however, decreases at a higher rate than the labor costs for Autoclave and Sous Vide. Cook and Chill has a much higher labor cost than the other technologies, this is because Cook and Chill is a much less automated process which requires much more manual labor. Moreover, the Cook and Chill labor cost does not decrease with increased production volume, an expansion of the production equipment requires an equivalent expansion of the workforce to operate it.

### 5.4.5 Efficiency Adjusted With Respect to Production Volume

Also the efficiency data treated in section 5.4.1 contains a production volume bias. Therefore, this data was recalculated according to a more theoretical model for efficiency. The recalculated data is displayed in Figure 6 and Figure 7 below.

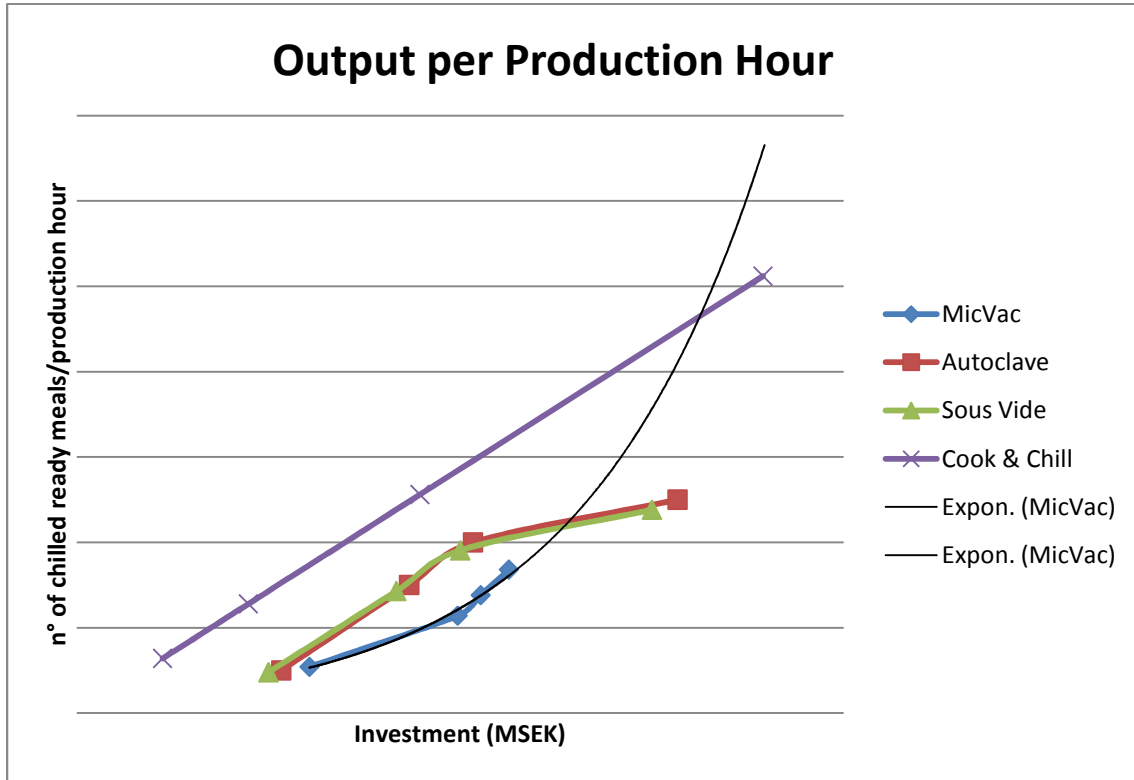


Figure 6. Output per Production Hour

Figure 6 displays production output per production hour as a function of machine investment. In the calculations, the maximum output rate is limited by the machine capacity. As can be seen, MicVac, Autoclave, and Sous Vide have about the same efficiency levels. Autoclave and Sous Vide have slightly higher production efficiency; however, MicVac is predicted to exceed this efficiency at higher investment levels, that is, at higher production volumes.

The efficiency level for Cook and Chill is by far the highest. However, this is perhaps not a realistic result. The reason for believing that the result is not realistic is that it would be more reasonable to assume that labor capacity limits the maximum output instead of machine capacity in the case of Cook and Chill.

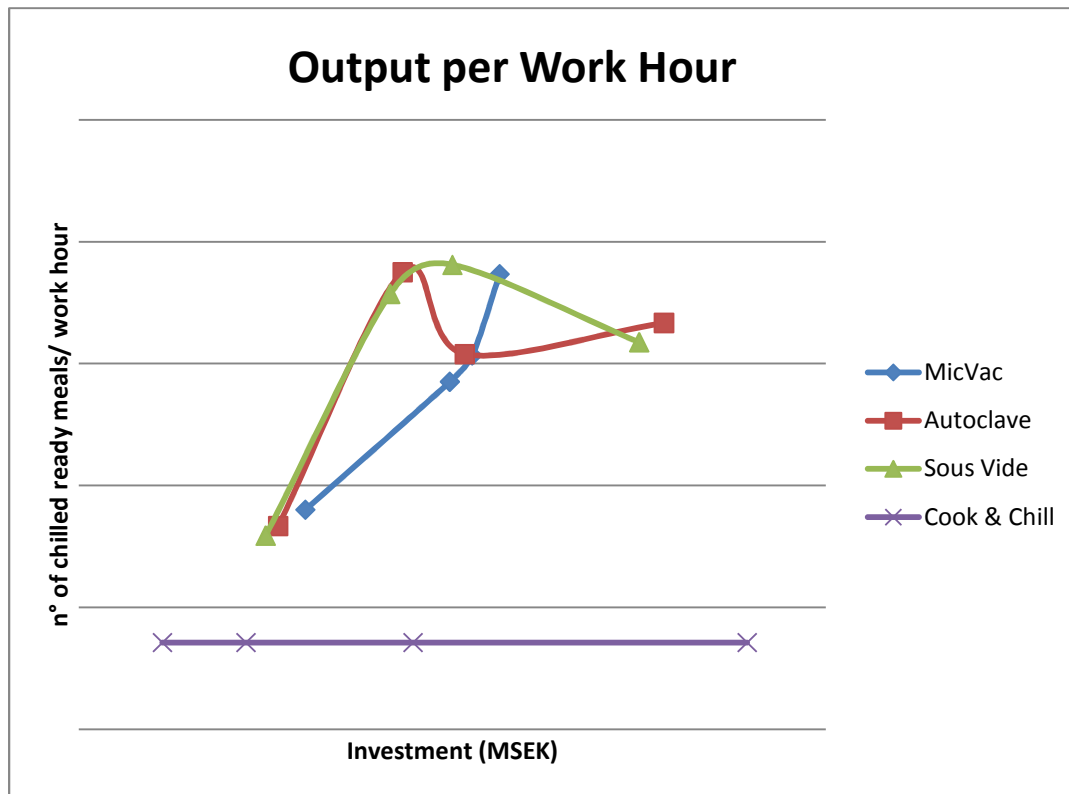


Figure 7. Output per Work Hour

In Figure 7, production output per work hour as a function of machine investment is illustrated. This diagram resembles Figure 6 since Autoclave, Sous Vide and MicVac have a fairly similar efficiency levels, whereas Cook and Chill's efficiency level is distinctly different. At lower production volumes, Autoclave and Sous Vide have higher output per work hour than MicVac. However, once the machine investment exceeds a certain level, MicVac becomes the most efficient technology.

Cook and Chill has very low output per work hour. This confirms the previous statement that Cook and Chill is a much more labor intensive technology than the other technologies.

#### 5.4.6 Pay-Back Time and Net Present Value Adjusted With Respect to Production Volume

Moreover, the pay-back times for the different technologies, at a given production volume, were calculated. Also net present value calculations for a specific production volume were created. These calculations summarize the total customer value for producers, in terms of economic value, created by the specific technologies.

	Autoclave	Sous Vide	Cook and Chill	MicVac
Pay-back time (years)				

	Autoclave	Sous Vide	Cook and Chill	MicVac
Net Present Value (SEK)				

### 5.4.7 Conclusions MicVac's Competitive Advantage

The results from the Analysis of MicVac's Competitive Advantage are summarized in the following table. The highest performing technology, for a certain value parameter, is marked with (+)(+) and the lowest performing technology is marked with (-). If a technology performs adequately in comparison with the other technologies it is marked with (+).

	<b>Autoclave</b>	<b>Sous Vide</b>	<b>Cook and Chill</b>	<b>MicVac</b>
<b>Production</b>				
Investment	Confidential	Confidential	Confidential	Confidential
Production Cost per Chilled Ready Meal	(+)(+)	(+)(+)	(-)	(+)(+)
Production Efficiency	(+)(+)	(+)(+)	(-)	(+)(+)
Pay-Back Time	(+)(+)	(+)(+)	(-)	(+)(+)
Net Present Value	(+)(+)	(+)(+)	(-)	(+)(+)
<b>Chilled Ready Meal</b>				
Food Quality (retained taste, nutrition, color, texture)	(+)	(+)	(+)	(+)(+)
Visually Attractive Meal	(+)(+)	(-)	(+)(+)	(-)
Ease of Preparing Meal	(+)	(-)	(+)	(+)(+)
Shelf Life (days)	(+)	(+)	(-)	(+)(+)

Figure 8. Competitive Advantages

MicVac is at a competitive advantage as compared to Autoclave when it comes to food quality. Furthermore, MicVac's meals are somewhat easier to prepare and have a longer shelf life. However, there exist meals, produced with Autoclave, that have a shelf life of up to 60 days (Zetterberg, 2010). MicVac is at a competitive disadvantage, as compared to Autoclave, when it comes to the visual attractiveness of the meals.

Further, MicVac's competitive advantages as compared to Sous Vide regard the improved food quality and the ease of preparing the meal. Another benefit with MicVac is that the meals have 14 days longer shelf life than the Sous Vide meals. However, there exist meals, produced with Sous Vide, that have a shelf life of up to 60 days (Zetterberg, 2010). The same shelf life has been proven by independent analyses of MicVac by accredited labs and MicVac customers (Zetterberg, 2010). MicVac cannot be said to have a clear disadvantage as compared to Sous Vide.

Moreover, MicVac's competitive advantages as compared to Cook and Chill are the reduced production costs and the efficiency of production at higher production levels, the extended shelf life, the pay-back time and the net present value. In addition, MicVac offers somewhat better food quality and the meals are a bit easier to prepare. On the other hand, MicVac is at a competitive disadvantage when it comes to the visual attractiveness of the meal.

Concerning the investment level, confidentiality issues prevents the authors of this Master's thesis from revealing the actual relationship between the technologies' investment levels. However, what can be said is that MicVac is at a competitive advantage when relating the investment level to the production cost and production efficiency at high production levels.

Conclusively, MicVac's performance exceeds all of the competing technologies when it comes to food quality and ease of preparing the meal.

### **5.5 Research Question 3 - What Type of Innovation is put forward by MicVac AB?**

MicVac can be considered to be a radical innovation for chilled ready meal producers since it represents a technological solution that is very new and different from prior and competing technologies. What makes MicVac new and different is that it uses a microwave tunnel and a valve in order to cook and pasteurize food. This renders the capabilities and the knowledge bases of the producers obsolete, if they are currently using other technologies.

A radical innovation does not have to be radical only because it renders technological capabilities and knowledge bases obsolete. It can also be radical because it renders for example organizational capabilities and knowledge bases obsolete or because it changes the composition of a value chain. MicVac does only lead to changes in production and only renders technological capabilities and knowledge bases obsolete. However, MicVac is still considered a radical innovation, even though it would be more radical if it also led to changes in other types of capabilities and knowledge bases than the technological ones.

