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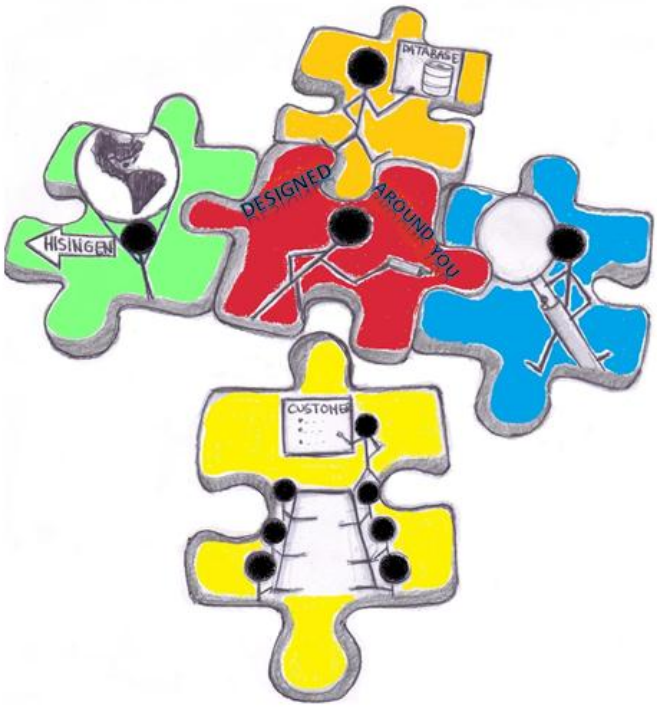

Customer-Oriented Product Development
An explorative study within a car manufacturer

Master of Science Thesis in the Master Degree Program Product Development

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Cover picture: Pieces of actions which could lead to a more customer-oriented way of working at Volvo Car Group, see further chapter 5- Proposal of improvements within the company

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Abstract

Most researchers within the field of product development agree on the importance of understanding customer needs when developing products. For example, Ulrich, K. and Eppinger, T. (2012) mentions that a company's economic success depends on their ability to identify customer needs and quickly create products that meet the needs at a low cost. Consequently, the economic situation of the car industry entails Volvo Car Group (VCG) to be more customers orientated, in order to stay competitive on the market.

The thesis answers the questions: ”Is Volvo Car Group customer-oriented?” and ”Why or why not?”, where the scope of the study includes both if VCG collects relevant customer information but also if the information is used in a suitable manner when new cars are made.

The study started out with a literature study, based on recommended and commonly referred to literature, as a mean for staying open minded for what can be considered the most relevant aspects of customer orientation. There were 14 initial and 22 in-depth interviews conducted with carefully selected employees at VCG as the main base for empirical data collection, and all empirical information was has been sent back to the interviewees for validation.

It can be concluded that VCG's new product development process is customer-oriented in some respects, and not in other. However, in order to get to be called a customer-oriented company, a few issues have to be resolved. For example, a customer-oriented organisation should listen to the customer input, but VCG appears to have problems with selective hearing; the information is not always welcomed unless it confirms what is already been known. Moreover, time and resources should be assigned to customer research activities. Contrary to this, it appears that critical early research activities too often get cancelled at VCG.

A few suggestions of improvements have been raised, which together cover the most important aspects to address if VCG desires to work in a customer-oriented manner.

Keywords:
Customer orientation, product development, car industry, interview study, customer research

Preface

I. The story behind the choice of topic

Being students of the master program Product Development, developing for the customer is central. Furthermore, the authors both found the masters course “Product Planning and Market Analysis” by Professor Marianne Karlsson (2011) interesting. One of the authors had a summer internship at the department of Product Planning and Management at VCG, for director Anders H. Gustavsson, where it became apparent that customer orientation is central at VCG today. Consequently, a thesis to investigate how VCG progresses in the work to become more customer-oriented was found interesting by both VCG and the authors. Upon this, the authors were lucky enough to get in contact with the program coordinator at the master program Product Development, who happened to be very knowledgeable in the area.

