Requirements on variables within industrial segmentation

Development of Tetra Pak Carton Ambient's segmentation model and establishment of which strategic sub variables that best capture the customers' needs

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Abstract

Title: Requirements on variables within industrial segmentation -Development of Tetra Pak Carton Ambient's segmentation model and establishment of which strategic sub variables that best capture the customers' needs

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Problem discussion: Industrial segmentation based on strategy requires a new course of action. How will overarching variables be chosen if the segmented objects change continuously? With which strategic sub variables will sub segments be created?

Purpose: The theoretical purpose is to identify requirements on variables within segmentation of existing customers in industrial markets. Furthermore, it will establish which strategic sub variables that best capture the customers' needs.

The practical purpose is to analyse Tetra Pak Carton Ambient's present segmentation. The objective is to improve the old model and to identify sub variables that make the model more detailed.

Method: We have been physically situated at Tetra Pak Carton Ambient in Lund. An abductive approach to the problem was chosen. Existing literature from different industries of science was used to describe and analyse the company and its environment. Combined with the theoretical study an empirical study was done at Tetra Pak Carton Ambient, which was used as a case study. This included interviews with several of Tetra Pak Carton Ambient's employers and customers.

Conclusions: Involving strategy in segmentation creates new requirements. A company that continuously changes its strategy must allow these changes to affect the choice of variables for a segmentation based on strategies. The chosen variables have to be dynamic to visualise scenarios of a market of existing customers. This thesis found five strategic sub variables appropriate to apply on industrial segmentation.

Key words: Segmentation, Industrial Segmentation, Dynamics, Variables, Sub variables, Dynamic variables, Tetra Pak, Packaging lines.

Acknowledgment

When our master thesis now has come to an end, we can establish the fact that this half-year has been the most educational time of our lives. We have learnt a lot about Tetra Pak and its environment and also how it is to work within an organisation. The travelling we have had the opportunity to do has provided us with unforgettable memories. We are delighted to have visited customers in Russia, Germany, Italy, Spain, Saudi Arabia and the UK. The experience in total has been very rewarding and has contributed to our personal development.

We would like to take the opportunity to thank Tetra Pak and all employees that have taken part in interviews. Especially we want to thank Kestas Zliusas and Lars Y Gustafsson, Product Management Carton Ambient, for their insightful and intelligent advice as well as kind attitudes.

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We hope you will find our work as interesting as we found writing it.

Lund, May 2002

Finn Alkskog   Kajsa Jeppsson   Niklas Andersson

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Part I

1 Introduction

1.1 Background to the problem

1.1.1 General background to segmentation

The Latin verb *secare* means *to cut*. Another Latin word, *segmentum,* represents something that is cut. Market segmentation so means cutting you a slice of the market. When segmenting the market it is presumed that not all customers are equal and that the market is never homogeneous. This encourages the creation of groups of customers where the customers in a group, in some respects, are similar.

During the last decades dividing potential buyers into segments has generally approached the consumer market. However, there is a significant difference between consumer segmentation and industrial segmentation. The latter consists of a more complex situation where the buyer normally is an integral part of a bigger network. Furthermore, it is common that the buying process involves many parts of the company and that the outcome will influence the company and their participants during many years.

1.1.2 Different authors view on segmentation

1.1.2.1 Smith[1]
Smith introduced the first formal definition of segmentation. He said: "Segmentation is based on the development of the demand side of the market and represents a rational and more precise adjustment of products and marketing effort to consumer or user requirements. In the language of the economist, segmentation is disaggregative in its effect and tends to bring about recognition of several demand schedules, where only one was recognised before".

1.1.2.2 Fredric
One of the first researchers to recognize segments in industrial markets was Fredric[2]: "The first step in analysing an industrial market is to divide the whole market into its component parts. Any particular group of prospective or present users of a product to whom a concentrated advertising and sales appeal may be made should be considered as a component market." Other authors who perceive segmentation very closely related to the marketing concept have recognized these thoughts[3]. They argue that the best way to work with a marketing concept is to concentrate on the customer's needs and wants. Through segmentation marketers receive a better foundation to approach a specific customer with a correct solution.

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[1] Smith W.R., (1956), "*Product Differentiation and Market Segmentation as Alternative Marketing Strategies*", pp. 3-8.
[2] Fredric J., (1934), Industrial Marketing.
[3] Kotler P., (1994), Marketing Management.

Other authors view segmentation as a tool for resource allocation[4]. They work with segmentation to identify different segments and thereby apply a specific strategy and assign specific resources to the selected group. When it comes to how the actual segmentation should be carried out, two directions have emerged. One of them is segmentation based on global variables and the other is based on individual decision-making characteristics. Global variables that have an impact on industrial segmentation are sometimes called macro variables.

1.1.2.3 Wind and Cardozo[5]
Wind and Cardozo advanced the concept and suggested that the variables should be based on probable buyer reactions. Variables useful for this are believed to be SIC[6] code, geographical location etc. Wind and Cardozo recommended that these macro segments should be further divided into micro segments based on additional measures that relate to purchasing behaviour.

1.1.2.4 Laughlin and Taylor[7]
More recently, Laughlin and Taylor proposed that industries should be classified based on their respective concentration ratios and product customisation requirements, i.e. the special needs of a customer. Furthermore, they suggested that the classification should be used as the basis for segment selection decisions. The specific variables that are suggested vary from author to author. Cardozo[8] recommends industrial buyers' purchasing strategies, buyers risk tolerance, purchase demands and environmental forces.

1.1.2.5 Perrault and Russ[9]
Perrault and Russ considered a form of benefit segmentation and then attempted to identify segments based on factors such as number of deliveries, number of alternate suppliers, dissatisfaction with distribution, average order cycle or the type of product. All these factors vary from routine to those likely to invoke political considerations.

1.1.2.6 Bonoma and Shapiros[10]
Bonoma and Shapiro proposed a multi-level nested approach. Five levels are suggested and they range from the easy to observe to those difficult to observe. The levels are organisational demographics, operating variables, purchasing approaches, situational factors and personal characteristics of decision makers. Regardless of the authors' different perspectives on segmentation, the essential principle is to recognize

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[4] Plank R. E., (1985), "*A Critical Review of Industrial Market Segmentation*".
[5] Wind Y., Cardozo R., (1974), "*Industrial Market Segmentation*".
[6] Denotes Standard Industrial Classification.
[7] Laughlin J.L., Taylor C.R., (1991), "*An approach to international segmentation*".
[8] Cardozo R. N., (1968), "*Segmenting the industrial market*".
[9] Perreault W.D. Jr., Russ F.A., (1976), "*Physical distribution service in industrial purchase decisions*".
[10] Bonoma T.V., Shapiro B.P., (1983), Industrial Market Segmentation: A Nested approach.

groups through their needs and drivers as well as how different customers and needs should be approached.

1.2 Presentation of the problem

Historical industrial segmentation models usually focus on simplicity where the models only include variables such as a SIC codes, firmographic or psychographics[11]. Psychographic variables describe the customer's interest, opinions or lifestyle. The notation demographic describes basic characteristics of the human being e.g. gender, income, occupation and age[12]. In industrial segmentation some authors replace these variables with different characteristic data of a company, which are easy to find and describe. These variables are referred to either as demographic variables[13] or as *firmographic* variables[14].

1.2.1 Two major problems with firmographic variables

There are two major problems with segmentation based on firmographic variables[15]. Firstly, these variables are assumed to reflect subordinated needs and buying behaviours within the specific segments. The likelihood that a segment based on firmographic variables represents a certain need by the user within this group is low. Different companies within a segment are likely to have heterogeneous needs and behaviours limiting the use of segmentation.

Secondly, one of the earliest authors to recognise the importance of how to involve strategy in the segmentation was Wind[16]. He refers to it as "actionability", i.e. how well the segmentation base contributes to portray the company's marketing strategy. Firmographic variables do not help to reach the customer with the right offering. Wind emphasizes the importance of reproducing the company's marketing strategy when performing segmentation and that there are different approaches to attaining the objective. It appears that there is little written on how to involve customer strategy in segmentation, to support the opinions by Wind.

1.2.2 Strategy as a base for segmentation

Johnson and Scholes defined strategy as "the direction of and scope of an organisation over the long term: which achieves advantage for the resources within a

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[11]Caliphates S.P., Cheston V., (1997), *"Normative Models and Practical Application of Segmentation in Business Markets"*, pp. 521.

[12] Kotler P., Armstrong G., Saunders J., Wong V., (1999), Principles of Marketing, pp. 387.

[13] Arun Sharma, Douglas M. Lambert, (1994), *"Segmentation of Markets Based on Customer Service"*, pp. 10.

[14] Forsyth J., Gupta S., Haldar S., Kaul A., Kettle K., *"A Segmentation you can act on"* pp.6-15.

[15] Sharma A., Douglas M. L., (1994), *"Segmentation of Markets Based on Customer Service"*, pp. 3 referring to a doctoral dissertation made by Sharma A. (1988).

[16] Wind Y., (1978), *"Issues and Advances in Segmentation Research"*.

changing environment, to meet the needs of markets and to fulfil stakeholder expectations"[17].

They further divide strategy into three levels: corporate, business unit and operational strategy. Today this is an established way to explain strategy. Corporate strategy is concerned with the overall purpose and scope of the organisation. It aims to meet the expectations of owners or major stakeholders and add value to the different parts of the enterprise. Business unit strategy is about how to compete successfully in a particular market. Operational strategy is concerned with the component parts of the organisation in terms of resources, processes, people and their skills. It will help them to effectively deliver the corporate- and business level strategic direction.

When performing segmentation based on strategy all three strategies above are to be considered. The strategy studied cannot only be investigated in general but should also be divided into parts that are studied alone. Depending on the purpose, any of these parts will be more emphasised. When the needs that will be satisfied become more detailed, the importance of the last strategy probably increases. Thus, when segmentation aims to offer the customer correct equipment it is mainly the operational strategy that will be considered. Nevertheless the other strategies must also be observed since strategy is such a wide term and most areas in some way touch on it. Besides, all strategy levels are interconnected.

1.2.3 New directions for industrial segmentation

Researchers have identified effective models concerning segmentation of the consumer market[18]. Development in the consumer market have reached the next level and more sophisticated segmentations models are used. Although there is literature that treats segmentation of an industrial market, these methods and course of actions are far behind the work that has been done in the consumer market. Undemanding variables are still used, but are they enough? Do companies require advanced variables in their segmentation? If they do, how will they be chosen?

Abratt[19] identified, in an empirical study, the three most common variables when performing segmentation of an industrial market. He found that geographical variables where used in 87.5 percent and firmographic variables in 62.5 percent of the cases. The third common variable, used in 62 percent of the cases, described how often the customer used the product. These variables are all too general and seldom fulfil their purposes.

Traditional segmentation is about dividing a market of potential customers into smaller groups. Little is written about how to segment a market of already existing customers. When dividing a market of existing customers it is important to work with

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[17] Johnson G., Scholes K., (1999), Exploring Corporate Strategy, pp. 551.
[18] See Kotler P., Armstrong G., Saunders J., Wong V., (1999), Principles of Marketing, pp. 386.
[19] Abratt R., (1993), "*Market Segmentation Practices of Industrial Marketers*", pp. 79-84.

a method that facilitates an understanding of these. This is why strategy has caught our interest.

In principle a customer's situation is the result of its strategy, although other external factors like legislation can have influence. The customers make continuous choices of direction for their business in order to reach new end users or markets, thereby making their business more profitable. Strategic decisions will embrace the whole organisation and if correctly implemented, be equal to it. All these choices distinguish companies from each other and lead them towards different niche markets. Consequently, this means different needs for equipment and other requirements that have to be satisfied. It is the customer's strategy that determines how these requirements will be treated.

The most appropriate segmentation would therefore be to investigate customer strategies. The strategy can take many shapes and evolves continuously. The type of strategic decisions can vary considerably. Not all changes are the result of strategic decisions. For instance a strategic decision could be to acquire another company. A company that is acquired has seldom any influence but it is still a change of situation, which probably gives rise to new needs and behavior.

1.2.4 Need for dynamics within segmentation

Companies with static strategies are doomed to failure since they cannot react to the market's requirements. If strategies are changeable and used for segmentation, the segmentation must be changeable or rather dynamic. Dynamic is, in physical terms, the description of the various quantities involved in the motion of bodies. It usually follows the study of static, which deals with the action of forces on bodies at rest.

A dynamic segmentation model consequently lets the segmented objects move in a realistic way and reflects all desirable factors. Not all segmentations have the objective to follow customers development, and then it is enough to position customers in a particular moment. When existing customers are segmented on industrial markets and the segmentation is based on strategies, it makes apparent demands on the model. It must be able to describe changeable conditions or actual scenarios. How will the variables be chosen to fulfil this? This thesis will contribute to knowledge of how to visualize segments when performing overarching industrial segmentation. It will add knowledge on how dynamics can work as a tool to support existing theory within industrial segmentation based on strategy.

Furthermore, when describing scenarios, the model must reflect the present situation and not earlier decisions. What requirements result from this? Finally, the thesis will contribute to comprehension of how companies, which provide manufacturing equipment, can make their segmentation more detailed.

1.3 Purpose

The purpose with this thesis is to identify new requirements on variables, within segmentation of existing customers on industrial markets, for classifying them as dynamic. Furthermore, it will establish which strategic sub variables that best capture customers' needs.

1.4 Constraints

Not all requirements on variables can be identified. The study concerns only those requirements that are related to the dynamics of existing costumers. Segmentation variables for potential customers probably do not have these requirements. There seems to be a lack of literature within this particular area and most findings are created without references. Parts of the work are therefore not influenced by earlier thought, which can give rise to creativity. However, to disregard earlier thoughts can affect the outcome and the relevance of the research.

There is no doubt that most markets are dynamic and changes continuously over time. This thesis was written during a half-year period and the real consequences of dynamics cannot be studied since it requires more time. Parts of the work are therefore mostly theoretical and should be studied for years to obtain total validity.

The sub variables are applicable to companies supplying manufacturing equipment. If their applicability would be broadened they become too general and loose their relevance.

1.5 Target Group for the thesis

The target group for the thesis are employees within Tetra Pak Carton Ambient, students and teachers within Business Management at the University of Lund. More precisely, the thesis is aimed to Technology Management at the University of Lund.

1.7 Outline of the thesis

The thesis consists of five parts, where part II, III and IV are intended to connect part I and V. Part I includes the introduction and the methodology. The introduction visualizes the background of the problem and identifies the problem to solve. The problem has one theoretical and one practical part where the practical is connected to the problem concerning the case company. The introduction converges into the purpose, which is to solve the problem stated in the introduction, both the theoretical and the practical.
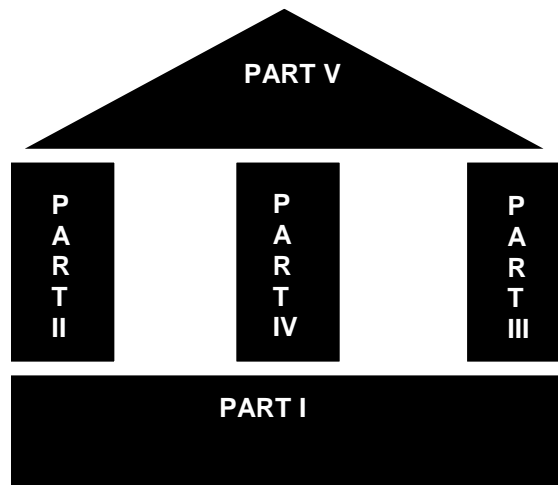
Figure 1: *Outline for the whole thesis*

The methodology describes the approach to fulfil the purpose. It starts with a short presentation of different approaches to methodology, followed by a motivation and presentation of the approach used for this thesis. The last section of the chapter presents the practical methodology.

Part II is an empirical description of the case company. First the company is discussed in general, what products they offer and in what environment they are acting. It will consequently give the background to the company and give the reader relevant information for later discussions. Part II is concluded with a more detailed description of how the Product Management department is working with segmentation.

Part III constitutes the theoretical framework for deeper analysis. It presents theoretical ideas that are used as a base for solving the problem. Since interdisciplinary thoughts are used in coming parts these are discussed in the analytical theory. This chapter combines earlier theories and creates partially new ideas to support later parts.

Part IV is introduced with macroanalysis. This chapter discusses the stated problems with the collected information, and attempts to identify how to define requirements on variables. The following chapter is a microanalysis and evaluates which strategic sub variables that best captures the customers' needs.

Part V consists of the final chapter with the conclusions. The most important statements in the analysis are summarized into two different sections. The first section concerns the macro level while the other concerns the micro level.

2. Research Methodology

2.1 Design of the research

The first part of the theoretical purpose was to identify requirements on variables within segmentation of existing customers on industrial markets. This purpose is fulfilled in the thesis section called the macro level.

The second part of the theoretical purpose was to establish which strategic sub variables that best capture the customers' needs. This part of the purpose is fulfilled in the section called the micro level.

There are different methods of approaching the stated pursposes. To concentrate the study on existing literature would have been one possible solution. Different views could be combined whereby new theories could be developed. However, industrial segmentation is difficult to study with literature as the only alternative. What seems theoretically correct may not be in accordance with reality. Empirical findings are probably for the conclusions to be truthful.

Another way to approach the problems could be to conclude a best practise through an investigation of different companies in a market. The participating companies do not necessarily have to belong to similar industries. Customer relations and marketing are areas that intersect between industries. A comparison between companies in different industries could therefore make sense.

If this method were chosen, the first problem to solve would be; what is best practice? Is it possible to measure or decide which segmentation is best? When this question is answered a comparison is possible. One factor making the comparison difficult is that the results of segmentation cannot be observed within a reasonable time. This time was not available for the thesis and therefore it seemed like an inappropriate method.

To create new findings, literature within consumer segmentation could be applied to industrial segmentation. Consumer segmentation is more developed than industrial and could give rise to useful findings. However, when performing industrial segmentation the situation is more complex and the circumstances are different. The objective of this thesis is complicated and to only apply literature within consumer segmentation is insufficient.

Computer influences are nowadays frequently used within segmentation and are sometimes a useful tool. A computer can solve a segmentation problem, but it does not create new ideas. It is the programming of the tool that is interesting. The objective with this thesis is to understand differences behind the programming, not to use a program. Figure two describes the four different levels that the design of our research embraces.

2.2 Methodology Approaches[20]

In the field of science there are many approaches to methodology. This section starts with a short presentation of some of these approaches, followed by a motivation and presentation of the approach used for this thesis.

The purpose of scientific research is to generate new knowledge and to develop theories that already exist in science[21]. Bjerke[22] denote that a good methodology is characterised by a fit between problem, solution techniques and the basic assumption. The problem discussion was presented in chapter 1 and the next two sections focus on basic assumptions and different solving techniques.
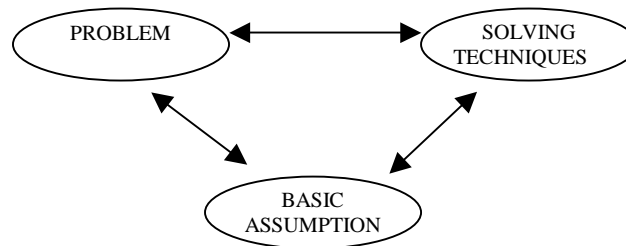
Figure 2: Different relations according to Bjerke

2.2.1 Basic assumptions

Basic assumptions, also referred to as paradigms[23], are assumptions about how reality is constructed. These assumptions influence the way a scientist looks at a problem and the attitude towards different solving methods. Three different methodological approaches are presented in the literature, *positivistic*, *systemic* and *hermeneutic* approach. The names can vary between different authors but have all similar meanings.

The *Positivistic* approach is based on assumptions that one objective reality exists and is independent of individuals. The reality has an additive nature, which means that the whole is the sum of the parts. The main purpose of scientific research is to reconstruct reality and establish causal connections. This view does not consider the effect of combining different parts.

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[20]Bjerke B., (1981), Some Comments on the Methodology in Management Research
[21]Patel R, Davidson B, Forskningmetodikens grunder, pp.14.
[22] Bjerke B., (1981), Some Comments on the Methodology in Management Research.
[23] Morgan G., (1980), Paradigms, Metaphors, and Puzzle Solving in Organisation Theory.

The *Hermeneutic* approach is the other extreme view and assumes that reality is a social construction, dependent on the actors. Supporters of this theory argue that humans create their own future and thus there is no validity to find how things really work.

The *Systemic approach* is centered between these two different views. Similar to the positivistic, this approach believes in an objective reality. However it assumes that the whole differs from the sum of the included parts. According to this approach the included parts are understood through the characteristics of the entirety. The systemic approach evolved during the 1950's as a reaction to the analytical view, and is today the dominant method in business research.

We are of the opinion that the truth can be found in how different organizations and individuals interact but are not positivistic. This is because we do not believe that the unchangeable laws of nature can be changed or replaced by others. Nor are we pure hermeneutic. Our stance is between these two approaches, as we take a systems approach. To us the world is a system where every component has an influence of the rest. This system is open; indicating our presumption that Tetra Pak Carton Ambient is both affected by, and affects its surrounding environment.

2.2.2 Solving Techniques

This area comprises the methods and techniques available to solve the research problem. Research has to consider the balance between the empirical and theoretical world. There are three ways of approaching scientific research i.e. the inductive, deductive or abductive approach[24]. The inductive approach originates from theories where hypothesis are created to find matches with the empirical study. From these findings new theories are created. The deductive approach is by nature more formalised and originates from present knowledge where new theories are developed[25]. The abductive approach combines the use of theory and empirical studies and switches between the two worlds.

While carrying out this thesis we have found an abductive course of action to be the best way. We found that either the inductive or deductive approach would be appropriate for solving the research problem. We have used existing literature from different categories of science to describe and analyse the company and its environment. Our purpose is to develop a segmentation model that is adapted to the need of Carton Ambient. This resulted in that we, at least to some extent, aimed to create theory by combining and use different methods as compliment. Therefore we also found it necessary to combine the theoretical study with an empirical study done at Carton Ambient to identify the special needs and adapt the tool.

