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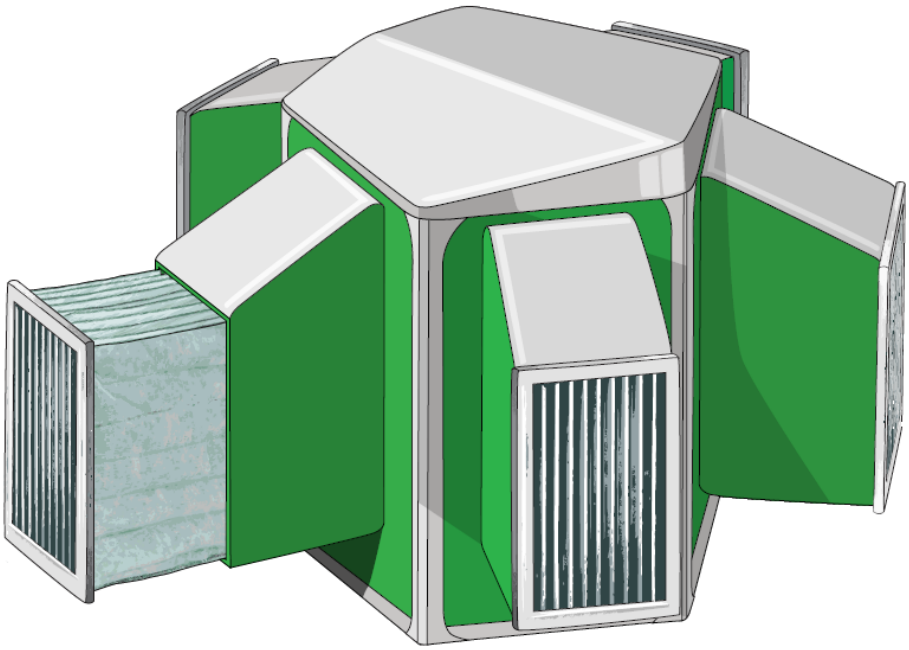

Multifaceted ventilation innovation

A market segmentation and channel analysis for an innovation at a large clean air provider

Master of Science Thesis

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Göteborg, Sweden, 2011
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Cover: Campolygon drawing, for more information, see 5.3 Campolygon.
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Abstract

Due to the increasing global interest in energy efficiency and green solutions, many companies focus their R&D efforts towards this area. At Camfil Farr, a world leader within clean air solutions, one of its R&D investments resulted in an innovation profiled to suit this identified need. This master thesis, which was initiated and conducted in cooperation with Camfil Farr, revolves around the innovation Campolygon, which enables reduced energy costs, high Indoor Air Quality and simplified maintenance by its physical and functional characteristics.

The purpose of this study was to investigate the market potential of Campolygon by doing a market analysis of the Swedish market. The study was also aimed to provide a basis for the creation of a market strategy to complete the business plan for Campolygon. The results of the thesis will be used as a basis for a decision regarding Campolygon's further development and commercialization.

The study had a three-phase build-up, where each phase had the objective of collecting data from different stakeholders. The data collection was mainly performed through semi-structured interviews in order to investigate, first, Camfil's own expectations on the thesis, thereafter, the end-users needs and wants regarding ventilation solutions, and finally, potential intermediaries' needs and wants concerning collaboration with suppliers. This formed the basis for the segmentation and channel design. The results of these processes were then analyzed and evaluated in the analysis and conclusions. In order to verify the results and increase the study's validity and reliability, both data source and methodological triangulation were used.

The results of this study show that there are three suitable start segments for Campolygon, which have been assessed to have potential in terms of market readiness, willingness to adopt and price sensitivity. Also, two sales channels have been discovered as feasible options for Campolygon. These channels were considered due to the value they can create for Camfil and for the involved intermediaries, HVAC consultants and installation companies, however, further investigation of the presented combinations' potential should be carried out. Further research is also suggested concerning the segment scoring and channel design frameworks that were adapted in the thesis, this, in order to establish a more generalizable framework that can be utilized by other actors introducing innovations in the ventilation industry.

Key words: innovation, ventilation solution, segmentation, sales channel, channel design

Acknowledgements

As G.B. Stern wrote: *Silent gratitude isn't much use to anyone* and we therefore would like to start with salutations to all the people that have helped us complete this project.

First, we would like to thank our supervisor Jonas Hjerpe, for encouraging and positive feedback and guidance. Secondly, to our supervisors at Camfil Farr AB, Ulf Johansson and Jörgen Karlsson, thank you for trusting us and giving us the opportunity to work with such an interesting product.

To all our friendly colleagues at Camfil Svenska, Årsta, without you our understanding of the ventilation business as well as our crossword skills would not have been half as good. Also, to our interview respondents, thank you for being patient and taking time to answer our questions, it meant a lot for us.

Last, but not least, our friends and families who have supported us not only during this thesis but also throughout our entire Chalmers education.

Yours sincerely,

Maria Allmér Linda Sandström

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1. Introduction

The aim of this chapter is to provide the background for and purpose of the thesis. This is then evolved into five research questions, which form the basis for the study. Answers are developed throughout the report and presented in short in the conclusions. Furthermore, delimitations, confidentiality and report outline will be presented.

1.1. Background

The background of this thesis project starts with the invention of a new product called Campolygon, at the company Camfil Farr AB (henceforth called Camfil).

Camfil is a large company developing and producing filters and clean air solutions. The main goal of Camfil is to ensure value to their customers through excelling in quality, service, R&D and sustainability. Their customer base ranges from small real-estate owners and ventilation installation companies, to large companies and nuclear power plants. The large variation of customers is divided into business areas depending on their differing filtering needs.

To keep at the forefront of R&D, Camfil has started an internal innovation company, a platform where new inventions can be tested and grow without the instant demand for profitability. The innovation company handles everything from new filter materials to wholesome ventilation solutions. The main focus is to explore the commercialization possibilities of new ideas that are generated internally.

For Campolygon, the innovation company already has investigated and approved of the technical possibilities. This led to a filed patent and a prototype, tested on one of Camfil's production facilities. The marketing aspects, however, have only been touched upon due to lack of time and resources. The innovative qualities of the product demand both the seller and the customer to reform their way of creating a ventilation solution. Therefore a thorough market analysis is needed to see if there is a will, ability and economical possibility to acquire this new set of skills.

1.2. Purpose

The purpose of the study is to investigate the market potential of the new innovation Campolygon by doing a market analysis of the Swedish market. This analysis will provide a basis for the creation of a market strategy to complete the business plan for Campolygon.

1.3. Research Questions

- Which are the end-user segments with most potential for growth, when considering market readiness, willingness to adopt the product and price sensitivity?
- What would be a suitable and scalable sales and distribution channel?
- What would a competitive solution, that would maximize the perceived end-user value for the considered segment/s, consist of?
- How can this solution add value for downstream stakeholders in the value chain, compared to current clean air offerings?

- Given Camfil's current profitability target, can this solution become a profitable offering?

1.4. Delimitations

The Scandinavian market is currently used for most product introductions at Camfil, due to the fact that this market is at the forefront of ventilation development. However, the structural differences between the Scandinavian countries and the limited time, made a further delimitation necessary. Camfil's strong position in Sweden and the interview methods made Sweden the focus area.

Furthermore, the market study was delimited to ventilation without special requirements, since the product alone cannot fulfill special requirements. However, a market study for Campolygon in combination with other products is encouraged for the future.

1.5. Report Outline

The report consists of ten chapters that depict the study by setting the scene, explaining the methods and discussing results. The structure of the report was built up to suit the purpose of the thesis, and the aim of each chapter and their structure is outlined below.

The thesis is starts with an introduction explaining the background and purpose of the thesis. This is also where the research questions are stated. The introduction is followed by a presentation of, for the study significant, previous research. In this chapter, relevant models are initially presented, and theory supporting the interpretation and analysis of data is critically discussed.

Directly after the previous research chapter, the research method and working process are described in the method chapter. Subsequently, the theoretical framework for the thesis is presented. The reason that these chapters are set in this order is that, while the method is used to structure the initial data collection, the theoretical framework builds up the basis for the adaptation of this data.

After the presentation of the arrangement and data processing context, the industry and company background is presented more in detail, and the function and characteristics of Campolygon are described. This information is relevant in connection to the empirical data in the following chapter, since the thesis is formed as a case study.

In the subsequent two chapters, empirical data from the interview study and theoretical framework adaptation is presented. The data is parted in two sections to become more reviewable. The segmentation discussion therefore presented in the first empirical data chapter and followed by a second chapter with the channel strategy argumentation.

Both the empirical data chapters are analyzed in the ninth chapter that is structured to first discuss the product advantages for different actors in the value chain and thereafter suggest four segment and channel combinations. The chapter is ended with the conclusions where the research questions, presented in the introduction, are answered.

Finally a discussion, recommendations for the company, and suggestions for further research are offered.

2. Previous Research

The purpose of this chapter is to present influential and relevant research within the areas of market segmentation and strategy. The selected research and its use in the thesis are synoptically and critically discussed, to create a solid foundation for the analysis of data. Models presented in this section form basis for the adaptation in the theoretical framework.

2.1. Segmentation

The aim of this section is to lay the foundation for the use of a segmentation model. It starts with a historical development of segmentation and thereafter the current approach is discussed. This section also provides an insight in the relevant aspects of segmentation through stating the advantages and difficulties with the approach and presenting acknowledged criteria and models.

2.1.1. Historical Development

Market segmentation is a method that has originally evolved from pricing theory. When researchers discovered that it was possible to use price differentiation, they combined this knowledge with marketing efforts to meet demand and thereby started developing this field of research (Quinn et al., 2007).

In the 1950's, when the research area was new, the target was mainly to find suitable segmentation bases (Plank, 2002). At the time the segmentation bases were tested mathematically and the criteria were often called base variables (Quinn et al., 2007). In the 60's the interest in segmentation was widened and it was discovered that the main part of the retail was often sold to a small part of the customer base. This made the segmentation gain in importance (Quinn et. al., 2007). So far, however, the search was still mainly for the right criteria. In the 1970's, some authors actually started evaluating the segmentation bases to see how they could be used in different types of scenarios (Plank, 2002).

After this, segmentation has become a method used in most companies. The reason is the increased awareness of differing customer needs (Quinn et al., 2007) and the differing profitability of customers. Segmentation has in the last decades evolved into a two-step phenomenon starting with a broad macrosegmentation followed by targeting and a microsegmentation (Plank, 2002). Recently, however, the precision of methods has been questioned. Quinn et al. (2007) means that the individual needs of consumers today demand a new approach, and Plank (2002) also requests research in more advanced multi-level segmentation. There is some evidence of this type of advanced segmentation research, for example the VALS method discovered in the 1980's, which was a high precision model. It had a very limited success, though, due to its high level of complexity. It is important that the level of complexity is limited, so that the benefits exceed the costs.

2.1.2. Current Approach

The most common approach today is the two-step segmentation method mentioned above. The innovative qualities of the product investigated in this thesis made this approach interesting since the accessibility of market information was uncertain. The

two-step approach divides the segmentation bases in two sequential steps (Kotler and Keller, 2006).

The initial step is called macrosegmentation, or vertical segmentation (Anderson, 1997, pp. 7), and Hutt and Speh (2007) describe this step as mapping the buying organization and the buying situation of potential customers. It also includes the sought application of the product. Examples of macrosegments could be: first-time buyers, novices and sophisticates (Hutt and Speh, 2007, pp. 125, Kotler and Keller, 2006, pp. 260).

If the macrosegments are not homogenous and responsive, the next step is a microsegmentation, or horizontal segmentation (Anderson, 1997, pp. 8), for each of the macrosegments. A microsegmentation consists of a comparison of the different decision making units in the macrosegments (Hutt and Speh, 2007, pp. 126). This part requires more marketing knowledge but, above all, it demands understanding of the buying company and its structure. It consists of determining the personal characteristics of the buyers as well as attitudes and strategies (Hutt and Speh, 2007, pp. 127). The microsegments can sometimes be as small as one customer per segment, which is called complete segmentation (Anderson, 1997, pp. 7). However, the common way is to divide the customers into several reasonably large and sufficiently homogenous segments, and a few smaller niche segments.

There are two different views that should be considered for both the macrosegmentation and the microsegmentation. Dowling (2004) calls them the customer-centric and the organization-centric view. When conducting a customer-centric segmentation, the method is focused on how the organization best can satisfy the needs of the different customers. The other view revolves around what the customers can do for the organization. It is vital to distinguish between the two views and always consider the needs of he customers. When the product is innovative the customer is even more important, which is why a customer-centric approach has been used in this thesis. When the objective is to find end-user segments and map their needs, this is the best way, however, there are also a number of other objectives and benefits with this type of segmentation.

2.1.3. Objectives and benefits

It is evident that the division of one large customer group into several will make the marketing department more aware of differences in needs between the customer groups. Hutt and Speh (2007, pp. 122) mean that this is only the first level of benefits that the company can reap from segmentation. The awareness of differing needs also makes the company able to adapt their products and focus product development to match these needs. In addition, lucrative market segments can be targeted separately when it comes to marketing, which can be very important financially (Hutt and Speh, 2007).

Anderson (1997, pp. 7) wants to widen the significance of segmentation even further and thereby move it from the marketing department to top management level. If the company is serious about categorizing its customers according to their needs, they must also be able and willing to adapt their resources to match the needs of the different segments. Anderson (1997) means that this is a highly strategic issue and that the

market segmentation should be continuously reviewed and modified, as it is naturally dynamic.

Another benefit with segmentation is the realization that customers' needs and wants are fulfilled in different ways by the company's resources and products (Anderson, 1997). This makes it possible to target specific segments with customized offers and focus on customer groups that are particularly profitable for the company. Therefore, the segmentation in the thesis will be followed by a scoring procedure in order to identify profitable segments.

By looking at the whole value chain other actors than the end-user can be identified as profitable, and therefore marketing efforts can be more successfully divided. According to Johnson et al. (2008, pp. 78) it is important to identify the strategic customer for each segment, that is, the actor in the value chain in control of the decisions. It is, of course, important to focus efforts on the whole segments, but it can be profitable to give extra attention to the strategic customers, since they can influence the rest of the segment (Johnson et al., 2008, pp. 78).

The benefits of the segmentation process have made it an accepted method to analyze the market of both new and existing products. In this thesis, segmentation is therefore used to try to find lucrative market segments where Campolygon can be introduced.

2.1.4. Difficulties

There is no perfect segmentation process, Quinn et al. (2007, pp. 442) identify four large areas in which managers will have to make difficult decisions; the basis for segmentation, the variables used to measure the basis, the analytical method, and the number and composition of the segments. This means that subjective decisions, albeit qualified and based to a certain degree on facts, are the base for the segmentation process. The risks of biased information due to the use of qualitative measures are, for this thesis, weighed up by the benefits of the chosen methods (3.3 Validity and Reliability).

Apart from the functional difficulties that appear when forming the segmentation, there are also a few conceptual complications that concern the goal of the segmentation. Firstly, Anderson (1997, pp. 12) points out that segmentation can only be efficient when it is followed by a differentiation by the company. However, it is important that the differentiation is made to satisfy the needs of the customers and for no other reasons. It is also important that the differentiation is made in small continuous steps instead of huge leaps. If the differentiation is not very well planned it can cause severe difficulties for the company (Anderson, 1997). Since this thesis only concerns segmentation, it is important to recommend the company to differentiate the product as a follow-up step.

Secondly, there is a difficulty with contemporizing the segmentation concept. Quinn et al. (2007, pp. 441) note that there is research pointing towards individualization among customers today that could potentially make it difficult to group them. In this case segmentation can be seen as counteracting current trends. However, it still is impossible in most cases to differentiate the offering for each individual customer, and thus there is still a need for segmentation despite these new difficulties.

2.1.5. Criteria

Every company has its own selection of segmentation criteria, or bases (Dowling, 2004). To choose criteria is, according to Anderson (1997, pp. 6), a creative process that is dependent on many company specific factors. Anderson (1997, pp. 6) lists different criteria that can be used:

- *Applications*
- *Decision makers*
- *Type of industry or business*
- *Size of company*
- *Geographical Location*
- *User benefits*
- *New or replacement market (OEM/MRO)*
- *Price sensitivity*
- *Need for service*
- *Buying habits*
- *Time sensitivity*
- *Type of competition*

These criteria cover many different aspects, and normally companies should use more than one criterion when segmenting (Anderson, 1997 pp. 6). On a more detailed level, there are more significant differences between the B2C and B2B markets. Johnson et al. (2008, pp. 77) differentiates between the B2C and B2B criteria in Table 1:

Table 1 - Some bases for market segmentation (Johnson et al., 2008, pp. 77)

Type of factor	Consumer markets	Industrial/organizational markets
Characteristics of people/organisations	Age, sex, race Income Family size Life-cycle stage Location Lifestyle	Industry Location Size Technology Profitability Management
Purchase/use situation	Size of purchase Brand loyalty Purpose of use Purchasing behaviour Importance of purchase Choice criteria	Application Importance of purchase Volume Frequency of purchase Purchasing procedure Choice criteria Distribution channel
Users' needs and preferences for product characteristics	Product similarity Price preference Brand preferences Desired features Quality	Performance requirements Assistance from suppliers Brand preferences Desired features Quality Service requirements

It is apparent that industry or B2B segmentation has its own set of market segmentation criteria that originate in the B2C criteria, but that takes the industrial buying pattern and the organizational characteristics into consideration. Johnson et al. (2008) divide the criteria in three different factor types to create structure and overview. Kotler and Keller (2006, pp. 259) further support this method by dividing their B2B criteria in even smaller groups to create a clear structure and thereby make it possible choose the most suitable criteria when segmenting a market.

In conclusion, it is impossible to find a perfect segmentation model. There are many criteria, as stated above, but it is unattainable to segment based on all of them, since some are bound to oppose each other. Therefore, it is important to choose segmentation criteria with care, taking the company, its environment and customers into consideration. For this thesis, the product characteristics and information available

were mapped against the two sets of criteria listed above, thereafter a suitable selection was made.

Even though the criteria stated above are useful when creating the segments, they are not helpful when trying to judge the quality of each segment. When the segment opportunities are identified and grouped, the different characteristics should be graded and lucrative segments targeted (Kotler and Keller, 2006, pp. 261). There are five well-recognized aspects to consider, making the segments eligible and practical:

- *Measurability*
- *Accessibility*
- *Substantiality*
- *Compatibility*
- *Responsiveness*

(Hutt and Speh, 2007, pp. 119, Kotler and Keller, 2006, pp. 262)

There is a need to be able to attain information about the segments and also to reach the segments with marketing endeavors. Furthermore, the segments have to be large enough and have potential for profitability, while at the same time be compatible with the company to match its strengths. Last, but not least, it is important that various segments respond differently to marketing efforts, otherwise they could just as well have been one segment.

There is a difficulty when trying to achieve segments that fulfill all the evaluation aspects suggested by Hutt and Speh (2007), Kotler and Keller (2006) and Anderson (1997). Not only can it be difficult to make one segment measurable, accessible et cetera, but also, ideally, the whole customer base shall be segmented in this way. To add further to the level of difficulty, these are all qualitative measurements. However, it is important to evaluate the potential and profitability of the segments, which is why the evaluation aspects are included in the development of the theoretical framework for this thesis.

2.1.6. Models

Through the development of segmentation research, many models and methods have been created. A selection of models that shows different levels of segmentation will be discussed. These were evaluated and used to structure the segmentation process in this thesis, and the most suiting model for segment prioritization was developed and adapted in the theoretical framework.

Anderson (1997, pp. 4) chooses to explain the process that segmentation is a part of in a model (see Figure 1).

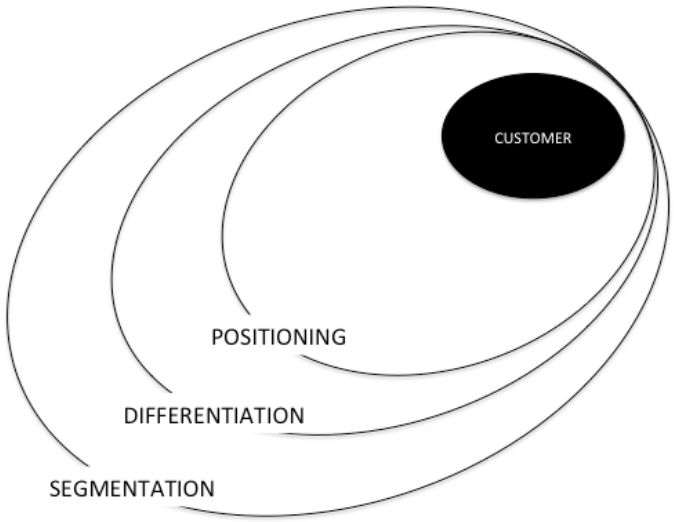


Figure 1 - The Three Rings (Anderson, 1997, pp. 4)

According to Anderson (1997), the outer circle, the segmentation process, includes the creation of a business strategy that is suited for preferred customers. This should then be followed by the inner circles differentiation, which means adapting the offering, and positioning, which denotes putting the company in the customers' minds. Together this becomes a complete strategy for reaching profitable customers. This is a very broad model that covers the environment of the segmentation process. Since this thesis is only concerned with the outer circle in Anderson's (1997) model, its further implications are evaluated in the Discussion and Recommendation chapter (9).

However, there are also models of the process of segmentation. Ruskin-Brown (2006) has shown the segmentation process in a cascade diagram (see Figure 2).