The chilled ready meals that are produced with MicVac only represent an incremental innovation for the wholesalers. The only thing that MicVac changes for them is that they now have the possibility of displaying the chilled ready meals vertically in the stores. Since this is a relatively minor change, which cannot be considered competence destroying, MicVac chilled ready meals represent an incremental innovation for the wholesalers. However, since chilled ready meals produced with MicVac have a relatively long shelf life, the wholesalers could change their logistics system radically if needed. But since they do not seem to be interested in doing so, MicVac can not be considered a radical innovation with respect to the wholesalers. Another reason for why MicVac is not a radical innovation when it comes to having an extended shelf life is that also the technologies Autoclave and Sous Vide give relatively long shelf lives.

Neither for the end customers, the chilled ready meals produced with MicVac can be considered a radical innovation. The end customers may obtain better food quality in terms of taste, nutrition values, texture and color; but these changes are only incremental in its nature. The ready to eat signal of MicVac is however something completely new and different for the end customer. But since this innovation does not fundamentally change how the chilled ready meal is prepared it is not considered a radical innovation.

Finally, the concept of architectural innovation does not apply to the case of MicVac. MicVac does not change the linkages between for example the different parts of a production system. Instead MicVac requires that you buy a completely new production system. MicVac does neither change the linkages between the different parts of a producer's organization. Regarding the supply chain, MicVac does not change the linkages between the actors.

## **5.6 Research Question 4 - How should MicVac AB Preferably Segment its Market, Differentiate its Offer, and Position itself?**

In this section, a market strategy in terms of segmentation, differentiation, and positioning will be created for MicVac AB. The market strategy will be based on the results from the Customer Value Analyses, the Analysis of MicVac's Competitive Advantage and the analysis of what type of innovation that MicVac is.

As stated in *Introduction*, more specifically in *Limitations*, only chilled ready meal producers will be considered as potential customers of MicVac AB. Therefore, the segmentation will be limited to discussing what types of chilled ready meal producers that MicVac AB should target. These limitations regarding the segmentation will also affect the differentiation strategy and the positioning strategy.

The ideas of the *Crossing the chasm* framework were taken into consideration already when the limitations of this Master's thesis were constructed. The reason for why only chilled ready meal producers were studied was partly because this segment was considered to be the natural mainstream market of MicVac AB. As described in *Background in Introduction*, MicVac AB has grown substantially during the last years, but the technological solution has been sold mainly to early adopters that want to try something new and not to established companies in the mainstream market. MicVac AB is therefore, sooner or later, about to cross the chasm with its radical innovation. When they do cross, that means that they will start selling to producers of chilled ready meals. Due to this situation, the *Crossing the chasm* framework was relevant to use when creating a market strategy.

### **5.6.1 Segmentation**

Even though it was already decided that MicVac AB should target producers of chilled ready meals, the segment could still be specified in more detail. That is also what has been done according to literature described in *Theoretical Framework*.

The segmentation was primarily performed in accordance with the traditional perspective on segmentation. To begin with, a mapping of possible segmentation variables was conducted. Possible segmentation variables were taken from Anderson (1997, p. 6) and complemented with possible segmentation variables that the authors of this Master's thesis found suitable with respect to the information that was obtained from the empirical studies.

Thereafter, an evaluation of the possible segmentation variables, according to the possibility of MicVac AB to offer a unique and demanded technological solution, was conducted. This evaluation was based on information from the Customer Value Analyses and information from the Analysis of MicVac's Competitive Advantage. Matching resources to market demands in this way builds directly on the ideas of the traditional perspective on segmentation. The complete list of segmentation variables, with comments upon how MicVac AB can offer a unique and demanded technological solution, is given in Appendix XI.

The appropriate segment was found to be:

*Producers of chilled ready meals who can afford an initial investment of X MSEK, who has an annual turnover of at least Y MSEK, who values food quality and who operates in a suitable geographical market.*

This market segment was evaluated according to the evaluation criteria described by Anderson (1997, p. 10) and was found to be a good segment. The detailed evaluation can be found in Appendix XII.

In the *Crossing the chasm* framework, the strategy for segmentation when it comes to starting to sell to the mainstream market, is to target a niche market that could function as an entry point to the mainstream market. The niche market that MicVac AB should target was chosen to be a specific geographical market. The reason for that is that different geographical markets vary a lot from each other. That was one of the conclusions from the Customer Value Analysis Wholesalers. As stated in *Limitations in Introduction*, evaluating different geographical markets lies outside the scope of this Master's thesis. After MicVac AB has proven that its technological solution is successful in one market, there is no reason to believe that other markets would not be able to use the chosen geographical market as reference and also start to demand MicVac.

Due to the Customer Value Analyses, information about customer preferences was gathered and there was no need for creating scenarios for acting according to informed intuition as suggested in the *Crossing the chasm* framework. However, this approach could be valuable when less resources and time are available before having to make a decision about segmentation.

The view of the *Blue ocean strategy* framework is to create a target segment that is as large as possible. This approach was not considered when segmenting the customers of MicVac because of the fact that it is the opposite recommendation than what is given in the *Crossing the chasm* framework. Since the *Crossing the chasm* framework describes the current situation of MicVac AB well, it is reasonable to believe that the *Crossing the chasm* framework is most beneficial for MicVac AB to use.

### **5.6.2 Differentiation**

It has already been concluded, in the beginning of section 5.6, that it is relevant to confer the *Crossing the chasm* framework when creating a market strategy for MicVac AB. When constructing the differentiation strategy in particular, the *Crossing the chasm* framework's key message of offering a complete product solution will be an overall goal of the differentiation strategy.

The *Crossing the chasm* framework offers limited advice on how to go about when creating an attractive complete product solution; it only describes which parts the complete product solution should contain. Therefore, the traditional marketing perspective was consulted as a complement. In the traditional marketing perspective, creation of customer utility by combining the target segment's needs with one's own capabilities is central. Therefore, the differentiation strategy will be created by matching chilled ready meal producers' needs with MicVac AB's capabilities.

In the traditional marketing perspective, differentiation is divided according to soft and hard differentiation and both are considered being an essential part of an attractive differentiation

strategy. Therefore, the differentiation strategy designed here is done so in terms of both hard and soft differentiation.

Moreover, by considering the main points of the *Blue ocean strategy* framework one realizes that the differentiation should not be an either or strategy. One benefit should not be added at the expense of another. It is important that all of the main customers' needs are fulfilled by the strategy.

The chilled ready meal producers' needs were investigated in the Customer Value Analysis. Producers value low production costs, an efficient production, visually attractive dishes, good taste and texture, attractive colors, and good maintenance support. For MicVac producers, nutrition level, support with incremental product and process improvements, and education and involvement during the production start-up phase are also important when it comes to creating customer value. The wholesalers value about the same characteristics of a chilled ready meal as the producers. However, they also value distribution efficiency and a low scrap level, in terms of low amount of expired chilled ready meals in the shelves. End customers are appealed by the taste, texture, color, and visual attractiveness of the chilled ready meals. Also, the end customers want chilled ready meals free from preservatives and women want high nutrition levels. Since it is the chilled ready meal producers that actually purchase MicVac, the differentiation strategy will however be designed to satisfy their needs.

MicVac's performance, with respect to the value parameters, was determined in the Analysis of MicVac's Competitive Advantage. Henceforth it is examined where MicVac excel and underperform.

Concerning the production efficiency, both in terms of labor and machine efficiency, MicVac performs well at high production volume levels. MicVac, Autoclave and Sous Vide have approximately the same efficiency levels. However, once a certain production level is reached MicVac becomes the most efficient technology. When comparing the efficiency level with Cook and Chill, MicVac is considerably more efficient. In sum, in relation to Autoclave and Sous Vide MicVac differentiates itself as a more efficient production technology at high production volumes. In relation to Cook and Chill, MicVac differentiates itself as an industrial production technology with a much more labor efficient production regardless of the production volume.

Moreover, the production costs are about the same for MicVac, Autoclave and Sous Vide. For Cook and Chill, on the other hand, the production cost is higher. This is mainly due to the fact that Cook and Chill is a labor intensive production technology. The implication of this for MicVac's differentiation strategy is that it should emphasize the lower production costs it has compared to Cook and Chill due to the fact that less manual labor is required.

Furthermore, the chilled ready meals themselves represent an important ground for differentiation. The technological solution MicVac has a much shorter pasteurization time than Autoclave and Sous Vide. With MicVac, the food is exposed to high temperatures for ten minutes as compared to 60 minutes for Autoclave and Sous Vide. The heat treatment is also gentler compared to Cook and Chill. This leads to better food quality, in terms of retained color, nutrition, taste and texture. Since the food quality is one of the aspects valued most highly by chilled ready meal producers, wholesalers, and consumers this is a major positive differentiator for MicVac. In fact, two of MicVac's current customers explained that the reason for investing in MicVac's technological solution was that they



could produce food with better quality (Appendix VII). Thus, MicVac should differentiate itself as a technological solution that enables better food quality.

However, Micvac should be aware of that communicating this value effectively could be challenging since food quality is associated with visually attractive food. As stated by ready meal researcher Mia Prim (Prim, 2010), if the dish does not look attractive, it is not recognized as quality food. Some dishes produced with MicVac look representative, such as casseroles and risotto, whereas other dishes look rather unappetizing. However, some countries, such as Norway (Appendix VIII), recognize that chilled ready meals can look like MicVac food and still be quality food. Thus it is important that MicVac AB considers the type of food culture that prevails in the countries which it targets. If the market does not accept the look of MicVac's dishes it will be extremely challenging, and costly, to convey the differentiation of better food quality.

Moreover, in relation to Sous Vide, MicVac's chilled ready meals are much more convenient to prepare for the end customers. Additionally, if one takes into consideration the MicVac valve that beeps when the dish is ready one could argue that MicVac's dishes are easier to prepare than Autoclave and Cook and Chill dishes as well. However, this requires educating the end customers in this particular preparation method. Prim (2010) observed end customers as they prepared MicVac food for the first time. The end customers removed the film before putting the dish in the microwave since this was the way they were used to preparing microwave food. Once the film had been removed, the valve could not beep and as such this differentiating factor was never discovered. Conclusively, convenient preparation is a differentiating factor as compared to Sous Vide and has the potential to be differentiating for Autoclave and Cook and Chill.

The aspects discussed this far belong to the hard differentiation category. These aspects are derived from the technology. Soft differentiation, on the other hand, is related to MicVac AB as a company and what it can offer its customers in addition to the technological solution. As mentioned earlier, producers value maintenance support, but they also value high flexibility, and low uncertainty and risk. In addition, MicVac producers value support with incremental product improvements and education and involvement during production start-up. For MicVac AB to best meet these demands it should convey a feeling of safety. MicVac AB should be to its customers what a supervisor is to students writing their Master's thesis. This should be achieved by emphasizing the technical competence that exists within MicVac AB and also by communicating the technological solution's close link to science and NGO and scientific institutions, such as Chalmers, SIK, etc. Further, MicVac AB should never be more than a phone call away if a producer experiences problems of any type. MicVac AB should listen to and respond to, to the extent that that the resources allow, customers' needs for product development. Annual customer meetings should be held so that MicVac AB can identify producers' needs for product development and eventual problems. During the installation of a new production line MicVac AB should take an active role and be a partner and a project leader. Much of this is already done today, however MicVac AB should differentiate itself by improving and emphasizing this further.

In conclusion, MicVac AB should differentiate itself by being:

*A competent mentor offering a technological solution for gentle, industrial production of chilled ready meals.*

What differentiates the technological solution more specifically is rapid pasteurization which leads to high quality food and efficiency at high production volumes.

### 5.6.3 Positioning

As stated in the last section, the section about differentiation, it has already been concluded in the beginning of section 5.6 that it is relevant to confer the *Crossing the chasm* framework when creating a market strategy for MicVac AB. This implies that the *Crossing the chasm* framework should be used also for constructing the positioning strategy.