There are different research approaches that shape the framework of a study, e.g. surveys, empirical researches, case studies or computer based analysis[26]. When

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[24] Holme, Idar Magne, Solvang, Bernt Krohn, Forskningsmetodik, (1997), pp. 51.
[25] Nilsson, C-H., Methodological Reflections – Extended Version, (1994), pp. 4.
[26] Yin, Robert K., Case study research: Design and methods, (1994), pp. 3.

deciding the method for acquiring data, intended for the research, a primary choice is between the qualitative or quantitative survey approaches. Working with several methods is usually described as a "triangulation"[27]. Hence, qualitative and quantitative methods should not be treated as competing methods but as complementary, that together can be used to solve a problem.

2.2.2.1 Case study

A case study is a method that focuses on understanding the dynamics in a context. In general, case studies are preferred when "how" or "why" questions are to be answered[28]. Furthermore, this procedure is appropriate when the investigator has little control over the event and the observable fact is in a real-life context.

The case study approach can include one or several case studies. The chosen approach determines whether the analysis will be an in-depth study of a few cases, or a broader, less detailed study of several cases. It can also be a study of a certain development over time[29]. Case studies shall not be viewed as a qualitative study, but instead as a method that can be based on both qualitative and quantitative information. The approach allows researchers to be more confident in their results and it represents a more holistic view of the problem.

We used Tetra Pak Carton Ambient, as a case study. Seventeen of Carton Ambient's customers served as representative customers and thorough interviews were performed. The objective with the interviews was to identify what different needs a customer has as a result of chosen strategy. The results were used to develop the segmentation model. The research was of both qualitative as well as quantitative nature.

2.2.3 Approach to analysis

Analysing data from a case is the heart of building theory from case studies[30]. A crucial part when analysing a case is to have sufficient and appropriate information. Hence, different data collection methods were used to gather information regarding Carton Ambient's customers. As our group consists of three persons, it contributed to complementary insights in the case. Eisenhart[31] discusses two possible solutions when performing data collection with a group consisting of several members. The first strategy is to allow all members to visit the case study sites together to bring different insights. In contrast to the second strategy the visits can be performed individually, which contributes to a more objective view of the case. Together we shaped the frame of the thesis by studying the work within Carton Ambient, but due to limited time and budget the customer visits were done individually.

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[27] Jick, T.D. Mixing Qualitative and Quantitative Methods – Triangulation in Action, (1979), pp. 602.

[28] Yin, Robert K., Case study research: Design and methods, (1994), pp. 1.

[29] Lekvall P and Wahlbin C, (1993), Information för marknadsföringsbeslut.

[30] Eisenhart, K. M., (1989), Building Theories from Case Study Research, pp. 539

[31] Ibid

A key feature when creating theory from case studies is the freedom to make adjustments[32]. Our analyses were based on semi structured interviews and we had continuing contacts with all persons involved in the interviews to facilitate a further flow of information, should new opinions would arise. A new model was created and analysed with existing literature.

2.3 Practical Methodology

During the case study secondary data has been used to achieve substantial substantial material for the investigation. Furthermore, different methods have been used to collect information, e.g. interviews with Carton Ambient and customer employees, studies of internal documents and research on Tetra Pak's Intranet.

2.3.1 Terminology

For the benefit of the reader, terms used in this thesis are explained in Appendix 1. Some are frequently used expressions within the organisation, but with varying significance. Consequently, we decided to create our own definitions to simplify our own work and to avoid misunderstandings. Terms created by us requiring an explanation can also be found in Appendix 1. Finally, some other words may need an explanation since they are frequently discussed and a lack of knowledge could make it difficult understanding this thesis.

2.3.2 Collection of empirical information

To get a proper perception of Carton Ambient's present segmentation model we started by having a meeting with our company mentor. He gave us an introduction to the situation they faced and a brief explanation of how they worked with the model. To acquire a better understanding of the market we studied internal documents. The information consisted of a customer data base file, qualitative feedback from the different segments originating from a survey, and some more general market information.

More information was consecutively added in frequent meetings with the mentor. During these meetings, our development of the model was gradually discussed in more depth. The geographical distance required most meetings to be held as videoconferences. Information about the markets and different customers were also obtained from different sources, e.g. Tetra Pak's Intranet, marketing companies and personnel within Carton Ambient.

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[32] Eisenhart, K. M., (1989), Building Theories from Case Study Research, pp. 540

2.3.3 Identify the requirements on the variables- macro level

We decided to use Tetra Pak Carton Ambient[33] as a case company for identifying the requirements on variables on the macro level. First a document study took place. The notation of a document has traditionally been used for printed information. The technical development has created new possibilities and ways of storing information. Today the notation of a document is extended and includes e.g. tape recording, movies and pictures [34]. In this thesis information on the Internet is also considered as documents.

Searching different independent sources extended the literature study, e.g. electronic academic databases such as Elin and Lovisa were used for collecting more documents. Subsequently, relevant documents were selected and a deeper study was performed. The documents selected were composed as a base from which we got an awareness of different segmentation models and raised trends. Through this method a better structure of the theory was created. The articles had different approaches; some authors base their theories on empirical studies and observations while others have a more provocative and speculative nature.

To support and to improve the comprehension of industrial segmentation we combined three different types of literature[35], and a partially new concept was developed. Literature containing strategy, contributed to an improved comprehension of industrial segmentation. Strategy within segmentation, as an appropriate base, arose from the beliefs of deriving buying behaviour from different customer strategies. To support our assumptions of this partially new theory, literature within dynamics was employed. Dynamics originates from Newton's three laws of motion and describes the quantities involved in the motion of bodies. We believed that his conclusions could be applied to segmentation since it in some way corresponds with strategy. Strategy does change over time and this is well illustrated together with Newton's findings.

An evaluation of Tetra Pak's present segmentation model took place to identify the requirements on the variables. Two areas were considered. One undertook the model's aptitude to visualise the drivers within each segment and the other considered the models ability to catch dynamics, i.e. to provide a model that permits a customer to move within that model. The need for dynamics arose from the fact that customer needs and strategies are changing and could not be considered as static[36].

The drivers reflect the value that different equipment delivers. Since it was desirable to keep the old segments almost intact and only improve them, it was inappropriate to completely change the variables. The work started with a discussion regarding what variables that would visualise the segments according to the drivers. The macro model was to be spread within Carton Ambient worldwide and the need for simplicity

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[33] See chapter 3.1.3 for a complete Tetra Pak organization chart.
[34] Patel R, Davidson B, Forskningmetodikens grunder, s 54.
[35] See figure 3 section 2.3.5.
[36] For further explanation see chapter 6.3

was of course important. This is why a model with more than two dimensions was not desireable. The variables could either be qualitative or quantitative but had to be easy to understand. Furthermore the model had to make visualization of scenarios possible, since its purpose was to segment existing customers. Through interviews with production line managers the different characteristics were presented and in addition to this knowledge, we identified new variables.

Customer interviews were held to identify the requirements on the variables. When working with interviews, and the purpose is to gather information, it is important to consider two aspects. The first aspect to consider is the proportion of standardisation, the predetermined level of order and formula that the interviewer follows. The second is the proportion of structuring, to what extent the interviewed object feels free to interpret the question and give an answer based on his or her experiences.[37] Depending on the purpose of the interview and the kind of information needed, different combinations of these two aspects allow different types of interviews. We chose semistructured interviews, with high levels of standardisation and low level of structuring.

2.3.3.1 The work with the improvement of the old model
In order to create a model with the required variables, the customer's situation and needs was the base for the segmentation. The differences between different equipment could not be neglected, because these properties in some way satisfy the customers' needs. If the customer situation and needs are described with the three equipment types' properties in mind, it could probably bring on a useful segmentation.

The properties of the production lines were compared two by two and were connected to the circumstances of customers that required different equipment. The most appropriate differences resulted in variables that describe customer situations that needed different line properties to manage the business successfully. Three different segments, with need for three different lines, was the outcome of that investigation. These were three different customer groups where the companies' situations were so unlike each other that they required different lines.

Besides only comparing the lines theoretically, a discussion with Carton Ambient employers and all interviewed customers regarding the new model were held. Also the questionnaire mainly aimed for the micro level contained parts that would support the model. However, it was an open discussion with Carton Ambient employers as well as the interviewed customers that gave validity for the new macro model.

2.3.4 Identify sub variables – micro level

To establish which strategic sub variables that best capture the customers' needs on the micro level we decided to attack the problem through an analysis of Tetra Pak Carton Ambient. To come up with several strategic sub variables we began to study

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[37] Patel R, Davidson B, Forskningmetodikens grunder, s 60.

literature concerning strategy and industrial segmentation. The document study was performed according to the macro level.

To reach the next complexity level of the macro segmentation, a study based on interviews with Carton Ambient employees was done. Several sub variables that could distinguish customers, had to be listed for further sub segmentation. A sub variable is a variable that directly affects the customer needs[38]. The choice of sub-variables was supported by interviews with Tetra Pak employees. The objective of the chosen sub variables was that they would be independent of each other to obtain a completely reliable investigation. Nine variables were chosen, eight quantitative and one qualitative. All were divided into levels to facilitate the summarizing.

2.3.4.1 Representative customers

During the customer interviews the chosen sub variables were investigated, regarding how well and which customer needs they satisfied. To perform a reliable study it was important to obtain representative customers. Seventeen customers were chosen and their profiles corresponded to the different sub variables.

The customers represented markets of two different maturity levels, and as a consequence different competitive situations. It was desirable to understand how different market situations could give rise to different needs. One group should represent mature markets like those in Western Europe or US. Another group should originate from growing markets like those in Eastern Europe. It was also important to meet customers from markets characterised by few competitors compared to those with fierce competition.

The customers should also cover two types of educational levels, one with low (or high turnover of employees) and another with high (or low turnover of employees) educational level and therefore different need for automation of the equipment. It was important that both dairies and JNSD producers were represented as well as self-manufacturers and co-packers.

2.3.4.2 How will the purpose be fulfilled?

To investigate how well and which customer needs a sub variable satisfied a questionnaire were composed with a semi-structured approach. It consisted of clear questions, and was easy to understand and measure[39]. It was mainly the sub variables that were desireable to be easy measured but also other easy measured figures were collected. Connected to measurable questions, qualitative questions regarding needs were asked. These were aimed to find out what sub variables that distinguish customers with different needs.

Through asking questions about needs and relate these to the measures on the sub variables by a discussion, the connections were investigated. Also the customers themselves were asked what connections they saw between the variables and the needs. Because of the fact that the costumers were representative and covered most of

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[38] For further information see chapter 4.1
[39] See appendix 2 for questionnaire

Carton Ambient's types of customers, the answers from only seventeen customers gave validity.

2.3.5 Summary of the cource of action for the thesis

- Theory

  Dynamics → Industrial segmentat- ← Strategy

- Tools to develop Industrial segmentation

  Combinations of literature

  Empirical study (Carton Ambient)

- Analysis

  Analysis

- Conclusions

  Macro Level   Micro Level
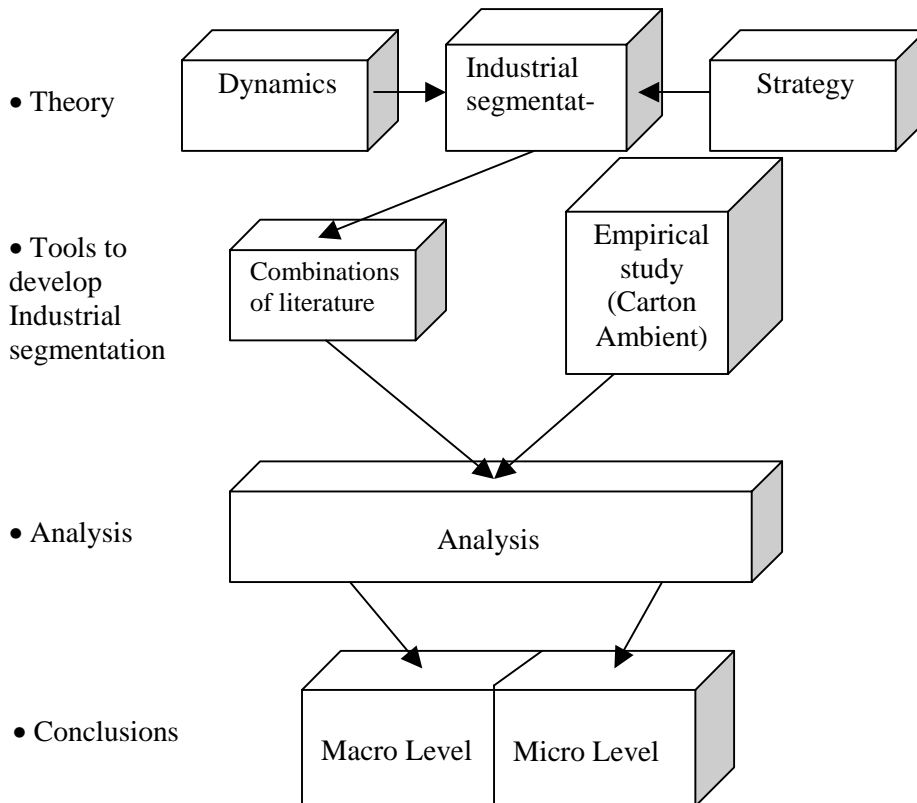
Figure 3: *Design of the research*: Three types of theory are combined to new ideas regarding segmentation. Applied on the case company their relevance are analyzed. The analysis results in conclusions regarding the macro level and the

2.4 The thesis' validity and reliability

The validity describes the accuracy of information in a research[40]. A number of uncertainties can be identified regarding primary data collection and more specifically the interviews conducted. These issues relate to reliability, forms of bias and finally validity and the ability to generalise. The reliability issue of the data collected from interviews comes from the fact that an interview with another subject representing the same company may reveal different answers and data[41].

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[40] Holme, Idar Magne, Solvang, Bernt Krohn, Forskningsmetodik, (1997), pp. 51.
[41] Saunders M., Lewis P., Thornhill A., (1997), Research methods for business students.

Holme and Solvang notify that the validity of the information tends to decrease during interviews, when dissimilar perceptions get together[42]. This problem have been minimized through interviews were the interviewed object have been aware of the purpose. The internal interviews have provided information on a more general level to obtain comprehension whereas the customer interviews have been more detailed.

The reliability of the research is affected by the performed measurements and the exactness in the working process[43]. The reliability of the macro level is good although it would have been desirable to have more empirical support. The time for this thesis was not enough to study scenarios and dynamic in reality since it requires several years.

One way to go had been to use information about history. The customers' development back in time could be studied and the relevance of dynamic variables thereby stated. Such information was not available since Carton Ambient has never collected and saved the necessary data about their customers. Instead new thought about dynamics within segmentation and the analytical discussion are based on existing literature from different sciences.

In fact, existing literature are not used, it is combined to create new ideas. Since these new ideas about dynamics within segmentation are not based on literature or other sources, vality must be attained in another way. Many different theoretical scenarios are simulated and combined with as much information about markets and customers as possible. The knowledge about the customers and their behaviour was critical for us to be able to simulate the scenarious and make other statements about dynamics.

The micro level concerns the strategic sub variables and is dependent on the selected customers. This implies that the profile of the examined customer is a good representative of the total. The selection is not always independent since it is easier to get in contact with customers with well-known contact persons. Probably there is a reason why there is a better relation to those companies.

Furthermore, the question is: Has the data collected answered our research questions? There is a problem when working on two different levels, a theoretical and an empirical, and these two must support each other. Data is collected and used to solve the problem stated in theory and finally conclusions are drawn about reality. Our opinion is that the answer to this thesis is yes.

There was a well thought out questionnare used during the customer interviews that supported the purpose on the micro level. Data regarding the sub variables was collected. Connected to them other qualitative and quantitative questions were asked. The questionnaire was worked out in order to give comprehension about the connection between particular customer properties and the needs they imply. This

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[42] Holme, Idar Magne, Solvang, Bernt Krohn, Forskningsmetodik, (1997), pp. 156.
[43] Ibid, pp. 163.

objective was obtained and many connections were discovered. Similarly, other potential connections were discovered to not exist in reality.

This questionnaire was mainly adjusted to the micro level purpose where it was critical for the conclusions made, but did also support the purpose on the macro level. However, our findings on the macro level are more theoretical and although the questionnaire supports them and gives useful information about customers' reality it is more based on theory.

Carton Ambient provided a considerable amount of the used material through, for instance, interviews and PowerPoint slides. This information was aimed to help us to use the customer interviews properly. However, this information will not be seen as totally independent and factual. There is no reason to believe that it would not be pertinent, but is nevertheless based from their view. Similarly, the customers' interests affected the customer interviews. This can, for instance, find expression in unjustified criticism on Tetra Pak.

During some customer interviews the person interview could not speak English and an interpreter was used. When using an interpreter the accuracy of the answers can be afflicted. The possibility to have deep discussions becomes limited. If the interpreter is a Tetra Pak employee it is possible that this person puts his or her own opinions into the answers. Customers are sometimes very busy and thereby uninterested in answering questions, which limits the reliability of some answers.

Part II Empirical

The intention with part II is to present sufficient information about the case company. In chapter three a general description of Tetra Pak and its environment takes place. It is followed by an informative description of the current production lines that Carton Ambient offers today. Chapter four contains a description of the company's present segmentation, how it deals with specific problems and customers. The last part gives an explanation of how this thesis fits in.

3 The case company and its environment

3.1 General information

3.1.1 Tetra Pak and the vision

In 1943 the development of a milk package that required minimum material whilst providing maximum hygiene was started[44]. This resulted in the principle on which the tetrahedron-shaped carton is based. Since then, the development has proceeded and today Tetra Pak is a global company with 18,900 employees. Tetra Pak develops, manufactures and markets systems for processing, packaging and distributing liquid food. Packaging material is produced at 68 plants and there are 77 marketing companies all around the world. The purpose of the marketing companies is to sell products and manage the relations with the customers. Every day more than 89 million Tetra Pak packages are distributed in over 165 countries.

Tetra Pak's vision is to become and remain the world's leading liquid food processing and packaging company. In order to achieve this vision, the company must be an industry leader in environmental matters. The policy is to achieve environmental excellence in the three major areas of activities: product design and manufacturing, management processes and finally communication.

3.1.2 The market and competition Tetra Pak deals with

Tetra Pak's service and manufacturing organisations are situated near the markets and expand continuously[45]. A trend towards self-service within retailing has increased the demand for Tetra Pak's products. Aseptic packages have also contributed to the expansion in undeveloped markets where it is hard to keep beverages chilled. The industry is increasingly consolidating and competitors are developing more than one type of package for the same product. To survive in a future with increasing competition, companies like Tetra Pak have to reduce cost, add more value to the packages and develop new concepts.

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[44] www.tetrapak.com, 2002-02.02
[45] Hammarkvist K-O., Håkansson H., Mattsson L-G., (1992), Marknadsföring för konkurrenskraft, pp. 68-69.

The milk package market is stagnating due to stagnated growth in the developed markets and the milk consumption in these markets is still low. Today most of the milk is sold in supermarkets and is primarily regarded as food. Children do not drink milk as refreshment. As a result Carton Ambient has tried to extend its products to other beverages, e.g. juice, beer and vine. From that follows a lot of new competitors. This competition comes mainly from carton packagers and from other package materials, primary glass, metal and plastics.

The main competitors today are IP, SIG Combibloc, Elopak, Shikoku, Nippon, Paper, Sidel, Plysu and SUP. The usage of plastic products is increasing and it is important to excel on this arena. Today Tetra Pak has a business unit working with plastics, although it still is on a small scale compared to the other business units. However, no competitor has such a geographical widespread manufacturing, marketing and servicing organisation as Tetra Pak.

To keep and develop this position it is important to prevent customers from installing competitor machines and also to maintain technical advantage. This advantage includes new packaging systems and new fields of application. It is important to Tetra Pak to keep a strong position in competitors' domestic markets to prevent their expansion.

The number of customers in each country is generally low but there is often a strong dependency on the packages. Tetra Pak has continuous customer contact through service commitments, material supply and participation in the customer's marketing activities. Consequently, their presence does not just concern the production but the whole company.

3.1.3 Tetra Pak's organisation and products

Tetra Pak includes four business areas, Carton Ambient, Carton Chilled, Plastics and Processing Systems. The organization is as follows[46]
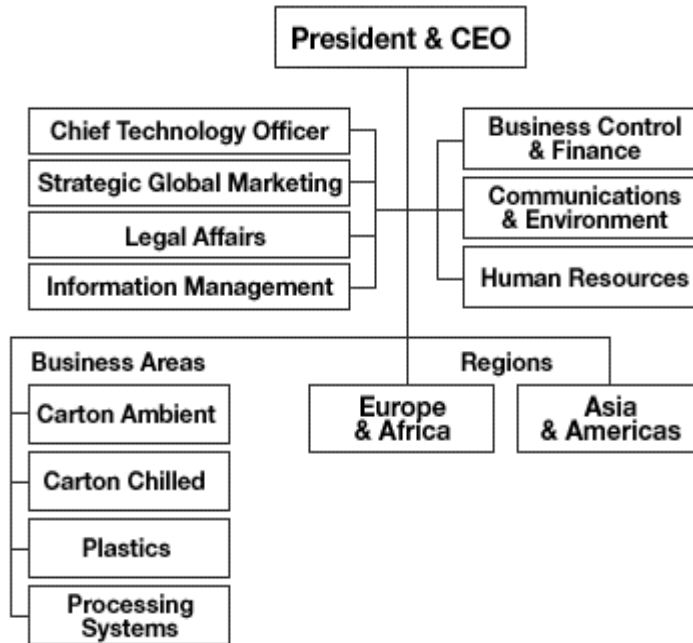
Figure 4: Tetra Pak *Organization Chart*

Since this study concerns only Carton Ambient, the other three business areas will not be described. However, both Carton Ambient and Carton Chilled offer a wide range of packaging products. Carton Chilled is working with packages for pasteurised beverages whereas Carton Ambient offers aseptic solutions. The design of the products from both units is often similar where some of the more important are Tetra Brik[47], Tetra Prisma, Tetra Wedge, Tetra Classic and Tetra Classic Aseptic.

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[46] www.tetrapak.com/corporate/eng/frameset1.asp? navId=1
[47] Is available in the designs Basic, Square and Slim.

Figure 5: *Packages that are offered by Tetra Pak Carton ambient and Tetra Pak Chilled. From left: Classic, Wedge, Rex, Prisma, Brik, Fino (lying in front of Brik) and Top where Rex and Top are not offered in an aseptic form.*

In Carton Ambient all of these packages are offered in an aseptic form, which gives them the names TBA, TPA and TCA[48] that in volume also are three most important packages.