II. Acknowledgements

The Master Thesis (30 credits) has been carried out at the department of Product and Production Development at Chalmers University of Technology and for the department of Product Planning and Management at Volvo Car Group. Johanna Blom has a Bachelor degree in Mechanical Engineering with product development and design and Anna Josefsson has a Bachelor degree in Industrial Engineering and Management. The supervisor and examiner at Chalmers, Lars Almefelt, to whom we would like to express our gratitude, have provided many useful insights and tips. Anders H. Gustavsson has also provided much encouragement, good contacts and good feedback. Finally, we would also like to thank all participating interviewees who have contributed with a lot of time and experience, and all academics who have been very helpful with tips for literature.

Table of Contents

1. Introduction

This chapter presents an overall introduction to the topic of customer orientation and the scope of the study.

1.1. Background

Most researchers within the field of product development agree on the importance of understanding customer needs when developing products (Rexfelt, O. 2005). For example, Matzler, K. (1996) mentions: "A high level of customer satisfaction is one of the most powerful indicators for the future of a business. Satisfied customers are loyal customers and ensure a lasting cash-flow for the business in the future." As Ulrich, K. and Eppinger, T. (2008) puts it; "Developing great products is hard. Few companies are highly successful more than half the time. These odds present significant challenges for a product development team". Similarly, Lager, T. (2005) mentions that "Nor is it enough anymore to develop a product that pleases the customer; it must also be better than competing products in the global arena."

A company's economic success depends on their ability to identify customer needs and quickly create products that meet the needs at a low cost (Ulrich, K. and Eppinger, T. 2012). Consequently, the economic situation of the car industry entails Volvo Car Group (VCG) to be more customers orientated, in order to stay competitive on the market. Accordingly, to deliver an attractive end-product, it is important to keep customer focus in all stages of the product development process for all involved departments.

1.2. The case studied

Volvo Car Group was started in 1927 and has ever since had its head quarter located in Gothenburg, Sweden. The company was part of Volvo Group until 1999 when it was sold to Ford Motor Company, but has since 2010 been owned by the Chinese company Zhejiang Geely Holding Group. Over the last decade, five different CEOs have led the company, where Håkan Samuelsson is the current CEO since October 2012. Each new CEO has introduced reorganizations in the company to some extent.

VCG's product development process is not unique and could be compared to a modified version of Almefelt, L. et al.'s (2003), as depicted in Figure 1.1. VCG has a process structure similar to the one presented by Almefelt, L. et al. (2003) The organisation structure is of Project Matrix character, which means that it consists of both functional silos with different expertise, as well as projects that run across the functions. In a matrix organisation, individuals are linked to others, both through the project they work on as well as according to their function (Ulrich, K. and Eppinger, S., 2012).

One of VCG's visions, which is used as a competitive differentiator, is called 'Designed Around You'. It means that VCG is putting resources where they matter to the customers, in order to make life less complicated for them. This vision makes customer orientation very central for Volvo.