In the *Crossing the chasm* framework it is important to define a market alternative and a product alternative. The market alternative is defined to be Cook and Chill. Cook and Chill has been chosen due to the fact that it represents a well recognized and established concept that has clear deficiencies when it comes to cost and production efficiency. It is a nonindustrial process. The product alternative is defined to be Autoclave and Sous Vide since these technologies represent industrial processes for producing chilled ready meals and thereby have much of the same cost and efficiency benefits as MicVac. However, MicVac preserves the raw materials' nutrition values, color, taste, and texture much better than both Autoclave and Sous Vide.

Having specified this, and following Moors (1991) framework for formulation a positioning claim, the positioning statement becomes:

*For producers of chilled ready meals, who are dissatisfied with the inefficiency of Cook and Chill, MicVac AB's product is a technology for industrial production of chilled ready meals that provides gentle heat treatment unlike Autoclave and Sous Vide. MicVac AB has assembled a complete solution that incorporates both technical knowledge and the technology itself.*

By evaluating this positioning claim from the traditional marketing perspective one realizes that the proposed category is the one that includes Autoclave and Sous Vide. This category is defined as technology for industrial production of chilled ready meals. Within this category MicVac AB becomes the challenger to the established technologies Autoclave and Sous Vide. MicVac AB should position itself as the modern alternative that handles the dishes gently. More explicitly, what makes MicVac different within this category is the mild heat treatment that preserves taste, texture, color, and nutrition values. The value that all actors within this category create, is large scale automated production of chilled ready meals with extended shelf life.

Finally, by analyzing the positioning claim from the *Blue ocean strategy* framework (Kim & Mauborgne, 2005) one realizes that a compelling tagline that positions MicVac in a unique place in the market place has been created.

## 5.7 Research Question 5 - What Challenges have been Identified that Pertain to the Commercialization and Marketing of Radical Innovations?

In the traditional marketing perspective, the importance of matching a company's knowledge and resources to the needs of the customers is emphasized. However, in the case of commercializing and marketing a radical innovation, information about the needs of the customers is difficult to obtain.

Firstly, since a radical innovation is something completely new and different from prior solutions, the customers may not know whether they would benefit from it or not. Therefore it is more difficult to perform a market analysis and ask the right questions. In the Customer Value Analysis Producers in

this Master's thesis, open questions were asked to producers in order to reveal how these potential customers were thinking and reveal what they value. However, open questions demand more time when interviewing and the result is more difficult to interpret.

Secondly, a radical innovation may not have a natural application or a typical customer. This also makes it difficult to perform a market analysis, since it is difficult to know whom to interview. In the Customer Value Analysis Producers of this Master's thesis, producers of chilled ready meals were interviewed because this seemed as the natural mainstream market which MicVac AB would have to target sooner or later. But other types of customers could also have been investigated.

In general it could be stated that a challenge for commercializing and marketing radical innovations is that there are so many variables that there is no information about, at the same time as this information is more difficult to obtain due to the fact that people cannot easily relate to something they do not yet know.

The *Crossing the chasm* framework deals with this problem by saying that informed intuition must be used when identifying a suitable market segment, because of limited time and resources. However, it is reasonable to believe that "real information" could improve decisions and be beneficial for a company that tries to commercialize and market a radical innovation. Therefore, knowledge regarding what is the most important information to gather and how this should be done would be valuable. Also knowledge about how a company could perform structured trial and error operations, and retain the knowledge gained by these operations within the company, would be valuable.

Another challenge that has been identified that pertains to the commercialization and marketing of radical innovations is how a company can know when to stop targeting the early adopters and move on to the early majority. This is not well specified in the *Crossing the chasm* framework, but is an essential question in reality for a company as MicVac AB.

## 6. Conclusions

The purpose of this thesis was (1) to investigate how MicVac AB, a small growth company with an innovative technological solution, should segment its market, differentiate its offer and position itself and (2) to discuss, in the light of the applied study, important challenges that pertain to the commercialization and marketing of radical innovations. In this chapter, the answers to all four research questions that relate to this purpose will be put forward.

### **Research question 1: How is value created for producers, wholesalers and end customers of chilled ready meals?**

The producers of chilled ready meals value low production costs and high production efficiency. Moreover they value visual attractiveness and high quality of the chilled ready meals. Quality refers to taste, texture and color. The chilled ready meal producers also appreciate maintenance support. MicVac producers also value high nutrition values, support with incremental product improvements and education and evolvment during the production start-up phase.

The wholesalers value an efficient distribution and low levels of scrap due to expired chilled ready meals. They also value visual attractiveness and high quality of the chilled ready meals.

The end customers value visual attractiveness and high quality of the chilled ready meals.

### **Research question 2: What value does MicVac create in comparison to existing, competing technologies?**

MicVac has shorter pasteurization/cooking time than all other studied competing technologies, something that leads to better taste, nutrition values, color and texture. The MicVac chilled ready meals are also easier to prepare than all other technologies. Moreover, the MicVac chilled ready meals have a longer shelf life than all other studied technologies, however, Autoclave and Sous Vide could potentially obtain the same shelf life. MicVac has also lower production costs, higher production efficiency, shorter pay-back time and higher net present value at high production volumes, as compared to Cook and Chill.

### **Research question 3: What type of innovation is put forward by MicVac AB?**

MicVac AB offers a radical innovation for producers of chilled ready meals. For wholesalers and end customers MicVac AB offers an incremental innovation.

### **Research question 4: How should MicVac AB preferably segment its market, differentiate its offer, and position itself?**

The optimal market strategy for MicVac AB, in terms of segmentation, differentiation and positioning is considered to be:

**Segmentation:** *Producers of chilled ready meals who can afford an initial investment of X MSEK, who has an annual turnover of at least Y MSEK, who values food quality and who operates in a suitable geographical market.*

**Differentiation:** *MicVac AB should differentiate itself by being a competent mentor offering a technological solution for gentle, industrial production of chilled ready meals.*

**Positioning:** *For producers of chilled ready meals, who are dissatisfied with the inefficiency of Cook and Chill, MicVac AB's product is a technology for industrial production of chilled ready meals that*

*provides gentle heat treatment unlike Autoclave and Sous Vide. MicVac AB has assembled a complete solution that incorporates both technical knowledge and the technology itself.*

**Research question 5: What challenges have been identified that pertain to the commercialization and marketing of radical innovations?**

One challenge for commercializing and marketing radical innovations is that it is difficult to obtain information about the needs of the customers. Another challenge is that it is difficult to know when to stop targeting early adopters and move on to targeting the early majority.

## References

- Anderson, B. (1997). *Positioning: the art of being first*. Sandberg & Co.
- Bryman, A. (2004). *Social research methods*. New York: Oxford University Press.
- Chesbrough, H., & Rosenbloom, R. S. (2002). The Role of the Business Model in Capturing Value from Innovation: Evidence from Xerox Corporation's Technology Spinoff Companies. *Industrial and Corporate Change* , 11 (3), 529-555.
- Datamonitor. (2009). *Ready Meals in Europe*. London: Database MarketLine.
- Datta, Y. (1996). Market Segmentation: an Integrated Framework. *Long Range Planning* , 797-811.
- Dickson, P. R., & Ginter, J. L. (1987). Market Segmentation, Product Differentiation, and Marketing Strategy. *Journal of Marketing* , 51 (2), 1-10.
- Grant, M. R. (1991). *Contemporary strategy analysis*. Cornwall: Blackwell publishing.
- Henderson, R., & Clark, C. (1990). Architectural Innovation: the Configuration of Existing Product Technologies and the Failures of Established Firms. *Administrative Science Quarterly* , 9-30.
- Holmén, M. (2010). *Lecture 1: Five basic questions. Research Design and Methods 2009*. Gothenburg: Chalmers University of Technology.
- Jolly, V. K. (1997). *Commercializing new technologies: getting from mind to market*. Boston, Massachusetts: Harvard Business School Press.
- Kim, C. W., & Mauborgne, R. (2005). *Blue ocean strategy: how to create uncontested market space and make the competition irrelevant*. Boston, Massachusetts: Harvard Business School Publishing Corporation.
- Kotler, P., & Armstrong, G. (1996). *Principles of marketing*. New Jersey: Pentice-Hall Inc.
- Lindmark, S. (2006). *Techno-economic analysis - an introduction*. Gothenburg: Chalmers University of Technology.
- McDonald, M., & Dunbar, I. (1995). *Market segmentation A step by step approach to creating profitable market segments*. London: MacMillan Press Ltd.
- MicVacAB. (2009, November 16). MicVac is a solution provider for in-pack pasteurization of ready to (h)eat food. *Försäljningsmaterial* . Göteborg, Västra Götalands län, Sverige: MicVac AB.
- Moore, G. A. (1991). *Crossing the chasm : marketing and selling high-tech products to mainstream customers*. New York: HarperBusiness, an Imprint of HarperCollins Publishers.
- Olleros, F. (1986). Emerging Industries and the Burnout of Pioneers. *Journal of Product Innovation Management* , 5-18.
- Porter, M. E. (1979). *On competition*. Boston: Harvard Business Review Book.
- Prim, M. (2010, 04 15). (S. Hjelmberg, & M. Larsson, Interviewers)

Prim, M. (2007). *Ready meals from the consumers' perspective - attitudes, beliefs, contexts and appropriateness*. V Frölunda: Universitetsbiblioteket Örebro University.

Ries, A., & Trout, J. (1981). *Positioning: the battle for your mind*. Baskerville: McGraw-Hill.

Rogers, E. M. (2003). *Diffusion of Innovations*. New York: Free Press.

Schilling, M. A. (2008). *Strategic management of technological innovation*. Singapore: McGraw-Hill/Irwin.

Webster, F. E. (1984). *Industrial marketing strategy*. John Wiley & Sons Inc.

Zetterberg, J. (2010, 01 25). Head of Sales. (S. Hjelmberg, & L. Madeleine, Interviewers)

## **Appendix I – Interview Guide Techno-Economic Analysis**

This interview guide was used for gathering information for the Techno-Economic Analysis. The reason for asking about what some concepts mean was that these concepts were described by MicVac AB as advantages related to MicVac.

### ***General Information***

- What do the employees of MicVac AB work with?
- How many workers are needed for operating the production line? What tasks are the workers performing?
- How long does it take to produce one chilled ready meal?
- How long is the change-over-time between different dishes?
- Why is the raw material weight loss lower with MicVac as compared to other technologies?
- Is HACCP certification possible with MicVac?
- What is the life time of MicVac AB's technological solution? How long pay-back time do the customers demand?

### ***1. Continuous Production***

- What advantages and disadvantages, related to continuous production, can be identified?
- What factors make continuous production possible?

### ***2. Bacterial Content***

- What prevents growth of the bacterial content with MicVac?

### ***3. Hot Filling Possibility***

- What does Hot Filling Possibility mean?
- What are the advantages and disadvantages related to Hot Filling Possibility?
- What technological factors make Hot Filling Possibility possible?

### ***4. Texture***

- What technological factors make a good texture possible?

### ***5. Taste and Nutrition Values***

- Why would MicVac products have better taste and nutrition values than products of other technologies?

### ***6. MAP (Modified Atmosphere Pressure)***

- What advantages and disadvantages can be related to MAP?
- What technological factors make it possible not having to use MAP?

### ***7. Energy Use***

- Does MicVac have a high consumption of energy? (For example, do the microwave tunnels consume much energy?)

### ***8. Uniform Heating***

- What does Uniform Heating mean?
- What advantages and disadvantages, related to Uniform Heating, can be identified?
- What technological factors make Uniform Heating possible?

### ***9. Steam Assisted Heating***

- What does Steam Assisted Heating mean?
- What advantages and disadvantages, related to Steam Assisted Heating, can be identified?



- What technological factors make Steam Assisted Heating possible?

**10. Stock-keeping of Chilled Ready Meals**

- How long is the shelf life of the chilled ready meals?
- At what temperature must the chilled ready meals be stored?