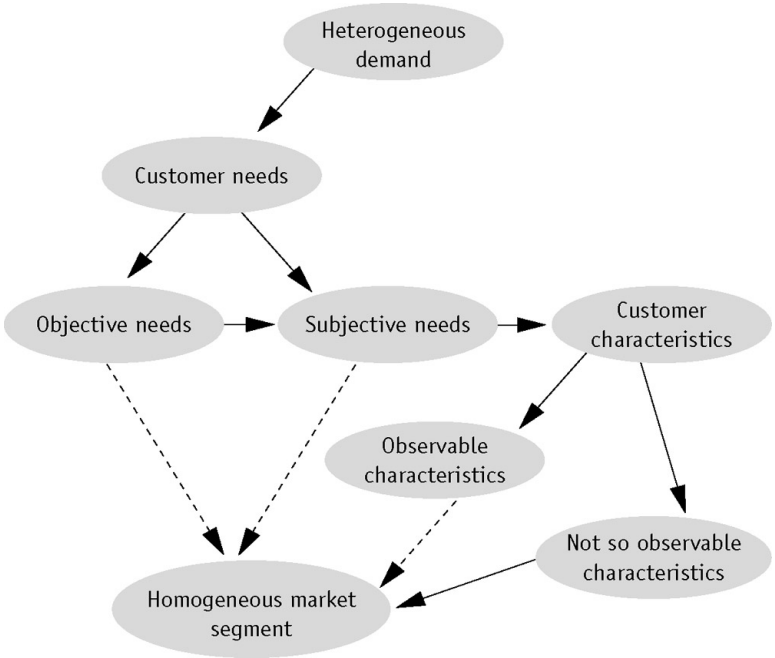


Figure 2 - The Segmentation Process (Ruskin-Brown, 2006)

In this model, the heterogeneous customer base is broken down via objective and subjective customer demands and observable and non-observable customer characteristics into homogenous segments. The holistic perspective of this model, contributed to the structure of the segmentation process in this thesis.

Segmentation is only useful if the segments that are created or discovered are then ranked, and their respective profitability researched. This can often be a problem since most of the data is qualitative. Katsaros and Christy (2005) have made an effort to overcome this problem with their Segment Scoring Matrix. In the matrix, data is divided in a number of factors, shown in the rightmost column in Table 2. Every segment is then scored with a number from 1-10 for each factor, and the total is calculated. Since the factors are qualitative, the scoring process will to some extent become subjective, but this type of scoring can nonetheless be useful.

Table 2 - Segment Scoring Matrix (Katsaros and Christy, 2005)

	Segment 1	Segment 2	Segment 3
Need	1-10	1-10	1-10
Value	1-10	1-10	1-10
Volume	1-10	1-10	1-10
Complete product	1-10	1-10	1-10
Channel	1-10	1-10	1-10
Marketing Communications	1-10	1-10	1-10

This model has been chosen to form the basis for the theoretical framework (4.1 Segment Scoring Matrix), since it is a model built up to quantify and prioritize qualitative data. This paper in mainly based on qualitative segmentation data, and due to the innovative qualities of the product the model suits the analysis very well.

2.1.7. Summary

The reproduced segmentation theory was chosen to depict a holistic and general view of the segmentation process, and at the same time focus extra on the models and aspects that were used as a foundation for this thesis.

In order to fulfill the purpose with the thesis (1.2 Purpose), segmentation criteria were chosen from the suggestions of both Anderson (1997) and Johnson et al. (2008), and the theoretical framework was adapted from Katsaros and Christy (2005). These were considered the most important theoretical bases for the segmentation study, while the other parts of the section were used as supporting arguments in the analysis.

2.2. Value Chain and Channel Strategies

The purpose of this section is to provide the background for intermediary relationship building and the use of a channel design model. Therefore, the basis for channel selection is discussed, starting out with a presentation of the value chain and continuing with a depiction of channel design and relationship strategy.

2.2.1. The Value Chain

According to Porter (1985), a firm can gain a competitive advantage by performing strategically important activities better or cheaper than its competitors. Therefore,

Porter (1985) coined the concept of the value chain, which can be used as a tool for analyzing sources of this advantage. By using this approach a firm disaggregates its strategically important activities and utilizes this information for assessing and understanding the behavior of costs related to the activities. Existing and potential differentiation opportunities can also be investigated by using this approach (Porter, 1985). Although competitors often compete for the same customers and with similar products, their value chains can be different and these variations are the source for their competitive advantage.

As is displayed in Figure 3, a firm's value chain is a small part in a larger value system. Porter (1985) furthermore points out that all firms have their own value chain and calls the upstream value chain for 'supplier value' and the downstream value chain for 'channel value'. Therefore, when introducing a new product it is important to consider value creation for both the supplier and the intermediaries. Eventually, a firm's product becomes a part in the end-user's value chain (Porter, 1985). This is an important aspect and one of the research questions is therefore completely devoted to finding the intermediary value of the product.

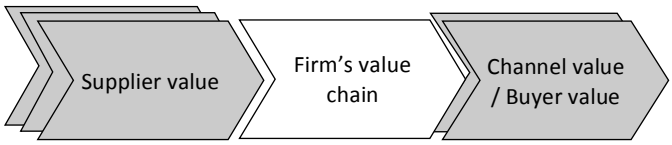


Figure 3 - The Value System

Porter (1985) argues that the value chain and value system are different depending on which industry the firm is present in. This implies that some activities in one industry are more important than in another. In the ventilation industry, the value chain is quite complex, which makes it even more important to investigate in order to identify significant activities.

There are some critics of Porter's (1985) somewhat general vision of the value chain. For instance, Huemer (2002) argues that the value chain analysis is a far too simple model when analyzing the different relations of an industrial company. This means that the value chain approach is most suitable for companies with sequentially interlinked activities, which is most common when turning raw materials to finished products. Also Normann and Ramirez (1993) and Ramirez (1999) argue that the value chain approach has faults and is too simple, since the framework was created for the old industrial economy. Therefore, a better approach should be co-productive, where the traditional view is better adjusted to the definition of businesses, organization of the operations and management of the new value creation (Ramirez, 1999).

Furthermore, many authors like Huemer (2002) and Gadde and Håkansson (2001), argue that it has become more important to have a value network approach in this type of analysis, instead of only considering a straight chain. The reason is that the network approach better reflects today's industrial environment and the multiple relationships and interactions that companies have. However, in the ventilation industry, the value

creation is still quite sequential, perhaps due to its industrial organization. Therefore, the value chain approach is used in the thesis.

From Porter's value chain approach, the supply chain management concept has been developed by, amongst others, Skjøtt-Larsen et al. (2007). Knowledge about the value chain and its relations is the basis for supply chain management. This concept is concerned with coordinating the different flows within the value chain, and thereby reduce costs, increase the understanding of the end-user's needs and become more responsive to their requirements. Skjøtt-Larsen et al. (2007) argue that the flows can be both of tangible and intangible character. When constructing potential channels, both tangible and intangible flows are therefore considered in this thesis.

2.2.2. Design of the Distribution Channel

The most common way of selling an innovation is through the company's own sales force, which is focused and skilled enough to create a demand and penetrate the primary target segment. Dorf and Byers (2008) present advantages and disadvantages with selling via the own company sales people and through independent representatives, presented in Table 3. This comparison is relevant since the focus company of this thesis currently uses both approaches.

Table 3 - Direct sales vs. Independent representatives (Dorf and Byers, 2008)

	Advantages	Disadvantages
Company 's own sales force	High product understanding Relatively easy to manage Feedback from customers possible	High fixed cost Low geographical dispersion Both time and financial resources are needed for education
Independent representatives	Paid on commissions Lower personnel costs High geographical coverage Already established relationships with customers	Non-exclusive to one brand Difficult to manage and control Low feedback from customers May have limited understanding of the product

The arrangement of the marketing channels can thus be both direct and indirect. Direct channels refer to, for instance, direct sales and online marketing, consequently, channels where the manufacturing firm handle all channel activities. Indirect channels, on the other hand, are channels where an intermediary, for instance a dealer or industrial distributor, manages sales (Hutt and Speh, 2007). The channels built up in this thesis are a mixture of direct and indirect channels in order to enable comparison of different alternatives.

Hutt and Speh (2007) present a framework for designing the distribution channel, from manufacturer to end-user. Channel design is a process that can be applied on both existing channels in need of modification and completely new channels. The result of the process is a specified channel structure with a high probability of fulfilling the firm's objectives. This structure describes the level of directness in the channel.

The framework consists of five stages (Hutt and Speh, 2007 pp. 303-307):

1. **Channel objectives**, the formulation of channel objectives corresponding to the marketing goals.
2. **Channel design constraints**, the acknowledgement of channel design inflexibilities in the channel selection process.

3. **Pervasive channel tasks**, the identification of key activities in the value chain.
4. **Channel alternatives**, the specification of channel alternatives, which include the degree of directness, i.e. the number of levels in the channel, types of intermediates to use, number of intermediates at each level in the channel structure and the number of channels to use.
5. **Channel selection**, the evaluation and comparison of channel alternatives. Looking at gaps between the systems can facilitate the process.

This framework is suitable for an innovation that has not yet been commercialized, since it is a systematic way to create and select appropriate channels taking many different aspects into consideration. The framework is therefore further developed in the theoretical framework and used as the basis for the channel selection in this thesis.

2.2.3. Buyer-Supplier Relationships

Buyer-supplier relationships can take many forms, and according to Grant (2010) and Bensaou (1999) arm's-length relationships are characterized by lack of investment beyond the transaction. This implies that it is often easy to switch from one supplier to another and that the competition often circles around price. This distant type of buyer-supplier relationship is what Day (2000) calls transactional exchange. Day (2000) furthermore suggests that the actors involved in this exchange see it as a 'zero-sum-game' where one side wins and the other loses, which is why transactional exchange terms often are concerned with much negotiation.

However, several authors like Bensaou (1999), Day (2000) and Grant (2010), argue that firms nowadays are moving from having transactional exchange relationships towards closer and longer arrangements. Grant (2010) suggests that there has been a massive shift from arm's-length relationships to long-term collaboration with fewer suppliers. Johnson et al. (2008) note that businesses benefit from closer relationships where they cooperate around, for example, product design and R&D. These types of collaborations differ from the arm's-length relationships, since they add value to the offering. Collaborative relationships also include a high level of commitment from buyer and seller when it comes to information sharing, and social and process linkages (Day, 2000). Therefore, more long-term intermediary and end-user relationships are investigated in the thesis.

Day (2000) presents a spectrum of various relationship types, shown in Figure 4. The spectrum spans transactional exchanges, value adding exchanges, and collaborative exchanges. Within the value-adding category, the focus shifts from getting new customers to keeping the old ones by customizing offerings and giving customers incentives to enhance the business with the supplier (Day, 2000).

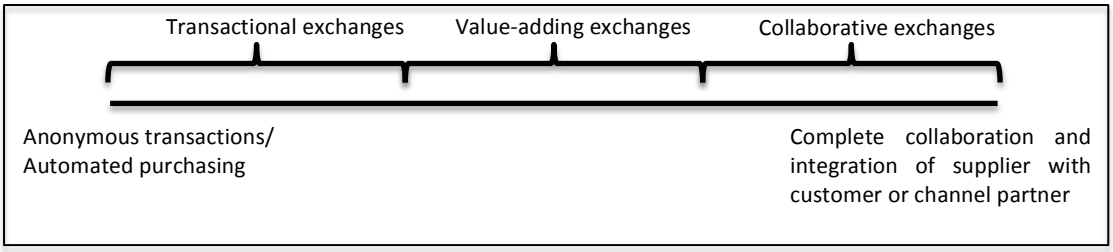


Figure 4 - Different relationship types (Day, 2000)

Anderson and Narus (1991) argue that the purest form of collaboration is the partnership. This is defined as "a process where customer firm and supplier firm form

strong and extensive social, economic, service and technical ties over time, with the intent of lowering total costs and/or increasing value, thereby achieving mutual benefit." (Anderson and Narus, 1991 pp. 96) Skjøtt-Larsen et al. (2007) further develop the concept of partners to strategic alliances, which according to them are voluntary collaborations between companies that involve co-development or sharing of products, technologies or services. Furthermore Skjøtt-Larsen et al. (2007) argue that the strategic alliances are deeper than normal business relations, since they include complementarities. This type of collaboration is long-term, however, there is no need for vertical integration. The partners become mutually dependent, but their activities can be widely separated (Skjøtt-Larsen et al., 2007).

Both Gadde and Håkansson (2001) and Bensaou (1999) put forward that close relationships are demanding and that companies only can be involved in a few. Day (2000) highlights two reasons for limiting the number of close collaborations. First, these types of relationships require high investments, both in time and money, and do not suit all industries. Second, collaborative relationships are very difficult to manage in a successful way. Day (2000) argues that this is a reason for why successful close collaboration creates a sustainable competitive advantage. Furthermore, innovating and improving products by involving customers is a good approach for creating successful products for the market. These arguments form reasons to choose current relationships when introducing an innovation. However, in this thesis potential new relationships are also investigated in order to broaden the area of investigation.

2.2.4. Summary

The different aspects of the value chain formed the underlying concept to support channel design and prioritization of the study. Considering the complete value chain instead of only focusing the attention on the company makes the intermediaries gain in importance.

The framework by Hutt and Speh (2007) was considered suitable for the channel design and therefore adapted in the theoretical framework to form the channel design process in this thesis, where industry-specific channel aspects were incorporated. The advantages and disadvantages of the relationship types are used as support arguments in the analysis.

3. Method

The purpose of this chapter is to provide a motivation for the research strategy, design and methods utilized in this study. This information will guide a future researcher through a similar process. The chapter discusses how the aim of the thesis has affected the selection of research strategy and design. Thereafter, the selected research methods, divided into the project's different phases, are presented. The chapter is concluded with a debate regarding the thesis' validity, reliability and generalizability.

3.1. Research Strategy and Design

Since the aim of this thesis was to find good start segments and identify suitable sales channels for Campolygon, the research approach can be defined as a practice oriented research (Holmén, 2009, pp. 63). To gather data for this type of research, qualitative methods are often preferred. The strength of using qualitative research is that it is less limited than qualitative research, due to the fact that it is based on words rather than numbers (Bryman and Bell, 2007).

For this thesis, large amount of qualitative data was to be collected during a relatively short period of time in natural settings. Therefore, a case study was a suitable research design (Bryman and Bell, 2007). In order to increase the validity, reliability and to some extent also the generalizability of the thesis, methodological triangulation and data source triangulation has been applied.

3.2. Methods in the Different Phases of the Project

To answer the research questions this study was naturally divided into three phases, see Figure 5. First, a pre-study was conducted to establish the purpose with the thesis. Second, an end-user segmentation was carried out, which had the objective to provide data concerning RQ1 and RQ3 by performing a customer-centric macrosegmentation and if needed a microsegmentation (2.1.2 Current Approach). The third phase was conducted to provide data about RQ2 and RQ4. It consisted of the channel design phase that had the objective to identify good intermediaries by investigating their needs, wants and interest for cooperation. RQ5 was then deduced from the aggregated responses from all phases. Each of the phases will be further explained below.

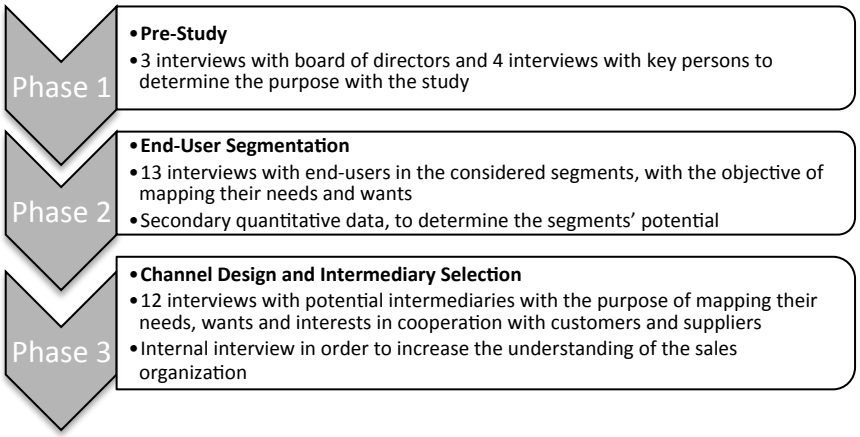


Figure 5 - Summary of the study's three phases

3.2.1. Phase 1: Pre-Study

The aim with this part of the study was to establish a solid understanding of what type of information the different stakeholders at Camfil needed in order to enable a well-founded decision regarding the Campolygon commercialization. A second aim with the pre-study was to investigate the company's expectations on the thesis.

The pre-study included open interviews with three representatives from the innovation company's board of directors. The reason that the interview was open was the explorative nature of phase 1. These interviews were between 30 minutes and one hour, two of them were carried out face-to-face and the third was conducted by telephone due to the distant location of the third respondent. The respondents were chosen because of their position in the innovation board.

In parallel, a general study of the company and industry was conducted with the purpose of increasing the understanding of the company's organization and the technical functionalities of the innovation. This was achieved by collecting data from both secondary and primary data sources. The secondary sources were concerned with annual reports and internal documents, whilst the primary data were collected through three in-depth interviews with Camfil employees, who have been involved with the innovation project and the company during a considerable time.

The information gathered in this pre-study was then synthesized and used as a basis for the formulation of the thesis purpose and the four research questions.

3.2.2. Phase 2: End-User Segmentation

In this part the aim was collect data for the analysis of two of the research questions:

- Which are the end-user segments with most potential for growth, when considering market readiness, willingness to adopt the product and price sensitivity?
- What would a competitive solution, that would maximize the perceived end-user value for the considered segment/s, consist of?

As described in chapter 2, segmentation is a good way to divide a large heterogeneous customer base into smaller, homogeneous groups. Even if there are some trends towards individualization, this method was chosen because the customer base is very large and therefore needs some form of aggregation to be manageable. In order to conduct a successful segmentation, the identification of customer needs is necessary. The qualitative data was collected through eight semi-structured interviews. This was accompanied by a quantitative data collection to enable the evaluation of the different segments. The quantitative data consisted of e.g. internal sales statistics and external real-estate statistics and was gathered from different secondary sources.

The initial scan for possible end-user segments was conducted through a brainstorming session, where different categories were posted on a white-board. The categories were based on a number of different criteria, such as application, size of the company, type of business and decision makers, chosen from the criteria suggestions by Anderson (1997), presented in the previous research chapter (2.1.5 Criteria). The result was a broad macrosegmentation of the end-user market on the basis of the activities performed in the buildings, where too small segments and segments with requirements that the Campolygon cannot currently meet were sorted out.

From this conclusion, five short telephone interviews with different real-estate companies were conducted. These interviews had the purpose of establishing an initial overview of the decision making process, as well as identifying the person responsible for ventilation systems at real-estate companies. The respondents were selected randomly, but it was important to include both private and public actors to see if there were any large differences in the decision-making process. These five general interviews were then used as a foundation for the planning and creation of the end-user segmentation.

To understand the needs and wants of the end-users and investigate the characteristics of the proposed segments, a semi-structured interview session was a suitable and therefore chosen method. The advantages with this method are that it allows the interviewer to ask follow-up questions and deviate from the predetermined order of questions, which thereby creates flexibility (Bryman and Bell, 2007). However, there is still some structure to the interview since the interviewer has the interview guide to return to if needed.

The interview questions were constructed for the purpose of investigating the needs and prioritizations of different customers, and to understand what the end-users actually value the most. To do this a number of criteria, suggested in previous research (2.1.5 Criteria) by Johnson et al. (2008), were used. These were, price sensitivity, volume, purchasing procedure, distribution channel, performance requirements and desired features. A second aim was to investigate the value chain and map the actors involved in the buying process of a ventilation system. The interview guide was pretested on one company and then the results from that interview was evaluated and some questions were modified to meet the match the aims with the interviews better. The interviews took about one hour to perform and the interview guide can be found in Appendix A.

The companies interviewed were selected through a process that resembles a mix of quota and convenience sampling (Bryman and Bell, 2007). Quota sampling was chosen because it was important that all segments were represented in the interview series. The sample therefore consisted of real-estate owners from all the considered segments. Since the buildings serve different purposes and therefore have different ventilation requirements, it was considered important that all building categories were represented. Also the different types of ownership had to be regarded, which required respondents from both the public and private sectors. The reason for the convenience sampling was that the interviews were carried out face-to-face, therefore the companies selected for interviews had to be located in the Stockholm area.

After the empirical data was collected, the qualitative and quantitative data was synthesized according to the Ruskin-Brown (2006) process (2.1.6 Models), and each segment was analyzed one by one to determine the willingness to adopt the product, market readiness and price sensitivity for each segment. Furthermore, all segments were compared and prioritized according to the theoretical framework (4.1 Segment Scoring Matrix).

3.2.3. Phase 3: Channel Design and Intermediary Selection

In this phase, the aim was to collect data for the analysis of research questions two and four:

- What would be a suitable and scalable sales and distribution channel?
- How can this solution add value for downstream stakeholders in the value chain, compared to current clean air offerings?

The data collection process started with a pilot study where potential intermediary categories were identified and six short telephone interviews were performed with one actor from each category. This was conducted in order to identify and exclude actors that directly showed a low level of interest of cooperation.

Three categories of potential intermediaries were thereby immediately sorted out and a semi-structured interview guide was formed for the remaining three categories. The questions were constructed in a similar way as in phase 2, with the purpose of investigating the needs, wants and general interest in cooperation with suppliers and customers. Furthermore, the interview guide also included some verification questions, aimed to verify the conclusions from the second phase of the study. The interview questions are shown in Appendix B. For this phase, telephone interviews were chosen due to the shorter interview time. This also widened the geographical coverage of the investigation. The telephone interviews took about 30 minutes and were carried out with six potential intermediary companies, two in each category.

The sample of companies resembles a convenience sampling, where the companies selected were considered to be large enough to have potential to become a collaboration partner. Since this interview series was conducted via telephone, the respondents were located in different parts of Sweden.

In addition to these interviews one face-to-face interview with a key representative from Camfil was performed. This interview was of open character and took about 45 minutes to perform. It concerned topics, such as, sales organization, sales objectives and how Camfil currently cooperates with customers and intermediaries. This interview was conducted in order to create a deeper understanding of Camfil's current cooperation approaches and strategic direction of the sales organization.

The data collected in the interviews was thereafter processed and the theoretical framework (4.2 Channel Design) was adapted to the data. Thereafter, the results from the channel design process were inserted in the Complete Segment Scoring Matrix (7.3) and the segments with the largest potential were then chosen for solution creation and analysis.