Customers are located all around the world and act in the liquid food business under very diverse economical, political and demographical conditions. Tetra Pak produces both production lines and packaging material. In the same way as the other participants on the packaging arena, Carton Ambient's highest profit comes from the packages and not from the production lines. The lines are instruments to retain customers, so they do not change material supplier. The value chain for the packages consists of four main parts.
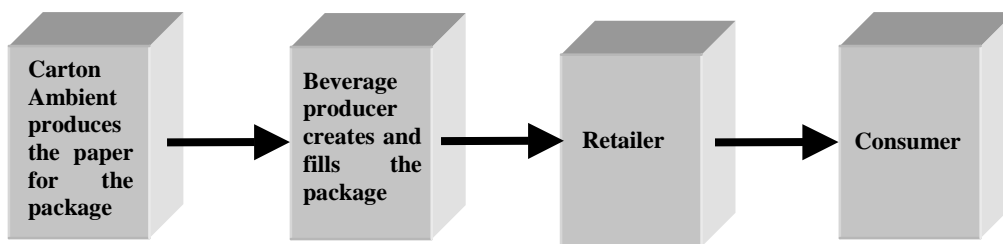
Figure 6: *Carton Ambient's value chain*

The aseptic packaging business is the major part of business for Tetra Pak worldwide and Carton Ambient is the division with the highest profit. They offer various packaging lines. The new generation consists of TBA/21 and TBA/22 in which much

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[48] Tetra Brik Aseptic, Tetra Prisma Aseptic and Tetra Classic Aseptic.

capital will be invested in the coming five years. More conventional production lines are TBA/19 and TBA/8, which have been offered for almost twenty years[49]. For these the investments will be low and more selective in coming years and will eventually stop.

3.2 The equipment

Below follows a description of the four lines offered by Carton Ambient.

3.2.1. TBA / 21[50]

TBA/21 provides a solution to face the dynamic needs of today's markets. It is space efficient and the intention is to save operational labour costs. With its flexibility to change package shape and volume, it will help customers to be more responsive to market changes and to increase productivity. The customers' investments become more protected and better utilized. TBA/21 system is based on the concept of having a base machine and volume conversion kits, which means that the same packaging line can deal with a number of packaging volumes and shapes.

Figure 7: *TBA/ 21 line*[51]

The long established Tetra Brik Aseptic family of packages is expanded with new and innovative packages. The machines can produce volumes from 200 ml up to 1500 ml and has a capacity of 5500-8000 packages per hour. Different openings are offered and also a wide range of solutions for the distribution and selling of the packages. More packages and solutions will be continuously developed and introduced in the future.

TBA/21 benefits from a new technology platform, which helps to achieve better machine control, intelligent monitoring, and high performance. Intelligent data acquisition and monitoring provides the possibility for better process control capabilities. It is built on a modular concept. This helps to focus on certain machine

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[49] http://151.183.219.211/
[50] TBA/21. The system that makes the difference.
[51] http://151.183.219.211/

functions and improves performance of specific modules. Also some of the modules are common for other machine systems. In an ideal world all customers in the Top Shelf User Segment would use the TBA/21.

3.2.2 TBA/22[52]

TBA/22 is a high-speed packaging system that creates an entirely new standard of capacity in the aseptic packaging of liquid food. It has been designed with the specific purpose of reducing costs and raising productivity for the producers. It provides a highly competitive solution for achieving lower operating costs, higher productivity and greater space efficiency.

Figure 8: *TBA/22 line*[53]

Savings on packaging operation costs are achieved through lower capital costs, lower utility consumption, lower operator cost and improved space utilisation and less waste per package. It has a capacity of 20,000 packages per hour. The higher capacity has been achieved by increasing the speed of the filling machine and designing innovative solutions. Several improvements have also been made in order to increase the user-friendliness for the operators and service technicians. The TBA/22 is suited for the Super User segment since it is able to satisfy its drivers.

3.2.3 TBA/8[54] and TBA/19[55]

The main difference between TBA/8 and TBA/19 is the sizes they produce. TBA/8 produces family packages and the TBA/19 portion packages. They are the forerunners to the TBA/21 and TBA/22. Nevertheless, the filling machine is well known for its reliability, safety and not least its aseptic performance. When they were new, they were the low-cost, high-performing solutions for both new and established customers producing family packages and portion packages.

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[52] TBA/22. For TBA 200 B and TBA 250.
[53] http://151.183.219.211/
[54] TBA/8. A reliable and safe aseptic system (Brochure).
[55] TBA/19. The Power in Aseptic Portion Packaging (Brochure).

Figure 9: *TBA/8 line*[56]   **Figure 10**: *TBA/19 line*[57]

They can produce different volumes and packages and have a capacity of 6000 packages per hour. The primary target market consists of Users, small or medium sized customers. During the history of the machine, continuous improvements have been applied, new technology has added functionality and also the lifetime of key components has been improved.

Today there are co-packers with a need for flexibility that uses several TBA/8 or TBA/19 instead of a TBA/21, which gives even more flexibility than the TBA/21. Customers who are investing in more TBA/8 or TBA/19 must be less cost sensitive comparing to those who invest in only one TBA/21.

3.2.4 Figures concerning the lines

There were about 210 TBA/21 and 30 TBA/22 lines installed around the world in the year 2001 and these figures are constantly increasing. At the same time there were about 1.020 TBA/19 and 2.040 TBA/8 lines. In addition, there were also about 2.800 older discontinued lines, which are to be divested until 2006. For TBA/8, TBA/19, TBA/21 and TBA/22 the delivered capacity is today distributed as follows; 19%, 36%, 21% and 25 % respectively. In 2005 this ratio is estimated to 7%, 10%, 33% and 50% respectively. Eastern Europe, South America, and Asia are the fastest growing markets for Carton Ambient. However, Western Europe, North America and Japan remain the markets accounting for the largest share of revenues.

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[56] http://151.183.219.211/
[57] http://151.183.219.211/

3.2.4 A comparison between the lines

The filling machine's properties are illustrated in the below matrix, which illustrates the TBA lines' capacity and operating cost.
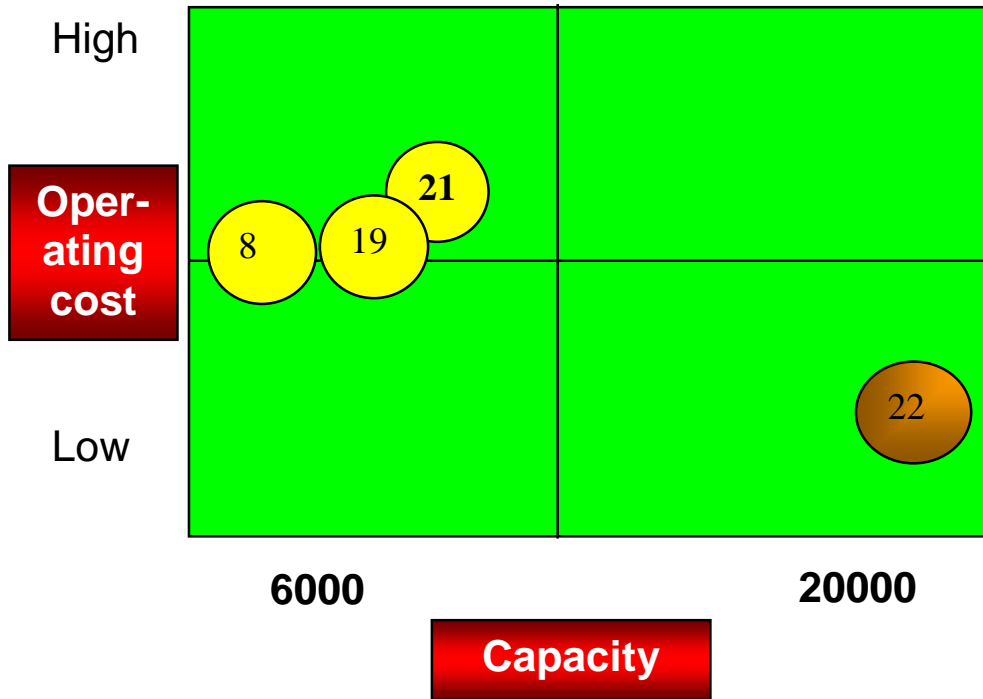
Figure 11: *Comparison of lines*

3.2.5 A complete packaging line

In addition to the filling machine a complete range of downstream equipment is available[58]. Different alternatives, in terms of equipment and distribution units are offered giving the possibility of tailor made packaging lines according to distribution requirements. A complete line consists of several equipment parts. In this particular case the composition is; filling machine, date printer, straw applicator, distributor, cardboard packer, tray shrink and pallet system. This can of course vary with the customers' particular needs.
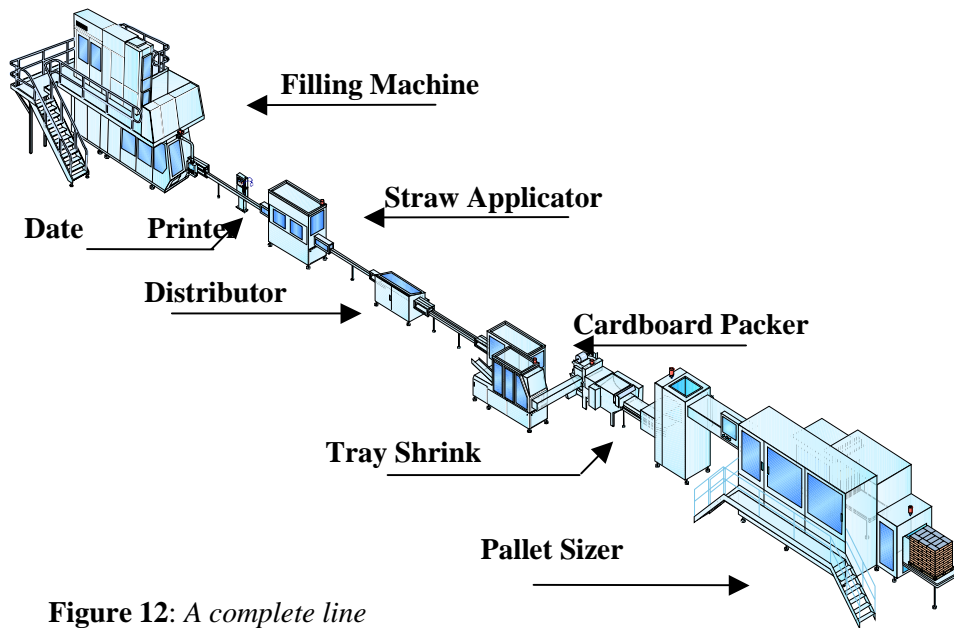
Figure 12: *A complete line*

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4 Segmentation at Carton Ambient

4.1 Why segmentation?

Carton Ambient has observed certain similarities among the needs of their global customer base. Since two years, they are working with a segmentation model that tries to globally cluster their existing customers based on two variables with connection to manufacturing. This is mainly an effort to quickly reverse the "one-size-fits-all" approach.

The model consists of four types of customers, Emerging Users, Super Users, Top-Shelf Users and Users. Emerging Users are found in emerging markets whereas the other two are found in advanced and developing markets. Although a customer usually belongs to one segment there are cases where Carton Ambient treats customers as if belonging to a combination of segments.

The customer segmentation was, when it first was developed, a key tool to identify and meet customer needs. Furthermore, it would ensure the right priorities, targets and also streamline the development projects for packaging lines. It would also help to visualize which customers Carton Ambient makes money from and also give incitements to end working with unprofitable customers.

4.2 The present segmentation model

All segments can be illustrated in a two-dimensional matrix with Annual Production[59] and Packed Product Margin for the customer on the two axes. The margin is divided into three levels, commodity, VFM[60] and premium products where commodity products have the lowest and premium products the highest margins. Generally product types are classified as
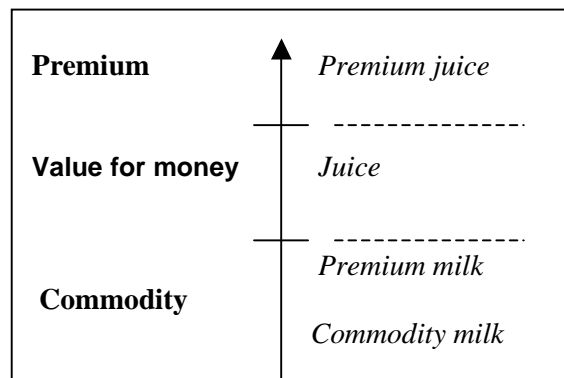
Figure 13: *Products Margins*

Furthermore, a customer's volume is high if more than 100 million packages are bought per year.

The Emerging Users who still only have "pocket money economy" is the segment with the lowest margins. They do not only have low margins but also low production and will not be further considered in this study.

This segmentation model is the basis for the Product Family Plan[61]. The plan concerns which attributes Carton Ambient needs to deliver to each segment within five years. The plan is made more detailed with several product plans that are translations of required attributes into concrete product offerings and the configurations of these over time. These results in a packaging line portfolio strategy and a product cycle plan.
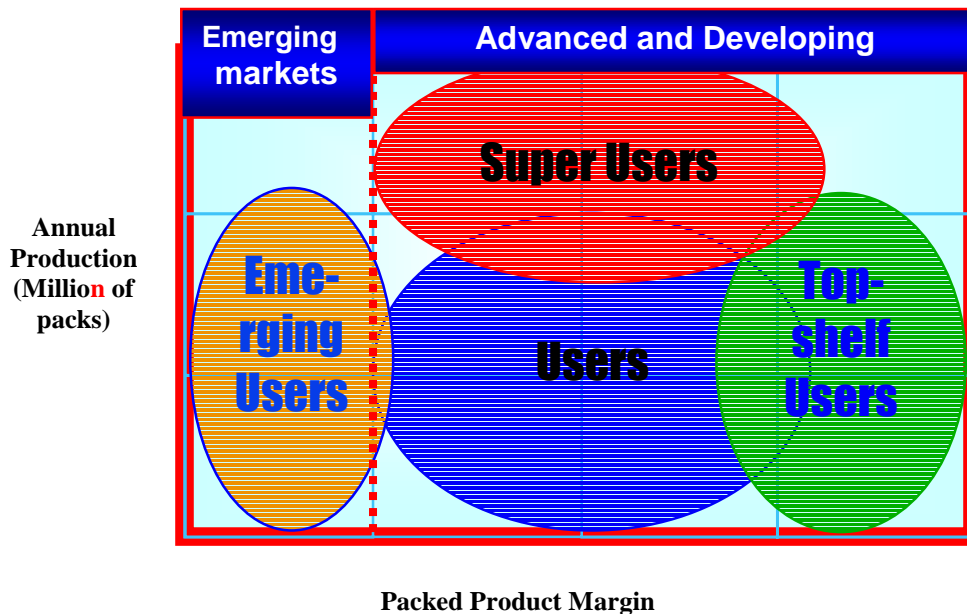
Figure 14: *The old segmentation model*

4.2.1 The User segment

The Users have low margins[62] at the same time as their annual production is low. For Carton Ambient this segment constitutes 55 % of the customers and 20 % of packages sold. It has fragmented needs, but entire markets may consist of only Users. Main key drivers for these customers are low investment, simplicity and robustness. Operational cost and differentiation are other important factors. They sometimes have

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[61] Customer Segmentation, *A part of the total process, pp.4*
[62] Not as low as for the Emerging Users.

space limitations to handle and to keep them satisfied Carton Ambient offers them low capital costs through simple and basic equipment.

4.2.2 The Super User segment

The Super Users also have low margins but higher material consumption since they have a high annual production. For Carton Ambient this segment constitutes 25 % of the customers and 70 % of packages sold. Apparently, this group is the bulk of the business. Key drivers for these customers are operational costs, volume and productivity. Similar to the Users, the Super Users often have space limitations.

4.2.3 The Top Shelf User segment

The Top-Shelf Users have high margins but low annual production. For Carton Ambient this segment constitutes 20 % of the customers and 10 % of packages sold. Despite its size this group is of high importance. This is where innovation and differentiation are deployed and driven. Key drivers for these customers are quality, innovation and differentiation, which are provided by Carton Ambient through flexible lines that can be changed relatively quickly.

4.2.4 Summary of the lines related to the three segments[63]

Annual Production (Millions of packs)

Packed Product Margin
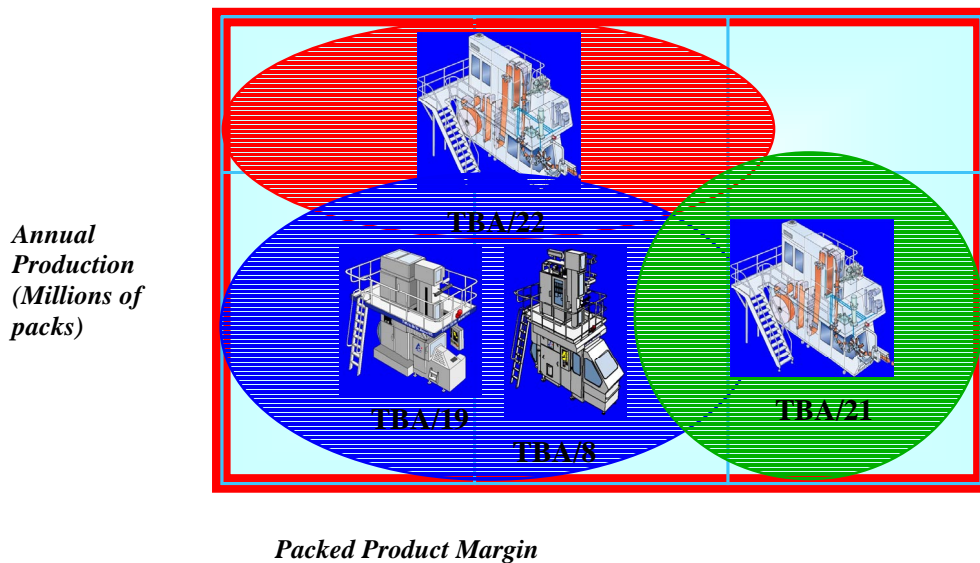
Figure 15: *The Filling machines for each segment*

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[63] Packaging line Strategy (Powerpoint), (2001), Packaging Line Positioning Primary Offerings pp. 4.

4.3 Where is Tetra Pak Cartoon Ambient today?

Carton Ambient's Product Management department consists of five areas, Packages, Packaging lines, Package performance, Business Control & Commercial Performance and Package Appearance. Understanding customer needs and requirements and translating these into development actions that can enhance the competitiveness of their product portfolio is a key task for the Product Management department.

Product Management has access to business vision, business strategy, strategic objectives, customer surveys, competitor analysis and external & internal performance data. Since they cannot interact directly with all customers, an important tool in order to achieve this is to have clear and relevant customer segmentation, where they simplify the world. This allows them to focus on what is important.

The group within Carton Ambient responsible for managing the portfolio of Packaging Lines consists of four people. Three of them are based in Modena and one in Lund. This group has to capture customer needs for packaging lines of product development. Data from the customers in the 15 most important countries are at this moment collected as a step to get a more comprehensive picture of the customers. Together the companies in this database represent 50 % of Carton Ambient's Volume.

To better understand the three segments a survey has been conducted. Representative companies with good relations with Carton Ambient have been chosen from the three segments to answer questions on different areas of investigation. The areas are sales portfolio, stock level, equipment, investments and competitors.

Another survey, called Link 88 has been conducted. This survey concerns general characteristics and performance of 15 large customers within the Super User and Top-Shelf User segments. The collected data was for instance used to derive characteristic values for simplicity of products[64] and Personnel per millions of packages. The most common performance measurements were waste cost per unit, line efficiency and delivery accuracy. The customers also had to grade the four parameters; quality, cost, supply and legislation according to their satisfaction with Carton Ambient.

Carton Ambient is for the moment losing market shares to their competitors within the carton area and one reason for this is the lack of knowledge about customers. One attempt to acquire this knowledge is through Value Investigation 2002. This is an investigation carried out to get a full understanding of what value the current systems bring to the customers. It tries to map the customers worldwide and involves 39 market companies. It identifies customer priorities when investing in new equipment and tries to find out why they still invest in new Carton Ambient lines, when there are competing alternatives on the market. To understand a customer's total need is of course difficult, but to work closer with existing customers will minimize the risk of them switching to competitors. This is why surveys like value investigation 2002 are conducted.

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[64] Millions of packages / Stock keeping Unit (Mpacks / SKU's).

4.4 Need for a better segmentation model

To realize the development of optimised offerings to the different segments, there is a need to get a deeper insight into the values different customers seek. Also, the values current Packaging Lines bring to different segments needs to be considered. To work with proxy customers who fit the segment profiles provides input to product strategy and product planning. Carton Ambient wants to know to whom they are selling current packaging lines, and why. The model therefore needs to be more distinctive.

Further, they need to understand the attribute gaps to be filled in, in order to sharpen their offerings and to quantify the segments to determine their importance. This will contribute to the understanding of generic requirements of attributes. The existing segments in the macro level will be divided into sub-segments. In the micro level these new sub segments will be visualised and they need to be quantified with for example package sales and number of customers. There is also a need for a qualitative input on needs and drivers for sub-segment.

4.5 Constraints during the work with Tetra Pak as a case company

Within Tetra Pak, only customers belonging to the Carton Ambient business area are treated. Among them, this thesis will only include three of the four customer segments. The Emerging User segment will not be studied.

Within Carton Ambient there are a lot of different packages that are categorised in different product families, e.g. TBA, TPA and TCA[65]. Among the packages it is only TBA and TPA that are included in the segmentation. TBA and TPA are the dominant packages in advanced and developing markets. The segmentation concerns the first level of customers and their end users are only treated with limited scope. It is primarily the lines that are in focus during the segmentation.

All customers cannot be visited. The analysis is restricted to 17 customers. Representative customers, from the different segments, will be selected for the research.