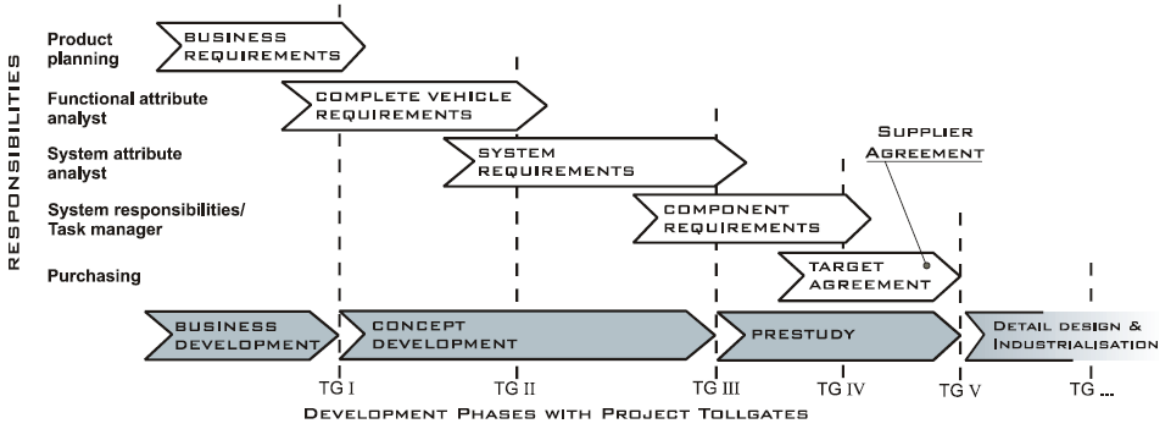


Figure 1.1. VCG has a process structure similar to the one presented by Almefelt, L. et al. (2003)

1.3.Definition of customer orientation

There appears to be no clear definition of how customer orientation should be defined. Rexfelt, O. (2005) mentions “There are many different terms used to describe the activity of developing products with the user´s (or customer) needs in focus.” He further states; “User-centred product development is a market-pull type of product development process. The descriptions of user-centred product development differ, and so do the names for it.” Furthermore, Miaskiewicz, T. and Kozar, K. (2011), state that "User-centered design, also commonly referred to as human-centered design and customer-centered design, represents a general philosophy toward design that brings the users or consumers into the design process."

Another perspective is to move the focus of the definition towards the end product instead of the development process. Rexfelt, O. (2005) states: “it is the result of the process that really should indicate the grade of user-centeredness, and not how the work has been carried out. This means that one could totally neglect the users during the development process and still produce a user-centred product. Admittedly, the odds of that would not be very great. Involving users in the development process is considered important by almost all researchers in the area, and I agree.”

The chosen definition for this study is one of Kaulio, M. (1997): “Customer- focused product development aims at developing products on the basis of an understanding of customers’/users’ needs and requirements.” The definition of customer orientation in this study will include both the experience of the *user* and the *customer*. This is to avoid missing the full picture, in line with what one of the interviewees states; “If you pick any piece out you don’t get a master picture of what customer satisfaction means. If you just want really satisfied *customers*, make sure that you piss everybody off and price it really high so that only the people who love it buy it, then you can get really satisfied customers.” Thus, the user is also included in the definition of customer orientation. Furthermore, when referring to product development, product planning is also included in the definition.

Moreover, the definition of customer orientation, in this study, is also approached with a cost perspective in mind. The bottom line for a company is to make money out of its products; otherwise no new products can be developed. Thus, in the definition of customer orientation it is included that the cost of the product is lower than what the customer is willing to pay for in order to get the perceived value that the product provides. Hence, it both includes optimizing the perceived value which that the customer is willing to pay for but also to keep costs down so that profit is made.

Furthermore, there is a difference between customer sympathy and customer empathy. Understanding customer needs and wishes is not about trying to satisfy a customer, but rather to truly understand the customer and its needs and wishes.

Finally, there is such a thing as a company that are customer-oriented all the time. Like everything else it is a matter of what approaches that are currently used, but where the accumulated approach reaches the customer. Thus, focus will not be on how the customer perceives VCG, but rather on what approach to customer orientation VCG is conducting at the moment in the development process.

1.4. Purpose

The purpose of this master thesis is to increase the awareness of how VCG identifies, integrates and reflects on their customers´ needs, both over time and over different departments. By highlighting the current state, measures can be applied in order to enhance user orientation at VCG, and simplify for future improvements.

1.5. Scope of the thesis

User centeredness could, according to Rexfelt, O. (2005), be considered to comprise both collecting the right information, making a good product out of it and finally, market it to the right customers. The scope of this report will be on the two former of these factors.

Collecting the right information and analysing it properly will be referred to as “doing the right things”, while the implementation of the requirements in the product development process will be referred to as “doing things right”.

1.5.1. Research questions

The thesis will answer the questions:

- ”Is Volvo Car Group user oriented?” and ”Why or why not?”