3.3. Validity and Reliability

When considering validity and reliability in a qualitative study, there are different approaches. The most common is to use the regular quantitative measures, but they often show a low validity and reliability for qualitative methods. Therefore, qualitative researchers have developed methods that are more suited to judge the validity and reliability of qualitative methods. LeCompte and Goetz (1982) found that the best way of determining the validity and reliability for a qualitative study is to evaluate the internal

and eternal validity and also the internal and external reliability. The meanings of these terms are adapted to the non-numerical results of a qualitative investigation. Therefore, these concepts are used as a basis for this discussion.

3.3.1. Internal validity

Internal validity is, according to LeCompte and Goetz (1982), concerned with the extent to which the results represent intended parts of reality. This means that there is a divide between what the researcher finds and what was originally stated.

The result of the pre-study was used to build up not only the purpose and research questions, but also the choice of method. Due to the fact that the requested results from Camfil were based on qualitative aspects like need, value and willingness to adopt, a qualitative study was used as the basis. However, the qualitative concepts also affect the internal validity negatively, since various researchers and interviewees can interpret them differently. Throughout the study interviews were used as a method, which can also be a cause for weak internal validity, due to the risk of biased questions and misinterpretations. To counteract this, the questions were thoroughly discussed and formulated, additionally, all interview guides were pre-tested, after which modifications were made.

To further strengthen the internal validity, triangulation was used. Firstly, both quantitative and qualitative methods were used to find the data and thereby create a methodological triangulation. Figure 6 is an illustration of how the methodological triangulation was used. Every method was used to find the answer to more than one research question, which made the different methods able to verify each other. Data source triangulation was also used when formulating the questions for the different interviews so that they could be used to verify each other. This means, for example, that both end-user interviews and intermediary interviews had some questions that concerned the same issue to get a stronger internal validity.

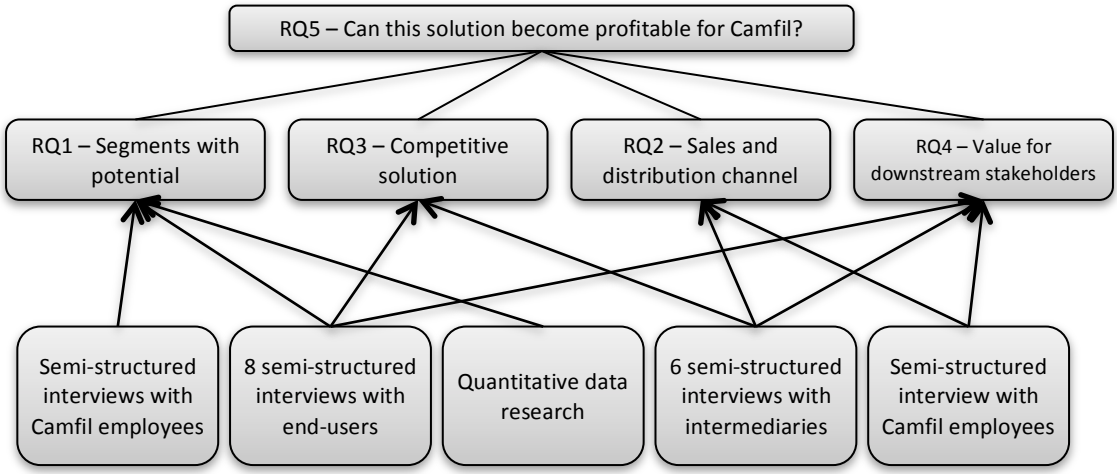


Figure 6 - Triangulation of method and research questions

3.3.2. External validity

External validity is considered by LeCompte and Goetz (1982), to be concerned with the generalizability of the study, thus with how group comparisons across settings can be

made. External validity is generally considered to be low for qualitative studies, due to the smaller and less randomized samples.

The difficulties with finding external validity in qualitative studies is prevalent in this thesis since the value chain in the ventilation business is very specific and the product's technical conditions makes the research very limited. However, the theoretical framework was adapted to mirror the specific circumstances of innovation in the ventilation industry. Therefore, the external validity was strengthened for comparison within the industry. Throughout the thesis, cultural aspects are also commented and described to provide a holistic, but also detailed picture of the setting, which also increases the external validity.

3.3.3. Internal reliability

The internal reliability is concerned with to which extend other researchers, given the same set of constructs, could interpret the results similarly (LeCompte and Goetz, 1982). This is especially relevant for qualitative research, since both results and data are based on interpretations.

To increase the internal reliability in the thesis, the two researchers were present at every interview. All the semi-structured interviews were also taped to make sure that responses were interpreted as objectively as possible. This was a very important element of the interviews, and when transcribing, responses that the researchers had interpreted differently were listened to repeatedly to verify the most likely interpretation.

The choice of semi-structured interviews also strengthens the internal reliability since it makes the researcher able to clarify ambiguous responses with follow-up questions if necessary.

3.3.4. External reliability

According to LeCompte and Goetz (1982), external reliability refers to weather or not the results can be replicated by a new set of researchers. This means that results must be freed from non-generalizable opinions and the role of the original researcher must be thoroughly described. External reliability is considered to be one of the major problems with qualitative research (Bryman and Bell, 2007).

One factor that affects external reliability in a negative way is the lack of transparency in qualitative research. Due to the fact that data is mainly gathered through interviews, all cannot be kept and displayed. To create as strong external reliability as possible, the method of this thesis is described phase by phase and all the semi-structured interview guides are attached in the appendix. The interview responses were transcribed, but due to the vast enormity of data these could not be included in this thesis. However, the interview responses were thoroughly described in a structured way in section 6.1 End-user Segmentation and 7.1 Value Chain and Actor Relationships.

The choice of sampling methods also affects the external reliability. In this study convenience and quota sampling were used. These sampling methods unfortunately create a weakness in the external reliability. The problem is concerned with the fact that the sample is difficult to replicate and do not really represent the whole population. In

order to overcome this some randomized verification interviews were conducted to support the findings.

The last part of the thesis work was focused on using theoretical models to build up a segment and channel prioritization. It is important to note that the grading of qualitative needs and wants is not an objective science, and therefore affects the external reliability negatively. To minimize this problem, the grades were systematically based on the current advantages and disadvantages of Campolygon. Also, the aggregation of grades could be mentioned to support this method, because even if the researchers misjudged single grades, there is a significant probability that a large part of the errors cancel each other out on the aggregated level.

3.4. Summary

The methods chosen are mainly qualitative and this creates some problems for the validity and reliability of the thesis. Therefore, the generalizability of the thesis is limited. However, the methods used are supported by the scope of the case study research design. In addition, the active usage of research methodology creates awareness that strengthens the generalizability.

Furthermore, to strengthen the validity and reliability of the thesis, several forms of triangulation were used. This supports the result and conclusion of the thesis.

4. Theoretical Framework

The aim with this chapter is to facilitate the data analysis and lay a foundation for the analysis and conclusions. Suitable models from previous research are chosen and adapted to the purpose of the study.

4.1. Segment Scoring Matrix

The purpose of this section is to create a feasible model for an innovative product with a complex stakeholder structure by adapting Katsaros and Christy's (2005) Segment Scoring Matrix. In parallel it will show why these changes are made.

As was described in 2.1.6 Models, the Segment Scoring Matrix is a tool to compare different segments based on the data collected through both qualitative and quantitative methods. In the matrix build-up each column represents one segment, and six scoring elements; need, value, volume, complete product, marketing communications, and channel, form the rows in the matrix (Katsaros and Christy, 2005).

Each segment is then scored on a scale from 1-10 for every scoring element and the totals are compared. Katsaros and Christy (2005) chose the scale for its simplicity, they suggest that a weighing factor could be used if necessary, but mean that it is important to avoid complexity.

When the model was adapted to fit the purpose of this thesis, the scale was changed to range from -5 to 5. The reason was that the product researched had some important disadvantages that with the new scale can be allowed to affect the scoring negatively. The qualitative data made a weighing factor necessary, since the data collected has different levels of certitude. Elements based on data where generalizability cannot be assessed were, therefore, judged on a scale of -1 to 1 (a weighing factor of 1/5) to make the total score as reliable as possible.

The scoring elements were kept in their original form, since they suited the collected data. However, the product-customer correlation leading to each scoring elements were adapted to suit the innovative qualities of the product and ensure compatibility with the industry. The exact modifications for each element are described below.

4.1.1. Need

The correlation that this element aims to score is the customer fit to the problem solving skills of the application or innovation. This correlation was kept in its original form and the result was based on end-user interview responses. To find the ultimate need of the segments and increase the measurability, interviewees were asked to grade their different needs. The ability of the product to fulfill the ultimate need then became the basis for the score.

4.1.2. Value

The correlation that this element aims to score is how valuable it is for the customers to solve the problem in the model by Katsaros and Christy (2005). Due to the innovative qualities of the product this was very difficult for the end-users to speculate in, but it was still important to investigate the responsiveness of the potential segments.

Therefore this correlation was slightly adapted to mean how the product can fulfill other values than the one most important one scored in 4.1.1 Need.

The three most important values were scored on a scale of -5 to 5, by comparing how well they fitted the characteristics of the product. For this to be used as one applicable scoring element, the average of the three grades was calculated.

4.1.3. Volume

This element aims to score the size of the segment and the willingness to pay for the product (Katsaros and Christy, 2005). The original correlation by Katsaros and Christy (2005) was kept for this segment since size and willingness to pay are very important factors to create substantial segments for innovative products.

However, the reliability of the segment size data is significantly lower when it comes to this type of product. Due to the specific technical requirements, the size of the segments is difficult to estimate. Even if the number of buildings can be calculated exactly, there are no records of the number of buildings with the exact technical requirements. Therefore the segment size estimate is graded on the lower scale of -1 to 1.

The payback time estimate is deduced from qualitative data and company-specific factors are for this measure judged as quite important. Therefore, also this question has been scaled from -1 to 1. To unite volume and payback to become one applicable scoring element the average of the two grades was calculated and used in the scoring matrix.

4.1.4. Complete product

The complete product element aims to score how completely the product solves the problem and whether there are any additional services that are necessary for the need to be fulfilled. This particular element was slightly adapted to fit the thesis purpose, since no solutions that the product can be a part in, are specified yet.

As was discussed earlier, there are some technical aspects that are significant for the total solution; they are in this case: need for testing, size of the buildings, roof construction and placement of the air intake. These aspects affect the need for changes in the product and/or total solution, which is why they are used as correlations to score this element. Each of the four correlations was graded on a scale from -1 to 1 and the average was then calculated. The reason to use the lower scale is the fact that adaptations of can still be made before the commercialization of the product.

4.1.5. Marketing Communications

To be able to reach a market with new technology there is a need for openness at the customer side. This scoring element aims to pinpoint the way new technology has to the segments and how they can be reached. (Katsaros and Christy, 2005). This was important to be able to determine the accessibility of the different segments. Therefore, the underlying correlation was kept for this scoring element as well. This was judged on the lower scale due to the fact that it is adaptable and could be changed by the supplier if necessary.

4.1.6. Channel

Katsaros and Christy (2005) describe this scoring element as a way to judge the possible channels for the product to reach the segments. The product that is dealt with in this analysis is innovative in the sense that no similar products are sold by the company today. Therefore there was a need for a new channel design that is described in detail below (See 4.2 Channel Design).

The channel with the highest channel design scores for each segment was then incorporated in the matrix as the channel-scoring element. The channel design score was converted to fit the Segment Scoring Matrix by converting the grades to a scale of 1 to 5. The segment with the best fit was graded 5 and the one with the worst fit was graded 1. This accurately portrays the channel that is most adapted to each of the segments, but also shows how well the channel and segment will function compared to the other segments.

4.1.7. Summary

The goal of this chapter was to describe the model by Katsaros and Christy (2005), and the adaptations that were made to make it fit the purpose and research questions of this thesis. In short, the model went from Table 2 (See 2.1.6 Models) to Table 4 below:

Table 4 - Adapted Segment Scoring Matrix

	Segment 1	Segment 2	Segment 3
Need	(-5)-(5)	(-5)-(5)	(-5)-(5)
Value	(-5)-(5)	(-5)-(5)	(-5)-(5)
Volume	(-1)-(1)	(-1)-(1)	(-1)-(1)
Complete product	(-1)-(1)	(-1)-(1)	(-1)-(1)
Marketing Communications	(-1)-(1)	(-1)-(1)	(-1)-(1)
Channel	(1)-(5)	(1)-(5)	(1)-(5)
TOTAL	XX	XX	XX

The different segments are listed vertically and the scoring elements horizontally. The matrix cell elements, which have been explained throughout the text, show the range of the grading for that element. The last row shows the total added score and this forms the basis for the segment prioritization.

4.2. Channel Design

The aim of this section is to provide a framework that facilitates the process of finding suitable channels when a segmentation of an innovation is performed. The framework for channel design by Hutt and Speh (2007) was, due to its clarity and systematic approach, selected and is therefore developed in the section. Adjustments made in order for the framework to suit this study are also explained.

The framework for channel design created by Hutt and Speh (2007) was presented earlier in the chapter 2.2.2 Design of the Distribution Channel. As was described, the aim with this approach is to create a distribution channel that is aligned with the company's overall strategic objectives and provides an effective and efficient flow from manufacturer to customer. The framework consists of a sequence of five steps that are performed to reach the final result. The steps are; channel objectives, channel design

constraints, pervasive channel tasks, channel alternatives and channel selection. Each step should be evaluated before the next is performed.

When the model was utilized some stages were modified in order to better suit the innovative nature of the product and purpose of this thesis, but also so that the results in this part could be incorporated in the Segment Scoring Matrix, which is described in section 4.1 Segment Scoring Matrix. Below all stages and modifications will be described and explained.

4.2.1. Stage 1: Channel Objectives

As was mentioned in 2.2.2 Design of the Distribution Channel, this stage refers to the formulation of channel objectives that are aligned with the company's overall strategic targets. Thus, the channel objectives and design must reflect both profit considerations and asset utilization. According to Hutt and Speh (2007), this is done to fully understand the marketing goals to be able to formulate corresponding channel objectives. The study did not imply any adjustments, and therefore this stage was kept in its original form.

4.2.2. Stage 2: Channel Design Constraints

This stage is concerned with the environmental constraints that arise when a new channel is designed. Hutt and Speh (2007) describe six of the most common factors that limit the choice of industrial channel. These are; availability of good intermediaries, traditional channel patterns, product characteristics, company financial resources, competitive strategies and geographic dispersion of customers.

In this study, these factors were used as intended by the original authors. However, in order to suit the characteristics of this study, the constraints were mapped against potential intermediaries. The scale was chosen to be 0-10, where 0 meant that the intermediary had poor possibilities for overcoming the factor and 10 good possibilities. The scale was selected because it was visual and easily understandable. This scoring was conducted in order to in a later stage facilitate the selection of the most suitable channels. A template of the grading table used is shown in Table 5.

Table 5 - Template of channel design constraints for scoring potential intermediaries

Channel Design Constraints	Intermediary 1	Intermediary 2	Intermediary 3
Availability of good intermediaries	(0)-(10)	(0)-(10)	(0)-(10)
Traditional channel patterns	(0)-(10)	(0)-(10)	(0)-(10)
Product characteristics	(0)-(10)	(0)-(10)	(0)-(10)
Company financial resources	(0)-(10)	(0)-(10)	(0)-(10)
Competitor strategies	(0)-(10)	(0)-(10)	(0)-(10)
Geographical spread of customers	(0)-(10)	(0)-(10)	(0)-(10)
TOTAL	**XX**	**XX**	**XX**

4.2.3. Stage 3: Pervasive Channel Tasks

The pervasive channel tasks refer to the mapping of the most important activities performed in the channel. Hutt and Speh (2007) argue that it is crucial in channel design to know the sequence of activities, rather than only knowing the potential

intermediaries that perform the activity. The understanding of the activities open up for channel designs that otherwise could have been missed.

A small addition was made to this stage; the potential actors performing the activities were added. This was done in order to facilitate the creation of channel alternatives, since the potential alternatives for one activity then already were identified.

4.2.4. Stage 4: Channel Alternatives

According to Hutt and Speh (2007) this stage refers to the creation of the different channel alternatives, which is determined by the previously conducted three stages. The specification of channel alternatives involves four primary issues; the degree of directness in the channel (2.2.2 Design of the Distribution Channel), the types of intermediaries to use, the number of intermediaries at each level of the channel, and the number of channels to use.

Because of the innovative character of the product, not all of the issues were analyzed. Both issue tree and four were disregarded due to lack of information about the product and data regarding interest from the intermediaries. However, by the use of the two first issues several different channel alternatives were created.

4.2.5. Stage 5: Channel Selection

The last stage in this model is concerned with evaluation and selection of the channel alternatives. According to Hutt and Speh (2007), this process often is quite simple, especially when the channel creation only is a small modification of the already existing channel. However, when a completely new channel is created the case is more complicated and the authors recommend a procedure for evaluating the channel alternatives.

This study is, as mentioned before, concerned with a new innovation. Therefore, evaluation and selection of distribution channel is not straightforward. Also, since the results of the channel design, will be included in the total segment scoring the suggested procedure was not applicable in this case. In order to facilitate the channel selection a new procedure for evaluation and selection was formed, which is shown in Figure 7.

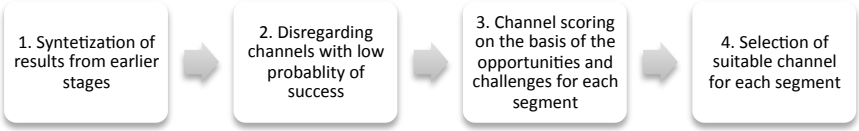


Figure 7 - The procedure for selecting channels

The process consists of four different steps; the first is an initial assessment and junction of the results from the channel design model. The second step is concerned with the initial assessment of the channels, which results in the exclusion of channels that did not suit the product and channel objectives. In step three, the channels were mapped against the opportunities and challenges of the different end-user segments. First, the opportunities and challenges were graded between 0 and 5, depending on their importance for the segment. Thereafter, the fit between the channel and opportunity or challenge was the graded with (++/--) if the channel was strongly correlated and with

(+/-) if it was weakly correlated. The scores were then coupled with the channel fit, see Table 6 for a scoring template.

Table 6 - Template for channel scoring

	Segment opportunities and challenges	Channel 1	Channel 2
Segment 1	Opportunity 1	(0) – (5) * (++/+)	(0) – (5) * (++/+)
	Opportunity 2 …	(0) – (5) * (++/+)	(0) – (5) * (++/+)
	Challenge 1	(0) – (5) * (--/-)	(0) – (5) * (--/-)
	Challenge 2…	(0) – (5) * (--/-)	(0) – (5) * (--/-)
	TOTAL Segment 1		
Segment 2	Opportunity 1 …	(-5) – (5) * (++/+)	(-5) – (5) * (++/+)

The final fourth step in this procedure was the selection of the channel with the highest total score for each segment, which was then recalculated and included in 7.3 Complete Segment Scoring Matrix as described in 4.1.6 Channel.

4.2.6. Summary

The purpose with this section was to describe the framework created by Hutt and Speh (2007) and the modifications that were made in order to suit the research questions and purpose with this thesis.

The result is a framework for channel creation and selection for an innovation. The segments can in this framework be combined with a channel and their respective fit be compared. The results can also be adapted to suit other frameworks like the Segment Scoring Matrix utilized in this study, by regarding the segments and channel relations on an appropriated scale.

5. Industry Background and Company Overview

The purpose of this chapter is to introduce the arena for the empirical case study. The chapter therefore includes a brief introduction to the clean air industry, followed by a company overview for Camfil Farr AB. Thereafter, the innovation is presented and its functions are described.

The air filtering industry in Sweden is characterized by a large number of actors. Most of the actors are small firms with few employees and limited production capacity (Kompass, 2011). These are often only active in small regions. However, there are also a few large and dominating actors with many employees, that are active over large geographical areas, and can utilize economies of scale and scope due to more significant production (Slack et al., 2007).

The many actors together with a fierce price competition make the market show indications of being mature (Svensk Ventilation, 2011). Industry experts also mean that customers are price sensitive and often switch filter provider if they cannot offer a low price. Therefore, the larger companies often position themselves as more innovative and try to differentiate on quality and add on services to be able to charge higher prices.

Substitutes that would reduce the need of filters significantly are in the current situation rare. However, there is always a threat of new inventions of filter media, and therefore the larger players must concentrate on innovation and development of alternatives in order to preserve their market share (Camfil, 2010). Another threat for the actors within the industry is the changing of standards, which affects the situation on the market.

The market development in Sweden is generally positive, ever since the dip caused by the financial crisis in 2008. This is shown in Figure 8, where a positive trend in the number of ventilation installations can be seen. This trend is forecasted to continue also 2011. (Svensk Ventilation, 2011)

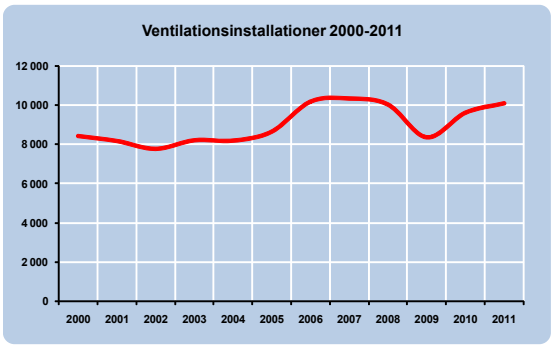


Figure 8 - Market development in Sweden, number of ventilation installations. (Svensk Ventilation, 2011)

5.1. Camfil Farr Company Overview

The Swedish company Camfil Farr AB, is active in the air cleaning business, where they sell air filters and clean air solutions to a wide range of customers. By the end of 2009 Camfil registered a turnover of approximately SEK 4.5 billion and had around 3 200

employees. The company's headquarters are located in Stockholm, but the business is global and spread over four continents. (Camfil Farr, 2010)

Gösta Larsson founded the company in 1963. Early on he had the mission of expanding his filter business through acquisitions with the result that Camfil now is the largest filter producer in the world. The Larsson family has continued to own the major share of the company until present date, but in the year 2000 there was an important change in the owner structure. (Camfil Farr, 2011) At that time, Camfil acquired the American company Farr, and the private equity company Ratos, thereby, became the owner of about 30 % of the stocks (Camfil Farr, 2011). This not only changed the owner structure, but also the business strategy and goals. Ratos has a requirement of 20% return on assets (Ratos, 2011) and the profitability goals are significant when it comes to private equity buy-ins. Since 2010, however, the previous owners bought out Ratos and Camfil is now privately owned again.