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[65] These are illustrated in Figure 5, pp. 33

Part III

In chapter five theories that are used as a base for solving the problem is presented. In the following chapter, interdisciplinary thoughts are discussed. This chapter combines earlier theories and create out of these new theories that form the base for the further parts.
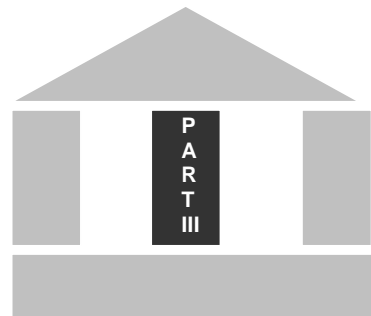
5 Theory

5.1 Background of strategy and authors thoughts

Strategy is a term that comes from the Greek *strategia*, meaning "generalship". In the military, strategy often refers to manoeuvring troops into position before the enemy is actually engaged. The concept of strategy has been borrowed from the military and adapted for use in business. In business, like in the military, strategy bridges the gap between policy and tactics.

5.1.1 Liddell Hart[66]

Lidell Hart examined wars and battles from the time of the ancient Greeks through World War II. He concluded that the earlier definition of strategy as "the art of the employment of battles as a means to gain the object of war" was seriously flawed. That is because this view of strategy intrudes upon policy and makes battle the only means of achieving strategic ends. Concluding his review of wars, policy, strategy and tactics, he arrives at another definition of strategy: "the art of distributing and applying military means to fulfil the ends of policy".

5.1.2 George Steiner[67]

George Steiner notes that strategy entered the management literature as a way of referring to what one did to counter a competitor's actual or predicted moves. Steiner also points out in his notes that there is little agreement to the meaning of strategy in the business world. Some of the definitions in use to which Steiner pointed included the following:

- Strategy is that which top management does that is of great importance to the organization.

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[66] Hart B. H.L., (1967), Strategy, Basic Books.
[67] Steiner G., (1979), *St*rategic Planning, Free Press.

- Strategy refers to basic directional decisions, that is, to purposes and missions.
- Strategy consists of the important actions necessary to realize these directions.
- Strategy answers the question: What should the organization be doing?
- Strategy also answers the questions: What are the ends we seek and how should we achieve them?

5.1.3 Henry Mintzberg[68]

Henry Mintzberg points out that people use "strategy" in several different ways; the most common being these four:

- Strategy is a plan or a "how", a means of getting from here to there.
- Strategy is a pattern in actions over time; for example, a company that regularly markets very expensive products is using a "high end" strategy.
- Strategy is position; that is, it reflects decisions to offer particular products or services in particular markets.
- Strategy is perspective, that is, vision and direction.

He also argues that strategy emerges over time as intentions collide with and accommodate a changing reality. Thus, one might start with a perspective and conclude that it calls for a certain position that is to be achieved by way of a carefully crafted plan, with the eventual outcome. Strategy is reflected in a pattern of decisions and actions over time.

5.1.4 Kenneth Andrews[69]

Kenneth Andrews did not agree with Mintzberg when he presented this lengthy definition of strategy. "Corporate strategy is the pattern of decisions in a company that determines and reveals its objectives, purposes, or goals, produces the principal policies and plans for achieving those goals, and defines the range of business the company is to pursue, the kind of economic and human organization it is or intends to be, and the nature of the economic and non-economic contribution it intends to make to its shareholders, employees, customers, and communities". Andrew's definition obviously anticipates Mintzberg's attention to pattern, plan, and perspective.

Andrews also draws a distinction between "corporate strategy," which determines the businesses in which a company will compete, and "business strategy," which defines the basis of competition for a given business. Thus, he also anticipated "position" as a form of strategy.

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[68] Mintzberg H., (1994), The Rise and Fall of Strategic Planning.
[69] Andrews K., (1980), The Concept of Corporate Strategy 2nd edition.

5.1.5 Benjamin Tregoe and John Zimmerman[70]

At the same time Benjamin Tregoe and John Zimmerman, defined strategy as "the framework, which guides those choices that determine the nature and direction of an organization." Ultimately, this boils down to selecting products or services to offer and the markets in which to offer them. They urge executives to base these decisions on a single "driving force" of the business. Although there are nine possible driving forces, only one can serve as the basis for strategy for a given business. The nine possible forces are

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[70] Tregoe B., and Zimmerman J., (1980), Top Management Strategy.

- Products offered
- Production capability
- Natural resources
- Market needs
- Method of sale
- Size/growth
- Technology
- Method of distribution
- Return/profit

5.1.6 Michel Robert[71]

Michel Roberts takes a similar view of strategy and argues that the real issues are "strategic management" and "thinking strategically." For Robert, this results in decisions pertaining to four factors:

- Products and services
- Market segments
- Geographic areas
- Customers

Like Tregoe and Zimmerman, Robert claims that decisions about which products and services to offer, the customers to be served and the market segments in which to operate are strategic decisions. The geographic areas of operations should be made on the basis of a single "driving force". Again, like Tregoe and Zimmerman, Robert claims that several possible driving forces exist but only one can be the basis for strategy. The 10 driving forces cited by Robert are:

- Product-service
- User-customer
- Market type
- Production capacity-capability
- Technology
- Sales-marketing method
- Distribution method
- Natural resources
- Size/growth
- Return/profit

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[71] Robert M., (1993), "*Strategy: Pure and Simple*", McGraw-Hill.

5.1.7 Michael Porter[72]

Michael Porter argued 1996 that competitive strategy is "about being different." He adds, "It means deliberately choosing a different set of activities to deliver a unique mix of value". In short, Porter argues that strategy is about competitive position, about differentiating yourself in the eyes of the customer, about adding value through a mix of activities different from those used by competitors. In his earlier book, Porter defined competitive strategy as "a combination of the ends (goals) for which the firm is striving and the means by which it is seeking to get there". Thus, Porter seems to embrace strategy as both plan and position.

5.1.8 Fred Nickols[73]

Fred Nichols talks about three basic forms of strategy in the business world. These are strategy or "strategy in general", corporate strategy and competitive strategy. The many definitions of strategy found in the management literature fall into one of four categories: plan, pattern, position, and perspective, which also Mintzberg mentioned.

As a practical matter, strategy evolves over time as intentions accommodate reality. Thus, one starts with a given perspective, concludes that it calls for a certain position, and sets about achieving it by way of a carefully crafted plan. Over time, things change. A pattern of decisions and actions marks movement from starting point to goal. This pattern of decisions and actions is called "realized" or "emergent" strategy. Since Strategies are changed companies' needs, behaviours, and other characteristics are also changed.

5.2 Porter's Generic Strategies[74]

The three segments in Carton Ambient's segmentation model seem, to a large extent, to reflect Porter's generic strategies. This chapter will explain the basis of the strategies' characteristics, requirements and risks. In the analysis[75] the segments will be compared to the strategies where resemblances are described and discussed.

According to Porter[76] there are only three strategies that a company can consider to use. If the primary determinant of a firm's profitability is the attractiveness of the industry in which it operates, an important secondary determinant is its position within that industry. Even though an industry may have below-average profitability, a firm that is optimally positioned can generate superior returns.

A firm positions itself by leveraging its strengths. A firm's strengths ultimately fall under one of two headings: cost advantage or differentiation. These strengths can in

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[72] Porter M., (1996), *"What is Strategy?",* Harvard Business Review.

[73] Nickols F., (2000) Three Forms of Strategy; General, Corporate and Competitive Strategy.

[74] Grant R.M., (1998), Contemporary Strategy Analysis, pp. 189-192.

[75] www.marketingteacher.com/Lessons/lesson_generic_strategies.htm

[76] Michael E. Porter, the professor of business administration at the Harvard Business School, wrote the landmark 1980 work, "Competitive Strategy: Techniques for Analysing Industries and Competitors.

either a broad or a narrow scope result in three generic strategies: cost leadership, differentiation and focus. These strategies are applied at the business unit level. They are called generic strategies because they are not industry dependent but are generic in all industries. The following figure illustrates Porter's generic strategies:

Porter's generic Strategies

Target Scope	Advantage	
	Low cost	Product Uniqueness
Broad (Industry Wide)	Cost Leadership Strategy	Differentiation Strategy
Narrow (Market Segment)	Focus Strategy (low cost)	Focus strategy (differentiation)

Figure 16: *Porter's generic strategies*

5.2.1 Cost Leadership Strategy

This generic strategy calls for being the low cost producer in an industry. The company sells its products either at average industry prices to earn a profit higher than that of rivals, or below the average industry prices to gain market share. In the event of a price war, the company can maintain some profitability while the competition suffers losses. Even without a price war, as the industry matures and prices decline, the companies that can produce at a lower cost will remain profitable for a longer period of time. The cost leadership strategy usually targets a broad market sometimes consisting of many countries.

Some ways for companies to acquire cost advantages are by improving process efficiencies, gaining unique access to a large source of lower cost materials, making

optimal outsourcing and vertical integration decisions, or avoiding some costs altogether. If competing companies are unable to lower their costs by a similar amount, the company may be able to sustain a competitive advantage based on cost leadership.

Companies that succeed in cost leadership often have the following internal strengths:

- Access to the capital required making a significant investment in production assets; this investment represents a barrier to entry that many firms may not overcome.
- Skills in designing products for efficient manufacturing, for example, having a small component count to shorten the assembly process.
- High level of expertise in manufacturing process engineering.
- Efficient distribution channels.

Each generic strategy has its risks, including this one. For example, other companies may be able to lower their costs as well. As technology improves, the competition may be able to leapfrog the production capabilities, thus eliminating the competitive advantage. Additionally, several companies following a focus strategy and targeting various narrow markets may be able to achieve an even lower cost within their segments and as a group gain significant market share.

5.2.2 Differentiation Strategy

A differentiation strategy calls for the development of a product or service that offers unique attributes valued by customers. Customers may perceive the product to be better than or different from the products of the competitors. The value added by the uniqueness of the product may allow the company to charge a premium price for it. The company hopes that the higher price will more than cover the extra costs incurred in offering the unique product.

Because of the product's unique attributes, if suppliers increase prices the company may be able to pass along the costs to its customers who cannot easily find substitute products. Companies that succeed in a differentiation strategy often have the following internal strengths:

- Access to leading scientific research.
- Highly skilled and creative product development team.
- Strong sales team with the ability to successfully communicate the perceived strengths of the product.
- Corporate reputation for quality and innovation.

The risks associated with a differentiation strategy include imitation by competitors and changes in customer tastes. Additionally, various companies pursuing focus strategies may be able to achieve even greater differentiation in their market segments.

5.2.3 Focus Strategy

The focus strategy concentrates on a narrow segment and within that segment attempts to achieve either a cost advantage or differentiation. The premise is that the needs of the constraint group can be better served by focusing entirely on it. A company using a focus strategy often enjoys a high degree of customer loyalty, and this entrenched loyalty discourages other firms from competing directly.

The focused strategy can be both cost leader and differentiation but limited to the focused area. Because of their narrow market focus, companies pursuing a focus strategy have lower volumes and therefore less bargaining power with their suppliers. However, companies pursuing a differentiation-focused strategy may be able to pass higher costs on to customers since close substitute products do not exist.

Companies that succeed in a focus strategy are able to tailor a broad range of product development strengths to a relatively narrow market segment that they know well. Some risks of focus strategies include imitation and changes in the target segments. Furthermore, it may be fairly easy for a broad-market cost leader to adapt its product in order to compete directly. Finally, other focusing companies may be able to carve out sub segments that they serve better.

5.2.4 A Combination of Generic Strategies - Stuck in the Middle

These generic strategies are not necessarily compatible with one another. If a company attempts to achieve an advantage on all fronts, in this attempt it may achieve no advantage at all. For example, if a company differentiates itself by supplying high quality products, it risks undermining that quality if it seeks to become a cost leader. Even if the quality did not suffer, the company would risk projecting a confusing image.

For this reason, a company must select only one of these three generic strategies. Otherwise, with more than one single generic strategy the company will be "stuck in the middle" and will not achieve a competitive advantage. Companies that are able to succeed at multiple strategies often do so by creating separate business units for each strategy. By separating the strategies into different units having different policies and even different cultures, a corporation is less likely to become "stuck".

However, there exists a viewpoint that a single generic strategy is not always best because within the same product customers often seek multi-dimensional satisfactions such as a combination of quality, style, convenience, and price. There have been cases in which high quality producers faithfully followed a single strategy and then suffered greatly when another company entered the market with a lower-quality product that better met the overall needs of the customers.

5.2.5 Competitive Dynamics

Jeffrey Williams[77] has identified key strategic features of industries that affect the competitive dynamics[78]. In a sense they remind of Porter's generic strategies but they are different enough to be described alone. These are; the rate of new product introduction, duration of product life cycles, the rate of decline of unit costs, geographical scope and the stability of supplier-customer relations. He has identified three industry types; the local monopoly markets, Traditional industrial markets and Schumpeterian markets.

5.2.5.1 Local monopoly

The local monopoly markets sell specialized products to relatively few customers and use highly specialized recourses and capabilities to meet highly specific customer requirements. Product differentiation is normally high and the customers are resistant to standardisation. Elasticity of demand is low, reflecting customers' preference for speciality products. High quality, low volume production with lack of competition encourages craft based production that is vertically integrated. This creates a use of highly skilled labour and places little emphasis on attaining economies of scale or experience.

5.2.5.2 Traditional industrial markets

The traditional industrial markets are those large and not heavily segmented markets where the rate of product innovation is modest. Competition is dominated by economies of scale and brand leadership. Market domination is seldom achieved. Products are close substitutes to each other and market share responds both to price and advertising. For the strategy to be effective, the organisation must emphasize efficiency through control and competence through experience and specialisation. Perfection is reached through the elimination of problems and defects.

5.2.5.3 Schumpeterian markets

Schumpeterian markets are driven by creative destruction. New products constantly displace established products. At the same time, innovations are quickly imitated, and speed in exploiting new products is essential. Hence, success depends not just on product innovations, but also on the manufacturing and marketing capabilities required to move down the experience curve ahead of competitors. Joseph Schumpeter[79] made a number of important contributions to twentieth century thought on this subject[80]. He was the first to recognize and analyse the dynamic interaction between competition and industry structure[81]. Furthermore, he focused on innovation

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[77]Jeffrey R. Williams is a professor of digital strategy at Carnegie Mellon University Business School, where he is the school's highest-rated speaker and adviser to the school's executive education programs.

[78] Grant R.M., (1998), Contemporary Strategy Analysis, pp. 260-262.

[79] Joseph A. Schumpeter, (1883-1950), was one of the most famous economists of the last century. He had ambitions in academics, politics and business but none of these could really satisfy him. He published his first papers in the age of 22. He was one of the youngest doctor laureates in Austria, the youngest private docent and the youngest professor in Austria.

[80]www.geocities.com/bcschipper/schumpcv.html

[81] Grant R.M., (1998), Contemporary Strategy Analysis, pp. 71.

as the central component of competition and the driving force behind industry evolution.

6 Analytical Theory

6.1 Introduction

The term dynamic seems to be an expression exercised within many areas. Computer science use the term frequently. Programmers make a distinction between static and dynamic variables. Dynamic variables are not expressed in source code; instead they are created through an explicit order in the access code[82]. Within the area of business dynamics it is a word that is well applied. It seems like every time there is a lack of a good explanation; dynamic is the word to use. However, the term is in general interpreted and used to explain forces and movements within a market, resulting from the environment.

The intention with this chapter is to explain and combine theories that unite segmentation and dynamics in an accurate way. The discussion originates from Newton's laws of motion, which is applied on segmentation.

6.2 Dynamic in general

Dynamics is the branch of mechanics, which deals with the motion of bodies under the action of forces[83]. The study of dynamics is directed towards the understanding and description of the various quantities involved in the motion of bodies. It usually follows the study of static, which deals with the action of forces on bodies at rest. Historically, dynamics is a relatively recent subject when compared to static.

Galileo, who made careful observations concerning bodies in free fall, created the beginning of a rational understanding of dynamics motion on an inclined plane, and motion of the pendulum. He was continually under severe criticism for refusing to accept the established beliefs of his day. Isaac Newton, guided by Galileo's work was published in the first edition of his *Principia*, which is generally recognized as one of the greatest of all recorded contributions to knowledge.

6.3 Applying dynamics to segmentation

For a company to make profit it must create value for customers, so a company must understand its customers. Second, in creating value, the company must be aware of how to create business relations with its suppliers. Furthermore, a company must understand competition. The ability to generate profitability from value creating activities depends on the intensity of the competition. Thus, the core of the company's business environment is formed by its relationships with customers, suppliers and competitors. This is the company's industry environment.

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[82] For further information see www.ida.liu.se/~TDDB21/om_accesstyper.pdf
[83] J.L. Meriam & L.G. Kraige, Engineering Mechanics Dynamics, 1998, pp. 1.

The business environment consists of all the external influences that impact on a company's decisions and performance. Influences can be clustered into demographic, social, technological, economic and governmental factors[84]. These factors are often referred to as the firm's macro environment. The crucial part of the discussion is to understand how these more general environmental factors impact on the company's industry environment. By focusing on the industry environment a company can define which of the macro factors that are important and which are not. The appearance of dynamics within an industry or market arises from changes in the environment.

A segmentation of existing customers, which aims to follow the segmented customers, must be performed according to some requirements. If the model constitutes a geometric space or if it has more dimensions, then it must be dynamic. Dynamic in this case implies that when a customer's situation changes over time, it will be illustrated in the model. The changed position will not just illustrate a movement but will do it in a way that let the company, performing the segmentation, use the information.

In order to do this the dynamic segmentation variables must be chosen in a way that it gives rise to useful and realistic scenarios. Dynamic variables will be in accordance with the laws of mechanical dynamics where the most important are the three laws put forth by Newton. Those laws explain why objects move as they do and have become known as Newton's three laws of motion. In this chapter they will be further described and connected to industrial market segmentation. The metaphor starts out from the ideas that segmentation needs dynamic variables when the purpose is to follow a company's development. The three laws are stated and followed by a discussion concerning how they can be used within segmentation.

6.3.1 Newton's first law of motion

An object at rest tends to stay at rest and an object in motion tends to stay in motion with the same speed and in the same direction[85].

6.3.1.1 Changing markets
Companies act in different kinds of markets, and can be affected in two major manners. First, there are occasions when the macro environment forces the company to change. It can depend on a changed legislation or level of competition etc. Secondly, there are circumstances that invite companies to change their direction of business. A company can identify a gap in the market that they intend to fill.

In a monopoly the only company is not affected in the same way as in competitive markets. They are not forced to make changes and that is why they seldom do. This is why monopoly markets can be seen as static. Unlike in a monopoly, a company in a market with more than one company must adapt to new situations and overcome arisen obstacles.

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[84] Grant R.M., (1998), Contemporary Strategy Analysis, pp. 52.
[85] www.glenbrook.k12.il.us/gbssci/phys/Class/newtlaws/u2l3a.html

One definition of the term dynamic is that "the environment is constantly changing"[86]. The company does not have to do anything for the environment to change. A dynamic environment consists of changing surroundings in which the company navigates. Most markets are under constant change, which of course affects the companies acting in them. The market influences companies and their strategy must continuously be reconsidered. Different actors shape the environment and the forces in a market. The competition is constantly shifting and new players replace incumbents. On the other hand it is argued that it is the customers who give rise to the competition through their purchasing power.

Depending on the market a company is acting in, customers have different influences on how the business will continue. In some industries, companies have the power to decide what the customer should buy, while in others it is the customer that notifies the company what to produce. Even a changed legislation or other political decisions can influence the market and be the cause for different forces. It is often the competition that decides what volume, margin, need for flexibility etc. the company will have.

Consequently, the unbalanced force within segmentation is the market that can force the company to move along one of the axes and what causes the force is competition. As Schumpeter argued these forces originates from innovations. Innovation represents a "perennial gale of creative destruction" through which favourable industry structures, monopoly in particular, contain the seeds of their own destruction. Creative destruction is the reason why it is not suitable to use current industry structures as a reliable guide to the nature of competition and industry performance in the future. The relevant consideration is the speed of structural change in the industry. In this dynamic view companies will never remain unchanged. Their properties and behaviour will continuously change.

The forces to change are of course most manifested on Schumpeterian markets[87] were the rivalry normally is more apparent. However, industries according to their competition may move from one category to another, through for instance new process technology[88]. There are forces that drive the development of a market and the companies it consists of, towards change. The consequences of the change can vary. It may arise internally like technological development or externally like changed legislation. The developments of mass markets and deregulations have caused many local monopoly industries to become traditional industries. Some industries may be hybrids where products consist of components from markets with different level of competition.

When a company increases its volume this is either to survive market forces or to enable the company to increase its volume. It has to be assumed that all companies use opportunities on the market to improve their situation and that they are allowed to

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[86] http://ai.eecs.umich.edu/cogarch5/menu/envirs/dynamic
[87] See Chapter 5.2.5.3
[88] Grant R., (1998), Contemporary Strategy Analysis, p. 261.

do it. However, there can be cases where companies are not allowed to act freely since the competition must be supported by the authorities. When such actions are undertaken the dynamics of the market is immediately impeded.

A company's movement in a market is not frictionless and there are always forces that work against movement. Companies that are rivals, try to destroy each other's benefits. Although this is most obvious on Schumpeterian markets it exists in more calm markets too. Besides, there is a lot of other friction to development, e.g. problems with combining differentiation and economies of scale[89] or limited demand with maturity as a consequence. The access to qualified employees is another factor[90]. The level of growth required for success is stunted by the inability to find qualified employees.

Nevertheless, the dynamic laws are still applicable since they say nothing about bodies' movements that cannot be disturbed by friction. Similar to a body that is exposed to friction, also a market whose development has gone on for some time is exposed to new counterbalancing forces that prevent the company's movement, or actual development. The demand for a product is not unlimited and sooner or later the offering reach the level of demand where the volume stagnates. Moreover other obstacles prevent the customers' volume from growing infinitively big, e.g. exponentially increasing taxes and new competition.

Competition is a dynamic process in which a firm's competitive advantage is constantly being eroded through imitation and innovation. Porter argues that it is the key to competitive advantage over the long haul. "Firms create and sustain competitive advantage because of the capacity to continuously improve, innovate and upgrade their competitive advantages throughout the value chain to more sophisticated types and employing higher levels of skills and technology"[91].

6.3.1.2 CEM contributes to customers development

Companies are in themselves dynamic and becoming static can cause their downfall. *Dynamic recourse fit[92]* is a process through which the strategic work not only utilizes a firm's recourses but also augments them through the creation of skills and knowledge that are the products of experience. The experience can in turn result from effective CRM[93] that has received a lot of attention over recent years. The idea at the core of CRM can be stated in the following way: Every time a company and a customer interact, the company learns something about the customer[94]. By capturing, sharing, analysing and acting upon this information, companies can better manage individual customer profitability.