Strengths and weaknesses with VCG’s current way of working in regards to customer orientation will be stressed.

1.5.2. Delimitations

As mentioned above, how the product is presented to customers after launch will not be included in the study. Thus, verification of whether or not the customer has ended up satisfied by the product is not investigated.

Only three of the current car models will be included in the study, and will each represent a separate phase of the development process. Only the aspects of new product development concerning these projects are addressed in the study. A reference project will be used as a means for comparison over two different periods in time. However, this comparison is merely of supporting character rather than the main focus of the study.

Despite the fact that the departments' strategically work with customer orientation deserves attention, it has been excluded from the study due to too little access of substantial material.

Many aspects affect the product development process, and choices related to developing products. This includes legal requirements, the social system such as politics and relations, and available resources. However, this is considered to be outside the thesis scope due to a restricted time frame.

Not all departments are addressed in the study, but rather the ones that have been found to be of particular importance, meaning only R&D (research and development), MSS (marketing, sales & service), PS&VLM (product strategy and vehicle line management), Design and MI (market intelligence).

Finally, only end customers are concerned, which means that dealers or purchasers of company cars are not addressed in the first hand.

1.6. Customer orientation from a sustainability perspective

According to a report of the World Commission on Environment and Development, sustainable development can be defined as; "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (UN, 2013).

According to UN (2013) there are three aspects of sustainability; social, economic and ecological. Developing products that meet customer expectations with a high precision is particularly important in economic sustainability, which means not wasting human and material resources in the long term. If products are developed to better satisfy the end user, less waste is needed since better and potentially fewer yet more expensive products can be produced.

2. Methodological approach of the study

This chapter describes the methodological approach of the study. First, the research process is presented, followed by reflections on the time plan and justification and critique of the methodological choice.

2.1.The choice of methods

The first step in this study was to conduct 14 initial interviews and attend 10 meetings, in order to get a general understanding of VCG's development process, to identify key persons and to understand the concept of customer-oriented development. Furthermore, in this step, car models to include in the study were chosen in discussions with relevant persons at the company, one model for each phase of the product development process. The first model was chosen, Project A, since it has gone through all early activities in the development process. The next project was chosen, Project B, since it is considered customer-oriented and in a financial balance by many at the company. The third project, Project C, was chosen because it involves a car model that has recently gone through a phase of interest. To enable a comparison of the current and previous working procedures the XC90 was chosen as reference project since it is considered successful by many.

Figure 2.1 shows what phases of the development process the four studied projects are representing. The three studied projects of today have fictive names; A, B and C.

The most important sources of information were comprised by interviews and a literature study. Furthermore, information has been gathered by observations, in terms of meeting attendance and following key persons around during their workdays. The preliminary results were occasionally presented at weekly meetings, so called "Monday meetings", with the product managers, to keep them updated on the latest findings and to receive feedback.

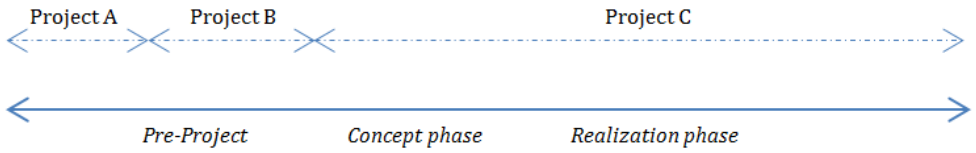


Figure 2.1. Different projects in the study represented different phases of the development process.

2.1.1. Initial understanding phase

The study started with an extensive literature study, before the interviews were carried out, a means to stay objective towards what to ask for. Key areas of interest were identified and could be used as a base for the interview guides which were used as a tool when carrying out the interviews. However, after finalizing the interviews, more time was spent on literature research. The literature study was divided into two parts since more areas of interest were expected to come up later during the interviews.

The frame of references was created from recommendations of professors as well as by the use of tools such as Google Scholar, which provide references that have extensively been referred to. This way, the quality of the reference literature was assured. Furthermore, references found in the literature were also used to find more information.