Camfil has a strong focus on sustainability, both internal and on the products offered. Often Camfil's products' up-front costs are higher than competitors; however, the payback is almost instant, since the filters are outperforming competitors in the categories; effective life in the system, energy consumption and carbon footprint (Salgado, 2009). Another focus area at Camfil is R&D, which has been crucial for making its success on the market possible. The center for R&D is located in Trosa, but R&D is also carried out in the company's primary production units (Camfil Farr, 2010).

Camfil's business is divided into four main business areas; Comfort Air, Clean Processes, Power Systems and Safety & Protection, within which Camfil practice both R&D and production. The largest business area, which is in focus in this thesis, is Comfort Air. This area includes products with the purpose of protecting people from dangerous particles in indoor environments, for instance in residential houses, schools or office buildings. This business area represented 45 percent of Camfil's total sales 2009 and major part consists of replaceable filters. (Camfil Farr, 2010)

Camfil highly values local presence the company is therefore divided in different subsidiaries with a high amount of individual governance. The subsidiary in Sweden is called Camfil Svenska and has its headquarters in Trosa. The sales organization has a regional structure, which even further strengthens the local presence. About 60 percent of Camfil Svenska's Comfort Air retail is performed through direct sales, where about 23 percent is dedicated to the public utilities segment, 17 percent is sold to private companies and 20 percent to the OEM segment. OEM customers can for example be Air Handling Unit (AHU) manufacturers that are using Camfil filters in their AHU's. The other 40 percent is sold to end-users via installation companies, thus through an indirect sales channel. (Camfil internal documents, 2010)

5.2. Supply Air Filtering Characteristics and Problems

A common solution for supply air filtering consists of a central air intake connected to a ventilation duct that leads to an indoor filter house. The air is often propelled through the filters by means of an AHU placed in close connection to the filter house.

The most important aspect when it comes to air filtration is to keep a constant filter capacity as long as possible. The duration of filtering capacity is significantly dependent on the pressure drop, which emerges when the air faces some kind of resistance, like a filter. To decrease the pressure drop, the filter surface shall be as large as possible, lowering the resistance (Gustafsson, pp. 9). Most air filters today, are designed to have as large surface as possible, for example by being shaped as parallel bags.

The pressure drop is not constant in a supply air filtering solution. As filters collect particles, they constitute an increasing resistance for the airflow, which leads to an increasing pressure drop. This means that the AHU must continuously increase its propelling frequency to ensure constant airflow. The smaller filter surface, the more efficiency increase is needed from the AHU engine, which in turn uses more energy. This is another reason for increasing the filter surface; however, the limiting factor is the size of the filter house, which in turn is dependent on the size of the space where it is located.

5.3. Campolygon

To solve the problem of limited space in the filter house and create a new possibility for increased filter surface, a new alternative concept solution, Campolygon, has been developed. The idea is to place the filter house outside, on the roof, where the air intake normally is located. The fact that the filter house is placed in an open environment creates new possibilities for size and design of the filter solution.

The Campolygon takes advantage of the new possibilities by being shaped as a polygon, with one air intake, and one to two filters, per side. This increases the filter surface significantly compared to a regular filter house with only one air intake. It also has the advantage that filters never have to be transported indoors, which can reduce the risk for safety hazards caused by particles for both maintenance workers and others that come into contact with them.

The new solution, however, requires a new way of looking at air filtration. At present, the requirement for airflow is the factor that decides how many filters that should be used. As a rule of thumb, a standard sized bag filter has a nominal airflow of 3400m^3/s. To calculate the need for air filters the total airflow required by the building is divided by the nominal figure, whereby the required number of filters is obtained. The engine speed of the AHU is not a part of this calculation.

For Campolygon, however, the number of filters will be constant at for example 8 or 16. The total airflow should instead be used to calculate the requirements on the engine of the AHU. In this way, the engine speed of the AHU can be decreased, which means a reduction of energy consumption. The challenge is to introduce and establish this new line of thinking. One of the goals with Campolygon is, therefore, to include this filter cabin in a total solution for ventilation. Furthermore, Campolygon should offer a possible way for differentiation and contribute to the fulfillment of the growth target, and also in a more long-term perspective to the profitability target.

Campolygon is currently at a prototype stage, where some testing on internal industrial facilities has been conducted. Because of this, the physical characteristics of the product are not fixed and, therefore, no completed production plan has been established.

Discussions regarding in-house or outsourced production alternatives are yet to be evaluated, and depends on the chosen commercialization strategy.

To visualize the advantages of Campolygon and compare them to the estimated investment cost, a Life Cycle Cost (LCC) analysis has been made, see Table 7.

Table 7 - LCC Analysis for Campolygon

	Base 4			Base 8			Base 10		
	Single Country	Single Industrial	Single Large	Double Country	Double Industrial	Double Large	Double Country	Double Industrial	Double Large
Savings total LCC (SEK)	10 109	15 243	12 174	20 219	30 485	24 384	31 960	46 237	37 048
Savings/Year (SEK)	2 022	3 049	2 435	4 044	6 097	4 877	6 392	9 247	7 410
Payback Time (Years)	13	8	11	13	9	11	8	6	7

Base 4, base 8 and base 10 in Table 7, indicate the number of filters in the original solutions, and the single and double Campolygon has 8 and 16 filters respectively. The result shows that the payback time for Campolygon currently is long. In this thesis the financial aspect is seen as a disadvantage with Campolygon. However, since the physical prerequisites are not yet fully developed, there might be room for constructional improvement, to decrease the payback time before commercialization.

6. Empirical Data: Segmentation

The aim of this chapter is to present the main part of the segmentation study by developing the underlying data from the interview study and the data conceived by using the theoretical framework (4.1 Segment Scoring Matrix). The segment prioritization will then be completed in chapter 7, when channel design aspects are added and all the data is aggregated in the Segment Scoring Matrix.

6.1. End-User Segmentation

The purpose of this section is to present the results from the first interview series by first, explaining the process and results of the macrosegmentation and second, developing the selected segments in terms of their general characteristics, needs and wants and opportunities and challenges. The chapter will end with a summarizing table.

The basis for the segmentation was determined by the results from the pilot study interviews, conducted with different real-estate owners. These results implicated that the segmentation of the end-users was to be conducted on the basis of the activity type in the different facilities, as earlier mentioned in 3.2.2 Phase 2: End-user Segmentation. Results of this process was summarized in a relationship diagram, see Figure 9, where the activities were paired with facility type and owner structure. Aggregated segments were then sustained from the diagram.

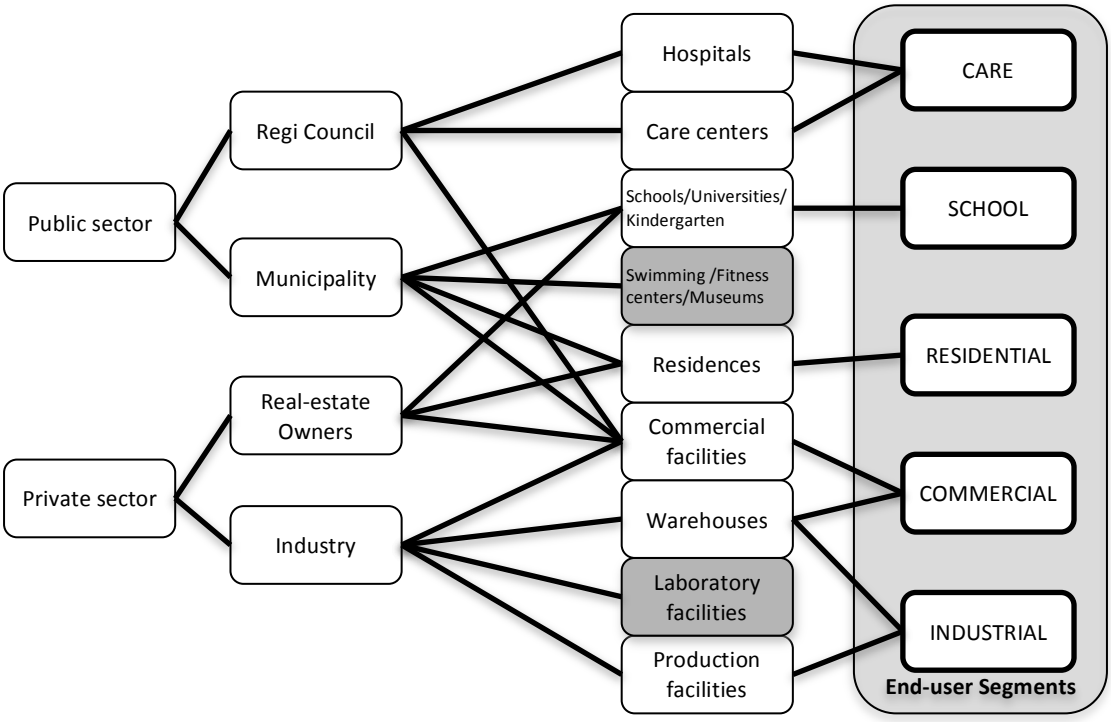


Figure 9 - Diagram showing the creation of the End-user Segments

The grey boxes are concerned with categories that were sorted out since they were determined to be too small or have special air requirements. The final segments are the boxes that are placed on the grey background on the right side in Figure 9: Care, School, Residential, Commercial and Industrial.

In total, eight semi-structured interviews with one or two real-estate owners per segment were conducted. The answers' validity was supported by a large consensus of opinion within each segment, but there was also some conformity across segments concerning questions that were not segment specific. The results based on only one interview were confirmed on crucial points by short additional telephone interviews with other companies from the segment. When the segments were evaluated they were assessed as relatively homogeneous and responsive (see 2.1.2 Current Approach), which made a microsegmentation superfluous at this stage.

Below, the result is compiled segment by segment. Actors from each segment were interviewed about, for Campolygon, positive aspects (Indoor Air Quality (IAQ), energy consumption, maintenance, space, innovative technology), and negative aspects (finance and roof construction). First, basic segment characteristics are presented, thereafter, needs and wants acknowledged in the interviews are reproduced and last, opportunities and challenges are identified.

6.1.1. Residential

The Residential segment consists of tenement buildings. The estimated segment volume is around 80 000 buildings[1] of varying sizes and forms, and there is a trend of increased segment growth. Camfil does, in the current situation, have a market share of 40 percent within this segment. The facility management was generally handled by installation companies. Both the private and public real-estate owners have strict economic targets and the payback time varies between three and eight years.

The dwelling stock mainly has flat and saddle roofs; however, various types of roof construction also exist. The distribution between the different construction types is unknown, but there is a significant number of residential buildings with flat roof. The roof construction trend for new production is also unclear, since some actors mean that they do not build facilities with flat roof anymore due to risk of leakage, while others mean that it is the best way to utilize all the space in the building efficiently.

The air intakes can both be centralized; one large intake placed on the roof or on the ground floor, or decentralized; several smaller intakes on the roof or façade. Some respondents indicated that the trend for new production is to place the air intakes behind the radiators in each flat.

The Residential Segment's Needs and Wants

All respondents within the Residential segment explained that there were no clear IAQ targets set by the company regarding particle concentration in the air. Instead, there were recommendations on minimum airflows in the apartments, and they were set by administrative authorities.

The questions regarding energy consumption showed that the real-estate owners have strict energy saving goals. The magnitude of these objectives varies across respondents, but the trend shows stricter and stricter goals. The reasons for this, according to the respondents, are that it provides both economical savings and a strengthened sustainability image. In the current situation, the respondents do exchange both whole

[1] Estimation based on the number of registered tenement buildings in Sweden (SCB, 2011)

ventilation systems and components in order to reduce the energy consumption and energy spending. Because of the large focus on energy saving, sustainability certificates are getting more and more common as image builders.

For the maintenance aspect, the interviewees indicated an interest in creating an acceptable work environment when possible. However, there were some concerns regarding Campolygon where some respondents questioned the safety when changing filters out on the roof. Another advantage with Campolygon is that it frees space within the building where the old filter cabin used to be, however, this aspect was not at all valued by the respondents.

The interest in new technology varied among the respondents, depending on the company culture and owner structure. The responses from the interviewees are, however, positive regarding Campolygon as a potential solution and one respondent even had a similar solution installed at the roof of one of its facilities.

Opportunities and Challenges

The opportunities and challenges that were found during the data collection for the Residential segment are shown in Table 8.

Table 8 - Opportunities and challenges for the Residential segment

Opportunities	Challenges
Restoration of 'Miljonprogrammet'	Small decentralized air intakes under windows in apartments
Sustainability certificates as image builders	Real-estate owners do not benefit directly from energy savings
Camfil has a strong position in the segment	

6.1.2. Commercial

The Commercial segment consists of offices, shops and warehouses, and its volume is estimated to approximately 27 000 buildings in Sweden[2]. The buildings are of varying size and the segment is characterized by several very large, dominating actors with significant number of buildings; however there are also many small owners. The large owners have internal facility management, while the small real-estate owners outsource to installation companies. The general growth trend for the Commercial segment is positive and in the current situation Camfil has a market share of 20 percent in this segment.

Commercial real-estate owners generally have very rigorous financial targets. The respondents meant that the payback time varied between two and absolute maximum ten years, and that no investment was approved without a clear economic benefit. The respondents also discussed that their tenants often only required ventilation during office hours. This affects the payback time for a ventilation system negatively, due to the prolonged time before the investment reaches break-even.

The commercial buildings are mainly built with flat roofs, because of the need to utilize the area efficiently, but there are a few other roof constructions as well. The air intakes are mainly centralized and placed on the roof.

The Commercial Segment's Needs and Wants

[2] Estimation based on the number of registered commercial buildings in Sweden (SCB, 2011)

In the current situation there are no regulations regarding particle levels in the Commercial segment. The respondents, however, pointed out that they experienced an increased interest from tenants in this matter. The interviewees meant that there were regulations and policies regarding airflows in the buildings, which were set by administrative authorities. Some of the respondents also had own policies for airflows, to be able to offer a good working environment for their tenants.

The energy aspect is essential for this segment. All respondents answered that their companies had own strict energy saving policies and objectives, which influenced the choice of ventilation systems. Both whole ventilation systems and components could be exchanged with the sole purpose of reducing the energy consumption and costs. All interviewees also pointed out that they had seen a trend of increasingly strict energy consumption targets on the market.

Facility management is currently either conducted through the companies' own work force or outsourced to installation companies. The respondents meant that the maintenance aspect was not the most important when considering ventilation, however, the respondents wanted to have acceptable maintenance conditions. The maintenance space is in the current situation varying, but often very narrow. The respondents also acknowledged that safety equipment that should be used for maintenance was often neglected.

The space that is freed with Campolygon can be highly valued, according to the respondents. However, the chance of utilizing the space efficiently is determined to be higher in new production, since the ventilation system then will be planned for this solution from the beginning.

Generally, the interest in new energy efficient technology for ventilation is high. However, if the interest can be transformed to an actual purchase is dependent on the company culture. The interest of adopting a product such as Campolygon is mixed. The respondents put much emphasis on energy consumption and the importance of utilization of the space within the buildings; however, none of the respondents had a similar solution on the roof of their facilities. There is an interest from the respondents to increase their efforts in sustainability branding and they also see similar trends among their tenants, which affects their demand for energy-efficient ventilation systems.

Opportunities and Challenges

The opportunities and challenges that were found during the data collection for the Commercial segment are shown in Table 9.

Table 9 - Opportunities and challenges for the Commercial segment

Opportunities	Challenges
Large and dominating actors	Ventilation does not run at all hours
Need for sustainability image	High financial targets
Large potential volumes	

6.1.3. Industrial

The segment, which consist of production facilities and warehouses without special requirements on ventilation, is estimated to include 25 000 buildings[3]. It is common that the buildings are owned by the company performing the activities in them. About 50 percent of the owners also manage the facilities, and the others outsource their facility management to installation companies. The actors in this segment range from small to very large firms. The industry segment buildings mainly have a flat roof construction, but variations occur. About half of the air intakes are placed on the roof, and centralized intakes are dominating.

In the current situation the general growth trend for the segment is positive due to an increased interest in ventilation. Camfil's current market share is estimated to 50 percent, but the Camfil's growth trend is decreasing. The interviewees indicate that the financial targets are high so that every investment must be defendable, and estimate the payback time to vary between two and eight years. Generally, the payback time is calculated on the whole solution, but in the case of minor exchanges the payback is estimated on component level, and therefore shorter. All respondents are using LCC-analysis to decide the life cycle cost of the components or solution. Although, there is a large focus on the financial aspects of an investment, the respondents meant that the most important issue still is the functionality.

The Industry Segment's Needs and Wants

The industry segment interviewees follow the policies on particle levels in the air that are set by the administrative authorities, but the respondents have lately experienced increased demand for better airflow in their buildings. This is a problem, since the pressure drop is significant and the AHUs consume more energy when the airflow is increased.

In this segment the energy issue is therefore central, since they have to produce their goods as cost efficient as possible to stay competitive on the market. Additionally, the interviewees meant that they had experienced an increased focus around the energy efficiency and energy consumption during the last years. This had been shown by ambitious goals for reduction of energy consumption. The interviewees also mentioned the possibility for building a brand around sustainability as an important aspect of energy saving. The increased focus on energy saving affected the choice of ventilation system, and both whole ventilation systems and components in a solution had been exchanged in order to reduce the energy consumption.

In the current situation, the work environment during maintenance varies, and everything, from large ventilation rooms to narrow cabins, is present. According to the respondents, there is an interest in creating a better and sustainable work environment for the maintenance personnel. However, the interviewees determined this possibility larger for new production than existing facilities.

The space that is freed by the use of Campolygon is not of significance in this segment; however, there was some interest from the respondents when it came to new

[3] Estimation based on the number of registered industry buildings in Sweden (SCB, 2011)

production of buildings. The interest in new technology is generally high and all the respondents actively searched for new ventilation solutions.

The interest in investing in a product such as Campolygon is mixed; the respondents meant that adopting an innovation or a relatively new technology is coupled with high uncertainty regarding its performance. Therefore, the interviewees requested thorough testing and access to the test results in order to become convinced by the advantages of the innovation.

Opportunities and Challenges

The opportunities and challenges that were found during the data collection for the Industrial segment are shown in Table 10

Table 10 - Opportunities and challenges for the Industrial segment

Opportunities	Challenges
Availability of test data, due to testing of prototype on industrial building	Heterogeneous segment
Sustainability image	Many real-estate owners
Camfil has a strong position in the segment	

6.1.4. School

The School segment consists of school and pre-school buildings in Sweden, and the segment volume is estimated to 27 000 buildings[4]. These are mainly publicly owned by either one of the 290 different school-municipalities in Sweden directly, or by public real-estate owners. The facility management is mainly outsourced to installation companies.

The general growth trend is positive, both economically and due to the increased media awareness of the connection between the schoolwork environment and air quality. Camfil has recently formed a school segment for its Comfort Air products, which is why Camfil's market share and growth potential are not yet available. The financial targets at municipal level is experienced to be strict, but the respondents believe that investments that can contribute to reduced energy consumption and increase the chances for successful sustainability branding are approved to a large extent. The payback time was estimated up to 15 years, which is generally calculated on the total ventilation system through the use of LCC analysis. If a component is exchanged in an existing system the payback time often is required to be shorter than for a system.

All technical prerequisites are varying in this segment, which depends on the very varying size of the buildings. However, the roofs are mainly flat or of saddle types and most of the air intakes are located on the roof.

The School Segment's Needs and Wants

The interview respondents from the School segment state that they primarily follow the policies and regulations regarding the IAQ that are set by the administrative authorities. This means that they at least have the minimum airflow and the filter class that is required. However, some actors set own policies that exceed the minimum

[4] Estimation based on the number of schools in Sweden (Skolverket, 2011)

requirements. All respondents also experience that there is a development towards increased need for higher airflows in the buildings. In addition, this segment is conducting component exchanges to increase the IAQ.

Energy consumption is central for actors in this segment; the respondents state that it is dependent on both the interest to save money, but also the willingness to profile the municipalities as 'green' and sustainable. According to the interviewees, they experience tougher and tougher energy saving goals. The savings in energy consumption is visible in this segment, since municipalities are public and therefore often have set budgets for energy spending. The respondents mean that the money saved by reduced energy consumption therefore can be used for other purposes than ventilation.

Maintenance is carried out in very differing environments, sometimes the ventilation central is large and maintenance is easy, however, in many cases it is very narrow. The respondents state that there are recommendations regarding safety equipment, but that the installation company or technician who perform the maintenance is responsible for following them. There is an interest to create a more acceptable work environment. All space in a school is highly valued, and the respondents believe that a ventilation system that would free space, even when concerning exchange in existing buildings, can be useful for the school activities.

The interest in new technology is large, mainly due to the strict and ambitious energy consumption goals. However, the respondents believe that the political mandates and the organization of the decision making affect this. Generally, the respondents were positive to the Campolygon solution and another company had introduced one of the interviewees to a similar solution earlier.

Opportunities and Challenges

The opportunities and challenges that were found during the data collection for the School segment are shown in Table 11.

Table 11 - Opportunities and challenges for the School segment

Opportunities	Challenges
Large interest for improving IAQ in schools	Long buying process due to political involvement
Sustainability image for municipalities	Relatively small and limited segment
Not so financially restricted	

6.1.5. Care

The Care segment consists of hospitals and care centers and the potential volume is estimated to 1 500 buildings[5]. These buildings are owned by one of Sweden's 20 regi councils directly, indirectly via a fully owned company or by private real-estate owners. The facility management is mainly outsourced to installation companies. The roof construction of the buildings, the air intake placement and the size of the buildings are very varying.

[5] Estimation based on the number of hospitals and care centers in Sweden (SKL, 2011)

In the current situation the general growth trend is positive and Camfil's market share is 50 percent. The growth trend for Camfil is also positive, still recovering from the financial crisis. When deciding upon an investment politicians are involved, they determine the financial boundaries from case to case, which implies that the payback time is rather uneven. According to the respondents, the longest payback was calculated on the technical lifetime, thus 20 years. However, when investigating a potential investment the respondents stated that they used LCC analysis.