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[89] See chapter 5.2.4 Stuck in the middle.
[90] http://washington.bizjournals.com/washington/stories/2001/03/12/smallb1.html
[91] Grant R., (1998), Contemporary Strategy Analysis, p. 135.
[92] A concept created by Hiroyuki Itami.
[93] Customer Relationship Management.
[94] http://www.crm2day.com/events/highlights/highlights0012.shtml

Companies that continuously develop from experience gives rise to changes in their environment. If only the company and not the customers develop, this would not affect the segmentation of existing customers. New thoughts on this subject; CEM[95], have recently aroused interest by Peter Gurney[96]. CEM argue that every time a company and a customer interact, the customer learns something about the company. Depending on what is learnt from each experience, customers may alter their behaviour in ways that affect their individual profitability. Thus, by managing these experiences, companies can orchestrate more profitable relationships with their customers[97].

The reason why CEM has got a foothold is the weaknesses in CRM. The idea of a "relationship" with customers seems hollow: CRM is very good at receiving, but not very good at giving. It asks customers to provide access and information without telling them what they will get in return. It pigeonholes customers based on past actions without informing them how to build a more advantageous profile. It prompts customers to become more valuable to the company without promising greater value from the company.

Furthermore, while CRM is fairly effective at measuring its own success, it does not provide much information about its failures. It can record when customers respond positively to its automated prompting and prodding, but it does not give much insight when customers do not respond in the predicted way. CRM is thus unable to determine whether failures are the result of faulty assumptions, incorrect information or poor execution. It is also unable to tell how these "failed" interactions affect the customer relationship; it treats all failures as neutral, when in fact the fabric of the relationship may have been weakened or undermined by a poorly executed service encounter.

CEM's strengths lie in precisely the areas where CRM is weak. By focusing on the experiences of customers and how those experiences affect behaviour, CEM examines both the quality of the company's execution and the efficiency of the result. It aligns customer needs with the company's ability to fulfil those needs, leading to business relationships that are mutually beneficial and that both parties - company and customer - are motivated to improve.

No matter if CRM or CEM is the way to go it is obvious that companies that interact through relations have influence on each other. They learn from each other and actually take advantage of each other. A company that will segment its existing customers must pay attention to the fact that the company itself continuously influence the customers. A dynamic market that will be segmented requires a dynamic method for segmentation. Otherwise companies might only be positioned, and it will be impossible to follow their development and the whole markets development.

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[95] Customer Experience Management.
[96] Managing Director of Kinesis.
[97] www.crm2day.com/events/highlights/highlights0012.shtml

6.3.2 Newton's second law of motion

The acceleration of an object as produced by a net force is directly proportional to the magnitude of the net force, in the same direction as the net force, and inversely proportional to the mass of the object[98].

6.3.2.1 Inversely proportional reaction

The market force that affects a company can of course be of different size. The market's influence on the company but also the company's possibility to react is somehow inversely proportional to the size of the company. Small companies are often more vulnerable to changed circumstances but can at the same time change its behaviour easier than a large stiff-legged company. The possibility for a large company to change strategy and direction of the business is normally limited. A smaller company is able to adapt to what the environment requires but is at the same time more easily influenced.

The force immediately starts to affect the company when the circumstances are changed. The company cannot store the influence and implement the changes later. This is why a company's position or movement in a segmentation model must reflect today's decisions. It is of little use to let the company's position be caused by decisions taken in the past, especially not, if the objective is to follow the company's development. The position in the segmentation model must reflect the situation of today.

6.3.2.1 Movement in many directions because of dependent variables

A force that moves an object in one direction does not give rise to a movement in any other direction. A market force that influences a company to move in a space of segmentation will just move it in one direction or force the company along one independent variable. If the increase or decrease of one variable also gives rise to the change of another variable they are dependent. Dependency in this case means that the change in one direction is the result of the change in another and that they somehow reflect the same fact. It can be illustrated with a simple example.

In a two-dimensional matrix a company is positioned by the measures on two variables. Those two measures result in an area that defines the company. What area that defines the company depends on whether the variables are dependent or inversely dependent. When a company changes its value for one of variable X or Y, and the change results in a change of the other variable, they are dependent. It will cause the scenario illustrated in figure 17. When it changes it will follow the curve between position 1 and 2.

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[98]www.glenbrook.k12.il.us/gbssci/phys/Class/newtlaws/u2l3a.html

Variable Y
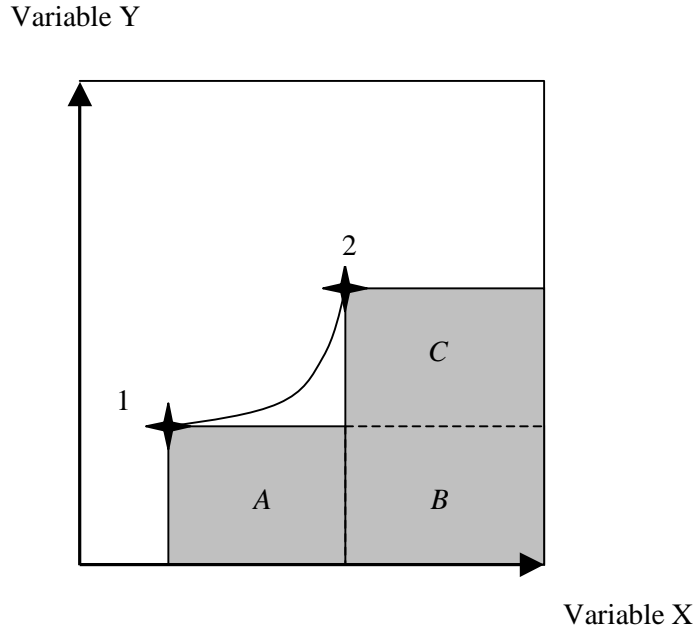
Variable X

Figure 17: *General matrix*

If the variables are adjusted[99], the area A+B will be the same as B+C. This is a result of the dependency between the variables. Although the variables are not adjusted the dependency will work for the area that defines the company and remains constant.

If the variables had been inversely dependent the company had moved down and right or up and left in the model. Corresponding scenarios with constant areas would occur but the defining area would be another part of the model.

Two typical dependent variables in consumer segmentation are income and age. They are dependent since when a person is growing older he normally increases his income. Of course there are exceptions but there is a clear connection between them. In industrial segmentation a corresponding case can be company size and its global spread. A big company does not necessarily imply an international spread, but there is clear dependency between the variables.

Variables can by different reasons give rise to static segmentation and the variables can therefore be classified as static. It can for example depend on dependency between variables. In this case one variable cannot alone be static since it is just dependent of itself. Only more than one variable can be dependent on each other. It is therefore more appropriate to talk about static pairs of variables.

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[99] The scales on the axes are adjusted.

6.3.3 Newton's third law

For every action, there is an equal and opposite reaction. It means that in every interaction, there is a pair of forces acting on the two interacting objects. The size of the forces on the first object equals the size of the force on the second object. The direction of the force on the first object is opposite to the direction of the force on the second object. Forces always come in pairs - equal and opposite action-reaction force pairs[100].

6.3.3.1 Action-reaction movements on markets

When a market forces or invites a company to change its behaviour, the market itself is also affected. Someone else in the market has now to consider changes, in order to remain competitive. The different forces that arise can also be interpreted as different actions that companies are using to gain advantage in the market. When a rival company attempts to capture customers in the market a countermove will be expected from the challenged company.

This is the way a market develops. Companies make moves and other companies have to respond. Prices decrease and quality is continuously improved. Companies that cannot compete, or actually make countermoves will sooner or later become bankrupt. Companies that are alone in a market, monopolies, do not need to respond and the market therefore normally remains undeveloped.

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[100]www.glenbrook.k12.il.us/gbssci/phys/Class/newtlaws/u2l4a.html

Part IV

Part IV consists of the analysis and is divided into two different chapters. The first chapter consider the analysis of the macro level and states requirements on variables in industrial segmentation and suggest new macro variables for Carton Ambient. Chapter eight identifies and discusses which strategic sub variables that are appropriate to employ in segmentation.
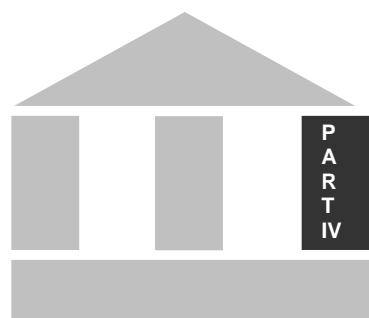
7 Macro analysis

7.1 The three segments compared to Porter's generic strategies

This section shall be read with chapter five in mind since it is a comparison with the presented theory. Furthermore, the segments are here treated as if they meet the drivers in each segment. However, this thesis argues that the drivers in the old segmentation model are presently not well visualised by the variables. Consequently, this is a comparison between a perfect segmentation with variables that visualize the drivers and Porters generic strategies.

If it is stated that there are similarities between the generic strategies and the segments this is an indication that the old segmentation somehow was based on strategy however unconscious. If it were based on strategy it would require that the variables were adapted to make an appropriate distinction between the segments.

It should be added that according to Jeffrey Williams' discussion about competitive dynamics[101], it is mainly the traditional industrial market and local monopoly that is an appropriate description of the beverage industry. The schumpeterian markets have not yet appeared except for in a few niche markets like Coca-Cola and Pepsi.

7.1.1 Super Users

When looking deeper into Carton Ambient's customer base, it is obvious that it is the Super Users that use the cost leader strategy. They normally produce high volumes, which give scale benefits and thereby make them able to offer lower prices on their products. This is how they compete, with cheap and comparatively simple products. Quality is important even if it is not a key success factor. To this purpose they need high productive equipment, which a TBA/22[102] line is aimed to offer.

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[101] See chapter 5.2.5
[102] See chapter 3.

This is a major investment but in turn it offers lower operational costs. Many Super Users are working globally with activities on markets in several countries and can afford such investments because of their high volumes, which cover such expenses. The high volumes that Super Users produce constitute the main entry barrier for new competitors. Furthermore, their products are often adjusted to contribute to an efficient distribution. This is another barrier for new competitors, which seldom have access to the right distribution channels. Among the Super Users simple packages like Tetra Brik are common in the product portfolios. The amount of products in the portfolio is usually small in volume, which mainly is an attempt to keep production costs low.

Porter argues that companies using this strategy need a high level of expertise in manufacturing process engineering. The Super Users do not necessary need to have this expertise on their own but when they use a TBA/22 they buy this expertise from Carton Ambient. Carton Ambient in turn are willing to make efforts on these customers since they normally buy much packaging material and thereby are profitable for Carton Ambient.

7.1.2 Top Shelf Users

Among Carton Ambient's customers the differentiation strategy is used by the Top Shelf Users. These spend a lot of money on differentiating their products with different methods. They profile themselves with marketing and packaging attributes that the consumer finally pays for. The attributes can be of different types but their purpose is to stand out in the crowd.

The Top Shelf Users' customers, or actually both retailers and consumers, are prepared to pay a higher price since they believe they get a better product. The product portfolio is wide, appeals to people and gives the impression of high quality. The content in the packages must have good quality since the consumer expects it to be and have paid for it. The reputation cannot to be deteriorated by complaints, as the brand must be connected with excellence. The reputation of quality and innovations constitute entry barriers for new entrants since such a reputation is costly to procure.

Top Shelf Users usually have highly educated developing teams that will keep them innovative. The innovations concern new applications and new products but also relatively small changes for reaching new customers with special requirements. Their need for speed is not comparable with the Super Users but instead their wide product portfolio requires flexibility. For this purpose is the TBA/21[103] developed. The flexible TBA/21 similarly to TBA/22 demands expertise in process engineering, something Carton Ambient tries to handle. The Top Shelf Users help Carton Ambient to be innovative and keep pace with the changes on this market. New products often require new solutions, which forces Carton Ambient to develop the line.

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[103] See chapter 3.

7.1.3 Users

Among the Users many customers have a focus strategy. Within the dairy industry it is quite difficult to compete in a large area since farmer positions are fixed and the milk's durability is limited. This is why small dairies can survive. They have their area on which they focus and they have well developed distribution channels and long term relations with the retailers.

As long as they do not disappoint their customers it is hard for new companies to enter the market even if it still is possible. In this area they are cost leaders, which it is hard to compete with for dairies in other areas. Other dairies cannot just enter the market since it would not be possible for them to compete on low price. This depends on the dairy industry properties with fixed sources of raw material and short durability.

The case for baby food is quite similar but here it is a differentiated focus strategy. The companies that have focused on this market are seldom cost efficient but they have entered a niche of anxious infant parents. Their focus on this constrained market, and knowledge about what parents want for their infants let them keep margins reasonable high. Parents are often ready to pay exorbitant prices for the food for their infants as long as the products are reliable. They are seldom willing to change to cheaper alternatives without a good and well-known reputation.

Users with a cost leader strategy or a differentiation strategy seldom require extreme flexibility or speed in their production. The TBA/8[104] or TBA/19 are therefore enough.

7.1.4 Stuck in the middle

The risk to get stuck in the middle also exists for the beverage industry. Those who have tried to combine low cost with differentiation have encountered problems. The employees have been confused of the purpose of the business and no clear strategy has been followed. During some of our customer interviews we have been told that the customer is combining the two strategies and that they think they can handle it. However, according to the discussions it has always been obvious that they are more focused on one of them. All companies are of course looking at costs and in some sense trying to add value to their products. Nevertheless it is seems like Porter's arguments are correct, firms that will succeed at multiple strategies must do so by creating separate business units for each strategy.

It seems like some customers solve this problem by dividing their business between different plants[105]. For instance, one plant produces bulk products whereas another produces more advanced products but in smaller volumes. The bulk producing plant concentrates on minimizing costs and therefore works with simpler products in big

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[104] See chapter 3.

[105] According to an interview 2002-02-17 with Lars C. Jönsson, Director Product Management, Packaging Lines and discussions with customers.

volumes. The plants with more advanced products focuses on differentiating the products produced and cannot therefore be that cost sensitive.

7.2 Why base segmentation on strategies?

The comparison between Porter's generic strategies and the three drivers for the segments that constitute Carton Ambient's customers shows that there are considerable similarities. The key success factors are the same as well as most of the behaviour. Since Porter argues that the strategies are generic it probably is not a coincidence. According to Porter most markets can be divided into these groups and the beverage market is no exception.

This is indeed the reason why the development of the production lines has taken direction towards those three segments. On the market there has been a need to satisfy three different strategies. The drivers are in the end reflecting the properties of the lines and the segmentation is somehow based on strategy although it is not pronounced.
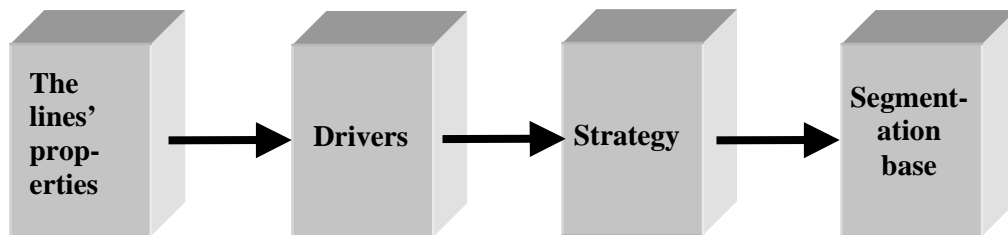
Figure 18: *Base for the segmentation*

It is consequently in the last step in figure 18 that Carton Ambient fails. The variables are not suited to visualise customer strategies and distinguish the customers based on that. This thesis aims to find out what requirements there are on variables. It will later be discussed how they will be chosen to perform the last step in the figure above.

Within every generic strategy there are several niches with marginal strategic differences. There are customers with many differences even though they have the same generic strategy. These differences will be caught in another new micro level, where every macro segment is divided into smaller sub segments with separate needs caused by the customer's niche strategy.

Although two bulk producers have the same overarching strategy, to be cost leaders, they can have several differences. This is of course also true for the other segments where strategic niches also are discernible. If these differences can be illustrated in segmentation it will be easier to fulfil the customers expectations.

7.3 The objective with the old segmentation model

When Carton Ambient developed their segmentation it would fulfil two purposes.

Firstly, it would to decide where Carton Ambient makes their money and thereby also let them end work with unprofitable customers. Carton Ambient makes their money on packaging materials and this somehow speaks for volume. It gives clarity to which customers that buy most packaging material and which customers that buy such a small volume that it does not even cover Carton Ambient's expenses. Of course, it is more efficient to have few customers that use a lot of packaging material than to have many small customers, regarding volume, since maintenance of relationships is costly.

Secondly, the three segments would have such different needs that they need different lines. Consequently, Super Users consists of customers with a need for high-speed lines, TBA/22, and Top Shelf Users of customers with a need for flexibility lines, TBA/21. Users prioritise simplicity and low investments and therefore, the TBA/8 and TBA/19 are most appropriate.

7.4 The objective with our new macro segmentation

The two purposes described above will in our new approach still be fulfilled but in a different way. The old model has just one level, the macro level, and both purposes have to be captured. Once the micro level is included, the customers' profitability for Carton Ambient can be disregarded in the macro segmentation and instead be considered on the micro level. This makes it easier to, on the macro level focus on the second purpose that is to have three segments with need for the functions covered by the three different lines.

The new macro segmentation will be made with variables that correspond to the requirements stated in Chapter 6. The segmentation will start out from the customers' present situation and what needs it implies. Customers with quite equal situations and needs are thereby grouped in order to satisfy each group with similar or almost similar equipment. Our main objective with the new macro segmentation is to let Carton Ambient foresee what line a customer is expected to buy next, given his situation. This objective will be fulfilled with information received during the customer interviews.

Often, customers have need for different lines at different occasions. They do not always have the same needs that make one line appropriate for them. A customer's overarching needs, will not be investigated but his needs in one particular moment. At this moment his whole situation will be considered. During the customer interviews it has been discovered that a customer's business seldom is simple enough to argue that he always needs the same line.

To be defined as, for instance, a Super User in the old segmentation model it depended on how much packaging material that was bought from Carton Ambient together with the customer's margin. If this segmentation did not correlate with the purpose to have segments with different lines, it was of little use to go to the next micro level. The macro level was primarily to be used as an instrument to group customers based on what line they were expected to buy next. The other purposes would be fulfilled in the micro level.

The macro model will not only allow Carton Ambient to position their customers at different moments but also let them be followed over time. This will be done with the requirements on variables presented in chapter 6. The model must be dynamic to catch scenarios and reflect changes. The scenarios will give as much information as possible and be realistic. The position of a customer at any one time will reflect the present situation and not the past.

The customers using a TBA/22 normally are the most profitable for Carton Ambient since they in most cases need most packaging material. This means that our macro segmentation somehow also will fulfil the second purpose even if it is not emphasized. There are other aspects than what line the customer uses that has influence on the customer's profitability for Carton Ambient. It would therefore be too simple to say that all customers using a TBA/22 were more profitable than those using a TBA/21. Most of the discussions regarding profitability could be left to the micro level but is not discussed further in this thesis.

The new macro model will result in the same three segments but allowing them to be more correct according to where customers are positioned. Its dynamics will make it more usable since customers are able to move between the segments when their situations change. It will help Carton Ambient to explain to their customers why they have a need for a particular line. It will also let Carton Ambient see where it will focus its efforts and develop their lines.

7.5 Change to pull approach

In segmentation like the one Carton Ambient uses lines could be pushed to the customers without considering the customers' situation. In the old model a customer's volume and margin define what equipment it has use for. There are many other customer properties and behaviours that must be considered to let every customer be offered the right equipment.

The plants volume and margin is information of decisions that were made years ago but it is the present situation that determines what line they have a need for. The circumstances that affect the customer's choice of line will be observed in accordance with the entire situation. Without doing that, the equipment will not be correctly distributed and some customers will have wrong lines according to their needs.

A more pull-oriented approach is therefore desirable where the customers' situation is understood and considered. No equipment will be pushed to customers, based on

some easily measured figures. Instead, the customer's whole situation is considered to decide what equipment is most suitable for them.

It does not mean that every customer will have their own tailor-made line but that many customers in similar situations have a need for a similar standard line. The lines deliver the same main values that are common for the whole segment. Then, all different needs within the segment can be satisfied with adjusted equipment but with different details that suit the customers' needs.

Most customers have a plant that consists of different types of lines. It is impossible to say that, for instance, a Super User only has TBA/22. However, the Super User's situation makes them buy a TBA/22 as its next purchase and this is why they are classified as Super Users. Carton Ambient will not develop lines that the customers have to adjust to. Nor will the lines be developed to fit a customer all the time. Instead it will satisfy customers with a particular need in one particular moment.

7.6 Comments on the old model

7.6.1 Wrong variables for the purpose

7.6.1.1 Variables that not catch the complexity

The segmentation model with total annual volume delivered to the customer and customer's margin on the axes is easy to create. Both variables are measurable and easy to find. To have measurable and easy found variables is of course important but the segmentation's primary objective must be to let the right customer end up in the right segment. That the model then consists of measurable easily found variables is desirable but not always possible. Anyhow, Carton Ambient's customer's situation is too complex to receive enough information out of these two measures.

The complexity appears mainly from the fact that a customer has different needs on each product. Similar to companies in other industries, many of Carton Ambient's customers have a broad product portfolio. Each product is approached with different strategies, i.e. how do they face the competition, cost leadership, differentiation, or a combination of these? Depending on chosen strategy different questions arise, in terms of marketing, product layout, product shape and size. Some products have to be produced in different lines. Thus, it is impossible to say that a customer has need for a specific line[106], each product has to be considered individually.

7.6.1.2 Variables that do not obtain the first purpose

The volume gives an indication of how profitable a customer is for Carton Ambient but does not catch the entire truth. The customer's profitability also depends on other factors like his preventing service, volume of the SKU with the highest volume and complaints. Good preventing service helps Carton Ambient from spending too much

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[106] For example company XXX's highest SKUs are UHT- milk 250 B & 1000B and orange juice 1000S. Similar portfolios can be identified of other customers. Some customers divide their production to different plants, however the reason for dividing the production is mainly because of different beverages and not production lines.

time on repairing equipment. Complaints can sometimes result in that Carton Ambient has to pay costly damages. The volume does not reveal information about how the profitability will change in the future. Provided that it is only the volume that decides the customer's profitability, which however is not true, the volume depends on old decisions. These decisions were taken many years back in time and do not affect today's needs for particular lines.