**11. Recipes**

- Are there any recipes that cannot be produced with MicVac?
- How much time must customers invest in developing the recipes?

**12. Adjustments for Specific Customers**

- In what ways can the production equipment be adjusted to the demands of specific customers?

**13. Pre-Preparation of Food**

- In what way must the food be pre-prepared before being put in the tray?
  - Does pre-processed food need to be purchased?
  - Do machines that pre-process the food need to be purchased?

**14. Health Aspect (related primarily to radiation from the microwave tunnels)**

- Are there any health risks related to eating chilled ready meals produced with MicVac?
- Are there any health risks related to producing chilled ready meals with MicVac?

## **Appendix II – Interview Guide Customer Value Analysis Producers**

These interview guides were used for gathering information for the Customer Value Analysis Producers.

### ***Interview Guide Producers Nordic Countries***

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#### **Sorting Questions**

1. How many chilled ready meals are sold on an annual basis?
2. Is it your company's ambition to increase this number significantly (i.e. so much that it exceeds the number 500,000 meals/year) in the foreseeable future?

#### **General Company Information**

3. What is the name of the company?
4. What is the name, the position, and the phone number of the interviewee?
5. How many people are employed by your company (enterprise + department related to chilled ready meals)?
6. How many people work in production?
7. In which geographical markets are your products (only chilled ready meals) sold?
8. To which customer segments (both wholesalers and end customers) are your products (only chilled ready meals) sold?
9. Who are your main competitors?
10. Who are your main customers?

#### **Operational Agenda**

11. Please describe what production technology is currently used for production of chilled ready meals.
12. What are the benefits and drawbacks of this technology?
13. Against what criteria is the overall performance of the production process evaluated?  
Discuss around, if not mentioned:
  - Raw and packaging material costs
  - Yield (5% for MicVac)
  - Stock
  - Labor costs
  - Energy consumption (electricity, water, steam, etc.)
  - Maintenance level (service and spare parts)
  - Inventory of consumption

- Materials of consumption (MAP)
- Production stops
- Production time (including change-over-time between dishes)
- Time to compose new recipes
- Ease of handling the production line

**14. What areas for improvements, concerning the fulfillment of the production process criteria, can be identified?**

**15. Against what criteria is the product evaluated?**

Discuss around, if not mentioned:

- Expected sales volume
- Expected sales price
- Defect products (including detection thereof)
- Production volume
- Shelf life

**16. What areas of improvements, concerning the fulfillment of the product criteria, can be identified?**

**17. Against what criteria are the effectiveness and the efficiency of the distribution system evaluated?**

Discuss around, if not mentioned:

- Centralized production
- Centralized storage
- Production to stock
- Transport load
- Transport reach
- Wasteful labor (distribution of defect products)
- Wasteful transport (distribution of defect products)
- Outbound logistics costs
- Inbound logistics

**18. What areas of improvements, concerning the fulfillment of the distribution system criteria, can be identified?**

**19. Against what criteria is the employee work environment evaluated?**

Discuss around, if not mentioned:

- Health risks for employees
- Work environment (temperature)

**20. What areas of improvements, concerning the fulfillment of the employee work environment criteria, can be identified?**

**21. What important laws and regulations does your production and product have to comply with? Are these considered costly and/or difficult to comply with?**

**22. What is considered important in a hypothetical situation where new production equipment is to be purchased?**

Discuss and prioritize:

- Start-up costs
- Production performance
- Product quality
- Effectiveness and efficiency of distribution
- Employee work environment
- Laws and regulations

### **Strategic Agenda**

**23. What is the rationale for producing chilled ready meals?**

**24. What is your future outlook of the development of the chilled ready meals segment? Any identified opportunities and obstacles?**

**25. What are your company's overall long term goals? Which obstacles to fulfilling these goals have been identified?**

**26. Is your company pursuing a growth strategy? If so what growth strategy is employed?**

Discuss around:

- Increasing sales in existing markets
- Targeting new geographical markets
- Targeting new customer segments
- Launching new products

**27. What obstacles to fulfilling desired growth strategy have been identified?**

**28. Are the products sold under your company's own brand?**

**29. What value(s) differentiate(s) your company's brand or product (depending on previous answer)?**

Discuss around (values for wholesaler and end customer):

- Low cost
- Convenience and ease of cooking for end consumers (choice of food serving temperature, ease of handling package for customer, evenly heated meal, hydrated surface, number of shopping trips, ready to eat signal)
- Ecological raw ingredients
- Healthy dishes (nutrition, salt content, preservatives)
- Visually attractive dishes (look of dish, look of packaging)
- Supreme meal (taste, texture, color, fresh ingredients)
- Big dish variety
- Safe products (risk of contamination, external quality stamp)
- Long shelf life

**30. What areas of improvements, concerning the fulfillment of the values of your company's brand or products, can be identified?**

**31. How would you characterize your company's relationship with the wholesalers?**

Discussion around:

- Close or superficial

- Payment alternatives
- Internalize waste due to expired dishes

**32. What works well in these relationships, and what areas of improvements have been identified?**

**33. How would you characterize your company's relationship with the suppliers of production equipment?**

Discuss around:

- Close or superficial
- Payment alternatives

**34. What works well in these relationships, and what areas of improvements have been identified?**

**35. What is considered important in a hypothetical situation where new production equipment is to be purchased?**

Discuss and prioritize:

- Growth strategy
- Values
- Relationship with wholesalers
- Relationship with suppliers

### ***Interview Guide Producers Western Europe***

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#### **General Company Information**

- 1. What is the name of the company?**
- 2. What is the name, the position and the phone number of the interviewee?**
- 3. How many chilled ready meals are sold on an annual basis?**
- 4. In which geographical markets are your chilled ready meals sold?**
- 5. Which technology is used for the production of the chilled ready meals?**
- 6. How long is the shelf life for your chilled ready meals? What makes this shelf life possible?**

#### **Company Ambition**

- 7. What is your company's overall long term ambition?**
- 8. What do you think are the greatest obstacles to fulfilling your ambition?**
- 9. If your company has a growth ambition, in which of the following ways are you trying to grow your business?**
  - By increasing sales in existing markets?
  - By targeting new geographical markets?

- By targeting new customer segments?
- By launching new products?

**10. What do you think are the greatest obstacles to fulfilling your growth ambition?**

**11. What aspects would be important for you to consider in a hypothetical situation where new production equipment is to be purchased?**

- Operational considerations?
- Considerations related to your company's overall ambition?

**12. What differentiates your company's chilled ready meals?**

### **Market**

**13. What do you think about the development of the chilled ready meal industry?**

**14. Why are chilled ready meals more expensive than frozen ready meals?**

## **Appendix III – Interview Guide Customer Value Analysis Wholesalers**

This interview guide was used for gathering information for the Customer Value Analysis Wholesalers.

### **Sorting Questions**

1. **What is the annual turnover?**

### **General Information**

2. **How many chilled ready meals are sold on an annual basis? Both in absolute terms and as a percentage of total annual sales volume?**
3. **Which chilled ready meals do you keep in your product range?**

### **Operational Agenda**

4. **What benefits and problems are there with selling chilled ready meals?**
5. **What criteria are used to judge whether a particular chilled ready meal is included in the product range or not?**

Discuss around:

- Vertical display
- Purchasing price
- Reduced wasteful storage (expiry date and defect products)
- Scrap
- Wasteful labor (defect products)
- Expected sales volume
- Expected sales price

### **Strategic Agenda**

6. **What is your future outlook of the development of the chilled ready meal segment? Any identified opportunities and obstacles?**
7. **What are the company's overall long term strategic goals that relate to chilled ready meals? Which obstacles to fulfilling these goals have been identified?**
8. **Is the company pursuing a growth strategy, related to chilled ready meals? If so, what growth strategy is employed?**

Discuss around:

- Increasing sales in existing markets
- Targeting new geographical markets
- Targeting new customer segments
- Launching new products

9. **What obstacles to fulfilling desired growth strategy have been identified?**
10. **Does the company sell products under its own brand?**
11. **In that case, what value(s) does (do) these products represent, and wish to represent?**

**12. If not, what types of chilled ready meals are considered attractive to sell?**

Discuss around:

- Low cost
- Convenience and ease of cooking for consumer (choice of food serving temperature, ease of handling package for customer, evenly heated meal, hydrated surface, number of shopping trips, ready to eat signal)
- Ecological raw ingredients
- Healthy dishes (nutrition, salt content, preservatives)
- Visually attractive dishes (look of dish, look of packaging)
- Supreme meal (taste, texture, color, fresh ingredients)
- Big dish variety
- Safe products (risk of contamination, external quality stamp)
- Long shelf life

**13. Which of the desired product values discussed above are not, or only partially, fulfilled today?**

**14. How would you characterize the company's relationship with the producers of chilled ready meals?**

Discussion around:

- Close or superficial
- Payment alternatives
- Internalize waste due to expired dishes

**15. What works well in these relationships, and what areas of improvements have been identified?**



## **Appendix IV – Interview Guide Additional Interview with Ready Meal Researcher**

This interview guide was used for the additional interview with the ready meal researcher Mia Prim who has written the dissertation thesis *Ready meals from the consumers' perspective- attitudes, belief, contexts, and appropriateness* (Prim, 2007).

### **Characteristics of Consumers**

- 1. What different consumer groups of chilled ready meals exist? Which group is the largest group?**
- 2. Are there any traits of the chilled ready meal consumers that are dependent on the geographical location (both region and country)?**
- 3. What is the rational for buying chilled ready meals?**
- 4. Where do consumers wish to buy their chilled ready meals?**
- 5. When do consumers wish to buy their chilled ready meals?**

### **Characteristics of Chilled Ready Meals**

- 16. What is your future outlook of the development of the chilled ready meal segment? Any identified opportunities and obstacles?**
- 17. What types of chilled ready meals do the consumers demand? Which characteristics are necessary for a producer to provide, which characteristics can be used for differentiation?**  
Discuss around, if not mentioned:
  - Low cost
  - Convenience and ease of cooking for consumer (choice of food serving temperature, ease of handling package for consumer, evenly heated meal, hydrated surface, number of shopping trips, ready to eat signal)
  - Ecological raw ingredients
  - Healthy dishes (nutrition, salt content, preservatives)
  - Visually attractive dishes (look of dish, look of packaging)
  - Supreme meal (taste, texture, color, fresh ingredients)
  - Big dish variety
  - Safe products (risk of contamination, external quality stamp)
  - Long shelf life
  - Well established brand
- 18. Which of the consumer demands discussed in the previous question are not, or only partially, fulfilled today?**

### **General Questions**

- 19. Are there any common misunderstandings related to chilled ready meals?**
- 20. Why are chilled ready meals more expensive than frozen ready meals?**
- 21. What do you think need to change for people to buy more chilled ready meals?**

## **Appendix V - Interview Guide Analysis of MicVac's Competitive Advantage**

This interview guide was used for gathering information for the Analysis of MicVac's Competitive Advantage.

### **General Information**

1. What was the total income during 2009?
2. Between which price levels are your products sold to the end customers?

### **Production of Chilled Ready Meals**

3. Did anything out of the ordinary happen during 2009?
4. What was the total production cost for 2009?
5. What machines do you have in your production? What was the purchasing price of these?
6. Are there any hygiene zones in your production?
7. How much space does the production occupy?
8. What was your packaging cost for 2009?
9. How much water is lost from the ingredients during production?
10. What was the cost of stock for 2009?
11. What was the cost of energy, electricity and water for 2009?
12. What was the cost of maintenance, personnel and spare parts, for 2009?
13. What was the material and inventory of consumption costs for 2009?
14. What was the insurance cost for 2009?
15. What was the total number of production work hours during 2009?
16. What was the total time of production stops during 2009?
17. What was the total number of indirect work hours during 2009?
18. What was the time spent on educating personnel in production during 2009?
19. Are there any health risks for production personnel?
20. Are there any difficulties with handling your production line?
21. How often are meals transported from your factory? Why?
22. How much scrap, both in terms of scrap along the production line and complete products, were there during 2009?
23. What method is used to detect defect products?
24. What is the maximum volume that can be produced on an annual basis?
25. How many different meals are produced, and what is the change over time between meals?
26. How long time does it take to produce one dish?
27. How many complaints on your meals, both from wholesalers and end customers, did you receive during 2009?
28. What possible health risks are related to eating your meals?