The Care Segment's Needs and Wants

The respondents in the Care segment experienced high demands on the IAQ, due to the special care environment and the need for disease control. The respondents also meant that the requirements on IAQ are stable, but that there is an increased focus on protection against resistant bacteria.

There are very strict general energy consumption goals that are set by the regi councils, since they own other types of companies as well. The tough energy consumption targets influence the choice of ventilation system. However, the interviewees had discovered a gap in the current ventilation business, in that there was no new energy saving solution tested in care environment. According to the respondents, tested solutions would be highly valued by the decision makers. Despite the lack of testing, the respondents stated that exchange of both whole ventilation systems and components have occurred with the purpose of reducing the energy costs.

The work environment for maintenance personnel is generally good within this segment; however, there is an interest in improving the work environment to an acceptable level where problems have been exposed. The maintenance staff always followed safety precautions, due to the health risks of the care environment. The interviewees also meant that the general impression is that freeing space in existing buildings is not relevant. There is a large interest in new technology within this segment, but the respondents meant that the care environment is very special, which affects the need for well-tested and robust solutions. Furthermore, one respondent meant that this limited the adoption of new innovations.

Opportunities and Challenges

The opportunities and challenges that were found during the data collection for the Care segment are shown in Table 12.

Table 12 - Opportunities and challenges for the Care segment

Opportunities	Challenges
The need for test-data from care environments	No current tests conducted in care environment
General energy consumption targets for all regi council activities	High IAQ requirements
Camfil has a strong position in the segment	Very small segment

6.1.6. Summary

A summary of the results is shown in Table 13. Every row shows a generalized aspect that was described above and therefore, investigated during the end-user segmentation, and each opposing column represents one of the investigated segments. This enables a perspicuous segment comparison.

Table 13 - Summary of the results from the End-user Segmentation

	Residential	Commercial	Industrial	School	Care
Volume (buildings)	>80 000	>27 000	>25 000	>27 000	>1 500
Payback time (years)	3 – 8	2 – 10	2 – 8	0 – 15	0 – 20
Growth potential	Good	Good	Medium	Very good	Good
Needs	Energy saving	Energy saving	Energy saving	Energy saving	Equivalent air quality
Wants	Low cost	Sustainability image	Improving air quality	Improving air quality	Energy saving
	Sustainability certificate	Low cost	Sustainable work environment	Sustainability image	Improved air quality
	Equivalent air quality	Improving air quality	Defendable LCC	Increase available space	Well-tested technology
Opportunities	Restoration of 'Miljonprogrammet'	Large and dominating actors	Availability of industrial test-data	Large interest for improving IAQ in schools	The need for test-data from care environments
	Sustainability certificates	Sustainability image	Sustainability image	Sustainability image for municipalities	General energy consumption targets for all regi council activities
	Camfil has a strong position in the segment	Large potential volumes	Camfil has a strong position in the segment	Not very financially restricted	Camfil has a strong position in the segment
Challenges	Small decentralized air intakes under windows in apartments	Ventilation does not run at all hours	Heterogeneous segment	Long buying process, due to political involvement	No current tests conducted in care environment
	No direct and visual benefit of energy savings for the real-estate owners	High financial targets	Many real-estate owners	Relatively small and limited segment	High IAQ requirements

6.2. Segment Scoring

The section aims to grade and score the results from the previous section to achieve a prioritization of the segments based on their suitability as an initial focus segment for Campolygon. This will be presented element-by-element and summarized in a partial segment-scoring matrix applied according to the theoretical framework (4.1 Segment Scoring Matrix).

6.2.1. Needs and Value

The needs and wants that were relevant for the product and expressed by the end-users, displayed in the result summary table (6.1.6 Summary), form the basis for the need and value rows in the Segment Scoring Matrix. These characteristics were graded on a scale from -5 to 5, according to the framework in (4.1.1 Need) and (4.1.2 Value). Every need or want was graded according to how well Campolygon, in its current form, could satisfy

it. The result of the grading is shown in Table 14 and the grades are thereafter motivated.

Table 14 - Summary of needs and value scoring

End-User Needs	Campolygon fit
Energy saving	5
Improved IAQ	4
Equivalent IAQ	3
Increased available space	2
Sustainability image	2
Sustainability certificate	1
Sustainable work environment	0
Defendable LCC	-3
Low cost	-4
Well-tested technology	-5

The most distinguishable advantage of Campolygon is its ability to reduce the energy consumption of the ventilation system. This quality has also been tested on the prototype and documented. Therefore, a need for energy saving suits Campolygon perfectly and this characteristic is therefore graded with the highest grade 5. A need for energy saving suggests a market readiness and it can also be an indicator of willingness to adopt the product.

The second most important selling point for Campolygon is the possibility to increase IAQ. Because of its construction that decreases pressure drop to insignificant levels, Campolygon can contain filters of a higher filter class without increasing energy consumption. A need for increased IAQ is therefore a signal of market readiness and graded with a 4. The reason that IAQ has a lower grade than energy consumption is that there are presently no comparative test documents to confirm this advantage. The need for equivalent IAQ was graded slightly lower, at 3, since this level is obviously obtainable with the current system. Thus, the willingness to adopt the product is less affected by this need.

Due to the fact that Campolygon is placed on the roof, the space where the filters are normally placed could sometimes be used for other purposes. The fit was graded at 2 and the reason for the modest grade is that today; all AHUs come with attached filter cabinets. Consequently, for Campolygon to actually create more available space, there is a need to modify the AHU connected to it.

There was also an interest in creating or enhancing the sustainability image for some respondent companies. Campolygon can be a part of this creation, but it demands other investments from the customer as well, since the only thing Campolygon can currently do is reducing the energy consumption. Therefore, the sustainability image is given the modest positive grade of 2. Some respondents also talked about sustainability certificates, which due to their broad scope received an even lower grade, 1. The certificate viz. includes aspects that cannot be fulfilled by Campolygon, for example limits on CO_2 emissions.

The last advantage that has been accredited Campolygon is the improved work environment. However, the interview study has shown that the advantages of not having to work in narrow, dirty filter rooms are outweighed by the risks connected to a

work environment outside on the roof. The advantages and disadvantages made the final grade neutral, 0.

The financial aspect is one of Campolygon's greatest weaknesses. The production cost is currently high and the payback time is long (5.3 Campolygon), even though the energy costs are reduced. Therefore, the need for low costs, which suggests high price sensitivity, has been graded -4. The need for a defendable LCC is graded slightly less negative -3, because this signifies price awareness, but a slightly lower price sensitivity.

The lowest grade, -5, was given to the need for well-tested technology. The reason is that even if there has been some testing on the prototype of Campolygon, much more testing must be done in a more structured and pointed environment and with suitable, extensive documentation to satisfy specific testing demands. This requires the largest investment from Camfil and is therefore graded the lowest. The need thus signals that the market readiness is low, which leads to a low willingness to adopt.

When the grades are inserted in the Segment Scoring Matrix according to the theoretical framework (4.1.1 Need) and (4.1.2 Value), some trends are already visible (see Table 22 Partial Segment Scoring Matrix). It is evident that Campolygon is less adapted to the most important need of the Care segment than the needs of the other segments. It is also visible that the needs and values of the School segment are appropriate for the use of Campolygon.

6.2.2. Volume

The third element of the Segment Scoring Matrix consists of a contexture of the number of buildings and the common payback time for the segments according to the framework in 4.1.3 Volume. The Volume and payback time row in the Results Summary table (6.1.6 Summary) form the basis for each segment. Since these are numerical measurements, the evaluation is straightforward, but a scale has been created to give each volume measure a value appropriate for the Segment Scoring Matrix.

For the volume, the scale is shown below:

Table 15 - Summary of volume scoring

Segment Volume (# of buildings)	0-20 000	20 001-40 000	>40 000
Grade	-1	0	1

A large number of buildings is preferable, since this will increase the possibilities of the segment. This scale must thus be relative since there is no set target. Therefore, a span around the average number of buildings for one segment, 20 000 – 40 000 buildings, was given the grade 0. If a segment has more than 40 000, the segment is seen as large and this therefore given the positive grade of 1. 20 000 buildings or fewer is seen as a small segment giving the segment a volume disadvantage which is graded -1. This gives some significance to the number of buildings.

When it comes to payback time, the interval is based on the Campolygon. The payback time for Campolygon is currently somewhere between 6-13 years as stated in the LCC-analysis table (5.3 Campolygon). Therefore, a demand for a payback time of 0-5 years

was given the negative grade of -1. Between 6 and 10 years, the payback time is acceptable for Campolygon and it therefore received the grade 0. A payback time of over 10 years was seen as positive, since it would match Campolygon's intended production plan, without any major changes to cut costs. The scale is shown in the Table 16 below.

Table 16 - Summary of payback time scoring

Payback time (years)	0-5	6-10	>11
Grade	-1	0	1

When the volume and payback time grades were weighed and inserted in the Segment Scoring Matrix, (Table 22), it was evident that this element gave the Residential and School segment an advantage. The Residential segment is the largest and thus has a volume advantage, and the School segment was one of the segments with the longest payback time.

6.2.3. Complete product

When it came to complete product, the four technical aspects, testing, roof construction, size of buildings and air intake were graded separately and then weighed together according to the framework (4.1.4 Complete Product). The scales for each aspect are displayed and explained below.

Firstly, testing was graded so that need for more testing would give a negative -1. If there was no need for testing, the score was set to 0 and if the tests that were already done could be used for the segment it got a grade of 1. The reason to set a higher score where the tests could be used was that there was a constant demand for affirmation of product qualities. Therefore, usable test results are positive, even if they are not specifically requested. The scale is shown in Table 17.

Table 17 - Summary of need for testing scoring

Testing	
-1	Need more testing
0	No apparent need for testing
1	The tests that are done can be used

Roof construction is the second critical issue for Campolygon. In its current shape, it needs a flat roof for the assembly. Therefore, the percentage of flat roofs within the segment was important. A low percentage of flat roofs was graded negatively with -1, while a high percentage of flat roofs was graded with 1. If the roof construction was varying, with about 50 percent flat roofs, the grade was set to 0. The reason that the segments with varying roof construction got a 0 is that there is a possibility to develop the construction of Campolygon to fit other roof constructions. The scale is shown in the Table 18 below.

Table 18 - Summary of roof construction scoring

Roof construction	
-1	Rarely flat roofs
0	About 50% flat roofs
1	Mainly flat roofs

The size of the building is another important aspect for Campolygon, which is adapted for large buildings. Therefore, if the segment had mainly small buildings, it was graded with -1, and if it contained mainly large buildings, it was graded 1. If the building size was varying, nothing could be said about the effect on the total score and the grade was consequently set to 0. The scale is shown in Table 19.

Table 19 - Summary of size of building scoring

Size of building	
-1	Mainly small buildings
0	Varying size of buildings
1	Mainly large buildings

The last Complete Product aspect considered was the placement of the air intakes. For the facility to be suited for a Campolygon, it has to have central air intakes. It is also crucial that the intake is placed on the roof for this innovation to be adaptable. Therefore, a negative grade, -1, was given when this was rarely the case. The reason why this is not a stronger aspect is that all segments actually have a certain amount of central air intakes on roofs. When this was true for about half of the segment, the grade was neutral, 0. When most air intakes were placed on roofs the grade was positive. The scale is summarized in the Table 20.

Table 20 - Summary of placement of air intake scoring

Air intake	
-1	Air intakes rarely placed on the roof or decentralized air intakes
0	About 50% of the air intakes are centralized and placed on roofs
1	Most air intakes are centralized and placed on roofs

When considering the weighed result of this element showed in the Partial Segment Scoring Matrix (Table 22), it is shown that the Industrial and Commercial segment have an advantage when it comes to the Complete Product. This is because these segments consist mainly of the right type of buildings, which means that Campolygon is applicable for a larger part of the total number of buildings in the segment.

6.2.4. Marketing communication

The interview responses about interest in new technology and channels to new solutions (6.1 End-User segmentation) are the basis for the score of marketing communication. The grade is set based on the level of development of the channel for new technology, the presence on fairs, availability of branch information, and also, the interest in new technology. The grade 1 is given if all aspects are good; the grade 0 if the aspects are medium, and -1 if there is no real interest for these aspects. The scale is shown in Table 21.

Table 21 - Summary of marketing communications scoring

Marketing Communications	
-1	Unclear possibilities to develop channel to Camfil, no contact with branch info, no real interest in new technology

0	Clear possibility to develop channel to Camfil, some branch info through papers, general interest in new technology
1	Established channel with Camfil, presence at branch exhibitions, significant interest in new technology.

These are very qualitative measures, but there were still some differences between the segments that is shown in the Partial Segment Scoring Matrix (Table 22). Both the Residential and Commercial segment has a strong interest in new technology and already developed marketing communication with Camfil, therefore these two segments get high scores. The Industrial segment gets low scores due to its heterogeneity and the Care segment due to its modest interest in new technology and underdeveloped channels to the ventilation industry. This means that the maturity for new technology is higher in the Residential and Commercial segments than in the other segments.

6.2.5. Summary

The results from these four elements give a partial result shown in Table 22. The scores from the Chapter 7, Empirical Data: Channel Design, will add one more row to this matrix and complete it.

Table 22 - Partial segment scoring matrix

	Residential	Commercial	Industrial	School	Care
Need	5,00	5,00	5,00	5,00	3,00
Value	0,00	0,67	0,33	2,67	1,33
Volume	0,25	-0,25	-0,25	0,50	0,00
Complete product	-0,25	0,50	0,50	0,25	-0,25
Marketing communications	1,00	1,00	-1,00	0,00	-1,00
Partial TOTAL	**6,00**	**6,92**	**4,58**	**8,42**	**3,08**

Since the scale goes from -5 to 5 and all the potential segments received positive results, there is a chance for all the potential segments to be targeted. Thus all segments pass the original challenge. This does, however, not mean that they are all equally good; they could still all be inapplicable or suitable segments.

Examining the matrix, it is evident that the best segment so far is the School segment. This means that the School segment has needs that Campolygon can fulfill, that it is comparatively large and does not require too much technical adaptation. All this indicates that the School segment is a good target segment for Campolygon. It is, however, too soon to conclude that the School segment is the only good segment.

As also can be seen in Table 22, the Care segment is lagging behind at this stage. Its result is not negative, so there is still a possibility for Care to become a profitable segment, but there is a need for significant adaptations on the product and the volume is also limited. Therefore, the positive aspects from later stages of the analysis must be significant for this segment to become interesting as an initial target.

7. Empirical Data: Channel Design

The aim of this chapter is to present the channel design and prioritization of the segments in a complete segment-scoring matrix (4.1 Segment Scoring Matrix). First, the underlying data concerning the projection process and the potential intermediaries is explained and adapted by using the theoretical framework (4.2 Channel Design). The final part of the chapter is dedicated to the aggregation of all empirical data from chapter 6 and 7.

7.1. Value Chain and Actor Relationships

The purpose of this section is to show the current situation, needs and wants and potential interest in cooperation from different actors in the value chain. This is introduced by a description of the ventilation projection process and Camfil Svenska's sales strategy. Thereafter, the Campolygon stakeholders are presented, followed by a closer investigation of the most suitable intermediaries, based on the interviews performed in Phase 3: Channel Design and Intermediary Selection (3.2.3).

7.1.1. The Projection Process for Ventilation Installation

When a new ventilation installation is projected, there are a number of different actors involved. To find a suitable channel it is important to map the current value chain and consider all stakeholders. Therefore, the end-user interviews were partly focused on finding the actors involved in the projection of new ventilation solutions.

For new buildings, the common way to project ventilation was to set up a project group with an internal project leader. In the group, there were external HVAC consultants and constructors responsible for creating the solution. There was also a member in charge of maintenance, either an internal or external facility manager. It was important that this group is in close cooperation with the construction company and the architects. When replacing ventilation equipment in existing buildings, the process was similar, but the project group was often smaller and the internal administrator often had a larger responsibility and power.

The interview respondents were also asked to specify the deciding party that selected the actual products used in the solutions. Many meant that the project leaders had the final deciding power, but there were several examples of cooperation where the installation company or the facility manager participated in the decision-making. In most cases, however, the HVAC consultants came with strong recommendations that were difficult and sometimes expensive to change.

The value chain was similar throughout the segments, but there were some differences. For example, the extent to which the installation companies are involved in the projection process was very company specific. The reason is that some companies choose to outsource facility management and some companies have their own facility managers. If facility management was outsourced, the installation companies were often involved in the projection process. The Industrial and Commercial segments relied more on internal facility management than the other segments did. They were often large actors, which gave more economies of scale for an internal facility management department. Another difference was that the Care segment had disease control specialists as a part of their project group, due to their many special needs regarding air quality.

To conclude, the end-users often used the project format for ventilation installation. They used internal project members as well as external HVAC consultants and in some cases (often where facility management was outsourced) installation companies were involved. There were some variations among the segments, but there was an obvious general similarity.

7.1.2. Sales and Relationship Strategy at Camfil Svenska

The particular value chain build-up, with almost half of the total sales through installation companies has led Camfil to set up goals to develop the indirect sales channel further and thus cooperate more closely with installation companies. There is also some cooperation with HVAC consultants, but this is secondary since HVAC consultants are not customers. However, Camfil has started to acknowledge that they might have a significant role for the choices made by the end-user.

Other potential cooperation partners that Camfil has considered are the AHU manufacturers, but currently, the AHU manufacturers prefer arm's length relationships and Camfil concurs. The long-term goal with all Camfil's customers and partners is, however, to create sustainable relationships with all customers and cooperate with companies with similar core values. They try to develop these relationships by educating important customers and have monthly campaigns for large customers and cooperation partners. One possible way to develop these relations is co-development of Value-Added Services (VAS) with installation companies.

Camfil has for a long time been known to have a technically competent sales force, which is important when trying to support an R&D centered and quality focused brand. Therefore, Camfil is constantly working to increase the technical capabilities in the sales force to differentiate their offering. This is very important since Camfil's main products, the filters, are rudimentary products. Therefore, extra services or a strong brand can be vital for success.

It is clear that Camfil has established goals about channel and relationship development and a high capacity in the sales force. This means that Camfil has capacity to increase the current offering if needed. However, Camfil sees a need for education of the sales force to be able to incorporate a new innovation and keep its position when it comes to technical competence. Usage of the existing and well-functioning sales force can facilitate the diffusion rate of a new product, especially since the current structure has complete market coverage. The development of a new business area is also possible, but this type of solution would require more investments and is therefore not the first choice for Camfil.

7.1.3. Potential intermediaries

The potential intermediaries were chosen either through being mentioned during end-user interviews or by currently having a relationship with Camfil. This first screening gave six possible types: construction companies, architects, sustainability certifiers, AHU manufacturers, installation companies and HVAC consultants. Through a pilot study, the different types were investigated to see which had a real potential to be part of the channel for Campolygon.

The result of this investigation was that construction companies were not interesting, since they did not design the ventilation solutions. Architects were mostly involved if the ventilation applications concerned the façade, and were of modest importance since Campolygon is attached on the roof. Sustainability certifiers only established goals for the total energy consumption or pollution and had no interest in the actual products. Therefore, they were all excluded in the closer investigation.

However, the pilot study also showed a few intermediaries that seemed interesting and worth a more thorough investigation. The AHU manufacturers were one of them, since they showed an unexpected interest in developing the cooperation with Camfil due to their closely related products. The installation companies also proved interesting, which was more expected due to their current cooperation with Camfil. There was also an interest in extending the current offering, which made them a highly interesting potential partner. Lastly, the HVAC consultants, who had already been mentioned in almost all end-user interviews as important participants in the ventilation projects, were also chosen as one of the most interesting intermediaries. They also showed a high interest in cooperation with suppliers. All these three intermediaries were therefore considered to have an important function in a potential Campolygon channel. The researched intermediaries were also considered to be possible actors of a scalable channel, since they all showed initial capacity to expand.

In conclusion, the result from the investigation was that three intermediaries could be important players in the sales and distribution channel for Campolygon: HVAC consultants, installation companies and AHU manufacturers. The result of the closer interview study with these three potential intermediaries is developed below. The current situation, the needs and wants and finally the potential interest of the intermediaries will be explored.

HVAC Consultants

At present, the HVAC consultants are involved in all types of ventilation projects. Commonly, they are assigned by end-users to compose different types of solutions, but also installation companies and AHU manufacturers can engage consultants for special solutions or when their workload is heavy. The customers of HVAC consultants range from large industries and municipalities to small real-estate owners, which means that they have a very wide customer base. It is also important for HVAC consultants to have many recurring customers, which is why they try to create lasting relationships.

The role of the HVAC consultant is primarily to create and construct the ventilation solution and they do this on product level. Sometimes, the product supplier is a part of the solution creation, but the selection of products is always also based on previous experience and existing, functioning supplier relationships.

The final product decision is always made by the buyer, which is most often the end-user, but can also be an installation company. However, it can often be costly to choose other products than recommended, since this can require changes in the ventilation solution. Therefore, it is most common that the recommended products are chosen.

The HVAC consultants are interested in developing their relationship with suppliers further, especially when it comes to product development and testing. This is because

product knowledge can increase the efficiency of the consultants. It is also important for the HVAC consultants that sales forces increase their technical competence and avoid overpromising sales pitches. Reliable technical data and full-scale test results are significant for HVAC consultants, particularly when it comes to innovations and new products, since they put their brand name on the line if recommended products do not function as well as promised. The brand is very important for HVAC consultants since a good reputation is vital in the consulting.

It is important for HVAC consultants to be able to extend their current product offering and they therefore have the capacity to expand. Consequently, there is an interest in new technology, as long as there is sufficient test data to support it. Testing can be conducted in cooperation with a supplier if necessary, but HVAC consultants mean that the best way to start cooperating with a supplier is when an end-user problem needs to be solved. It is evident that the HVAC consultants are interesting and underdeveloped cooperation partners due to the fact that they do not actually buy products from Camfil. However, it could potentially be pivotal for Campolygon if HVAC consultants were involved.