7.6.1.3 Variables that do not obtain the second purpose

Nor do the variables fulfil the other purpose, to have three distinct segments, which can be provided with three different TBA lines. One segment needs flexibility, another segment needs speed and a third segment is not dependent on any of these two properties and therefore prefer low investments. This is the objective but is probably just possible in an ideal world. However, the precision in the segmentation must be better.

Today all lines are bought within all segments. Not because they have similar attributes but because the customers in the different segments have in some specific situations similar needs. For instance a co-packer in the User segment versus a co-packer in the Super User segment have in most cases the same needs, because of the co-packing. The variables do not let the segments be distinct. There are many and more complex factors that decide what equipment a customer has a need for.

7.6.1.4 Other weaknesses with the model

None of the lines that Carton Ambient offers combine high speed with flexibility and it is not likely that this will be offered within a perspicuous future. Consequently, the customer somehow has to prioritise. He cannot simultaneously ask for speed and flexibility and is therefore required to explore the business, to identify his key success factors. Although both are desirable, one of them will be more determining for remaining successful.

Since the segmentation model indicates that margins & need for flexibility and volume & need for speed are proportional to each other, the model has a weakness. There is one area in the matrix that Carton Ambient cannot satisfy with today's lines. The fact that there are possible strategies that demand equipment that Carton Ambient is unable to deliver would not be illustrated in the model. This can worry customers since most companies in some way have the vision to combine high margins with high volume although it seldom is possible in the beverage industry.

Another problem is that margin and volume do not visualize enough the drivers in each segment that somehow reflects the lines' properties. Innovative and differentiated customers normally have high margins but it is not always like that. Also bulk producers can perform high margins within the right circumstances[107]. Nor is it the customer's total volume that decides the need for speed. What decides that is how much volume every machine has to produce, even though it is possible that a high volume producing plant has a need for speed.

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[107] Highest produced SKU by XXX Diary is UHT- milk 200 B (180 M. packages) and is considered as a premium product in Saudi Arabia.

It is also a danger to mix a sale variable like margin with a production variable like volume in the same model. This results in too little focus on the user of the machine and its situation, meaning that the focus is on Carton Ambient's needs and not enough on the customer. The production managers do not work differently or have different needs whether they have high margins or not. What is most important for them is to lower the operational cost.

7.6.2 Dependent variables give rise to unrealistic scenarios

Even if the variables seem inadequately chosen for the purpose, the model gives a picture of the customer portfolio. In a static view it describes what kind of companies that buy equipment and packaging material from Carton Ambient, although it tells little about their needs today. Nevertheless it can be interesting to see what happens when a customer moves along some of the axes or when two customers merge. Such occurrences result in a new company with new properties. The purpose is probably that there will be some synergetic effects that let them rationalize the business.

The first problem with the margin variable is that Carton Ambient already has decided which products that have a particular margin. When a margin variable with three different levels is used it causes difficulties to follow a customer's development. Tetra Pak have defined the three margin levels with particular kind of products; commodity, value for money and premium products, where premium products have the highest margins and commodity products the lowest. All consists of particular product types. This means that, to move along the margin axis, or actually to increase or decrease its margins in the model, a customer has to change its product portfolio. This change must be done to products that Carton Ambient classifies as higher, or maybe lower, margins.

If a customer has to change product portfolios it is unlikely that the volume variable will remain constant. Manufacturing a new product implies new competition and probably a totally new situation for the customer. New competition is met and the strategy must be changed. The changes are so thoroughgoing that many more variables than the margin is changed and probably also the volume. If the volume variable is affected when moving along the margin variable, the variables are dependent[108].

Although there is a problem with variables consisting of levels it anyway lets Carton Ambient position its customer along just these variables. This does not let Carton Ambient follow their customers' development. On the other hand, if the margin variable were continuous and reflecting the customers' real margin, the problem with dependency would remain. Here are two examples where the dependency gives rise to problems.

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[108] See Chapter 6.3.2.1

7.6.2.1 Example 1

When a customer of Carton Ambient intends to increase its volume, through for instance successful marketing, he is able to increase the margins. The reason is that the overhead costs can be spread over a larger volume. Some overhead costs may of course increase but not as much as the income from the increased volume. Increased volume is almost always desirable when it comes to increased margins. Increased margins permit the company to reduce the price since it still will have sufficient margins. The company can also choose to keep the higher margin and make as much money as possible.

Suppose that the company reduces the price. A lower price will probably attract more consumers, especially those who are cost sensitive. This again increases the volume and consequently, increases the margins in the same way as just described. This is not what happens in reality and the same scenario arises, because the two variables are dependent on each other. No company can grow infinitely big. What are needed are dynamic variables that can visualize this scenario.
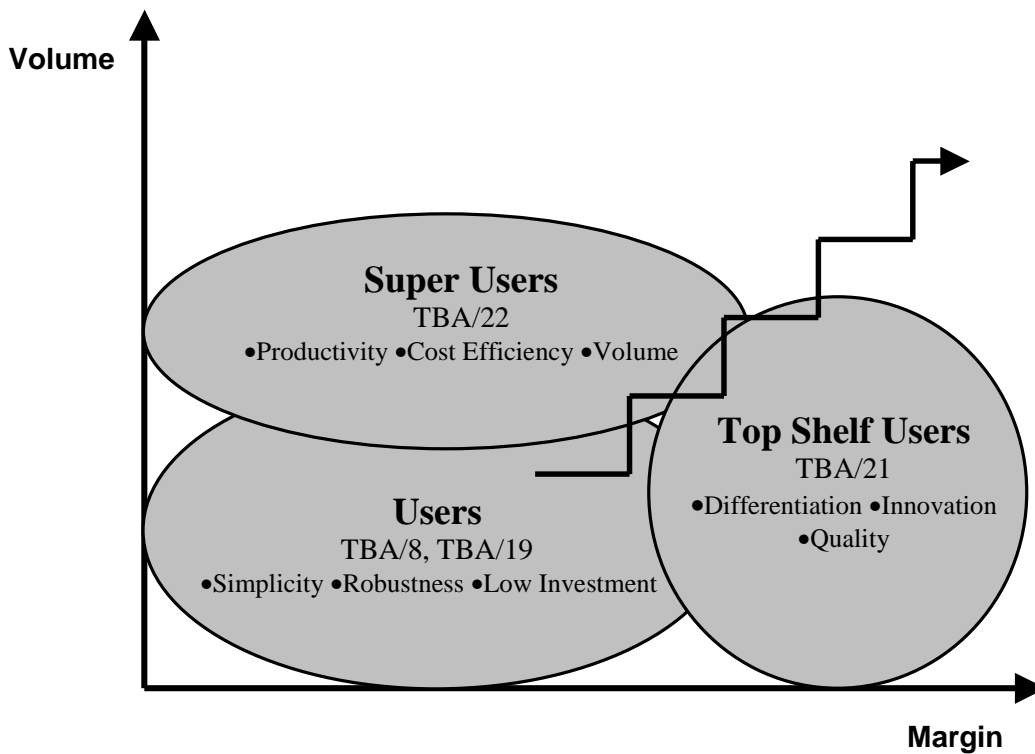
Figure 19: *Impossible scenario when one customer starts to grow*

7.6.2.2 Example 2

A similar scenario appears when two companies from one of the three segments merge, presented in picture 20. For example, it unlikely those two Users will transform into a customer with high margins and high volume. The same would happen if an acquisition took place. Increased volume contributes to higher margins, which in turn results in larger volume. In this first step the increased margins depend on the ability to rationalize.
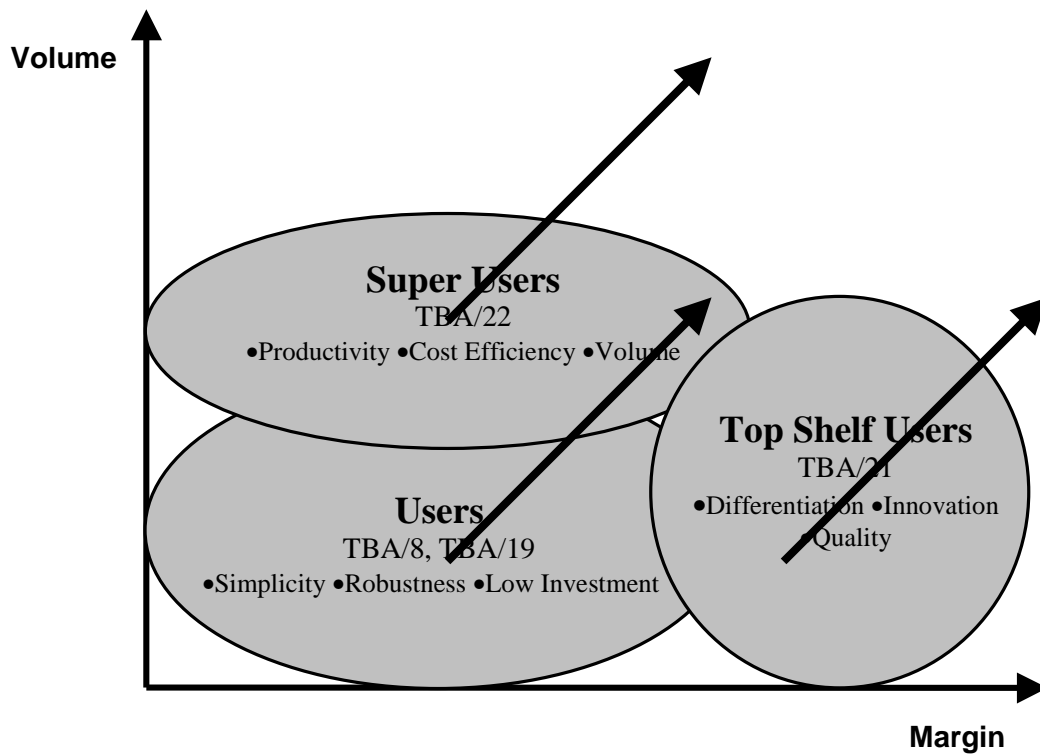
Figure 20: *Impossible scenarios when two customers merge*

7.6.3 Two static variables that do not reflect the present time

Another dimension of dynamics is the model's ability to reflect the present time. Margin and volume are results of strategic decisions taken earlier, probably many years ago. Decisions concerning whether a cost leadership or a differentiated approach would be undertaken are today reflected in the customers manufacturing. Those decisions affected the investments and other behaviour at that time which resulted in today's volume and margin. The situation today is probably different and with other needs.

Maybe the customer's situation implied a need for high-speed production at that time. If he invested in equipment that permitted him to increase the productivity it is probably reflected in the present volume. Markets are not static and a company's environment is always changing. Today the customer maybe is in competition forcing him to differentiate his products with the accompanying need for flexibility.
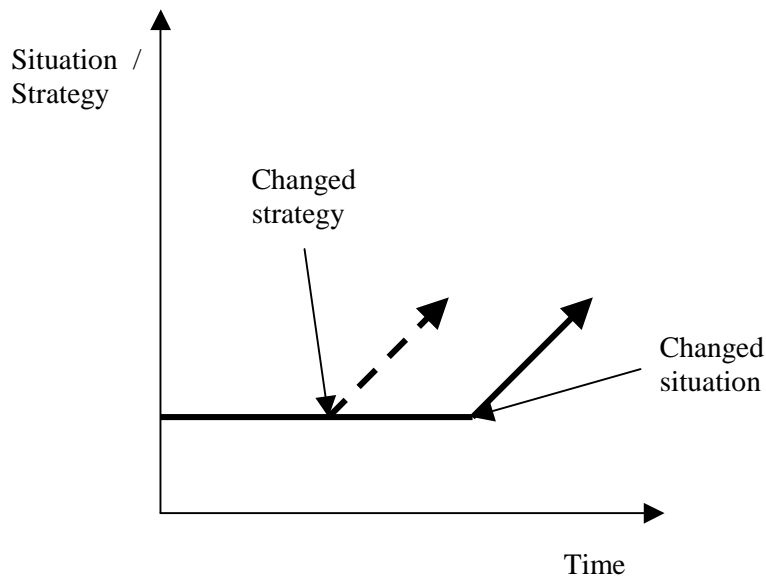
Figure 21: *Delayed reaction*

A changed strategy does not immediately give rise to a new situation but it takes time to see the changed situation. In figure 21 it is the moment when the strategy is changed that will be reflected in the segmentation. It is in this moment that new needs come up and it is those needs that will be satisfied. The old model focuses instead on the other moment, the changed situation, and measures figures that try to find this point.

Provided that the objective is to satisfy every customer with the right equipment, the interesting thing is the situation today and what needs it gives rise to. A customer's volume and margin can remain constant although the strategy is changed in a way

that causes a demand for other line properties. The following weaknesses are identified with the old model.

7.6.4 Summary of comments on the old model

- Gives a picture of the customers, based on easily found variables.
- Wrong variables for the purpose
    1. There are other aspects than volume that determine the customers' profitability for Carton Ambient.
    2. Margin and volume do not say enough about the customers' situation and its needs.
- Does not give rise to distinct segments. Today all lines are sold to all segments.
- Not enough focus on the lines' properties and consequently the segment's drivers.
- It combines production variable with sales variable.
- Does not catch dynamics.
    1. Reflects earlier strategic decisions.
    2. Does not let Carton Ambient follow their customers since there can be   unrealistic scenarios.

7.7 Need for dynamic variables

7.7.1 Example 3

This section presents an example that illustrates why a model with independent variables is more appropriate to visualize a scenario. Two new independent variables are chosen that illustrate the existing customer base. Initially they were considered as possible variables for the macro segmentation but since they have other disadvantages they are not used. However they are independent and they reflect in a good way the benefits of independent variables. The total volume variable is changed to volume per line and hour. The margin variable is changed to a qualitative measure for need of flexibility.

If two Users with five products each merge, they have to choose a direction between two extreme cases to handle the situation. They can use their earlier market share to go on with five products but with the double volume for each product. This results in a higher volume per line but no change on the other axis. The customer moves from the User segment to the Super User segment. The new company can also keep all ten products to become more differentiated. This results in a new Top Shelf User instead of the two earlier Users since it is only their need for flexibility that increases.

When two Super users merge they probably already have as high efficiency as the TBA/22 permits them to have and cannot move along the Volume per line axe. Instead they become more differentiated and move along the other axe and become a hybrid of Super User and Top Shelf User. Of course there are a lot of other practical obstacles to reach this combination but theoretically it is possible. This is also the

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case when two Top Shelf Users merge. Their need for flexibility is constant and they only move along the volume per machine axe since they achieve higher volume per SKU. When Top Shelf Users merge, they seldom do it to become even more differentiated. Instead, they try to use their well-known brands for a bigger market share.

These new independent variables better reflect what happens in reality. Although the scenarios described are simple it is a good explanation of what is really happening when two companies merge. Consolidation on a market can of course also depend on mergers between customers in different segments. This is more complicated to visualize but the discussion is still reasonable. The customers still have to choose which of the two measures in the model that they will develop.
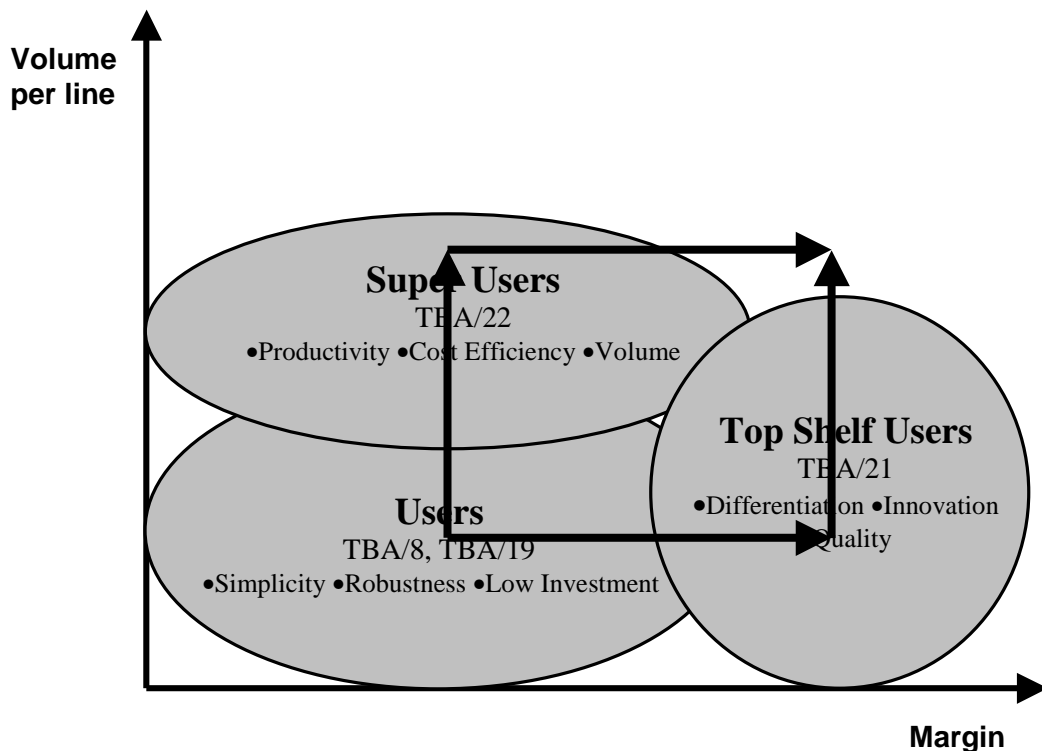
Figure 22: *Possible scenarios when two customers merge*

7.8 New model

7.8.1 Change of the volume axis

According to utilisation, customers can have two extremes. Some customers have a market situation that allows them to sell all that they are producing. Others cannot sell the volume that their capacity is able to provide, because they have not enough market share. Looking at the TBA/8's and TBA/22's properties, how are they related

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to these situations? The main reason why customers chose the TBA/8 instead of TBA/22 is that it denotes a lower investment, or lower fixed costs.

Users, which are usually small customers, are seldom able to make large investments since they do not have enough cash flow. In most cases their business is not dependent on low variable costs although it always is desirable. Their volumes are so small that operational or variable costs are not a determining factor for success. When the volume increases the need for minimizing variable production costs increases. At the same time the importance of the basic investment decreases.

Super Users, which normally are large companies, can afford the TBA/22 that is about 1.8 times more expensive than the TBA/8. The fact that the TBA/22's variable costs are much lower makes it more profitable to buy this line since their utilisation is so high. The higher fixed price paid, with sufficient high utilisation, will soon be paid off. It is of course important that the sale is ensured for some years.

This is why the volume variable in the old model can be changed to the customer needs for low fixed costs or low variable costs, which is a result of utilisation. This new variable is of course closely related to the customers' volume, from the old model, and thereby its need for keeping different costs low. The new one is more effective in reflecting the customers' situations and what needs it implies. The customer prefers to keep one of the costs down or simply has the same need for keeping both costs down.

On this scale the Top Shelf Users are covering the whole span. Their high margins allow them not to depend on minimizing costs. Their situation can vary between need for low fixed costs and the need for low variable costs. However, The Top Shelf Users are mostly represented in the middle area with companies that value low fixed and low variable costs equally. The TBA/21 offer a fixed price and operational costs that is something in between. It does not matter if the line is bought or leased since it still is a fixed cost even if it is spread over time.

7.8.2 Change of the margin axis to product portfolio's need for flexibility

The next step is to find a variable that separates Carton Ambient's customers on another dimension. The Top Shelf Users profile themselves on quality, differentiation and innovation. These drivers normally result in a need for flexibility. Many SKU's demand equipment that can be easily changed between the different product content, package material and package size. Many innovations, as answers to the market requirements, cause a need for equipment that can handle new products and product types.

Neither Users nor Super Users have this need for flexibility since their key success factors are different. None of them are especially differentiated or innovative according to the products. For Super Users it is more important to keep production fast and cost efficient. As mentioned before it is not, with today's technology, possible to combine flexibility with speed in a line although it is in some way desirable for many customers.

Users need equipment that is easy to use and does not cause problems. Often, they are focused on a constrained market without hard competition. The most important is to have a reliable production that let them produce the volumes they want. What determines their success is if they can produce the volume that the market demands. If they fail to do so, a window of opportunity is opened for other companies to enter the market and start to compete.