### **Chilled Ready Meals**

29. Can your meals be displayed vertically? What are the advantages and disadvantages with your packaging solution?
30. Can the packaging be recycled?
31. What type of quality certifications and approvals do you have?
32. How is the level of nutrition in the food measured? What has been concluded from these tests?
33. Are there any preservatives in your meals? Which?
34. How close to the taste of a homemade meal is the taste of your meals?

35. How close to the texture of a homemade meal is the texture of your meals?
36. To what degree can the colors of the ingredients be preserved?
37. How much salt is added to your meals?
38. Is it necessary for the meal to reach a certain temperature before it is safe for the end customer to eat it?
39. Does the meal become evenly heated when it is prepared by the end customer?
40. Does the surface of the meal stay hydrated when prepared by the end customer?

## Appendix VI – Result Techno-Economic Analysis

This is the Techno-Economic Analysis, which explains the relations between the technological solution MicVac and its customer utilities and/or disutilities. The parameters were used when creating the interview guides for the Customer Value Analyses and the Analysis of MicVac’s Competitive Advantage. The Techno-Economic Analysis should be read from left to right.

Technology	Technical Attribute	Customer Utility/Disutility	Customer Utility/Disutility		Parameter
Production line		Ease of handling the production line	Increased need for education of employees		Amount of education needed for employees
			Need for accurate knowledge about temperature before microwave tunnel		Ease of handling the production line
	Highly automated production	Reduced production planning			Amount of production planning needed
		Reduced risk of employee failure	Reduced variety of production output		Homogeneity of production output
			Reduced risk of contamination		Risk of contamination
			Reduced education of employees		Amount of education needed for employees
		Complex system	Increased education of employees		Amount of education needed for employees
		Reduced manual labor			Amount of manual labor needed
		More machinery to wash	Increased waiting time between operations	Increased production time	Production time
				More manual labor	Amount of manual labor needed

Production line, especially microwave tunnel	Continuous production	Reduced waiting time between operations	Reduced production time	Production time
			Retained freshness of ingredients during production	Ability to retain freshness of ingredients during production
Microwave tunnel	Simultaneous cooking and pasteurization in tray	Reduced handling of food	Reduced risk of contamination	Risk of contamination
			Eliminated need for hygiene zones	Production environment investments
			Reduced need for education of employees	Amount of education needed for employees
		Cannot perform only pasteurization and not cooking	Reduced dish variety	Number of different dishes that can be offered
		Possibility to pack in warm room	Improved work environment	Standard of work environment
			Reduced production environment investments	Production environment investments
		Reduce number of operations in production	Reduced production time	Production time
	Uniform heating in production	Increased certainty that every part of dish have been above 98°C for at least two minutes	Reduced risk of food contamination	Risk of contamination
		Better quality of food	Better texture	Texture of food
			Better taste	Taste
			Better nutrition	Nutrition values
	Radiation in production	Increased cost for radiation monitoring equipment		Cost for radiation monitoring equipment

		Health risks for employees		Health risk for employees
	Cooking in microwave	Not all products suitable for this cooking	Reduced dish variety	Number of different dishes that can be offered
		Need for preparation of raw material	Increased manual labor	Amount of manual labor needed
			Increased cost of preparatory machinery	Cost of preparatory machinery
			Increased raw material cost	Raw material cost
	Pasteurization	Short pasteurization time	Retained nutrition values	Nutrition values
			Reduced production time	Production time
			Retained taste	Taste
			Retained color of food	Color of food
Microwave tunnel /Microwave of consumer	Food exposure to radiation	Negative publicity		Risk of negative publicity
MicVac valve, film and Flextray		Ease of handling package for customer		Ease of handling package for customer
	Vacuum packaging	Increased shelf life		Shelf life
		Reduced cooling time	Reduced production time	Production time
			Reduced risk for contamination	Risk of contamination
			Reduced energy consumption	Energy consumption
		Vertical display possible		Possibility of vertical display
		Food squeezed together	Worsened look of dish	Visual attractiveness of chilled ready meal
		Cannot manufacture dishes with space between ingredients	Reduced variety of presentation of food	Variety of presentation of food
			Long time needed to compose recipes	Time needed to compose recipes

		Possibility to fill hot food	Reduced production time	Production time
			Reduced energy consumption	Energy consumption
		No need to inject MAP	Reduced cost of materials of consumption	Cost of materials of consumption
MicVac valve	Steam assisted heating	Hydrated surface		Possibility of hydrated surface
	Beeping when steam passes	Ready to eat signal	Ready to eat signal	Ready to eat signal
			Accurate serving temperature	Accurateness of serving temperature
Film, Flextray	Ability to detect leaks	Defect products are not processed after microwave tunnel	Reduced wasteful transport	Amount of wasteful transport
			Reduced wasteful labor	Amount of wasteful labor
Flextray	Uniform heating for end user	Avoid hot and cold spots		Possibility of evenly heated meal
Tray	Cooking in tray	Reduced loss of water in raw material	Increased raw material input/output ratio	Raw material input/output ratio
			Better texture	Texture of food
			Better nutrition values	Nutrition values
		Reduced need of packaging	Reduced manual labor	Amount of manual labor needed
		Less machinery to wash	Reduced waiting time between operations	Reduced production time
				Less manual labor
				Amount of manual labor needed
Microwave tunnel, MicVac valve	Everything that leads to reduced risk of contamination	Ensure that defect products are not sold	Good reputation	Risk of bad reputation

			Confident marketing	Possibility of confident marketing
			Reduced risk of costly law suits	Risk of costly law suits
	Everything that leads to increased shelf life (pasteurization and vacuum packaging)	Production to stock	Production to stock	Possibility of production to stock
			Centralized stock	Possibility of centralized stock
			Centralized production	Possibility of centralized production
			Full transport load	Possibility of full transport load
			Reduced number of change-over instances	Dish variety Number of different dishes that can be offered
				Reduced production cost Production cost
		No need to add preservatives		Need for preservatives
		Increased transport reach		Transport reach
		Less scrap due to expired products (wholesaler and end consumer)		Scrap (wholesaler and end consumer)
		End customer can have stock at home	Reduced number of shopping trips	Number of shopping trips



## **Appendix VII – Result Empirical Study for Customer Value Analysis Producers**

This is the complete result of the Empirical Study for Customer Value Analysis Producers.

### **Producers Nordic Countries**

In total, eight Nordic producers were interviewed. The interviewed producers were Carolines kök, Gooh, Guldfisken, Hot Cuisine, Lunch Express, Måltidslösningar and Rieber & Søn. One additional producer wished to remain anonymous. The CEO: s of the companies were interviewed in 63% of the cases and the production manager in 37% of the cases.

The producers of chilled ready meals in the Nordic countries were generally small companies, six of eight interviewed producers only sell between 0.5 and 1.5 million chilled ready meals per year and none of the interviewed producers have more than 20 people working in the production at the same time.

Four of the interviewed producers use the Cook & Chill technology, two use the MicVac technology and one uses both the Autoclave technology and the Sous Vide technology. One interviewed producer uses a technology which cannot be categorized as any of those three technologies; that technology consists of a normal oven where the food is cooked in trays that can stand the heat.

The producers typically only market their products on their domestic markets, only one producer sold to at least one other country. All interviewed producers sell their chilled ready meals to supermarkets; however, some producers also sell through other channels. Gooh, for example, has their own stores. One producer also mentioned selling to the public sector, one mentioned selling to after-hours supermarkets such as Pressbyrån and 7-11 and one mentioned selling to hotels. Seven producers answered the question of whether they sell under their own brand or not and three companies answered that they sell only under their own label. Four companies answered that they sell both under own brand and under private label.

When buying new production equipment, there is a wide variety of aspects that are important to the producers in the Nordic countries. However, what seem to be most important is the quality of the product and the efficiency of the production (with respect to both time and cost). It is hard to tell whether any of these two aspects is more important than the other. Apart from quality of product and efficient production, other important aspects for the producers are: that the production equipment is reliable, that there is good access to service and spare parts, the initial investment level, that the pay-off time must not be too long, that the work-environment will be good, the convenience for the end customer, how long the life of the investment is and the flexibility regarding possibility to change for any type of product that they will want to produce in the future.

The producers do not have a clear picture of what they think are the most important parameters to evaluate the production process according to. However, the most common answers are: how large volume it is possible to produce per time unit and how much scrap/waste there is in production. Other production process evaluation criteria were considered to be amount of production stops, the quality of the product, the safeness of the product, work hours/volume produced, the service degree, planned volume/produced volume, the variable costs, the cost of raw material, the cost of labor and the number of operations needed for completing a certain task.

When it comes to the question of how the producers would like to improve their production processes, the most common answer is that they want to increase the production volume that is possible to produce. But the answers from the different producers varies a lot, other improvement areas are considered to be: more efficient preparation of raw material, better measurement of the weight of the raw material, reduced costs in general, better coordination in production, more synergies between production and logistics, possibility to eliminate operations which are not good for the employees and reduced cost of film for trays. One producer states that no area of improvement can be identified and another producer state that they focus much more on the quality of the product than on the production process itself.

When evaluating the product itself, the producers in the Nordic countries have the taste as their most important evaluation criteria; six of eight interviewed producers have stated that this is important. The second most important criteria seems to be the visual attractiveness of the food, two companies have expressed that this is important. Other criteria that were mentioned were: the bacterial content, the texture, the color preservation, the amount of oxygen in the tray and that the shelf life shall not be too long and not too short. One producer states that they evaluate the product through customer satisfaction investigations.

Three out of eight producers say that there is no specific area of improvement for their products. However, among those who would like to improve their product, two producers want to work with developing new products (new recipes), the other producers mention that they want to improve their product by: using fresher raw material (that is, not frozen raw material), reducing E-numbers in the raw material, having a higher quality of the raw material and improving the visual attractiveness of the meal.

When asking the producers about how they would like to improve their distribution system, the array of answers is very broad. The same answer is never given twice. The answers that the producers have are: they want to take over the control over the supply for the shelves in the stores since they are often empty, they want to be able to control the temperature during transportation when transporting with external companies, they want the trucking companies to deliver on time, they want better possibilities to plan their production to get fresh food in and fresh food out, they want lower logistics costs and they want to have more information about the final consumption of the chilled ready meals. But answers were also given from producers that they do not work with this question or that no improvement is needed. Often the producers think that the end customers want fresh products and they think that their shelf life is sufficiently long.

Certifications, such as HACCP, and what the producers have to do in order to get approved is not by any producer seen as a problem. Rather, several producers mention that they see the rules for certification as a help to make them a better company.

All producers categorize their relationship to the wholesalers as close. Two of eight producers state that the wholesalers help them to understand the end customers, however, four of eight producers state that they get no help from wholesalers in understanding the end customers. Most producers do not give the wholesalers the right to send back expired goods, only two out of eight producers do this. Out of these two producers, one producer gives the wholesalers the right to decide themselves (higher price with right to return meals) and one of the two producers state that the wholesalers have this right when it comes to new types of meals. When asking for areas of improvement

regarding the relationships between producers and wholesalers, two out of eight companies state that they see no problems in the relationships. Three companies state that the wholesalers have too much power due to low competition and that the wholesalers for example are demanding when it comes to food security, price and shelf life. Other areas of improvement that were mentioned were: that it is empty in the shelves too often, that the wholesalers are too mainstream in their approach to what kinds of chilled ready meals they want to sell, that the producers must take the initiative in trying to understand the customers, that you may be listed by a wholesaler but that the supermarkets do not buy the products anyway and that the producers need more resources to visit supermarkets and end customers.