AHU Manufacturers

AHU Manufacturers are producers of most types of technical components in ventilation systems and they are currently Camfil's OEM customers since they use Camfil filters as components in their AHU's. For AHU manufacturers, direct sale is very uncommon. They only sell directly to very large customers; otherwise they sell through installation companies. AHU manufacturers have many recurring customers and try to create lasting relationships with them. It is very common that HVAC consultants assign products from the AHU manufacturers and therefore there is often a close and important cooperation between these two actors. Suppliers are rarely involved in the creation of the solution, but there is an interest in decreasing the number of suppliers for each component. Closer supplier relationships are therefore interesting, but there is a larger interest for technical components, such as electronics, than for other, simpler, components.

AHU manufacturers want more reliable technical data and test results from suppliers and continuously look for trustworthiness in potential partners. Interesting new cooperation can happen both with suppliers and with HVAC consultants. It is also important with product quality insurance and secured, timely deliveries. The reason is that the supplied components will be used in production of AHU's and therefore will affect the quality of the AHU manufacturers' products. Branding is important also for AHU manufacturers and unreliable components will affect their brand image negatively. AHU manufacturers are always interested in increasing their branding, and it is therefore important for them to be able to create ventilation solutions with low energy consumption and an acceptable LCC.

Existing supplier relationships facilitate introduction of new technology to AHU manufacturers since trust is an important element. When it comes to Campolygon, however, there is skepticism about the use of the product. All AHU's currently have filter cabinets attached and are equipped with filters when they are sold. Since Campolygon is an alternative to these filter cabinets, there is a need to change the form of the AHU's to exclude the filter cabinet for a perfect fit. If this is not done, the filter cabinet will take up

unnecessary space. AHU manufacturers are also concerned about the work environment for the maintenance personnel. The respondents see a danger in creating a solution where there is a need to go out on the roof to change the filters, especially wintertime.

Therefore, the AHU manufacturer interest in the Campolygon is limited. There is also a potential hindrance in the fact that the margins are small and that the AHU manufacturers are large and profit-centered and therefore can be difficult to persuade.

Installation Companies

Installation companies often have two different functions for their customers. One part is to purchase and install ventilation systems and the other is to conduct the maintenance during the technical lifetime of the product. This second part consists of filter exchange, duct cleaning and everything that is needed to keep the ventilation systems functioning. Normally, the first part consist of one off deals, while the second part means binding customers with contracts lasting for a few years. Customers range from large construction companies to small real-estate companies.

Presently, HVAC consultants often specify the solution, which means that there is already a product recommendation when the installation company gets involved. The installation company can also request a function from the supplier, who picks a suitable solution from their product portfolio. Normally, the solution can be found among standardized material. The choice of products is often based on experience and supplier relationships. Close collaboration has more influence than arm's length relationships.

Many installation companies wanted to become total solutions providers and get involved earlier in the value chain. In order to achieve this they were interested in creating more long-term relationships with both suppliers and customers. These relationships were also important to gain knowledge of how new products could create value for the end-users. There is also a previous cooperation with Camfil, which is positive when it comes to the possibility for cooperation around Campolygon. The capacity to extend the current offering was, however, often dependent on the size of the company.

The qualities that installation companies wanted from suppliers were reliable technical data, full-scale test results, and timely deliveries. There was an interest in new technology as long as technical data was present. It was also very important that maintenance is simple, since the installation companies also perform the actual maintenance.

Since the solution is most often specified when the installation company gets involved, installation companies can be seen as subordinate channel members. The result is that they can be interesting intermediaries, but cooperation with them is not enough to successfully introduce the innovation.

7.1.4. Summary

This section presented the value chain buildup for Camfil by displaying a common ventilation projection process followed by Camfil's sales and relationship objectives. Thereafter three potential intermediaries were identified as possible important

members of the Campolygon sales and distribution channel. These will be further investigated in the channel design process below.

7.2. Channel Design

This section aims to show how interesting intermediaries are developed into potential sales and distribution channels. This will be presented step by step according to the channel design model developed in 4.2 Channel Design. The section will result in a selection of two possible channels for Campolygon.

7.2.1. Channel objectives

By combining the earlier stated general goals for Camfil (see section 5.1. Company Overview and 7.1.2 Sales and Relationship Strategy at Camfil Svenska) and the goals with Campolygon suggested in section 5.3 Campolygon, the channel objectives were formed in accordance with the theoretical framework (4.2.1 Stage 1: Channel Objectives)

The channel objectives for Campolygon were thereby abstracted:

- To create value for both Camfil and intermediary
- To offer an opportunity for Camfil to focus more on relationship building with key intermediaries
- To increase the total innovativeness of the value chain by having closer relationships, and thereby creating possibilities for differentiation and growth for Camfil

7.2.2. Channel Design Constraints

The scored channel design constraints by each considered intermediary are displayed inTable 23. These constraints were all graded on a scale from 0 to 10 according to the framework presented in (4.2.2 Stage 2: Channel Design Constraints). Each intermediary was scored on how limiting the constraint was, where 10 is not at all limiting and 0 is very limiting. In Table 23, AHU, HVAC and IC stand for different intermediaries, while DS is direct sales.

As can be seen in Table 23, the grades give indications of which intermediaries that are the least limited by the constraints. It is evident that installation companies and HVAC consultants have the best scores. It can also be deducted that the AHU manufacturers seem to have more limitations than all the other intermediaries. The reasons for the grading in Table 23 are presented below.

Table 23 - Channel Design Constraints

CHANNEL DESIGN CONSTRAINTS	AHU	HVAC	IC	DS
Availability of good intermediaries	3	10	7	10
Traditional channel patterns	6	3	10	8
Product characteristics	2	5	8	8
Camfil's financial resources	1	8	6	3
Competitive strategies	3	7	7	2
Geographical spread of customers	6	10	10	7
TOTAL	**21**	**43**	**48**	**38**

Availability of good intermediaries

The HVAC consultants have been graded with high grades in this category, since there are many HVAC consultant firms. As was shown in section 7.1.2 Sales and Relationship Strategy at Camfil Svenska, Camfil can extend the sales force if necessary and, therefore, direct sales has also been scored highly. The lowest grade was given to the AHU manufacturers since there are only a few very large actors considered to be alternatives for cooperation. This can be compared with the installation companies, which are many and of very varying size, thus a better opportunity than AHU manufacturers and given a higher grade.

Traditional Channel Patterns

In this category, the best alternative was the installation companies, which have been scored high since Camfil's current sales channels often include them. For the same reason direct sales received a high grade. The lowest graded intermediary was the HVAC consultant, since Camfil historically has not invested much in relationships with them.

Product Characteristics

When considering the product characteristics, it is evident that Campolygon is most suitable to the installation companies and direct sales, since the product characteristics do not affect their current sales structure. The reason for AHU manufacturers getting a low grade is the risk of cannibalization on their products. The lack of reliable test-data and the fact that they recommend products based on experience, affect the scoring of the HVAC consultants.

Camfil's Financial Resources

This category was graded on the basis of the size of the investment that the cooperation with the potential intermediary requires. If a large investment was necessary the intermediary received a low grade and the other way around. As can be seen in Table 23, only the HVAC consultants have a high grade, this since the investment this cooperation needs is lower than for any other alternative. AHU manufacturers and direct sales received low grades because the interviews showed that the expansion of the current relationship would require large investments from Camfil. The installation companies already cooperated with Camfil and therefore the investments needed were assessed to be less significant.

Competitive Strategies

Competitive strategies refer to the possibility for the intermediary to develop similar product and strategy with a competitor to Camfil. The intermediaries that had similar products, which ran the risk of becoming cannibalized by Campolygon, were graded low, therefore direct sales and AHU manufacturers received low grades as shown inTable 23. It is evident that the HVAC consultants and installation companies are not likely to develop a substituting product and channel structure since these two potential intermediaries only offer services, which is why they have high grades.

Geographical Spread of the Customers

The constraint refers to how many end-users the potential intermediary can reach. If it can reach many end-users, a high score is assigned. As can be seen in Table 23, all the intermediaries give good possibilities for reaching many customers. The reason for the top scores of HVAC consultants and installation companies is that many of the firms are large and have a countrywide coverage, which means that they have a significant opportunity to sell Campolygon to end-users. The somewhat lower grades on AHU manufacturers and direct sales depends on that it is assessed to be more difficult to reach as many customers using these intermediaries.

7.2.3. Pervasive Channel Tasks

The most pervasive channel tasks are identified as is described in section 4.2.3 Stage 3: Pervasive Channel Tasks. The section 7.1.1 The Projection Process for Ventilation Systems forms a basis for the identification of the tasks and also for the assessment of the possible actors that can perform these activities. Table 24 shows the most likely activity chain for Campolygon and the possible actors involved in each activity, which furthermore is the basis for the next stage: the channel alternatives.

Table 24 - Identified Pervasive Channel Tasks and the actors that can be involved in them

Activity Chain	Possible actors
1. Identification of end-user need	End-user
2. List of requirements creation	End-user HVAC
3. Solution design	End-user AHU HVAC Installation Company Camfil
4. Solution selection	End-user Installation Company
5. Supply of the selected solution	AHU Installation Company Camfil
6. Installation	End-user Installation Company
7. Service and maintenance	End-user Installation Company

7.2.4. Channel Alternatives

The actors controlling the channel tasks, deduced in the earlier stages, were combined in different channel alternatives, according to 4.2.4 Stage 4: Channel Alternatives.

Unrealistic alternatives were disregarded right away, which resulted in the four possible alternatives shown in Table 25.

Table 25 - Summary of channel alternatives and the actors involved

Channel Alternative	Actors involved (except end-user)
Channel 1	HVAC Consultant Camfil direct sales
Channel 2	HVAC Consultant Installation Company
Channel 3	HVAC Consultant AHU Manufacturer
Channel 4	HVAC Consultants AHU Manufacturer Installation Company

Because of the results in the initial interview studies that showed that the HVAC consultants were gatekeepers is the all ventilation solution value chains, it was decided that the HVAC consultants should be present in all channel alternatives for Campolygon. Channel 1 was formed as a direct channel to investigate the possibility of utilizing one of Camfil's existing channels. Also channel 2 is present, and Camfil is currently trying to develop the relationships with the installation companies to expand this channel. Therefore this was a highly relevant channel to investigate for Campolygon. Channel 3 and 4 involve AHU manufacturers. These are new channels that are included since an interest in cooperation from the AHU manufacturers was discovered during the intermediary interviews. Flowcharts showing the product and information flows, the actors involved, and the channel tasks for each alternative, are attached in Appendix C-F.

7.2.5. Channel Selection

This section is based on the selection procedure adapted in section 4.2.5 Stage 5: Channel Selection. Furthermore, the opportunities and challenges presented in 6.1 End-User Segmentation as well as the results from the four foregoing steps in 7.2 Channel Design were used to form the arguments. The initial elimination of non-suitable channel alternatives was primarily based on the channel objectives for Campolygon presented in 7.2.1 Channel Objectives.

The goal of the channel selection process was to find channels that suited specific segments. However, if all four channel alternatives would be mapped against all segments the evaluation process would become overpowering. Therefore, before the segment mapping, the channel alternatives were compared and evaluated independently. The two most promising channels, when it came to match between relationship goals and interest in the product, were then selected for further investigation.

Initial Elimination

It is pointed out in the interviews with Camfil employees that a company objective is to move closer to the end-user in the value chain. Comparing the suggested channel alternatives, see Appendix C-F, it is evident that the activity chains including cooperation with AHU manufacturers are longer and more complex than in the other alternatives. A longer value chain implies that Camfil will be located further away from

the end-user. This is a disadvantage for channel 3 and 4, since they are the longest chains.

The channel design constraints points in the same direction, as the AHU manufacturers received the lowest total score. The low score indicates that cooperation with the AHU manufacturers would have a significantly lower probability of being successful. This together with the general weak interest in Campolygon, the risk of cannibalization on the AHU manufacturers' sales, and their buyer power (7.1.3 Potential Intermediaries) also make channel alternatives 3 and 4 unfavorable.

The negative aspects described above are not affecting channel 1 and 2 and they are therefore selected and further mapped and scored against the five different segments.

Channel scoring

The channel scoring was performed in accordance with section 4.2.5 Stage 5: Channel selection. The scoring is used as an approach to determine which of the two channels that suit each of the five considered segments. As explained in the theoretical framework, the channel alternatives are plotted against each opportunity and challenge discovered in the segmentation process. Below, the results from the scoring are presented segment by segment.

Residential

Table 26 - Channel scoring for the Residential segment

	Segment opportunities and challenges	Channel 1	Channel 2
Residential	Restoration of 'Miljonprogrammet'	(5) * (+)	(5) * (++)
	Sustainability certificates	(1) * (++)	(1) * (+)
	Camfil has a strong position	(4) * (+)	(4) * (++)
	Small decentralized air intakes under windows in flats	(4) * (--)	(4) * (-)
	No direct and visual benefit of energy savings for the real-estate owners	(2) * (-)	(2) * (--)
	TOTAL Residential	**-1**	**10**

For the Residential segment, the most influential opportunity discovered in the end-user interviews was the restoration of 'Miljonprogrammet'. The reason for grading 'Miljonprogrammet' with 5 (see Table 26) was that these buildings have the characteristics that Campolygon requires in order to function properly. Moreover, the buildings are in the process of restoration at present and for some years ahead, which is seen as a huge opportunity to sell the solution and to reach many buildings in the same situation. Channel 2 is considered the most appropriate, since many residential real-estate owners use installation companies and trust their input. This channel also offers possibilities to reach a large number of 'Miljonprogram' owners through installation companies, which is seen as a positive aspect.

The second most important opportunity, scored 4, is the fact that Camfil currently has a strong position in the segment, which implies established relations. Through this, the potential customers already trust Camfil, which facilitates the introduction of an innovation. Since the strong position in this segment is dependent on the cooperation with the installation companies, channel 2 is most suitable for this opportunity.

The last opportunity for the residential segment is the sustainable certificates. This is scored 1, since certifiers do not influence which products that are used to reduce the energy consumption. The channel most suitable for utilizing this opportunity is number 1. The certification does only reward the end-user and therefore it is better to contact then directly to mediate this opportunity and thus use a direct sales channel.

The first challenge: small, decentralized air intakes under windows in apartments, makes it impossible to use Campolygon. This trend is mostly visible in new production; therefore, the grade was determined to be 4. The channel, which is assumed to have the greatest chances to overcome this challenge, is channel 2 since installation companies in cooperation with HVAC consultants have a better possibility to influence the choice of ventilation system than Camfil has.

The last considered challenge: that there is no direct and visual benefit of energy savings for the real-estate owners, is neither important for the success of Campolygon, nor is it considered to be critical. Therefore, it is scored 2. For this challenge, channel 1 offers better possibilities for success, since it is easier to show the advantages with Campolygon by communicating directly with the end-users.

Commercial

Table 27 - Channel scoring for the Commercial segment

	Segment opportunities and challenges	Channel 1	Channel 2
Commercial	Large and dominating actors	(4) * (++)	(4) * (+)
	Sustainability image	(2) * (++)	(2) * (+)
	Large potential volumes	(3) * (+)	(3) * (++)
	High financial targets	(3) * (-)	(3) * (--)
	Ventilation does not run at all hours	(2) * (-)	(2) * (--)
	TOTAL Commercial	**10**	**2**

For the Commercial segment, the first opportunity is the large and dominating actors (see Table 27), which is seen as a significant opportunity to reach many buildings through one real-estate owner. However, the fact that many buildings can be reached trough one owner does not imply that all buildings are suitable for Campolygon; therefore the opportunity was scored 4. The channel assumed to suit this opportunity best is channel 1, since the large actors makes it feasible and beneficial to go directly to them. In order to reach as many buildings as possible the contact should be initiated on a high level in the organization.

A sustainable image is important for the actors in this segment; however, this factor is not essential for the selection of ventilation system. Consequently, the opportunity was scored 2. Channel 1 is considered to suit the communication of Campolygon's sustainability advantages. The reason is that Campolygon, as a part of the sustainability image of the end-user, is easiest explained through as few value chain steps as possible.

This segment is considered to have relatively large potential volumes, which is a noteworthy opportunity for Campolygon. When assessing the significance of this opportunity, it was scored 3, due to the uncertainties regarding roof construction and air intake position, which have large impact on the applicability of Campolygon. As the segment is large with many actors channel 2 is assessed to suit best. This, since Camfil through the installation companies can reach many actors at once.

The first challenge considered the high financial targets. This implies a need for short payback time, which in the current situation is difficult to achieve for Campolygon. Therefore, the significance of this factor was determined to be 3. Another challenge in this segment is that the ventilation does not run at all hours, which is important when the real-estate owners decide which ventilation system they want to use. However, since this is not the only factor determining choice, the challenge was scored 2. This challenge is closely related to the preceding one, however, it is more specific than the former, and the financial targets have a smaller overall impact on investments than the payback time of the ventilation system.

The channel that implies the highest probability to overcome both of these challenges is channel 1, since the price must be set as low as possible. This implies that it is important to avoid all types of intermediaries that will increase the price.

Industrial

Table 28 - Channel scoring for the Industrial segment

	Segment opportunities and challenges	Channel 1	Channel 2
Industrial	Camfil has a strong position	(4) * (++)	(4) * (+)
	Availability of industrial test-data	(3) * (++)	(3) * (+)
	Sustainability image	(2) * (++)	(2) * (+)
	Heterogeneous segment	(4) * (--)	(4) * (-)
	Many real-estate owners	(4) * (--)	(4) * (-)
	TOTAL Industrial	**6**	**1**

The most significant opportunity is that Camfil has a strong position in this segment. Due to the trust and relationships Camfil has established, this opportunity was scored 4. The second opportunity is the availability of industrial test-data, which is seen as a significant factor that can be utilized in order to convince the end-users that Campolygon is a good solution. However, the conditions under which different production facilities are working are very varying, which in turn can make the existing test data inapplicable on parts of this segment. Therefore, the score was determined to be 3.

Sustainability image is something that has been identified during the interviews as an opportunity for Campolygon, since is offers a reduction of energy consumption without deteriorating on the IAQ. This, together with the general trend towards more focus on sustainability for producing companies creates the opportunity. However, there is still a varying interest for a sustainability image in the segment, and it is therefore difficult to sell Campolygon only on this argument, which is why it was scored 2.

For all these opportunities, the best channel is assessed to be channel 1, that is: direct sales. One reason for this is that the position Camfil has offers a possibility to directly identify the needs of a specific end-user. Moreover, direct sales can facilitate the process of finding arguments in the test data and sustainability requirements that can be convincing enough to motivate a purchase. In order to succeed, the closeness to the end-users is highly valued and the fewer intermediaries that are used, the better.

However, there are also challenges, and they are met better with channel 2 since the wide coverage of installation companies can be used for reaching many end-users. The challenges are related and concern the heterogeneous characteristics of this segment, as well as the dispersed owner structure. These challenges are both scored 4, since they pose difficulties for reaching a large number of end-users without significant investments from Camfil.

School

Table 29 - Channel scoring for the School segment

	Segment opportunities and challenges	Channel 1	Channel 2
School	Not financially restricted	(5) * (+)	(5) * (++)
	Sustainability image for municipalities	(3) * (++)	(3) * (+)
	Large interest for improving IAQ in schools	(2) * (++)	(2) * (+)
	Long buying process, due to political involvement	(2) * (--)	(2) * (-)
	Relatively small and limited segment	(1) * (-)	(1) * (--)
	TOTAL School	**10**	**11**

The most significant opportunity for the School segment is that financial requirements are not that strong. As mentioned in the end-user interviews, municipalities often have long payback times and it is rather easy to get an investment with environmental focus approved. This is an essential selling point and therefore it got the highest score, 5. Due to this opportunity, it can be beneficial for Camfil to utilize channel 2 in order to reach many schools at once. The fact that Campolygon gets more expensive when an intermediary is used is determined to be of less significance than the possibility to reach many actors, due to the financial space.

Sustainability image is increasing its significance for municipalities in Sweden, and it is now important to have an environmentally sustainable profile. Therefore, this has been identified as an opportunity for Campolygon, which can offer reduced energy consumption and better IAQ, but it is not sufficiently strong as stand-alone argument for

a purchase, and therefore it got the grade 3. This opportunity is considered to be best satisfied if channel 1 is utilized, since Camfil thereby has a possibility to establish contacts with key gatekeepers at a high level in the political organization and thereby reach many schools.

In the current situation, there is a media trend that investigates the IAQ in schools; this is seen as an opportunity for Camfil, since Campolygon can offer better airflows and lower levels of particles, without increasing the costs for energy. However, media trends are often temporary and it is also a challenge for Camfil to keep up the interest for the IAQ, therefore this opportunity got the score 2. The channel best suited for exploiting this opportunity is direct sales, since a special offer can easier be formed, and the impact of their sales is clear and visible in Camfil's financial reports.

One challenge that was identified during the end-user interviews, is the long buying process, due to the involvement of politicians. The buying process can be complex and it is necessary to find the right person to make the deal possible. This can be costly for Camfil; however, it is not regarded as challenge that can stop a deal from being accepted. Therefore, the challenge was graded 2. This challenge and level of risk can also be reduced if channel 2 is used, because the investment in negotiation is moved from Camfil to the intermediary, the installation company.

The size of the segment was scored 1, since it was not regarded as a challenge that would reduce the interest from Camfil's viewpoint. The reason for this is that since the municipalities have many different activities, there is an opportunity to expand from this segment once Campolygon is adopted. To overcome this challenge, channel is most suitable. By utilizing direct sales, the process of extending the segment, by suggesting new buildings to try Campolygon on, can be facilitated.

Care

Table 30 - Channel scoring for the Care segment

	Segment opportunities and challenges	Channel 1	Channel 2
Care	Camfil has a strong position in the segment	(4) * (++)	(4) * (+)
	General energy consumption targets for all regi council activities	(2) * (+)	(2) * (++)
	The need for test-data from care environments	(1) * (++)	(1) * (+)
	No current tests conducted in care environment	(5) * (-)	(5) * (--)
	High IAQ requirements	(4) * (-)	(4) * (--)
	TOTAL Care	**3**	**-9**

The fact that Camfil currently has a strong position in the Care segment makes this opportunity significant for the adoption of Campolygon. Since Camfil already provides products that this segment knows it can trust, it will be easier to introduce a new solution to the segment. Therefore, it has been scored 4. In order to utilize this

significant opportunity, channel 1 is suggested as the best approach. The reason is that there is already an established relationship.