A new segmentation model could therefore have low fixed or variable costs prioritised and product portfolios need for flexibility on the axes. One way to go would be to measure the first variable as utilisation, but then you measure the utilisation of today and not the desirable utilisation. Number of SKU's is one possible measure for the product portfolio's need for flexibility but it is not a generally applicable term and therefore not usable. It is important to stress that it is not the production's need for changes. This is because of the fact that utilisation and need for changes are dependent. A customer with low utilisation has a need for changes, e.g. flexibility, in order to increase the utilisation per line and thereby use fewer lines. Utilisation is not on the other axis but it is quite similar.
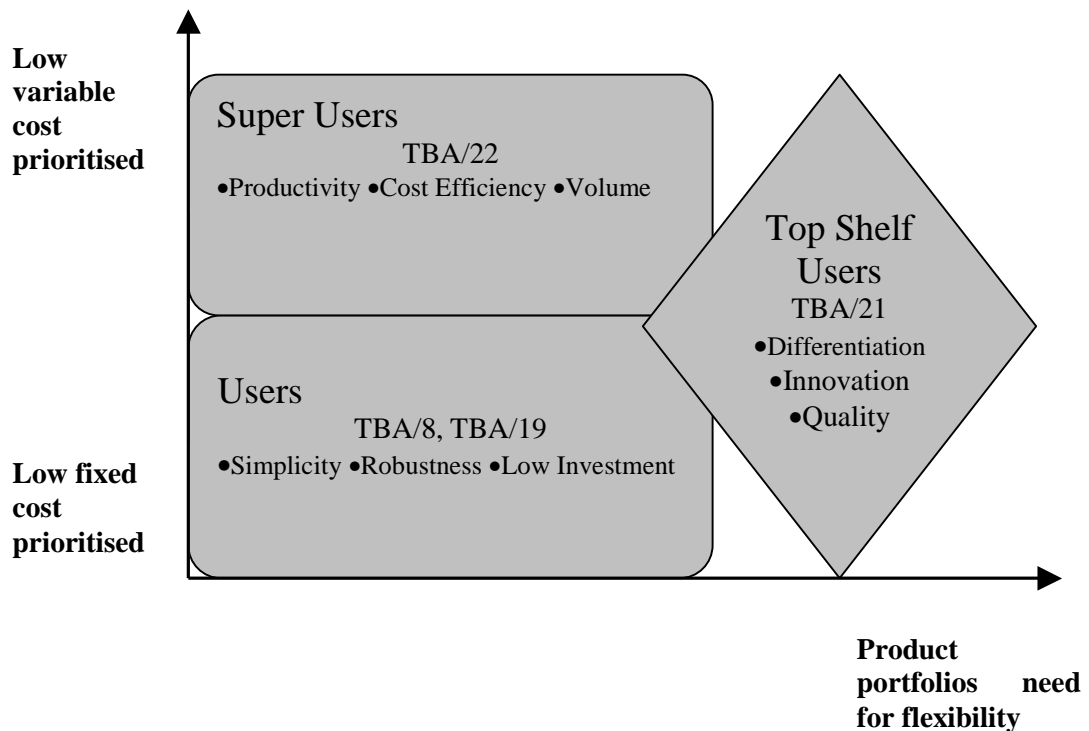
Figure 23: *Change of margin axis to Product portfolio's need for flexibility*

7.8.3 Change of the margin axis to need for high degree of efficiency

The customer's margin together with its speed of production gives rise to different needs for a high degree of efficiency or reliability[109]. Super Users, which by definition are, among other things driven by productivity, have such a high-speed production that makes them very vulnerable to stoppages. The higher speed results in a need for a higher degree of efficiency since the effects of a stoppage are worse, due to the fact that there is more wastage or absent income per hour[110]. Super Users normally have low margins, which means that a bigger part of the price is to cover production costs than for example a high margin product. Their relative income per product is lower than for a customer with high margin.

Users, using TBA/8, normally have low margins and low volumes and are thereby vulnerable to stoppages. They are focused on a small area and normally have low liquidity since they are small. Their cash flow is therefore not enough to cover too much lost income, which makes them vulnerable to stoppages. Top Shelf Users normally have high margins resulting from their innovations, quality and differentiation. Even if stoppages are not desirable they can be handled due to the fact that the relative income on the products sold is so high. Even if the TBA/21 has a higher speed than the TBA/8, the consequences of a stoppage for a User is normally not that big since the Top Shelf Users have high margins on other products that cover.

Thus, the old margin variable could be changed to the customer's need for high degree of efficiency. This results in the following model:

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[109] In the sense of a machine that do not make difficulties.
[110] Emphasized by Jesus Aldazabadal, Key account manager Pascual.
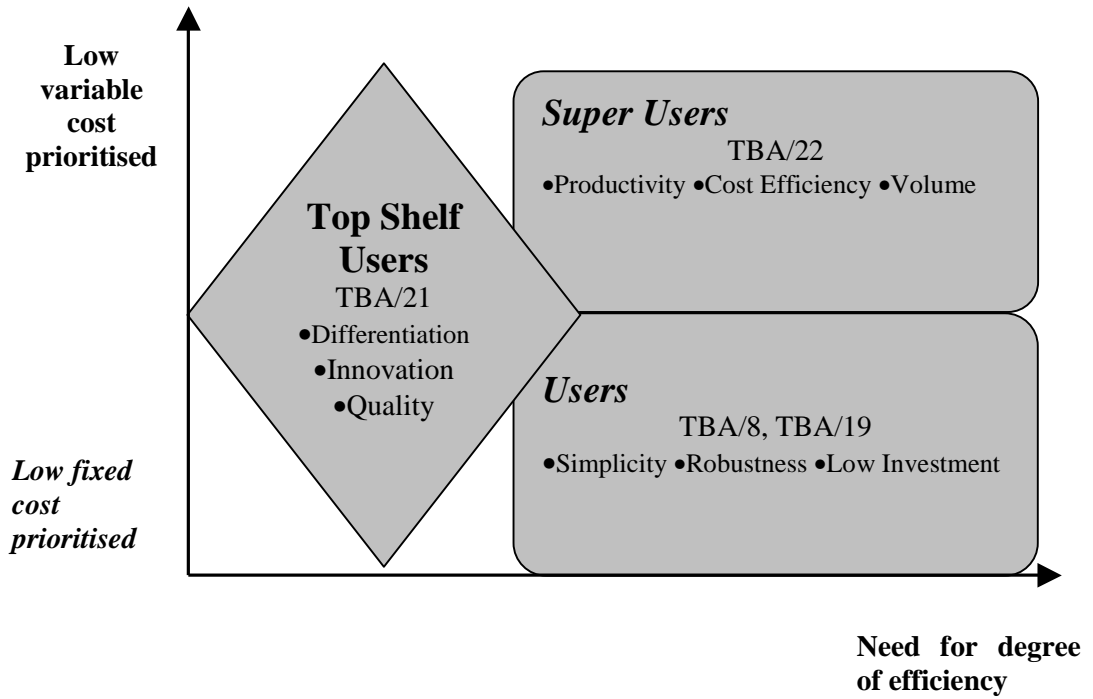
Figure 24: *Change of margin need for degree of efficiency*

7.8.4 Aggregated model

Although the needs for reliability and for flexibility do not exclude each other, in these two models it seems like they are opposite to each other. This is because in the sense that customers that have a need for one of them have a smaller need for the other and vice versa. If the two models above were aggregated to one model it would result in the following segmentation model.

Low variable cost prioritised

Super Users
TBA/22
•Productivity •Cost Efficiency •Volume

Top Shelf Users
TBA/21
•Differentiation
•Innovation
•Quality

Users
TBA/8, TBA/19
•Simplicity •Robustness •Low Investment

Low fixed cost prioritised

Product portfolios need for flexibility

Need for degree of efficiency
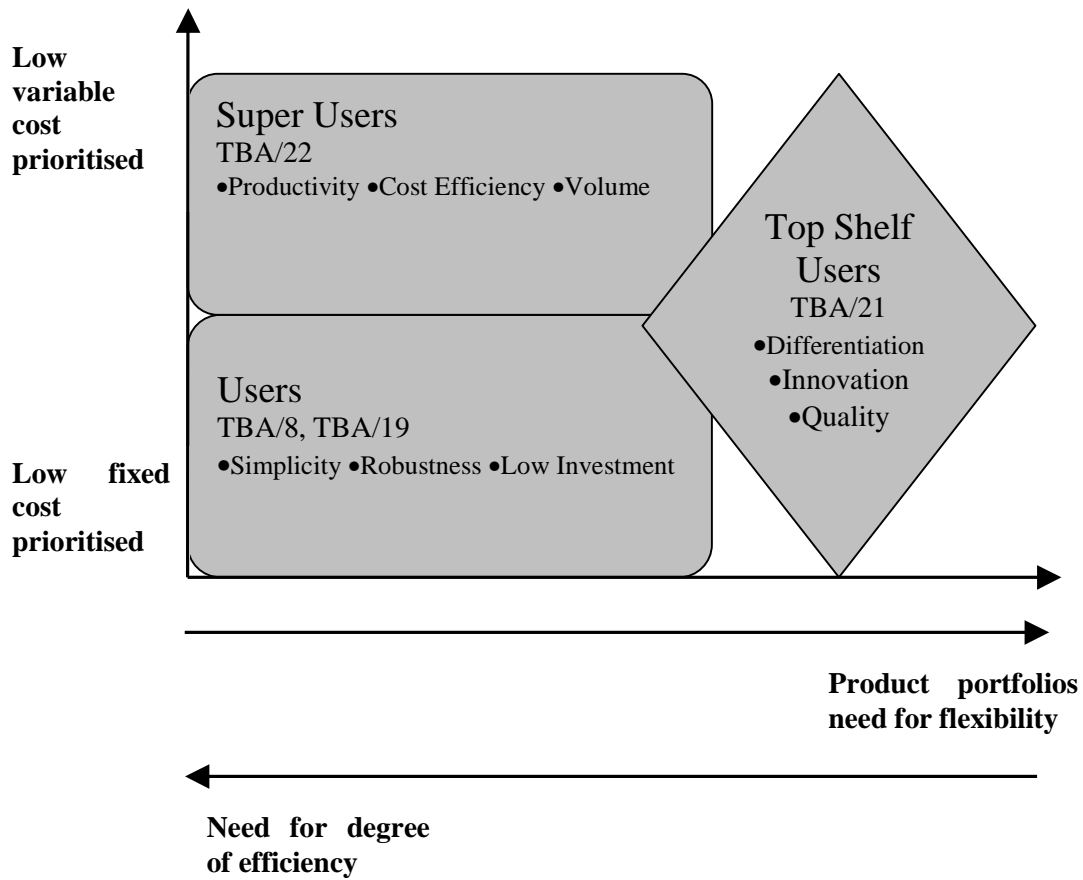
Figure 25: *Aggregated model*

In this two-dimensional model, four aspects are caught which with more probability lets every customer be put into the right segment. These are speed of production, margin on products, the product offerings need for changes and utilisation.

The customer's situation regarding speed of production and margin decide the need for a higher degree of efficiency. His product offerings' demand for product changes decides his product portfolios need for flexibility.

The low fixed or low variable costs prioritised catch the utilisation in production that the customer needs. If his market share gives him a high utilisation with following high volumes it can be worth to spend more money on the equipment if he thereby gets a lower production cost. If the customer can produce all he wants with a slower line it is possible or maybe necessary to minimize the investment costs.

The new model catches many types of dynamics. First, customers can move within the model. At the moment when a customer's situation changes and need other line properties, it becomes a member of the new segment. For instance, a customer who has mostly TBA/8's but suddenly gets a need for a TBA/22, changes segment from Users to Super Users. Mergers or acquisitions will result in movement along just one variable. This depends on the fact that the variables are independent so all possible scenarios are realistic. Carton Ambient can follow their customers in the matrix according to their situation and what equipment they thereby need.

Many customers have several TBA/8 or TBA/19 but it does not necessary mean that they are Users. When those customers bought the machines there were probably no alternatives. If they had bought a new line today it had maybe been a TBA/22 and that turns them into a Super User. The model illustrates changes in the customer situation today and thereby how its production will be in the future. Volume and margin are results of strategic decisions taken earlier and says little about the customers' situation today.

The new variables visualize the drivers in each segment well. It is for this reason that the variables are chosen with the line properties in mind. The line properties reflect the drivers in each segment.

As can be seen in the model it is the Users and Super Users that have the most need for reliable equipment. The Users are today satisfied within this area. Tetra Pak has improved the TBA/8 for decades and it is very reliable compared to TBA/22. Carton Ambient have with TBA/22, which is a quite new line with new technology, at this moment, several problems. This is why it is here Tetra Pak will focus its efforts to keep on satisfying its customers.

7.8.4.1 Summary of the benefits with the new model
The new aggregated model has the following benefits

- It classifies the customer from its situation and what line it is expected to buy next.
- It makes the segments distinct.
- It also pays regard to the line properties.
- Consequently, the variables better reflect the drivers in each segment.
- It permits customers to change segments without unrealistic scenarios.
- It reflects decisions taken today, not in past time.
- It catches four aspects but is still simple, only two-dimensional.
- It lets Carton Ambient focus its efforts on the right lines and customers.

8 Micro level analysis

8.1 Choice of variables and units

This section will come up with ideas how an existing segmentation can be made more detailed and how different customer properties give rise to different needs. Carton Ambient acts as a case company but the findings in the conclusion will be general enough to be applicable to other companies who supply production equipment. To generate basic knowledge about customers and their needs, employees at Carton Ambient were interviewed. Some recurrent opinions were investigated and some potential sub variables were considered. Initially, the objective was to find as many possible sub variables as possible. These were frequently discussed with our mentor[111].

Gradually the interviews were more focused on a couple of potential sub variables. Finally, after careful consideration and several meetings with Carton Ambient staff, nine sub variables were chosen (see table one). Many interview objects argued these to be likely to influence the customers' needs. Based on the discussion concerning strategy as a base for segmentation, most of these sub variables are of strategic nature. The sub variables chosen were not allowed to depend on each other. Thus, a measure on one variable would not influence the measure on another.

This is different compared to the macro level where independent variables are desirable since they have to be able to visualize scenarios. Instead we aimed to make the survey more reliable and to provide as much information as possible. The measures on the nine variables can be seen as an expression of the customer's strategy. However, all strategic measures are of course somehow dependent. The sub variables are chosen so that they do not directly influence each other although there is some dependency.

8.2 Nine sub variables

Below follows a discussion why these nine variables were chosen and why they are measured in the particular unit listed in table one. It will also be treated how they affect customer needs and thereby their appropriateness as sub variables.

The choice of a unit is as important as the choice of variable. Some sub variables can be measured in many different units but for every sub variable, one is decided upon. With wrong units, maybe something else than the variable would be measured and the survey becomes misleading. At the same time as the variable must be well visualised by the unit, it must be easy to verify. If the unit is too complex it will not be possible for Carton Ambient to later collect the required information. In addition, for each variable several questions have been created. The intention with the questionnaire

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[111] Kestas Sliuzias, Product Manager High Speed Packaging Lines.

was to create an understanding of the customers' situation and at the same time visualize customers' different needs[112].

Sub variable	Unit
Competition	Number of competitors to the plant's top three products.
High / Low – acid production	Percentage of total volume that are low acid production.
Co-packing / Self-manufacturing	Percentage of total volume that is co-packing.
Margin	Commodity, Value for Money or Premium products. Percentage of total volume.
Seasonal variation	Maximum volume per month / minimum volume per month for the top three product.
Production strategy	Percentage produced in batch.
Product life cycle	Number of years.
Utilisation	Percentage of the plants capacity that are used.
Educational level	Three levels of knowledge (do they understand the local language, can they read the operator manual, have they participated in any Tetra Pak courses).

Table 1: *Sub variables*

8.2.1 Competition

Strategy and competition are close conceptions. According to the three different types of strategy that Johnson and Scholes[113] define, competition affects all of them. To compete is about manoeuvring a company's resources and capabilities in a way excelling their competitors. This is quite similar to the first Greek definition of strategy, which was to manoeuvre troops into position before the enemy is actually engaged.

Carton Ambient's customers are found all over the world in almost hundred markets. All markets are different. One area of difference is the competition, which can vary considerably between markets. Some markets are monopoly or oligopoly when others consist of several competitors. Of course, a customer's situation is affected by the competition they meet with the benefits and disadvantages of high versus low competition. When competition is increasing the requirements on the equipment

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[112] The questionnaire is presented in appendix 2.
[113] See Chapter 1.

increases, since the customers are forced to perform well or actually better than the competitors.

The intensity of the competition can be measured in different ways. The measure must reflect which competition a particular customer faces. The number of competitors that act on a market is often proportional to the rivalry. A market with many companies invites to price war and other actions to excel competitors. Markets with few competitors can more easily control each other and in the extreme cases have cartels or other agreements, which curb the competition.

The competition on the market where the customer acts affects to a large extent the customer's strategy and is therefore interesting to measure. The competition will therefore be measured as the number of competitors to the customer's three SKUs with the highest volume. These products are probably the most important and the competition that these products face, reflects certainly the competition that the whole company faces.

It was supposed that competition affects the need for speed and that companies with many competitors are forced to just focus on increasing the speed. During the interviews with customers it appeared that it was not that simple. Customers with many small competitors are instead looking for flexibility to be able to have a relatively wide product portfolio compared to their volume. This allows them to be more differentiated and compete although they are not that cost efficient. Small companies with small or without competition are the easiest to satisfy. They are normally content with the lines and seldom complain.

However, large companies that face competition from other large companies with similar market shares are normally anxious to increase the speed of their production. The barriers for new entrants are too large and consist mainly of investments, loyalty and rivalry with existing customers is intensive. The volume is relatively constant although some of them have a multinational focus. What is desirable is to make the production more efficient. Speed is not enough and their line requirements are in general larger than companies facing less competition. They have opinions about most of the line properties. Besides, they do not hesitate to show their dissatisfaction. Their size gives them bargaining power and for Carton Ambient it is not desirable to loose these customers.

It is not possible to connect the measure on this sub variable to particular needs except for small companies. All requirements and needs are in general more pronounced by large companies with more competition and distinction is not possible. The small companies have a greater need for flexibility if they face greater competition.

8.2.2 High / Low acid production

There are fundamental differences between different types of beverage manufacturers. George Steiner[114] discusses strategy and asks the question: What should the organization be doing? It is seldom a strategic decision to choose between manufacturing milk and JSND. In most cases companies that start to manufacture one of them, did not even think of producing the other. Nevertheless, companies that later have started to produce both of them make decisions of the mixture. What mixture gives the highest profit and makes the company most competitive?

Within Carton Ambient, a difference is made between which beverages the equipment is aimed to pack. Beverages with different acidity have partially varying line requirements. A less acidic product has higher demands, due to its inability to acidify the process. Among the low acid products different kinds of milk are included and beverages with high acid are mainly JNSD. Tomato products are something in between and most other beverages are classified as low acid. There is also a distinction between natural high acid products and acidified products, in which acid is added.

All the production lines are developed according to the high requirements set up for milk production even though not all customers need it. The strategy for a diary versus JSND producer is in most cases different and it is interesting to investigate if this difference gives rise to different needs. This makes it appropriate to measure the quota between the low volume acid beverages produced and the total volume to get a measure of the production's composition.

Just as we thought, the interviews with the customers indicated that low acid producers are more dependent on the aseptic performance. Those milk producers only producing milk without flavour or other additives normally have lower margins and use to be more interested in making the production more efficient in general. Almost no customers could enter a new market if the aseptic performance was improved. A good aseptic performance is instead a must for the business and without it, it would be impossible to perform well on the market.

During interviews it was also found that JNSD producers normally have shorter production batches compared to milk producers. Thus, JNSD producers challenge more product changes than a milk producer. When a production line has to change products a waste cost arises and consequently becomes an important factor to consider.

8.2.3 Co-packing / self-manufacturing

Another of George Steiner's statements is that strategy refers to basic directional decisions as choice of purpose and mission. Furthermore strategy will answer the question: What are the results we seek and how should we achieve them? To achieve the purposes of the business a company must decide how to approach the marketing

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[114] See chapter 1.

and manufacturing. There are benefits from owning the brands manufactured as well as to manufacture other company's brands.

Co-packers' business is normally very different from self-manufacturers'. The co-packers are more deserted and dependent on other companies. They must be able to produce a large number of different products since they often have dissimilar clients. Furthermore, there is a trend towards exchange business, on a market place where co-packers bid for other companies' production. Many customers are both co-packers and self-manufactures, even if there are absolute cases. In some cases self-manufacturers try to use their unused capacity for co-packing. Carton Ambient has for a long time been aware of that there is a difference between those two groups' needs but have not dug deeper into it.

The trend in the future is that the amount of co-packers will increase and there will be a clearer distinction between co-packers' and self-manufacturers' strategies. A co-packer is dependant on the production plant and must be able to change the production layout to meet their customer's demand. This makes it appropriate to measure the quota of co-packed products of the total volume produced.

During interviews with Carton Ambient employees it was frequently argued that co-packing customers have a higher need for flexibility since their production is impossible to plan. Co-packers also usually have more SKU's per volume unit, which implies flexibility. The customer interviews indicated that this was absolutely right and that flexibility was a more pronounced requirement from the co-packers. Design is also is an important area. The design affects the possibility to clean the equipment easily and fast. It therefore also contributes to the overarching speed of the production.

However, need for flexibility is not always as important as many customers believe. For the moment, Combibloc markets their production lines as very flexible and the changes are expected to be fast. Combibloc has by successful marketing created a demand among customers that in some cases do not exist. Many of Carton Ambient's customers do not need a flexible line to run a profitable business, and it is definitely not a crucial part of their business. But dreams of one machine that produces different kinds of products, regardless of size, have arose.

8.2.4 Margin

Mintzberg argues that strategy is to position and that strategic decisions reflect how to offer particular products or services in particular markets. To chose which products to manufacture is a corporate decision that will run through the organisation. It will affect the whole business and it is often hard to cancel such decisions. Like Porter argues, strategy is about being different[115]. The first effort to be different is to choose a product portfolio that is different from the competition.

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[115] See chapter 1.

Tregoe and Zimmerman defined strategy as "the framework, which guides those choices that determine the nature and direction of an organization"[116]. This would boil down to selecting products or services to offer and the markets in which to offer them. Also, Robert[117] asserts that decisions about which products and services to offer are central in the strategy as well as the market segments in which to operate.

A company's margin on products is to a great extent dependent on what products they are manufacturing. Also other aspects of effectiveness contribute to the margin. Margin was used in Carton Ambient's old segmentation model on the macro level but is now used as a micro variable. On the macro level it was in principally aimed to distinguish differentiated customers from bulk producers and thereby give rise to segments with needs for different equipment. Margins can vary considerably within each macro segment.

Margins can be measured in percentages but those figures are sometimes confidential and it can be difficulties to find them. Besides, the definition of margin varies between customers. In accordance with Carton Ambient the margin can be classified to different beverages. They have chosen to disregard the effectiveness and assume that the margin is a result from the choice of product.

There are of course benefits from using the same measure as Carton Ambient since it already is well known throughout the organisation. That is why the three margin levels; commodities, value for money and premium products are used.

Most customers argue that margins are decreasing in their markets. Among Carton Ambient's customers those with low margin products are more focused on making their business more efficient. Similar to competition there are particular needs that are more pronounced. All requirements increase when the margins go down. Customers with low margins are more willing to change line supplier and Carton Ambient therefore has to be patient with these customers.

There are customers with low margins that try to increase the volume instead of the margins and these are very interested in speed. However, it is not possible to say that any particular area is more important for customers with low margin but all requirements are increasing when margins decrease. If any, it is the speed for those who try to improve the business through increased volume instead of increased margin. It was also indicated by the customer interviews that customers with low margins do not look for automation since they cannot afford it.