Seven producers answered the question related to the relationship to the suppliers of production equipment. Five companies had the opinion that they had a close enough relationship to their production equipment suppliers, while two companies did not think that they had a close enough relationship. When it comes to the relationship to the suppliers of production equipment, most companies have identified no area of improvement. However improvement areas that were mentioned were: that the producers want better access to more specialized service support, that they want more maintenance support, that suppliers should help the producers to develop their business and that the producers wanted somewhat larger suppliers to help them more in developing the production equipment.

When asking the producers about what they think will happen to the chilled ready meal industry in the future, six out of eight producers state that they believe that the market will grow. Three companies also state that they believe that the supply will be more varied. Other beliefs that are mentioned are that the market has grown but that it is now more stable, that people will have to learn to pay more for the food, that the quality of the food will become better, that the competition will increase and that the price will be lowered. One producer states that he would have believed the growth of the chilled ready meal industry to have been higher than it actually has been.

The producers who believe that the market for chilled ready meals will grow believe so because they believe that the chilled ready meals will have a high quality in the future, that people will not have time to cook in the future, that people do not want to cook and that people will switch from frozen food. Five producers were also asked about the future of food components for end customers to take home and put together themselves and they all said that they believe that the market for components will grow in the future. What could stop further development of the chilled ready meal industry, the producers believe is unserious producers, the relatively unattractive presentation of the food and prejudice against chilled ready meals.

The producers do not generally have a clear picture of who the end customers of their chilled ready meals are. However, when speculating they mention for example singles, old people and people who eat it for lunch. When asking about who their competitors are, 48% answer only other producers of chilled ready meals, while the rest also mention home cooked food and restaurants as competitors.

The Nordic producers do not always have very well specified long-term goals for their companies. Three out of eight producers mention a specific growth goal in numbers when asked about their long-term goals, but they do not always know exactly how to get there. The most common answer, not taking into consideration specific growth numbers, was that the long-term goal is to offer high quality products; this was mentioned by three out of eight producers. Other long-term goals that

were mentioned are being the market leader in the existing market, being the company that takes the initiative (market developer), developing new meals, developing components, existing in Nordic city regions and developing within a new production technology. The companies that wish to grow wish to do so mainly in existing markets, some companies consider growing into other countries but that seems to be more of an idea than an actual plan. The most common strategy for growing is by launching new products, thereafter by trying to reach new customer segments. When asking about possible obstacles for growth, the producers give varied answers. They answer recessions, badwill due to unserious producers, heavy decrease in prices as for frozen food, that a large volume actor enters the market (and can get low fixed costs per meal), that they have not got enough money for marketing, that there is a need for a new logistics solution and that there are restrictions regarding what kinds of meals that can be produced with their current technology. However, one producer sees no obstacles for growth at all.

The Nordic producers of chilled ready meals do not seem to be very clear about how they are differentiating themselves. Five companies out of eight mentioned that high quality is what differentiates them from their competitors. What the producers mention otherwise as differentiation is: that the food is like home cooked, that they have high nutrition values, the taste of their chilled ready meals, that they have a shop-in-shop solution, that it is only Swedish raw material in the food, that they have a long shelf life for wholesalers to exploit and that they have a large variation of meals. One producer mentions that they were an early player in the market and that this is what differentiates them. When asked about whether there exist any obstacles to differentiating in desired way, three out of eight producers state that there are no such obstacles. Obstacles mentioned by single producers are: internal problems and difficulty of focusing at one thing at a time, the visual attractiveness of the food, how the food is positioned in the stores, that the shelf life is not long enough and that they need to introduce more exciting tastes.

Asking about differentiation also reveals what the Nordic producers believe is not important when it comes to differentiation. For example low prices do not seem to be very important. Convenience is considered an important issue, but it is not considered to be an important basis for differentiation, since all chilled ready meals are considered convenient. The ready to eat signal is not considered important at all by most producers, only one producer states that it might be an important factor for making people buy their products a second time. Everybody seems to think that ecological raw ingredients are important, but nobody has got it today. Producers also think that offering healthy dishes is important, but nobody really focuses upon it. Offering chilled ready meals without preservatives does not seem to be an issue since nobody states that they have got any preservatives in the food (however, preservatives might exist to some extent in the raw material). To be able to offer visually attractive dishes is important, but the producers do not state that this is a differentiator against the customers. Producers have the same view when it comes to offering a big dish variety, this can be important, but not differentiating and too high variety might be expensive. Safe products are not either considered as a differentiator, this is only a minimum requirement. Long shelf life might be good for the wholesalers, but it is not considered positive for the end customers.

When asking the producers who use MicVac about the benefits of the technological solution, the most common answer was that MicVac is kind to the raw material. Other benefits that were mentioned were the high nutrition values, the closeness to home cooked food, the good texture and the relatively long shelf life. The drawbacks with MicVac were considered to be the visual

attractiveness of the meals, low production output (meals/time unit), that it is an expensive technological solution and that the trays are not environmentally friendly.

When asking the producers who use the Cook and Chill technology about the benefits of that technology, the most common answer was that it is not an industrial process; two of four interviewed producers answered this. Other benefits were considered to be that it tastes like home cooked, that the visual attractiveness of the dish is high and that it is possible to have a sufficient shelf life. The drawbacks of the Cook and Chill technology were considered to be too short shelf life, that it is difficult to deal with the hygiene, that the food is messed around in the tray and that there is condensation on the plastic film.

Since only one producer which uses Autoclave and Sous Vide was interviewed it is very difficult to draw any conclusions about benefits and drawbacks of these technologies out from the interviews with producers in the Nordic countries. However, benefits mentioned with both the Autoclave and the Sous Vide technologies were the security of the technologies with respect to food safety issues. The drawback of Autoclave was considered to be that the package is not always sealed and the drawback of Sous Vide that there is a change of color of some raw ingredients.

Out of curiosity, the producers were also asked about why they do not produce frozen ready meals, but chilled ready meals. The most common answer was that the chilled ready meals taste better. It was also mentioned that chilled ready meals take short time to heat for the end customer, that the nutrition values are higher for chilled ready meals and that it is “impossible” to earn any money on frozen ready meals due to small margins. One producer mentions however that a disadvantage of the chilled ready meal is that it is more expensive.

### **Producers Western European Countries**

In total, sixteen Western European producers were interviewed. The interviewed producers were 2 Sisters Food Group (Great Britain), Bischofszell (Switzerland), Bonarea (Spain), Charal (France), Deliva (Belgium), Fleury Michon (France), Grencore (Great Britain), Hot Cuisine (Belgium), Irvai (Belgium), LCC (Netherlands), Le Petit Cuisinier (France), Lustucru (France), Noel Alimentaria (Spain), Pescasana (Spain), Precocinados Fuentetaja (Spain) and S&R Foods (Great Britain). There is a wider spread regarding who is interviewed in the case with the Western European producers than in the case with the Nordic producers. The Production Manager was interviewed in 31% of the cases, the CEO was interviewed in 19% of the cases.

The Western European producers were generally larger, in terms of number of chilled ready meals produced per year, than the Nordic producers; six of 16 interviewed producers had a sales volume higher than 5 million chilled ready meals per year.

In the sample of Western European producers, the percentage of producers who use Autoclave and Sous Vide was higher than in the sample Nordic producers. In the Western European sample, 31% of the producers use Autoclave, 6% use Sous Vide and 25% use both Autoclave and Sous Vide. MicVac is used by 13% of the interviewed producers, 13% use Cook and Chill and in 12% of the cases it is unclear what technology is used. The shelf life of the products is in 38% of the cases 21-30 days, in 25% of the cases 31-40 days. Only 6% have a shelf life that is no longer than 10 days. 44% of the interviewed producers state that it is only the production technology itself that leads to the extended shelf life, the rest of the producers there is either no information about, or they have extended the

shelf life also with MAP. One interviewed producer states that both MAP and preservatives extend the shelf life.

Also the Western European producers typically market their products on their domestic markets. 56% of the producers only market their product on the domestic market, while 38% market their products in several countries. One producer has a very small part of the sales just outside the border of one country.

There is a large variety regarding what is important to the Western European producers when it comes to buying new production equipment. However, production efficiency, a high quality product, the initial investment level and flexibility seem to be what is most important. Flexibility here refers to possibility of producing many different products. Apart from these aspects also the convenience of the product, a long shelf life, the feeling of a fresh non industrial product, compatibility with HACCP and help and assistance from suppliers is mentioned by producers.

When asking about the future for chilled ready meals, 72% of the interviewed producers think that the market will grow while 14% say that there is no or only slow growth. 14 % of the interviewed producers state that they do not know what will happen to the chilled ready meals industry in the future. The reason for growth of the chilled ready meals industry is primarily believed to be that people spend less time on cooking, but other mentioned reasons are: that people will switch to eating chilled ready meals from eating out, that families are smaller today and that the products are simply easy to buy and consume. A company in Spain also stated that the Spanish market for chilled ready meals should grow since it is not yet as developed as the markets are in France or Great Britain. When asking the producers about how they think that the market for chilled ready meals will change in general, six producers have answered that the market will become more price competitive. Apart from that, what is mentioned by the producers is: that the consumer perception of chilled ready meals is a problem, that the chilled ready meal segment is a generally difficult segment to be in due to the fact that one must produce high quality to low prices, that new technologies of production will keep coming, that people will demand good quality, low prices and no preservatives, that the market must go into other products than pasta (which does not increase so much more), that people will want fresher meals in the future, that producers will have to be innovative to stay in the market and that many new types of products and recipes will come.

The Western European producers have a vague picture of who the end customer is and just like the Nordic producers they speculate around who the end customer might be rather than stating who the customer is that they try to target. However, the most common answer to this question is that the chilled ready meals are dinner alternatives for families. Other answers that are mentioned are old people, couples, people who want chilled ready meals as a lunch alternative, young people, working people and people who don't want to cook at home.

It is difficult to get a clear picture of what the long-term ambitions of the Western European producers are. Producers have answered: to come up with new recipes in order to grow, to make high quality food with long shelf life, to develop ultra-fresh food with more vegetables, to go into the frozen food segment (but not leave chilled ready meal segment), offer chilled ready meals with high quality at affordable prices, to be the number one in UK and US convenience food, to have increased sales in supermarkets both for consumption at home and outside home and be the largest ready

meal producers in Europe through acquisitions and collaborations. Some companies mention a specific growth ambition in numbers while others say that they have a general growth ambition.

When growing, the Western European producers, just like the Nordic producers, primarily focus on growing inside their own country. However, 16% of the companies state that they have plans to grow to new geographical markets and 12% say that it might perhaps be a good idea in the future. The strategy for how to grow is mainly through launching new products and selling to new customer segments.

There is also a great variety of answers from the Western European producers when it comes to what types of obstacles they see to fulfilling their long-term ambitions. The most commonly mentioned obstacle is that people are suspicious against for example long shelf life, vacuum packaged food and chilled ready meals in general. Other obstacles that were mentioned were: difficulty to provide fresh enough products, technical difficulties related to the fact that good food must not be pasteurized but that food needs to be pasteurized to extend shelf life, not enough money for marketing, problem of growing the entire market, difficulty of introducing chilled ready meals in customers' homes, the wholesalers own brands (because of the low price), that the shelf life is too short to satisfy the wholesalers, that the visual attractiveness of the food produced with Sous Vide is low, that the market is not ready for chilled ready meals and that there are too many companies in the market. One company does not see any specific obstacles to their long-term ambitions.