The tougher and tougher energy consumption targets are a significant opportunity in the Care segment since Campolygon can be used in order to reduce the energy consumption. However, this opportunity is only graded 2 since the care environment has many other requirements regarding, for instance epidemic protection. Channel 2 suits this opportunity best, because this can imply a larger possibility for information distribution to more actors.

The need for test-data from care environments is an opportunity for reaching this segment, however it was scored 1, due to the lack of current competence to meet this need. This opportunity grows if Camfil develops Campolygon specifically for care environment and gets a chance to test it at a hospital. However, this requires significant investments. The fact that there are no tests with Campolygon in care environments therefore currently also emerges as the most significant challenge in this segment, since the end-user interviews showed that the regi councils looked for well-tested and robust solutions and this challenge was graded 5. If this opportunity and challenge were to be investigated more deeply, the best channel to use would be the direct sales, channel 1, due to the already established relations with influential people in the regi councils.

High IAQ requirements are also a challenge identified in the end-user interviews. This refers to the special care environment, where it is extra important to be able to ensure the level of particles in the indoor air. One area of concern is, for example, the level of cleanness and risk of leakage in the ducts. This is proved important to gatekeepers in this segment, and was therefore graded 4. The best channel to use in order to overcome this challenge is channel 1, due to the already strong position in the segment and established sales channel. Additionally, installation companies seem to have a bad reputation in this segment, which also speaks in favor for the direct channel.

7.2.6. Summary

The total scores for the segments and channels are displayed in Table 31. This table shows the differences in channel suitability for the considered segments. As can be seen in the table there are significant differences between the two channels in all segments except the School segment, where the scores indicate that both channels are applicable. The Care segment has low scores on both channels, which suggests that a totally different channel could be preferable. Both the Residential and Commercial segments have strong indications on which channel to select. The channel scores do not differ that much in the Industrial segment, but the difference is still considered to be sufficient for selection. In Table 31, the best channel for each segment is also graded from 1-5 depending on the score and this new and adapted score is inserted in the Complete Segment Scoring Matrix (7.3), which is then finalized.

Table 31 - Summary of the channel scores for all segments

Residential		Commercial		Industrial		School		Care	
Ch. 1	**Ch. 2**	**Ch. 1**	**Ch. 2**	**Ch. 1**	**Ch. 2**	**Ch. 1**	**Ch. 2**	**Ch. 1**	**Ch. 2**
-1	10	10	2	6	1	10	11	3	-9
New score	3	3		2			5	1	

7.3. Complete Segment Scoring Matrix

The purpose with this section is to provide a short summary and the results of the preceding sections; segment scoring and channel design. By showing and explaining the complete Segment Scoring Matrix, the selection of the three segments with most potential will be made.

Table 32 - The Segment Scoring Matrix

	Residential	Commercial	Industrial	School	Care
Need	5,00	5,00	5,00	5,00	3,00
Value	0,00	0,67	0,33	2,67	1,33
Volume	0,25	0,25	-0,75	0,00	0,00
Complete product	-0,25	0,50	0,50	0,25	-0,25
Marketing communications	1,00	1,00	-1,00	0,00	-1,00
Channel	3,00	3,00	2,00	5,00	1,00
TOTAL	**9,00**	**10,42**	**6,08**	**12,92**	**4,08**

In Table 32, all elements presented and adapted in 4.1 Segment Scoring Matrix are included. This means that the Channel element has been inserted, with the highest score from the channel selection section (7.2).

As can be seen in Table 32, the segment that received the highest total score is the School segment, which indicates that this segment has the highest potential when it comes to market readiness, willingness to adopt and price sensitivity.

The other two segments that are considered to have high potential are the Commercial and Residential segments. This is much dependent on the channel scoring, which meant that these segments' opportunities and challenges suited the two considered channels better than the Industrial's and Care's. The implication of this Segment Scoring Matrix is that the three segments chosen for further analysis in this study are; School, Commercial and Residential. In the following chapters these segments and the suitable channels will be analyzed deeper.

8. Analysis and Conclusions

The purpose of this chapter is to analyze the potential value of Campolygon compared to the investments required, for Camfil and the suitable intermediaries. Thereafter, four potential segment and channel combinations are suggested. The chapter ends with conclusions that, built on the empirical data and the analysis, respond to the research questions (1.3).

8.1. Potential Value with Campolygon

In this section the aim is to analyze the benefits that the commercialization of Campolygon can give. This is analyzed by relating the empirical data with the previous research, and investigating the implications for Camfil and the most promising intermediaries.

8.1.1. The Camfil perspective

There is an expressed will at Camfil, as mentioned earlier in section 7.1.2 Sales And Relationship Strategy at Camfil Svenska, to move towards becoming a total solution provider. Since the market is assessed to be mature, it is important for Camfil to try to differentiate itself as innovative. Campolygon has the potential of being a module in a wider solution. Therefore, Campolygon could give Camfil a possibility to expand their offering and thereby move towards their goals.

Campolygon thus offers a way for Camfil to change its current position in the value chain, and move downstream, closer to the end-users. This is a highly strategic issue, and if Camfil is heading in this direction Campolygon could be a good first step. However, if this is not the case, a non-cautious introduction of Campolygon could hurt the existing customer relationships. Therefore, it is important for Camfil to know its value chain, to be able to balance the strategy and risks and analyze the strategic position (2.2.1 The Value Chain).

It is of significance that Camfil is not cannibalizing too much on AHU manufacturers' sales, since, as mentioned in Camfil Farr Company Overview (5.1) the OEM customers represents about 20 percent of their total sales. The benefits with introducing Campolygon are thus multifaceted. The step towards being a total solutions provider is very attractive, but the advantages it creates could be outweighed by cannibalization losses. However, benefits from an efficient and effective value chain can for Campolygon be reduced production costs and delivery times to end-users, since this often imply more satisfied customers. Therefore, the risk can be worth taking.

Campolygon offers a good possibility to develop Camfil's position in the value chain by creating different types of relationships. One of the benefits with this is the possibility to increase the brand recognition towards both intermediaries and end-users, because of the increased communication, as suggested in 2.2.1 The Value Chain. Furthermore, Campolygon offers a possibility to increase the brand recognition, due to its physical characteristics and the fact that it is placed visually on the roof. Campolygon's functional characteristics, that are focused around energy saving and IAQ, can also facilitate the improvement of Camfil's sustainability image.

There is a trend to focus more and more on core competences in companies today (2.2.1 The Value Chain). The need for Camfil to differentiate does not have to imply moving in

the opposite direction, since strategic alliances can be formed, as suggested in 2.2.3 Buyer Supplier-Relationships. In the case of Campolygon, this is applicable due to the complementary relations built with for instance installation companies. Installation companies are, as stated in section 7.1.3 Potential Intermediaries, a service supplier. This implies that Camfil's and installation companies' competences are suitable for co-development, which furthermore can mean increased sales for Camfil, either through the installation company or to end-user directly.

Another advantage for Camfil when cooperating with installation companies is the opportunity to reach many customers with fewer relationships, which can be beneficial for Camfil from an investment point of view (2.2.3 Buyer-Supplier Relationships). This has already been established for other products at Camfil, which gives this approach even more strength, since it makes Camfil able to use existing relationships as a starting point.

Strategic alliances are, as mentioned in 2.2.3 Buyer-Supplier Relationships, capital intense and require investments in both money and time from the parties involved, therefore it is essential that the alliance is profitable for all involved actors. This might therefore not be suitable for relationships with HVAC consultants, since they are brand independent and must have the ability and freedom to recommend any product. However, the involvement of HVAC consultants can be turned into an advantage due to the innovative qualities of Campolygon. If there is no similar product available from another supplier, the recommended solution from the HVAC consultants can be difficult to replace. A good relation to HVAC consultants can therefore be a valuable investment.

Consequently, the relationship type developed with HVAC consultants should be of more value-adding character, somewhere between the pure transactional and collaborative relationships presented in Figure 4 (see 2.2.3 Buyer-Supplier Relationships). This type of collaboration could offer a better possibility for Campolygon to become profitable, since here, Camfil and HVAC consultants can get involved in the testing of Campolygon together. Need for more test-data was identified during the data collection and the HVAC consultants expressed an interest in being involved in this type of testing. This can be beneficial for Camfil since the parties by testing Campolygon together can increase the HVAC consultants' awareness of the product, so that they later can suggest the product to the end-users. Additionally, by testing the product together, Camfil will acquire knowledge of what type of test data is needed in order to convince the HVAC consultants to recommend products in general.

Despite the many advantages with close collaboration, it is expensive to create and sustain relationships with intermediaries (2.2.3 Buyer-Supplier Relationships). Therefore it is crucial that Camfil does not initiate close collaborations with too many actors. Instead the company must be selective and compare the advantages and disadvantages with the cooperation, and thus only involve a few important actors. This should be done in order not to exceed the benefits with the relationships. Therefore, when making the choice of cooperation partner for Campolygon, similar core values should be preferred.

Depending on which sales channel that will be used, involvement of end-users are of varying importance. If the direct sales channel is to be used, closer relations with end-users can increase Camfil's understanding of their needs and thus make the development of the offerings more suitable for the customers. As mentioned in 2.2.1 Value Chain, this can lead to larger profit for the supplier due to increased sales and shorter time to market. In indirect channels are used, focus will be divided between the end-user and the intermediary. The customer understanding that the intermediary can offer here replaces this decreased focus on end-users. This can in some cases be even more valuable. Therefore, both options can create value for Camfil.

8.1.2. The intermediary perspective

Closer relationships have been identified as the most suitable relationship strategy for Camfil when it comes to Campolygon in both the suggested channels. The intermediary perspective aims to analyze the value Campolygon can create for HVAC consultants and installation companies. It is important to be able to identify and show this aspect when attempting to create a closer relationship with the intermediaries to create motivation for them to enter and develop the relationship.

HVAC

The intermediaries that, according to the interviews and the value chain mapping (7.1.3 Potential intermediaries) was involved the most were the HVAC consultants. They are a part of almost all types of projections in ventilation procurement and they are assigned both by end-customers, and other intermediaries like installation and construction companies, and AHU manufacturers. This signified a need to involve HVAC consultants in the projection process for Campolygon, regardless of what channel alternative is finally chosen.

Since the HVAC consultants are assigned to create solutions on product level, creating a relationship with them will make them aware of the products that Camfil is offering and give them a thorough understanding of the product. This is important for the HVAC consultants, since it will expand their product portfolio and thereby increase the possibility for them to customize a solution for their customer. Solutions adapted to the customers' needs are what create financial value for HVAC consultants, since this makes more customers interested in buying their services.

Another value creator for HVAC consultants with Campolygon is potential collaborative activities, like testing. HVAC consultants can benefit from this through the certainty it creates that they are recommending well-tested products. This will furthermore strengthen their image when it comes to quality.

Image is a very important aspect for HVAC consultants (7.1.3. Potential Intermediaries) and another way that Campolygon can strengthen their brand is by being an environmentally friendly solution through its energy saving potential (5.3 Campolygon).

Installation companies

The second channel that was viable in the channel design process included both HVAC consultants and installation companies. This chain is a little longer than the direct sales and it makes Camfil focus on selling to an intermediary instead of the end-user. This

makes it interesting to discuss the reasons why installation companies would be interested in collaboration for the commercialization of Campolygon.

Firstly, cooperation with installation companies is very common and already about 40 percent of the filter sales at Camfil is sold through the installation companies (5.1 Camfil Farr Company Overview). There is also an internal focus on developing this channel to increase cooperation and create closer relationships. When introducing Campolygon, this aim can be utilized since it is an opportunity to involve the installation companies at an early stage, which would create value for the installation company through increasing their influence and possibility to affect the end-user decisions.

When involving the installation companies, there is also an opportunity for them to adapt the solution to fit their purposes, which is a request from the installation companies (7.1.3 Potential Intermediaries). This can thus, not only, be a way for Camfil to extend their offering, but also for the installation companies to extend theirs. It is important to realize that even though the installation companies are described as a sales intermediary, they are mainly selling maintenance services today, therefore, their financial value when adopting Campolygon is created through the way they can increase their service offering.

Introduction of Campolygon could, for example, be a part of an offering that includes service for a certain number of years. In this way, installation companies can extend the length of their service contracts, and thus bind their customers for longer periods of time, which is one of their main objectives (7.1.3 Potential Intermediaries). This could also become a way for installation companies to become more of a total solutions provider instead of only a performer of set tasks.

8.2. Suggested combinations

The aim of this section is to highlight different aspects that are highly valued by channel members and end-users, and therefore could be selling points in future offerings. The different aspects are presented through four potential segment and channel combinations. Some suggestions about a potential Camfil solution and offering are also given. The chapter is ended with a summary, where the four different combinations are discussed and synthesized.

8.2.1. Direct Sales to the School Segment

This combination focuses on reaching the School segment by direct sales. This means that Camfil's sales force shall focus attention on public procurement. To reach the School segment directly, expertise in this area is pivotal. The segment consists of 27 000 buildings (6.1.4 School), and could therefore be a significantly large segment. However, the large variation of building sizes and roof construction makes the actual segment size considerably smaller. This is an obvious limitation, but due to the municipal owner structure, an offering aimed at the School segment could probably, in time, quite easily be expanded to other municipal buildings. This increases the substantiality of the segment.

A Campolygon offering in this combination would focus on finding municipalities with a sustainability image. If branded in an appropriate way, Campolygon could be sold as an

investment in a sustainable future due to its energy saving qualities. This could be done by advocating sustainability and energy saving campaigns for key gatekeepers, like the real estate office.

Another important selling point is that the IAQ within school buildings is currently under medial coverage. There have been several programs on television and newspaper articles about the effects that poor ventilation has on study results. This can be used as an argument in Camfil's Campolygon offering, since Campolygon can offer both higher airflow and better particle filtration without increasing the energy costs.

Since the municipalities are run by different political parties and are very differently composed, there is variation in the required payback time. However, this segment has shown a comparatively good tolerance to long payback times, which is why this solution is still suitable if Campolygon is produced in-house and the current estimated payback is kept.

8.2.2. Direct Sales to the Commercial Segment

This combination consists of a focus on direct sales towards the Commercial segment, which means that Camfil's own sales force shall devote attention to the large commercial real-estate owners and try to sell the idea of Campolygon and create sustainable relationships with them. The segment consists of 27 000 buildings (6.1.2 Commercial), and could therefore be a significantly large segment. In addition, a large part of the buildings show the required technical specifications needed for an installation of Campolygon.

One way of forming an offering for the Commercial segment would be to create a total offering with Campolygon as the center of a sustainability campaign. This way, Camfil could also develop surrounding products and services with an energy saving focus to create a complete offering for the customer. The important aspect from a marketing perspective is here to figure out how this solution can become a contribution to the sustainability image of the customer.

Another important selling point is the financial savings from the decreased energy consumption. Due to the fact that many of the companies in the commercial segment have high financial requirements, an innovation that could significantly lower the energy costs for commercial buildings would be highly valued. However, this high focus on finance is also negative for Campolygon, due to its high production cost and the fact that the ventilation is often only used during work hours, which makes the payback time long. Therefore, for this to become a real alternative, there is a need to focus on decreasing the production and distribution costs of Campolygon.

8.2.3. Sales through Installation Companies to the School Segment

This combination is built up by sales through installation companies with the end-user focus in the School segment. This means that sales and distribution is outsourced and that Camfil's marketing efforts will be divided between the installation companies and the end-users. The segment size is similar to the size stated in **Error! Reference source not found.** Combination 1, but this size is less relevant with this solution since the chosen installation company governs the end-user customer base, which makes the choice of cooperation partner essential.

An offering with Campolygon for this solution must therefore be directed primarily to the installation companies, where the central issue is focused around identifying the right cooperation partner. The Campolygon offering suits installation companies with a similar innovative image as Camfil. They should also have an environmental focus and have a large customer base in the public sector.

The financial aspect is considered to be somewhat more complex when an intermediary is involved. This usually creates higher demands for low-cost solutions, which implies a need to develop the physical features of Campolygon to make it more cost-efficient.

8.2.4. Sales through Installation Companies to the Residential Segment

This combination is focused on cooperation with installation companies and the Residential segment, which means that Camfil should divide the marketing activities to both the intermediary and end-users. The residential segment is the largest segment with more than 80 000 buildings (6.1.1 Residential), but there are some variations when it comes to roof construction and placement of the air intake that need to be considered. However, the actual size of the segment is determined by the customer reach of the installation companies selected for cooperation.

The opportunity that is primarily discovered for this solution is in the replacement area. Many buildings from the 'Miljonprogram' are in need of ventilation restoration. When the 'Miljonprogram' facilities were built, there was a trend to have flat roofs and mostly central air channels, which makes it possible to introduce Campolygon on these houses. A Campolygon offering for this combination should be adapted for installation companies focusing on these types of restoration projects, with a large residential customer base, preferably with an aging dwelling stock.

There is often financial pressure on the older facilities. Since there is a large need for many different types of restoration projects, the payback time often needs to be reasonably short. At the same time as this creates a disadvantage for the relatively expensive Campolygon, it also creates a window of opportunity. If the introduction of Campolygon can be an alternative to the replacement of the AHU, or at least push this investment a few years forward, then Campolygon might be a way to actually decrease costs for the real-estate owner. If the real-estate owner later wants to exchange the AHU, the Campolygon can continue to function, even with the new set of conditions.

8.2.5. Summary

Four different channel and segment combinations have been discussed above, all with significant and specific selling points. There are different ways of approaching a commercialization and it is important to note that the combinations suggested above are not mutually exclusive. One option is to start with one of the combinations to have a clear initial focus, and be able to delay other strategic decisions until Campolygon's real potential can be evaluated. However, Camfil can instead decide to combine all the solutions or focus heavily on the installation companies to create a substantial cooperation with them. Then combinations 3 and 4 are can be interesting to apply. Another possibility is to focus on the School segment and therefore use both the direct and indirect channel to reach them. This would use combinations 1 and 3.

8.3. Conclusions

The aim with this chapter is to summarize the main arguments and provide pertinent answers to the research questions presented in the Introduction chapter (1.3). Each question is answered separately.

8.3.1. Research Question 1

Which are the end-user segments with most potential for growth, when considering market readiness, willingness to adopt the product and price sensitivity?

As shown in 7.3 Complete Segment Scoring Matrix, the segments that showed most potential, when it came to market readiness, willingness to adopt and price sensitivity, were the School segment, the Commercial segment, and the Residential segment. Each provides different opportunities for the commercialization of Campolygon (6.1 End-user Segmentation).

8.3.2. Research Question 2

What would be a suitable and scalable sales and distribution channel?

The channels considered most suitable are a direct sales channel and a channel with sales through installation companies. In both channels, the HVAC consultants should have a substantial role. The research has shown that cooperation with them can significantly facilitate the introduction of the innovation, since they are important actors in all ventilation installation value chains. The suggested channel outlines are displayed in Appendix C and D.

8.3.3. Research Question 3

What would a competitive solution, that would maximize the perceived end-user value for the considered segment/s, consist of?

To create a competitive solution with Campolygon, there are a number of general aspects that should be taken into consideration, regardless of the chosen segment strategy.

Firstly, the Campolygon solution could preferably be profiled as an environmentally friendly image enhancer. Its visual aspects as well as its technical functions could be even more adapted to suit this purpose. A good addition to this would be to equip the Campolygon offering with an explicit and structured collection of test data that clearly visualizes the energy saving it provides over time. This is important to stand out from other offerings with a sustainability profile that are currently on the market.

Secondly, the solution cannot be sold solely on the grounds of IAQ. Even if IAQ is a recognized concept, the demand for higher quality has not yet been acknowledged. Therefore, the function to increase IAQ possessed by Campolygon cannot be used as the main selling point.

Finally, since the end-user's financial requirements vary, it is important to create a suiting production and distribution solution. Most combinations require a low-cost alternative, since the current LCC is often higher than the willingness to pay. However, this also depends on the chosen pricing strategy and intended sales volume.

8.3.4. Research Question 4

How can this solution add value for downstream stakeholders in the value chain, compared to current clean air offerings?

The adoption of a Campolygon solution would for the considered intermediaries propose a number of opportunities for value creation. Since both suggested intermediaries are service providers, their financial value is mainly created through customer relationships.

This implies that the largest value that Campolygon can offer the intermediaries is the possibility to create returning customers. For Campolygon to offer this, the development of the channel must strive towards closer relationships in order to enable adaption of the solution. This also allows for competence exchange between the actors. This is valuable for the intermediary if it shifts the intermediary's position in the value chain closer to the decision makers, and increases its influence. The increased influence together with the characteristics of Campolygon (see 5.3. Campolygon) can also enhance the possibility to create longer service contracts.

It is also important for the intermediaries to constantly develop their product portfolio with new technology to sustain their competitive advantage. This is another reason why new products, such as Campolygon, can be valuable. Additionally, the characteristics of Campolygon that concern the environmental aspects can increase the intermediaries' attractiveness towards customers and be used to strengthen their sustainability image.

8.3.5. Research Question 5

Given Camfil's current profitability target, can this solution become a profitable offering?

Campolygon can become a profitable offering, since many of its characteristics are requested by the customers. However, there is also a need for significant investments in education, production and distribution set-up, and relationship building, to successfully commercialize Campolygon. It is also important that the commercialization of Campolygon is inline with Camfil's strategic direction. If a commercialization decision is taken, Campolygon can increase its potential by co-developing the technical functions and the market adaptation. This should be done both internally and in cooperation with intermediaries.

9. Discussion and Recommendations

The aim with this chapter is to discuss the conclusions presented above and their further implications for Camfil and the Campolygon value chain. Furthermore, the purpose is to provide specific recommendations for actions and further research.

According to Anderson (1997), a segmentation like the one performed above should be followed by differentiation (2.1.6 Models). For Camfil this would mean that the next step is adaptation of Campolygon for the targeted segments, possibly by testing it in collaboration with a few customers and thereby investigating their actual needs. The last step that Anderson (1997) suggests is positioning, which for Camfil would mean to increase the customer awareness of Campolygon. This means creating customer-adapted goals for Campolygon.