8.2.5 Seasonal variation

Many customers produce products where the demand is not constant during the year. It can concern different types of beverages, which have peaks during summers. This is a complicating factor that creates a lot of difficulty for the companies trying to keep up with the surplus capacity. The level of seasonal demand for a particular product is

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[116] See chapter 5.
[117] See chapter 5.

hard to predict. Of course they can try to affect the demand with marketing activities and other business unit strategy efforts[118]. Else, they must handle the variations in the best way possible through operational strategy. The right equipment properties can help avoid the problems.

The seasonal variations are measured as the proportion between the maximum volume per month and the minimum volume per month for the top three products. Although a customer has more than one product this measure indicates the situation regarding its most important products, which could reflect the company's whole situation in a proper way.

Customers with products that are influenced by fluctuations in the production are often looking for flexibility. This is the general opinion among Carton Ambient employees and was stated by the customers. The exception is companies that are able to pre-produce or outsource production. For them the peaks can mean opportunities to make more money. Planning can help but finally it is flexibility that lets the customer use fewer lines during low production. In fact, few lines, which can perform all production in order to stop the other lines. This can decrease the labour costs.

8.2.6 Production strategy

Production strategy is by definition a part of the strategy. The production strategy is an obvious means of getting from here to there[119], and can continuously be corrected. Among Carton Ambient's customers, a distinction can be made between two production strategies. These are production, which tries to foresee the demand through forecasting and production based on demand. Customers with low capacity or equipment that do not let them have fast production or good utilisation sometimes have to produce all they can.

The more sophisticated customers with, for instance, Just In Time are only producing on demand since they want to avoid storage. However JIT is unusual since Carton Ambient's customers have to store their finished products for a minimum number of days because of safety regulations. The customers' production strategy is also affected by the choice of producing continuously or in batches. It results in various numbers of changes per week. It is appropriate to measure the ratio between batch and continuous, to establish what needs an increased number of changes give rise to. This number is a result of the production strategy but mainly of the requirements that there is on the manufacturing, caused by the company's situation.

This is probably the most appropriate sub variable. Everything points to that customers with many product changes are looking for flexibility and lines that can reduce the waste cost. These lines require well-performed design to facilitate an efficient production with faultless changes. They are also anxious to have an automated production to decrease labour costs that follows from many product

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[118] To compete successfully in a particular market, according to Johnson and Scholes, which include marketing.

[119] Which Fred Nickols argues is one of four strategy categories.

changes. On the other hand, customers with few product changes need production lines with high speed and low operational cost.

8.2.7 Product life cycle

A customer's products can have life cycles with different lengths as well as they can be in different phases of the life cycle. The length of the product life cycle is a result of the strategy. Fred Nickols[120] is of the opinion that strategy is a *pattern* of actions over time. For example, a company that regularly launches new products has chosen this strategy. Thus, the length of the product life cycle can be a way of "positioning" the company and is a form of strategy according to Kenneth Andrews[121]. It can also be the market, or actually other companies in the market, that decide how long a product is permitted to sell profitably.

Sometimes it is profitable to launch many new products and to leave out old models if the objective is to give an impression of being an innovative company. Short life cycles can denote many new products, which require equipment that can handle this. Life cycles of different lengths indicate a different approach to the market and thus different strategies. It is interesting to investigate if this causes different needs and consequently the average length of product life cycles is measured in number of years.

In certain markets with more differentiated products, the product life cycles are getting shorter. The need for flexibility is increased since the customer must be capable to adjust to new products and respond to market changes. The flexibility needs can be of different types like package content flexibility or packaging flexibility.

8.2.8 Utilisation

All customers want to utilize their equipment as much as possible since surplus capacity is always costly. Good planning is a way of improving the utilisation but it is often the equipment that is the limiting factor. Since all companies want to increase the utilisation it is doubtful to treat it as a direction for the business, which many authors argue[122], is the strategy. It can of course be implicitly expressed in the strategy that the quality of the equipment has to be high, not to cause decreased utilisation. However, all of Carton Ambient's customers strive for increased utilisation even if it is more pronounced for some of them.

Customers with low utilisation will in some cases be able to improve the utilisation with better equipment, which has higher flexibility. However, equipment allowing the customers to improve their utilisation is relatively costly. The unit for utilisation is quite simple to measure, and although not all customers have the same way to measure it, it is easy to convert the figures. It is to decide how much of the twenty-four hours that the equipment is used and express as a percentage.

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[120] See chapter 5.1.8
[121] See chapter 5.1.4
[122] See chapter 1.

Customers with low utilisation level expressed no particular need for flexibility. They argued that it was the market share that was not enough, and if that was increased the utilisation would be improved. Most customers agreed that a flexible line could let them use a reduced amount of lines but with higher utilisation. However this was not crucial to their business and it was preferable to focus on marketing to increase market share to improve the utilisation.

8.2.9 Educational level

Tregoe and Zimmerman[123] as well as Michael Robert[124] are of the opinion that production capability alone can serve as the basis for strategy for a given business. Together with the equipment it is the employees running the equipment that decide the production capability or production capacity. The employees' skills are mainly dependent on their educational level.

For customers there is money to save on the production staff. This constitutes a considerable part of the variable costs in production. Many customers try to cut these costs through the use of less educated employees, which are cheap to use, e.g. students or immigrants. They are at least not educated to operate a filling machine although they can have other skills. A low educational level requires better equipment that does not demands a skilled user.

A country's income level influences the educational level but it is mainly the company's strategy that decides who they employ. What determines the operator's educational level is his ability to understand instructions and whether he has taken part in any of Carton Ambient's courses. The worst cases are customers that appoint immigrants unable to speak the country's language or any other language, which they can be instructed in.

There are cases where they can be verbally instructed but not able to read the operators manual. On the other hand, there are cases where the operators do not have an education but are able to read the operators manual. Finally there are customers that truly invest in their employees and are careful about who they appoint. Every customer has the right to let their operators take part of Carton Ambient's courses but those customers are more willing to use this opportunity since it is not for free.

As for the courses, also service is available for Carton Ambient's customers. The level of customer needs for service is mainly dependent on the market's maturity. Companies in markets of growth do not care much about costs. To keep growing, they invest in new equipment and become more dependent on service, since new lines need more service. Companies in mature markets are primarily competing through low costs. A way of doing that is to spend less money on service.

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[123] See chapter 1.
[124] See chapter 5.1.6

The US and many European markets are mature while South American and Asian markets are growing. The problem in Asia is that neither customers nor consumers are able to pay. Therefore almost none of the customers prioritise service. No differences can be seen between today's three segments, Super Users, Users and Top Shelf Users according to their need for service. It isn't the customer's margin or annual volume that determines the need for service; but the level of automated production line.

We believed that a low educational level of operators required an automated line. Instead the interviews indicated the opposite. An automated line requires operators and well educated service employees, since the technology is more advanced. An automated production is of course reducing the number of operators, but those who remain must be more skilled to run the production. This means that automation cannot be used with the objective to decrease the education level.

8.3 How will Carton Ambient use the variables to segment their customers? An Area for further research

A sub segmentation based on several sub variables can hardly be visualized in a model, and particularly not in a geometrical figure. A simplification of the nine variables is therefore necessary. Since Product Management aims to create input into development, this should be focused on. Development cannot base their work on measures on a couple of sub variables. Instead it needs segments with need for particular equipment. This makes it necessary for Carton Ambient to find a method where measures on several sub variables can be transformed into sub segments that act as input to development.

Below follows a proposal about how measures on sub variables can be transformed to sub variables. Transforming this into reality is an area for further research.

With qualitative and quantitative questions to customers, the connection between a particular measure on a sub variable and the influence on directions of development was investigated. For Carton Ambient these five areas are the lines' speed, automation, flexibility, aseptic performance and design. For other companies with other products these are probably different. For Carton Ambient flexibility and design can be divided into different types[125].

Actually, we have already in this thesis tried to investigate the connection between the sub variables and the directions of development. However, we have not created sub segments out of these connections. The connections have been discovered but not measured.

A customer specific profile can be created for every customer with measures on these directions of development. The profile indicates what properties of the line that a
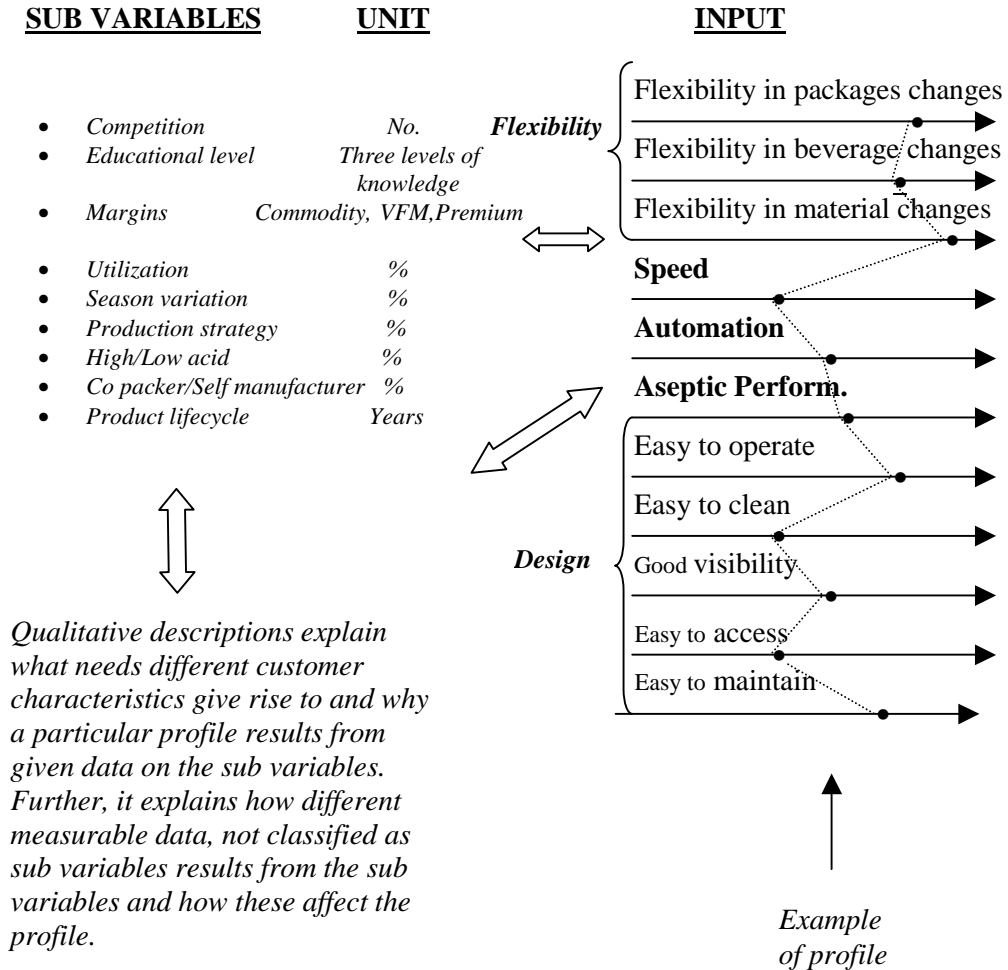
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[125] See figure 26.

customer needs. The answers to the questions are used build up knowledge that forms the basis for a manual. The purpose with this manual is to give clarity to what different needs customer characteristics give rise to, and why a particular need profile results from given data on the sub variables. Furthermore, it will explain how different measurable data, not classified as sub variables, results from the sub variables and how these affect the customer's profile.

When the profile of the customers in the survey is concluded they are clustered into groups, or actually sub segments. The sub segmentation can therefore start out from one or many parameters, depending on the purpose. Of course not every variable influences all directions. Moreover, many variables can influence the same direction of development.

The profiles will support the development and help them spend the right resources on those customers who have these specific needs. Furthermore, the profiles will guide the development in a correct direction. The profile for each customer can be illustrated with arrows that reach different values depending on the information given from the measured sub variables.

SUB VARIABLES   **UNIT**   **INPUT**

- *Competition*   *No.*   ***Flexibility***   Flexibility in packages changes
- *Educational level*   *Three levels of*   Flexibility in beverage changes
                         knowledge
- *Margins*   *Commodity, VFM,Premium*   Flexibility in material changes

- *Utilization*   *%*   **Speed**
- *Season variation*   *%*
- *Production strategy* *%*   **Automation**
- *High/Low acid*   *%*
- *Co packer/Self manufacturer %*   **Aseptic Perform.**
- *Product lifecycle*   *Years*
                                                  Easy to operate

                                                  Easy to clean

                                          Design   Good visibility

                                                  Easy to access

                                                  Easy to maintain

*Qualitative descriptions explain
what needs different customer
characteristics give rise to and why
a particular profile results from
given data on the sub variables.
Further, it explains how different
measurable data, not classified as
sub variables results from the sub
variables and how these affect the
profile.*

*Example
of profile*

Figure 26: Method

Part V

This part consists of the conclusions from the thesis. It is divided into two parts; the first one concerns requirements on variables in industrial segmentation while the second one consists of a discussion of which sub variables that best capture the customers' needs.

Part V
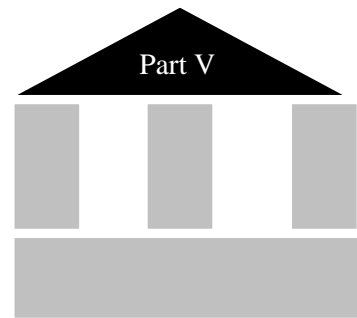
9. Conclusions

9.1 Theoretical conclusions

9.1.1 Macro level

❑ The first part of the theoretical purpose is to identify requirements on variables within segmentation of existing customers in industrial markets

Dynamic variables: Most theory within segmentation concerns segmentation of potential customers. Although thoughts about segmentation of existing customers have been expressed, no one seems to have investigated what requirements on the variables that it causes. Sometimes the requirements are not different from those when segmenting potential customers. When the objective with segmentation is to group customers by their needs it implies certain requirements on the variables.

To investigate a company's strategy seems to be the best way to find out its needs. The interviews and discussions we have had with representatives from Tetra Pak Carton Ambient and their customers indicate that a customer's needs almost always are results of its strategy.

However, when strategy is involved in the segmentations it creates new requirements. A company's strategy is continuously changed and it must affect the choice of variables. No matter if a matrix or another model is constituted by the variables, it shall allow the segmented customers to change position in the model when necessary. The appearance of dynamics within an industry or market arises from changes in the environment and requires dynamic variables.

Dynamics, in this case, implies that when a customer's situation changes over time, it will be illustrated in the model. The changed position will not just illustrate a movement but it will also allow the performer of the segmentation to use the information made available. Theoretical scenarios that are practically unrealistic should be avoided. A prerequisite for this is that the variables are independent. This

means that a movement along one axis not automatically implies a movement along another.

Furthermore, the variables must be of such nature that they reflect today's situation. A measure that is based on decisions taken back in time says little about the company's needs today. This means that the variable measures what needs the company had when it made the decision. Most decisions do not cause an immediate reaction in the company's business and most measurable figures are changed with a delayed reaction. Therefore, such figures are inappropriate as variables since they do not visualize the needs of the company today.

With dynamic variables, segmentation can find new areas of application. Instead of just positioning existing customers it can be used as a tool to follow customers. Whole markets or specific customer development can be investigated. This can be done either back in time to explain new situations or to predict the future in order to achieve competitive advantage.

Today there are many methods for performing scenario analysis. There seems to be a lack of graphical methods to visualise scenarios. This is an area where segmentation of existing customers with dynamic variables can prove useful. This type of segmentation is most appropriate to companies that need a clear and correct view of their customer portfolio needs, and base their segmentation on these needs. The portfolio development and changed needs must be accommodated for. This is to ensure that the company will be able to offer the right product to their customers and thereby satisfy customer needs at any particular moment.

9.1.2 Micro level

❑ The second part of the theoretical purpose is to establish which strategic sub variables that best capture the customers' needs.

When a company's most overarching needs are considered in segmentation it is often desirable to catch details in the customers' needs. This can be done using sub variables, which in this case will be adjusted to a company that supplies manufacturing equipment. These aim to distinguish customers with different underlying needs. Consequently, variables that only indicate generally increased requirements are not appropriate as sub variables.

There is good reason to believe that the variables listed below meet the need of a sub variable since the collected information, mainly through interviews, indicates that.

Competition: This variable captures the need for flexibility of small companies facing competition. For large companies it is not that appropriate since there is only a general increase of all needs. Furthermore, the measurement of this sub variable gives rise to subjective estimates.

High/Low Acid: This variable is directly connected to Carton Ambient's industry and must be more general. It will therefore be considered as the sensitivity of the

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production. There are two extremes where the more sensitive requires more quality and reliability.

Co-packer/Self-manufacturers: This variable captures distinct needs for companies supplying production equipment and is generalised as contract-manufacturers and self-manufacturers. Contract-manufacturers' business is unpredictable and harder to plan and they therefore need flexible equipment.

Margin: Margin is too dependent on the competition and is normally confidential information. It is therefore not suitable to act as a sub variable.

Seasonal variations: Companies with periods of declining demand have a distinct need for flexibility for some of their lines. This is due to the fact that they will be able to stop some equipment and produce the whole volume on the remaining equipment.

Production strategy: Companies with many product changes need automation, design and flexibility whereas companies with few product changes need speed and low operational cost. Consequently, there is an obvious difference in needs between the two extremes of this variable, which makes it useful.

Product life cycle: Companies that produce products with short life cycles need flexible equipment to, for instance, be able to respond to new requirements from the market.

Utilisation: Those companies that have an unsatisfying utilisation do not want to solve this with more flexible lines. Instead they choose to focus on marketing to increase volume. It results in that this variable does not reflect particular needs of the equipment.

Educational level: It turned out that educational level did not give rise to automation. Instead automation sets requirements on the educational level and this sub variable is not useful.

The conclusion is that sensitivity of production, contract-manufacturer / self-manufacturer, seasonal variations, production strategy and product life cycle are the most appropriate sub variables for companies that supplies manufacturing equipment.

9.2 Conclusions regarding Carton Ambient's segmentation

9.2.1 Replacement of the old variables

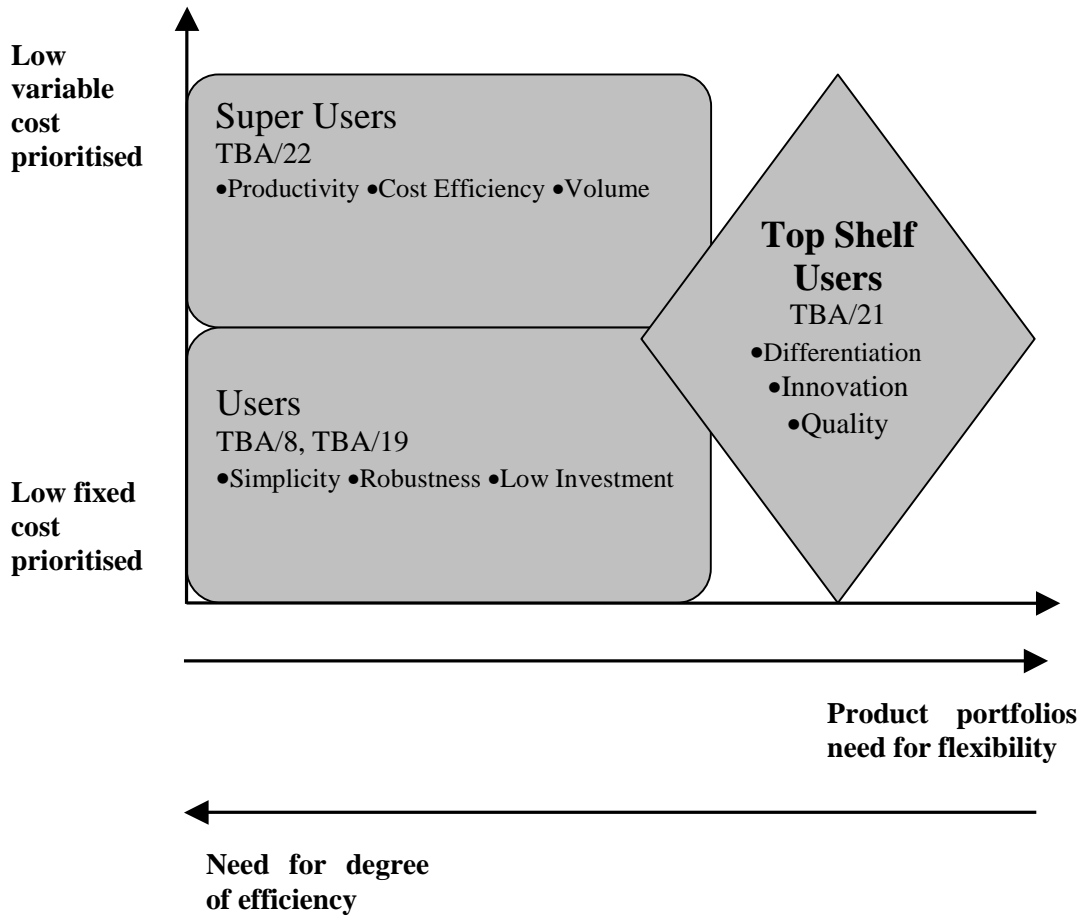We propose that Carton Ambient will use the following segmentation model.

Low variable cost prioritised

Super Users
TBA/22
•Productivity •Cost Efficiency •Volume

Top Shelf Users
TBA/21
•Differentiation
•Innovation
•Quality

Users
TBA/8, TBA/19
•Simplicity •Robustness •Low Investment

Low fixed cost prioritised

Product portfolios need for flexibility

Need for degree of efficiency

Figure 27: *Aggregated model*

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In this two-dimensional model, four dimensions are caught which, with more probability, puts every customer into the right segment. These are speed of production, margin on products, the product offerings need for changes and utilisation.

The new model catches many types of dynamics. First, customers can move within the model. At the moment when a customer's situation changes and it needs other line properties it becomes a member of the new segment. This depends on the fact that the variables are independent. Secondly, it classifies the customer based on its situation and what line it is expected to buy next. Many customers have several TBA/8 or TBA/19 but it does not necessary mean that they are Users. When those customers bought the machines there were probably no alternatives.

9.2.2 New sub variables

The sub variables that best distinguish Carton Ambient's customers with different needs are high/low acid products manufactured, co-packer/self-manufacturer, seasonal variations in produced volume, number of changes in production and length of the products' life cycles.

Correction of figures

Figure 11: *Comparison of lines*

Figure 14: *The old segmentation model*

Figure 15: *The Filling machines for each segment*

Figures