Just as the Nordic producers, the Western European producers have no clear picture of the differentiation of their products. However when answering, most producers mention the quality of the product or the taste as being what differentiates their products from other products. Altogether nine producers mention quality or taste as what differentiates them. Otherwise, producers state that what differentiates them is: specific recipes, that they have got no preservatives, the low price, the large range of products, that they have got pasteurized products, that their products are safe, that they exist in a higher price segment, that the size of the plate looks good in the store, that they have standard meals, that they have been in the market for a long time, that they have a relatively long shelf life, that they have fresh raw material, that they have fresh products, that the nutrition is maintained over time, that the products are healthy and that they exist in a middle price segment.

The Western European producers were also asked about why they believe that chilled ready meals are actually so much more expensive than frozen ready meals. The most common answer from the interviewed producers was that there are logistics advantages related to frozen food due to the longer shelf life; eight interviewed producers have answered this. Three producers have stated that they believe the reason for lower prices for frozen ready meals is that the food quality is much lower for frozen ready meals. Three producers have also answered that the food safety requirements are not as strict for frozen ready meals as for chilled ready meals. Other answers were: that there is a historic perception that frozen food has lower quality, that pasteurization is much more expensive than freezing, that you have to add MAP to chilled ready meals, that there is a higher packaging cost for chilled ready meals, that people demand more from chilled ready meals (it must be tasty) and that the quality of the raw material is worse for frozen food. One producer states that there is no difference in quality between chilled ready meals and frozen ready meals.

## **Appendix VIII – Result Empirical Study for Customer Value Analysis Wholesalers**

This is a summary of the results from the Empirical Study for Customer Value Analysis Wholesalers. Since the answers are confidential, the individual wholesalers are named A, B, C, etc. What is true for all wholesalers is that it is a requirement that the producers of chilled ready meals are quality certified in order to be accepted as suppliers.

### **A**

A wants to improve their logistics so that they can offer as fresh products as possible, so called “super fresh” products with two to three days shelf life. They do not want products with too long shelf life as this is not categorized as fresh food from the consumer’s perspective. A’s own brand has a shelf life of 14 days which is what they consider being an appropriate time.

Other attractive features of chilled ready meals are strong brands and a lot of vegetables. Nutritious meals are attractive.

The chilled ready meal market has been very dynamic, with new producers starting up and going bankrupt on a continuous basis. It is hard for chilled ready meal producers to be profitable. A is not interested in adding a new producer to its supplier list, the current relationships work efficiently and effectively.

Concerning preservatives, A believes that end customers should accept that certain food requires preservatives in order to stay fresh. Preservatives are not always bad.

They measure the performance of different producers through sales volumes, nothing else.

### **B**

B wants to improve their logistics so that they can sell “super fresh” products. As of today the biggest problem with selling chilled ready meals is logistics problems.

What is most important for B is that they have a complete chilled ready meal range. It is a rule that 75% of the products should be permanently in stock, and that 25% should be changed on a continuous basis. B does not want a single producer to offer a wide range of meals; rather many producers should offer a limited number of specialized meals each. This is how B predicts that the ready meal market will develop. It will be characterized by many producers specializing on different types of meals. One type of meal that B particularly believes in is high quality products that cost around 100 SEK.

### **C**

Ready meals have to “fight” for shelf space. There is too little total space in the refrigerated shelves.

C’s goal is also to sell “super fresh” products. Based on studies and purchasing patterns C has concluded that this is what consumers demand. Consumers choose the product with the shortest total shelf life. C does not believe that it is possible to “educate the consumers” to accept longer shelf life since much of the value is due to the freshness of the product. A product with a shelf life longer than one month is not considered being fresh. The biggest obstacle to achieving this is



logistics. C wants to maximize the efficiency of the distribution system in order to offer as fresh products as possible. Another problem is that the sales volume is too low to get an adequate product flow. England and its chilled ready meal market is the ideal.

C emphasizes that the purchasing pattern for chilled and frozen ready meals is fundamentally different. Consumers travel to supermarkets to purchase large quantities of frozen ready meals that they can store in their freezers for a long time. Chilled ready meals, however, are purchased to be consumed within a close future. Consumers are willing to pay for the convenience of not having to plan what they are going to eat for lunch or dinner. This is another reason for why longer shelf life does not create value for the consumer.

C also states that preservatives are a necessity. However, a somewhat reduced level of preservatives would be positive.

C strongly believes in moving away from selling complete one person ready meals to selling components. In this way the consumers can feel that they participate in the cooking process, which is going to become increasingly important as they get less time to cook. In order to realize this, sales volumes must increase significantly and logistics must be improved. Again, England is the ideal.

## **D**

There are two major challenges to growth in the chilled ready meal segment. Firstly, growth is very dependent on the general economic situation. During the recession of 2009 the sales volumes decreased. D believes that this is because the majority of consumers of chilled ready meals are construction workers that need a filling lunch. Since fewer construction workers were employed during the recession, the sales volumes decreased. The other reason is the stigma associated with ready meals. It is considered shameful if families with children eat ready meals for dinner. D wants to remove this stigma as they consider it attractive to sell meal components that families with children can eat for dinner. This is how D predicts the future development of the chilled ready meals segment.

Scrap is a big problem related to chilled ready meals, due to shorter shelf life and sparsely populated parts of the country. D wants meals with longer shelf life to reduce scrap.

The taste of the meal is the ultimate purchasing criteria for consumers. Traditional recipes have the highest sales volumes.

## **E**

E does not believe in further development of the current type of ready meals. E believes that this market has stagnated. E wants to introduce new types of chilled ready meal products and concepts, such as components for families with children and healthy dishes for women above 25 years. Currently the ready meal producers offer too few types of products.

E believes that the introduction of new products during 2004 and 2005, such as porridge and fresh pasta, was the reason for the extreme growth that the market experienced during this period.

E wants better performance from the chilled ready meal producers, both when it comes to distribution and follow-up in stores.

In the country of wholesaler E, a particular company applying the Sous Vide technology has for a long time dominated the market. Therefore, in this country, that particular company is equivalent to ready meals. The Sous Vide look of chilled ready meals therefore represents how chilled ready meals should look.

The most important purchasing criterion for consumers is that the chilled ready meals are easy to cook. Other important criteria are price and taste. Traditional recipes have the highest sales volumes. Nutrition values are also taken into consideration.

## **E**

F is very skeptical towards chilled ready meals. In general scrap is very high, the products are too expensive, the quality is not high enough, and the market is not ready.

There is a need for better production technologies that allow for cheaper production and longer shelf life. A shelf life of seven days, which is what most products have today, is too short.

Consumers want to know what they eat. The different ingredients should be visible and recognized by the consumer. Sous Vide products do not fulfill this criterion. Also, consumers pay for the convenience of not having to cook.

## **G**

This wholesaler believes that a combination of price, taste and visual attractiveness of the meal is what is most important to the end customer. The visual attractiveness of the chilled ready meals is today considered a problem. Also the fact that a chilled ready meal producer can offer innovative recipes is important to this wholesaler.

In the future they believe that the chilled ready meals will occupy more space in the shelves. A possible obstacle for beneficial development in the future could be that competitors succeed in offering better meals to lower prices. Something that this wholesaler thinks is missing on the market today is weight reducing chilled ready meals.

## **H**

75% of H's ready meals are own labels which are produced by a number of different manufacturers. When H wants to add a new product a specification is sent out to a number of different manufacturers. These manufactures then compete for producing the new product. The process of adding a new product in this manner takes around nine months.

H wants to offer as fresh products as possible. Pasteurized meals are not considered as being fresh.

## **Appendix IX – Result Additional Interview with Ready Meal Researcher**

This is the result from the interview with the ready meal researcher Mia Prim, who has written the dissertation thesis *Ready meals from the consumers' perspective- attitudes, belief, contexts, and appropriateness* (Prim, 2007). Mia Prim is referring to ready meals in general (that is, both chilled ready meals and frozen ready meals) and not to chilled ready meals in particular, if nothing else is stated.

**What different consumer groups of ready meals exist?** According to Mia Prim, there are no specific groups of people that eat ready meals. For example she mentions that there are no age groups and no specific gender which are/is overrepresented when it comes to buying and eating ready meals. However, different types of products can have different target groups and be advantageous in different situations. For example chilled ready meals are more suitable as lunch alternative than frozen ready meals since they consume less time to prepare.

**What is the rational for buying ready meals?** People eat ready meals for lunch in order to save time, but they eat ready meals for dinner because of the convenience aspect. Older people can buy ready meals also because they are tired of eating the food they normally use to cook. For some young people it is more of a surprise when they get hungry and they can then buy ready meals because it is convenient. Lonely, old people, mostly men, also buy ready meals because they do not cook so much food themselves anymore.

**When do end customers wish to buy their ready meals?** The end customers buy different ready meals during different parts of the year. For example soups and salads are more common during summer. Many end customers buy their chilled ready meals during lunch time; people do not believe that chilled ready meals can be stored for a longer period of time, so they perform instant shopping rather than storing chilled ready meals at home.

**Where do end customers wish to buy their ready meals?** In 2002-2003, people bought their ready meals in supermarkets, however normally not the largest supermarkets. Today, Mia Prim estimates that smaller convenience stores have a large market. Also many restaurants have started to sell ready meals. Mia Prim believes that both restaurants and supermarkets/convenience stores will develop when it comes to ready meals. However, restaurants must learn how to chill the meals properly; something that Mia Prim believes that solutions will come for in the future. Mia Prim also believes that supermarkets need to be better at having small stores outside the regular stores where customers can buy ready meals.

**Are the ready meals dependent on the geographical location?** The geographical location is important when it comes to the wholesalers' requirements on the ready meals. For example the Finnish producers are distributing the ready meals directly to the supermarkets, while the Swedish ready meals must last long enough to manage trans-shipments. The geographical location is also important for the supply of chilled ready meals, in big cities people have less time for cooking and the supply is larger and closer. However there are also things that are uniting different countries when it comes to ready meals and that is that it is shameful to serve chilled ready meals to somebody else.

**What is your future outlook of the development of the chilled ready meals segment?** Mia Prim says that she would have believed the development of the market to be more rapid than it actually has been. The market is growing, but she would have expected it to grow more. There are many small players in the market which basically function as caterers.

The reason for why the market for chilled ready meals has not grown more she believes is that at least Swedish people like the frozen food and the frozen food is also easy to handle for the supermarkets. The frozen food producers have also dumped the prices, so it is difficult to compete with the frozen food. Also, she mentions that the shelf space is very limited in stores; therefore it is difficult to get the right exposure to the end customers.

What could be dangerous for the chilled ready meal industry is if some producer produces bad food that makes people seriously sick. Particularly restaurants providing chilled ready meals do not always have everything under control. A scandal would hurt the whole industry.

Mia Prim believes that the market for chilled ready meals will grow in the future when a new generation is brought up and that there will be more convenience food stores in the future. She also believes that the ready meals should be put together with salads to give end consumers a more complete meal. Sweden is not a bad market for chilled ready meals since the Swedes eat warm lunch and warm dinner.

**What are the problems of chilled ready meals of today?** Mia Prim says that people could be attracted to shop ready meals with the right marketing and the right products. However, the products need to look good and live up to the demands on a Saturday night dinner. It should not be a black box with food that does not look particularly good. She thinks that there is job left to do to reach the end customers, in particular she mentions that there is a problem that one cannot buy food for the evening at the same time as one buys for example chips and soft drinks.

Mia Prim thinks that Gooh would be able to increase their sales if the food looked more appetizing. But she does not believe in putting a cardboard sleeve around the food, the problem is rather that everything is mixed together when eating it. She says that some people want to have different parts of their meal split. Mia Prim explains that people eat with their eyes. Some types of food, however, could be more suitable for Gooh than other types of meals, for example she mentions that focus groups have expressed that they like different types of stews.