These goals need to be specific and clear to utilize all Campolygon's potential. The first step would be to create a well-organized documentation of Campolygon's technical prerequisites. When Camfil really knows what the prerequisites are, the real segment size can be assessed. This documentation can be conducted together with a customer or cooperation partner. At the same time they should also adapt Campolygon as much as possible to suit the needs of the targeted segment.

It is also important to address the problem areas of Campolygon. Firstly, the financial requirements and goals with Campolygon must be specified. This includes production and installation costs as well as specification of margins. Also other characteristics, like roof construction, air intake position and building sizes, which affect the addressable segment size should be investigated. The final acknowledged problem with Campolygon is maintenance safety. Even if the maintenance personnel can avoid narrow ventilation centrals, a solution on the roof creates a new safety risk. This can cause insurance problems for installation companies and should therefore be investigated.

Campolygon is a good incentive to develop Camfil's relationship strategy further. Relationships formed for the retail of Campolygon can be seen as a first step towards a broader collaboration. For instance, collaboration with HVAC consultants can increase the awareness of many Camfil products, which in turn can strengthen the Camfil brand as well as creating new customers. However, the relationships with HVAC consultants do not automatically create sales. Since they are only recommending products they are easily overlooked when it comes to marketing efforts. The problem that should be solved is, therefore, to get the sales force motivated to collaborate with HVAC consultants, despite the fact that the HVAC consultants do not directly contribute to their sales targets.

This discussion can be concluded in five recommendations for Camfil:

- Set specific goals for Campolygon
- Produce and compile technical data for Campolygon, preferably in cooperation with an interested end-user
- Adapt Campolygon to fit targeted segments and cooperation partners

- Investigate production and installation alternatives in order to minimize the total cost
- Initiate collaborations with HVAC consultants through creating real incentives for the sales force

To conclude this chapter, some suggestions for further research will be stated. During the literature review of this study, one significant gap was discovered. Most segmentation literature is adapted to a commercialized product with an existing market. Therefore, segmentation research for innovations is suggested as an interesting new subject area. It would, for example, be interesting to research the generalizability of the models that were adapted to suit the specific conditions of this case study. The reason is that it concerned an innovation, but also that the value chains in this industry are complicated. Furthermore, it would be very interesting to probe deeper into the area of relationship building by researching the optimal build-up of a relationship portfolio in different value chains.

10. Bibliography

Anderson, B., 1997. *Positioning: The Art of Being First.* 1st ed. Stockholm: Sandberg & Co.

Anderson, J. C. Narus, J. A., 1991. Partnering As A Focused Strategy. *California Management Review,* 33(3), pp. 95-113.

Bensaou, M., 1999. Portfolios of Buyer-Supplier Relationships. *MIT Sloan Management Review,* 40(4), pp. 35-44.

Bryman, A. Bell, E., 2007. *Business research methods*. 2nd ed. Oxford: Oxford University Press.

Business Dictionary, 2011. *What is market segmentation? definition and meaning*. [online] Available at: <http://www.businessdictionary.com/definition/market-segmentation.html> [Accessed 23 May 2011]

Camfil Farr, 2010. *Annual Report 2009.* [online] Available at: <http://www.camfilfarr.com/Global/Documents/Financial%20information/AnnualReport2009_eng.pdf> [Accessed 5 February 2011]

Camfil Farr, 2011. *Historisk överblick – Camfil Farr*. [online] Available at: <http://www.camfilfarr.se/Om-oss/Historisk-overblick/> [Accessed: 15 Feb 2011]

Camfil internal documents, 2010. *Camfil Svenska sales statistics.* [powerpoint slide] ed. Camfil Svenska AB.

Day, G. S., 2000. Managing market relationships. *Journal of Academy of Marketing Science,* 28(Winter), pp. 24-30.

Dorf, R. C. Byers, T. H., 2007. *Technology Ventures: From Idea To Enterprise.* 2nd ed. London, McGraw-Hill Higher Education.

Dowling, G. *The Art and Science of Marketing: Marketing for Marketing Managers*. Oxford: Oxford University Press.

Gadde, L-E. Håkansson, H., 2001. *Supply Network Strategies*. Chichester, John Wiley & Sons Ltd.

Grant, R. M., 2010. *Contemporary Strategy Analysis.* 7th ed. Chichester, John Wiley & Sons Ltd.

Gustafsson, P., 2007. *Allt du behöver veta om luftfilter*.[e-book] Available through: <http://www.slideshare.net/guestc97988/allt-du-behver-veta-om-luftfilter > [Accessed 25 March 2011]

Holmén, M. 2009. TEK190 Research Design and Methods 2009: Lecture 5 [class handouts] ed. Göteborg: Chalmers University of Technology.

Huemer, L., 2002. Value Creation Strategies in Supply Chin Networks: The Case Of Logistics Service Providers. Dijon, France 5-7 September 2002.

Hutt, M. D. Speh, T.W., 2007. *Business Marketing Management: B2B.* 9th ed. US: South-Western.

Johnson, G. Scholes, K. Whittington, R., 2008, *Exploring Corporate Strategy*. 8th ed. Essex: Prentice Hall.

Katsaros, J., Christy, P., 2005. *Getting it Right the First Time: How Innovative Companies Anticipate Demand*. Westport: Praeger Publishers

Kompass, 2011. *Lista över leverantörer.* [online] Available at: <http://se.kompass.com/sv/advanced-search.html> [Accessed 1 March 2011]

Kotler, P. Keller, K. L., 2006. *Marketing Management*. 12th ed. New Jersey: Prentice Hall

LeComte, M. D. Goetz, J. P., 1982. Problems of Reliability and Validity in Ethnographic Research. *Review of Educational Research*. Vol 52, pp. 31-60.

Normann, R. Ramirez, R., 1993, From value chain to value constellation: Designing interactive strategy, *Harvard Business Review,* July-August Issue, pp. 65-77.

Plank, R. E., 1985. A critical review of industrial market segmentation. *Industrial Marketing Management*. Vol.14, Iss. 2, pp. 79-91.

Porter, M., 1985. *Competitive advantage*. The Free Press. New York.

Quinn, L. Hines, T. Bennison, D., 2007. Making sense of market segmentation: a fashion retailing case. *European Journal of Marketing.* Vol. 41, Iss. 5/6, pp. 439-465.

Ramirez, R., 1999. Value co-production: Intellectual origins and implications for practice and research, *Strategic Management Journal*, 20, pp. 49-65.

Ratos, 2011. *Investment strategy – Ratos.* [online] Available at: <http://ratos.se/en/Startpage-EN/About-Ratos/Investment-strategy/> [Accessed 15 Feb 2011]

Ruskin-Brown, I., 2006. *Mastering Marketing: A Comprehensive Introduction to the Skills of Developing and Defending Your Company's Revenue*. 2nd ed. London: Thorgood.

Salgado, B., 2009. Camfil Farr, *Manufacturing today*, [online] Available at: <http://www.nxtbook.com/nxtbooks/schofield/mt_2009fall/index.php#/0> [Accessed 5 Feb 2011]

Skjøtt-Larsen,T. Schary,P. B. Mikkola, J. H. Kotzab, H., 2007. *Managing The Global Supply Chain*. 3rd ed. Sweden: Liber.

SKL, 2011, *Om SKL.* [online] Available at: < http://www.skl.se/om_skl> [Accessed 5 April 2011]

Skolverket, 2011. *Snabbfakta – Skolverket.* [online] Available at: < http://www.skolverket.se/sb/d/3534/a/23365#paragraphAnchor2> [Accessed 4 April 2011]

Slack, N. Chambers, S. Johnston, R., 2007. *Operations Management*. 5th ed. New Jersey: Prentice Hall.

Statistiska Centralbyrån. 2011. *BO37 Rikets Fastigheter.* (BO37SM1001). [online] Available at: <http://www.scb.se/Pages/PublishingCalendarViewInfo___259923.aspx?publobjid=12252> [Accessed 4 April 2011]

Svensk Ventilation, 2011. (Konjunkturrapport Ventilationsinstallationer, september 2010). [online] Available at: <http://svenskventilation.se/index.php3?use=publisher&id=1350> [Accessed 8 April 201

Appendix A: End-user Interview Guide

General

1. What types of facilities are you managing?
    a. What types of activities are performed in these?
    b. How large are they generally?
2. Where are the air intakes placed on the facilities?
3. What types of roof constructions exist among your facilities?
    a. If varying, what does the distribution look like?
    b. If very varying, what type is dominating?
    c. What are the norms for new production?
4. Are there any specifications regarding the weight that the roofs can bear?
    If yes:
    a. How are they set?
    b. Who sets them?

Indoor Air Quality (IAQ)

5. Do you have any policies for assessing the IAQ?
    If yes:
    a. What do they look like?
    b. Who sets them?
6. Historically, what does the trend look like, when it comes to requirements on IAQ?
7. Are you currently searching for new solutions in order to improve the IAQ in your buildings?
    If yes:
    a. What does the process look like?
8. Have you ever changed any component in a ventilation system with the sole purpose of improving the IAQ?

Energy Consumption

9. Do you have any energy consumption targets in your facilities?
    a. What do they look like?
    b. Who sets them?
10. Historically, what does the trend regarding energy consumption requirements look like?
11. Are you currently searching for new ventilation solutions to reduce the energy costs?
    a. How?
12. Have you ever changed a component in a solution with the sole purpose of reducing the energy costs?

Maintenance

13. Who manages the maintenance of the ventilation system in the current situation?
    a. How is the work environment for the person executing these activities?
        i. Spacious/narrow?

ii.
iii. Protected/unprotected from filter dust?
iv. What type of safety equipment is required?

b. Are you currently investigating potential improvement areas within the maintenance work environment?
i. How?

Space

14. Would it be possible to increase the filter surface in the existing filter cabinets?
    a. Would it be possible to increase the size of the filter cabinet to increase the filter surface?
15. Would you value a ventilation solution that requires less space?

Finance

16. Which are your largest IAQ cost accounts?
    a. Who pays the energy costs?
17. How long is the payback time for a new ventilation system, at present, allowed to be?
    a. What is included in your payback calculation?
    b. Is payback calculated on the whole solution or on every component?
    c. Does it differ between new production and exchange?

The Value Chain

18. Which actors are involved in a purchase of a new ventilation solution in:
    a. New production?
    b. Exchange?
19. Who makes the decision regarding component selection in the solution?
    a. Does somebody provide strong recommendations in this question?
20. Is there any part in the value chain that can be improved and become more efficient and effective?

Summary

21. What is included in the requirement specification that is developed in connection to new production or exchange of a ventilation solution?
    a. How would you rank these different factors:
        i. Indoor Air Quality
        ii. Energy consumption
        iii. Investment costs
        iv. Available space
        v. Work environment for the facility management

New Technology

22. What are your attitudes towards new technology within the ventilation area?
    a. Have you historically invested in it?
    b. What channels does new technology take into your organization?
23. Do you, in the current situation, have a ventilation solution with a filter cabinet on the roof?

Appendix B: Intermediary Interview Guide

1. What is your role at XX?
2. What products and services do XX offer today?
3. What types of customers do you have?
    a. Distribution?
4. What do the requirements on air quality form your customers look like?
    a. Trends?
5. What do the requirements on energy consumption from your customers look like?
    a. Trends?
6. Do you have any sustainability targets at XX?
7. What do you experience is a normal PB-time requested from your customers?
8. How do you work with suppliers today?
    a. How involved are they in the creation of the offering for your customers?
9. How do you work with HVAC consultants today?
    a. How involved are they in the creation of the offering for your customers?
10. Does your company profit from cooperating with suppliers or consultants?
    a. If yes, in what way?
11. Are there any areas of improvement when it comes to your relationship management?
    b. What are they?
12. If you imagine your most profitable products or services, what actually makes them valuable for your organization?
13. Are there any other types of value than monetary value for your organization?
14. Do you have the capacity to extend your current product and/or service offering?
    a. If yes, could that capacity be invested in supplier cooperation?
        i. If yes, what areas of collaboration would be interesting?
        ii. If yes, what type of collaboration would you like?
15. In what ways do you want to be convinced of a product's advantages?
    a. Do you have any set requirements that new products must fulfill?

AHU Manufacturers

16. What is your approach to purchase vs. internal development of new technology?
    a. How do you work with patents?
17. Would you be interested in a potential cooperation to create an offering where you provide the AHU and the filter producer provide the filter cabinet?
    a. Why? / Why not?

HVAC consultants

18. What is your approach to new, relatively untried technology?
    a. Do you recommend non-standardized solutions?
    b. If yes, what makes you do so?

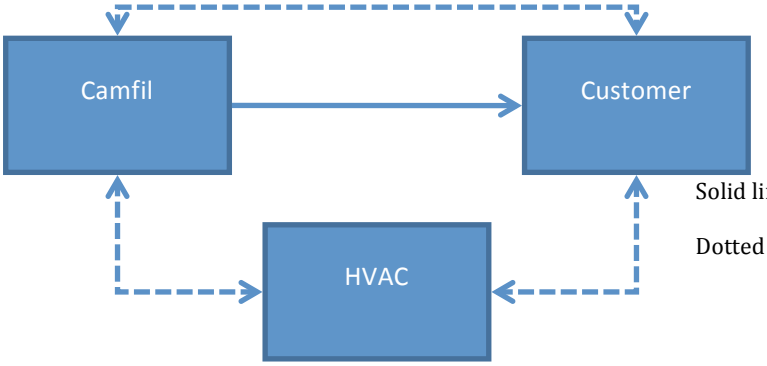
Installation companies

19. Do you know approximately how many air intakes that are placed on roofs?
    a. What is the trend for new production?

Appendix C: Channel Alternative 1

Cooperation with HVAC Consultants in combination with direct sales

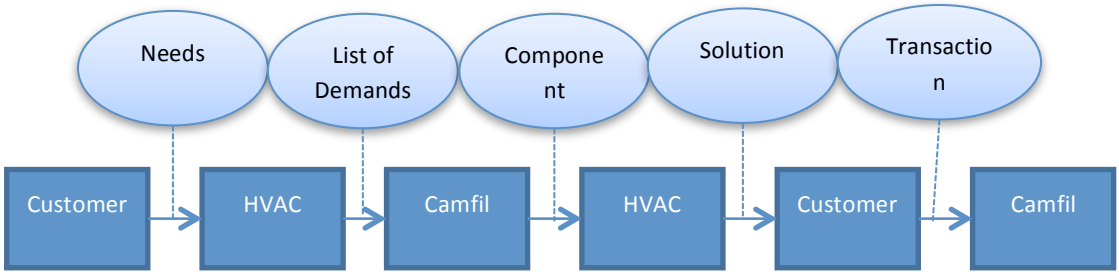
Information and product flow



Solid line – Product flow

Dotted line – Information Flow

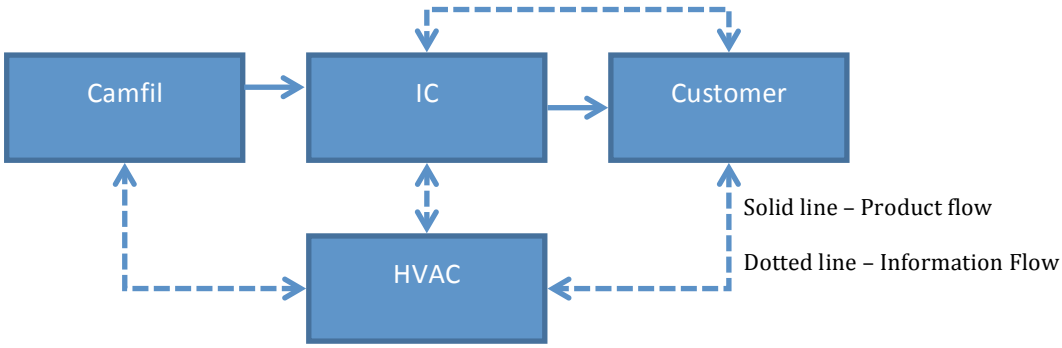
The actors in the channel coupled with the identified activity chain, except the aftermarket service and maintenance.



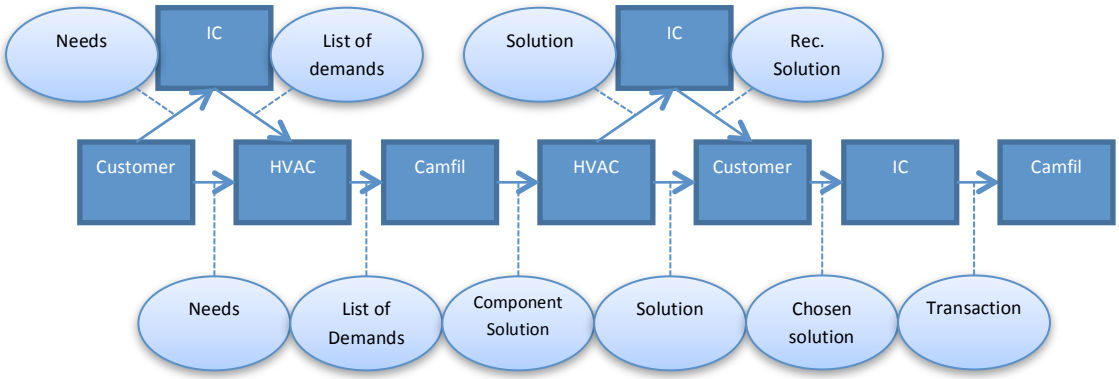
Appendix D: Channel Alternative 2

Cooperation with HVAC Consultants and Installation Company

Information and product flow



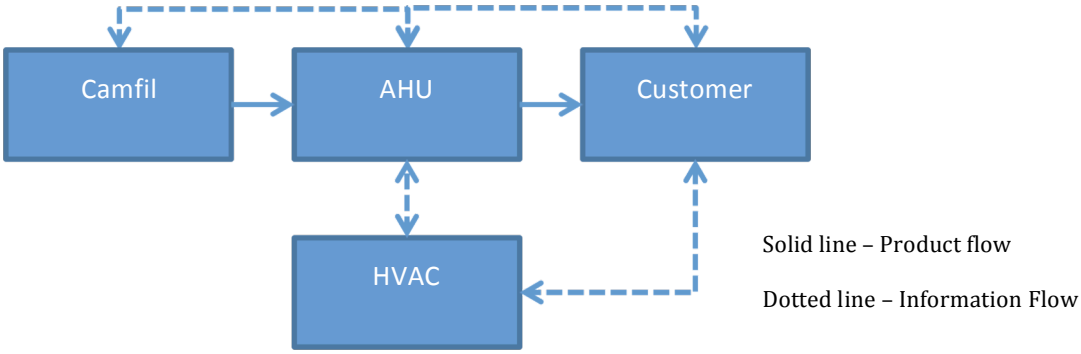
The actors in the channel coupled with the identified activity chain, except the aftermarket service and maintenance.



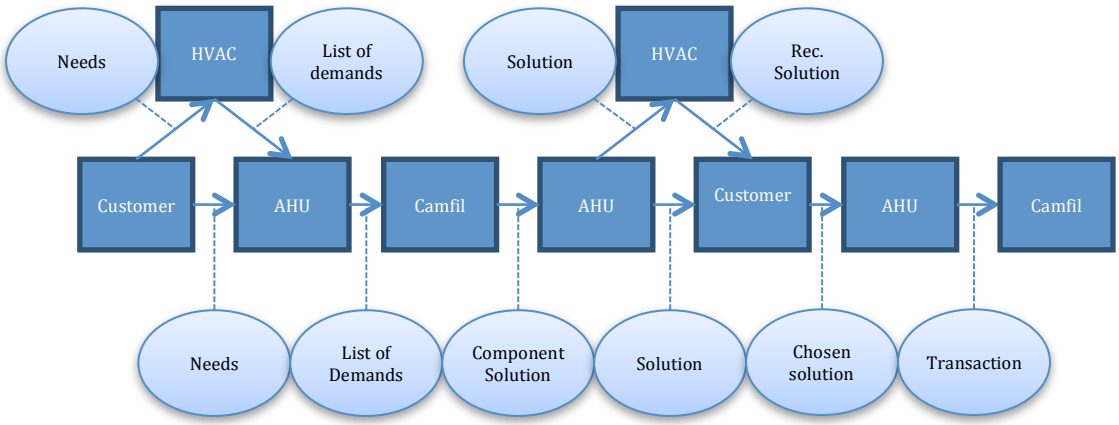
Appendix E: Channel Alternative 3

Cooperation with AHU Manufacturer and HVAC Consultants

Information and product flow



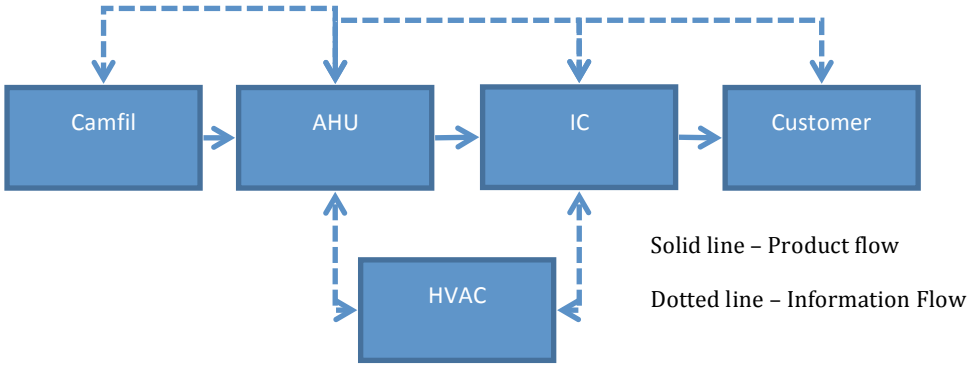
The actors in the channel coupled with the identified activity chain, except the aftermarket service and maintenance.



Appendix F: Channel Alternative 4

Cooperation with AHU Manufacturer, HVAC Consultant and Installation Company

Information and product flow



The actors in the channel coupled with the identified activity chain, except the aftermarket service and maintenance.