**What types of ready meals do the end customers demand?** Low cost is not very important to the end customers. Mia Prim believes that the chilled ready meal segment must create its own identity so that it is not always compared to frozen ready meals. The price must however be compared to going out and eating on restaurant because then you also get to sit in a nice environment and you get for example coffee and bread. An advantage for chilled ready meals in larger cities is however that the end customers value their time highly.

The convenience of preparing the food is important, however, Mia Prim says that it is taken for granted that the ready meal is easy to prepare. She states that Sous Vide is not very convenient, however, the food from Gooh is not that convenient either if you miss the information about the valve and the ready to eat signal. According to Mia Prim many people miss how the Gooh ready meals work and just run the fork through the plastic film. The ready to eat signal of Gooh she thinks

is “fun”, but she does not think that people experience it as a problem that they do not know when the food is ready. According to Mia Prim, Gooh does not focus on the ready to eat signal because the company does not want to focus attention upon its package because of the bad presentation of the food.

Regarding ecological ingredients, Mia Prim believes that women care more about those issues than men do. However, the supply is still limited and she believes that people who like to buy ecological ingredients also like to cook their own meals.

Also healthy ready meals are more important for women than for men. However, the question of salt has never been much debated in Sweden. What people are more aware of is the question of preservatives, which is a very sensitive question. However, the end customers do not think about for example the content of C-vitamin. Many end customers are though negative about microwave cooking. That the ready meals are safe is a basic requirement for all ready meals.

The visual attractiveness of ready meals is very important and Mia Prim mentions that people buy with their eyes. According to her, frozen ready meals look good. More people also want more vegetables, partly because the dish looks better with vegetables in it. A problem can also be if a ready meal looks like a mess, or if its color is too uniform. This problem could possibly be solved with different spaces for different parts of the meal, but at the same time it must not be too much of a package feeling, this solution could also be problematic when it comes to obtaining a uniform heating in a microwave. The question of how the ready meals are placed in the stores is also important. This is more important than whether or not it is possible to have vertical display.

The taste of the food is also important and according to Mia Prim, end customers want a lot of taste in their chilled ready meals.

The fact that a ready meal producer can offer many different sorts of ready meals is important to some extent. Many customers choose the same recipe every time, but he/she wants more ready meals to choose between in order to become satisfied.

A long shelf life is not positive for the end customer. Some producers do not even write the production date on the package. However, it is positive for the wholesaler with a long shelf life.

**Are there any common misunderstandings related to chilled ready meals?** Common misunderstandings could be that it is negative to use the microwave for cooking and that the nutrition values are low in ready meals. In general, there is a large suspiciousness against the industry.

**What do you think need to change for people to buy more chilled ready meals?** The chilled ready meals need to be better exposed in the stores; they must be easy for people to find. Possibilities to taste the food in the stores would also be good since some people say they tasted chilled ready meals 20 years ago and did not like it back then. The chilled ready meals also must contain more spices and more vegetables.

**Conclusively,** what creates value for the end customers is the taste of the food. It must be possible to make spicy food that contains vegetables and possible to offer customers complete meal solutions in

the supermarkets (for example to also offer salad). Stews have been appreciated by food panels. The food must live up to the standards of a Saturday night dinner.

Moreover what is important for the end customers is the visual attractiveness of the ready meal. The food must not be mixed together and not have a too uniform color.

What is not considered very valuable for the end customers is low price. Also a long shelf life is not very important to end customers since they mostly buy the food for immediate consumption. Ecological ingredients and healthy dishes are not either very important to all customers yet. The possibility of having a vertical display is not either considered very important.

What is taken for granted by end customers is convenience of package and that the ready meals are safe products. A certain number of different ready meals need to be offered in order for any ready meal to be attractive to buy.

It is also important to remember that what is valued by customers can differ from market to market.

Problems that are related to the ready meals today are that they are not very spicy and the visual attractiveness of the food is low. Moreover, it is considered shameful to give away ready meals to others. Also that the supermarkets do not offer complete solutions for people who wish to eat and that the ready meal is poorly exposed in the stores are problems.

## Appendix X – Explanation of Customer Value Parameters

In this appendix, the meaning of the customer value parameters, used to summarize the findings from the customers value analyses and the additional interview with ready meal researcher Mia Prim, are explained.

<b>Value Parameters</b>	<b>Explanation</b>
<b>Production</b>	
Investment	Cost of purchasing the required production equipment.
Production Cost	All costs associated with producing chilled ready meals (except initial investment).
Work Environment	How it is to work in production for the employees.
Distribution	Transporting the chilled ready meals from the production facility to the retail store.
Production Efficiency	How many meals that can be produced per work unit and the capacity of the production equipment.
Quality Certification	Official quality certifications, such as HACCP (Hazard Analysis and Critical Control Points) and BRC (British Retailer Consortium).
<b>Chilled Ready Meal</b>	
Vertical Display	Whether the meal can be placed vertically without it being visually deformed.
Visually Attractive Meal	Whether the meal looks appetizing.
Nutrition	Nutrition level in meal.
Taste	Taste of meal.
Texture	Texture of meal.
Color	Color of meal.
Preservatives	Whether the meal contains preservatives.
Salt Content	The salt percentage of the meal.
Choice of Serving Temperature	Whether the meal can be consumed, from a food safety point of view, without being reheated to a specific temperature.
Ease of Preparing Meal (including ready to eat signal)	Whether it is considered easy for the end customer to prepare the meal, including whether the meal signals when it has reached an appropriate serving temperature.
Evenly Heated Meal	Whether the meal becomes evenly heated or will consists of hot and cold spots after being heated in the microwave oven.
Hydrated Surface	Whether the meal will have a hydrated or dry surface after being heated in the microwave oven.
Purchasing Price	The cost of purchasing a meal.
Scrap	How large percentage of the purchased material that cannot be sold or consumed.
Safe Products	Whether the meals are safe to consume.
Variation of Dishes	How many different ready meals that are offered by one particular producer.
Long Shelf Life (above 14 days)	The time span within which the meal can be consumed. The 14 days limit is set to separate Cook and Chill from the other competing production technologies.
<b>Business Model</b>	
Incremental Product Improvements Support	Whether the design of the meal and the performance of the process are upgraded in response to the producers' needs.

Maintenance Support	Whether problems with the production equipment are prevented and dealt with if they occur.
Education and Involvement During Production Start-Up Phase	Whether the production equipment manufacturer is involved, in terms of educating the producers and handling problems that might occur, during the installation and start-up phase.
Payment Options	Whether payment for the production equipment can be arranged in different ways than only one upfront payment covering the entire cost.
High Flexibility	Whether the purchased production equipment allows for the production of a variety of different meals and concepts or just one particular type of meal.
Low Uncertainty and Risk	Whether the uncertainty and risk is low when new production equipment is purchased.



## Appendix XI – Segmentation Variables

This is a presentation of the segmentation variables that were taken into consideration when segmenting the market of MicVac AB. The variables in bold are considered to be variables for which MicVac has a unique offer. Taken into consideration is also whether the unique offer is actually demanded by chilled ready meal producers.

### Ambition or mindset

- Innovativeness
- **Willingness to take financial risks**
- Type of technical capabilities
- Type of customer focus
- Emphasis on marketing
- **Priority of food quality**

The customers need to be willing to take an upfront investment. MicVac AB further has a unique offer when it comes to food quality; therefore companies that value food quality (meaning taste and texture, but also color) should be interested in MicVac AB's technological solution.

### Application

- Type of product (recipes, lunch or dinner etc.)
- Type of customer (public sector/supermarkets and wholesalers/vending machines)
- Type of end customer (women or men, old or young etc.)
- Type of distribution system

### Buying habits

- Type of buying process
- Payment alternatives (leasing/**take the whole investment**)

Having the customers taking the whole investment reduces the financial risk for MicVac AB and ensures that the customer is motivated to work hard for the business to become profitable.

### Decision-makers

#### Geography

- **Market size**
- Maturity of market (established market/not established market)
- Food culture (type of food, food habits)
- Growth of market
- Number of actors

The customers should operate in a sufficiently large market or in a market that have good prospects of becoming sufficiently large. A sufficiently large market is a market that is estimated to have room for at least one more of MicVac AB's technological solutions. Also, the food culture should be thought through before going into a new geographical market. Especially it should be thought through if the country accepts the visual presentation of MicVac AB's products.

#### Industry cycle

- Fluid/Transitional/Stable

#### Industry or business

- **Producers of chilled ready meals**
- Producers of frozen ready meals
- Restaurants
- Other food companies

As stated before, the market strategy was designed under the premise that chilled ready meal producers constitute the target segment.

#### Need for service

- High/Low

#### New or replacement market

- New/replacement

#### Price sensitivity

- High/**low**

Since MicVac AB's technological solution is related to an upfront, initial investment, the customers need not to be too price sensitive.

#### Production methods used today

- **Autoclave**
- **Sous Vide**
- **Cook & Chill**
- Methods for frozen food
- Methods for conservation

Since MicVac AB's technological solution has advantages to all other types of technologies, companies with all other technologies for production of chilled ready meals should be targeted.

#### Size (turnover, number of employees, large geographical area etc.)

- **Large/Medium/Small**

See motivation under "Ambition or mindset".

#### Time sensitivity (how fast they want delivery)

- High/Low

#### Type of company

- Growth of company
- Established/Entrepreneur

MicVac AB's technological solution is related to an upfront, initial investment. Companies are probably more able to make such an investment if they are established companies.

#### Type of competition

- Strong/Weak

## Appendix XII – Evaluation of Segmentation

In this appendix, an evaluation of MicVac AB's suggested market segment is performed.

- **The customers in the segment have the same needs and values.**  
The needs and values might differ between different countries. Therefore, producers in different countries should be considered different customer segments.
- **The customers in the segment can be expected to react in much the same way to the company's offer.**  
Yes. There is no reason to believe that they would not react in the same way.
- **The customers in the segment command enough total buying power to be of strategic importance to the company.**  
Yes. The total buying power is not calculated, but it should be large enough since the whole world is treated as a potential market. However, it might be wise to start working intensively with one country at a time.
- ***Servable* – the company must have the resources to serve the segment better than its competitors.**  
Due to limited resources, MicVac AB could take one country at the time and start to go through the possible companies in that country and at the same time learn about the food culture of that country. We cannot give advice regarding where to start since we have not investigated differences between countries.
- ***Defensible* – it must not be too easy for competitors to counteract and neutralize the company's efforts.**  
If the protection from the patents is not enough, the emphasis on good relationships between MicVac AB and its customers will become more important. This is however nothing that changes the appropriateness of the target segment.
- ***Identifiable* – it must be possible to describe the market segment in simple, natural terms. Everybody in the company should be aware of who the customer is and who the customer is not.**  
Possible!
- ***Communicable* – it must be possible to effectively reach decision-makers in the segment by marketing-communications and personal selling. It is also good if the decision-makers can be identified and processed in a customer database.**  
There is a limited number of producers of chilled ready meals, it should be possible to take one country at the time and find all of them. It might however take a long time and be difficult to communicate with the large players.
- ***Comfortably large* – the segment must have the potential to be big and profitable enough. But it must not be too big, because then the company's resources will not be enough to capture a high market share in the segment.**  
Yes, it should be sufficiently large. The question is however how many countries that MicVac AB can cover with their current sales force.

- **Receptive** – the potential customers in the segment should be interested in what the company offers and react favorably.

They should be. But maybe they are not interested if they have already bought new equipment – then they are only interested if they are growing.

- **Measurable** – it must be possible to determine the number, the size, the buying power, the buying patterns etc. of the customers in the segment with reasonable accuracy.

Possible.

- **Stable** – the segment should be stable for a length of time.

It is probably stable enough. Many companies state that they are here to stay.

- **Accessible** – the segment should be accessible to the company. The customers should not be tied to other suppliers or other technology. It is good if barriers to trade do not exist.

A potential problem is that the potential customers have already got other technologies. But unless MicVac AB wants to target potential customers that do not produce chilled ready meals today, they have no other choice.