To map out the thesis process, a brainstorming session was held in the beginning of the study, to generate ideas around the topic. A flow chart was created with seven process steps with relevant methods and deliverables and where input and output were defined for each method, in order to clarify their purpose. The flow chart is showed in

Appendix B – of the project process.

2.1.2. Interview strategy

Furthermore, 22 in-depth interviews (with 24 interviewees) were conducted, with key people from different departments within the organization. The interviews lasted for about one and a half hours each and were conducted in the interviewees' office environment, in accordance with recommendations of Ulrich, K. and Eppinger, T. (2008). The interviews were analytical and semi structured, based on interview guides for the different projects and roles. They were mainly conducted with one person at the time but two interviews were carried out in a group of two. In order to find key persons, hierarchical tree structures and experts' recommendations were used. The interviewee sample contained employees distributed over different projects, roles and departments, as illustrated in Figure 2.2. However, for the reference project, only one interviewee represented the whole project. The interviewees' experience of new car product development differs from 7 to 40 years.

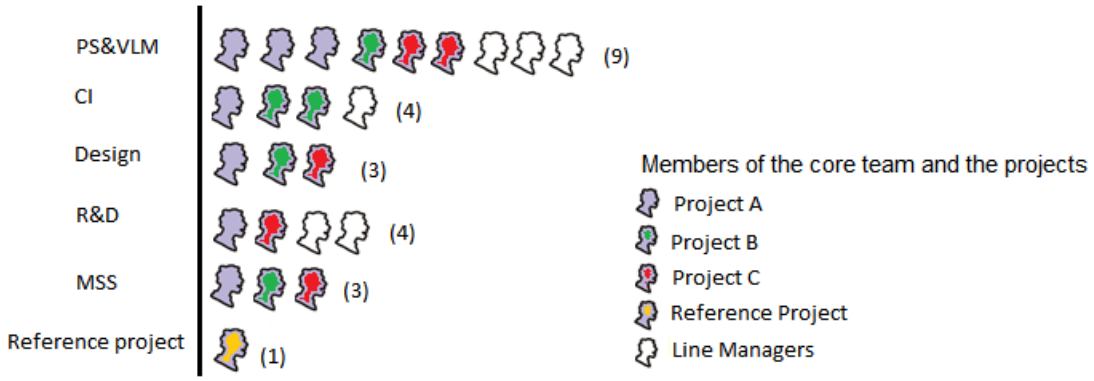


Figure 2.2. A description of the interview sample. The participants were distributed over different departments and projects. Influenced by Almefelt, L. et al. (2003).

Initially, the scope was broadened as an exploratory investigation but later in the process, when the interviews took place, the work instead became of confirmatory character and continued to be throughout the process.

The interviews were done with a qualitative approach with the aim to get the VCG employees' opinions and views on the research question. To have a structure to follow during the interviews and to secure that the topics of interest were covered, interview guides were created. The interview guides followed a specific structure, starting with introduction or prologue, followed by the body and ending with an epilogue, as recommended by Karlsson, M. (2011), who states that interviews with a semi-structured order have questions formulated in a specific order to guarantee that certain topics are covered but the exact order and the formulation may vary between the interviews. The interview guides included open questions in the beginning and more specific towards the end, like a funnel. The questions were both open-ended and close-ended to allow both explanatory answers and specific answers. Both probing and

confirming questions were asked during the interviews. Since the interviewees represented different projects, and thus different phases, of the development process, five different interview guides were created with similar questions but also specific for each phase and project. The interview guides followed a sequence structure and an example can be found in Appendix A – One of the interview guides.

The questions were divided into different topics, with a set of questions each. The questions varied from 29 to 41 depending on the project the respondent belonged to, since some questions only concerned particular phases of the development process. The different topics can be found in Figure 2.3. The topic "social system" was later on excluded from the study since the questions were badly communicated and the topic too complex.

Topic structure	Project A	Project B	Project C	Line Managers	Reference project
Introduction	X	X	X	X	X
Data gathering	X	X		X	X
Analysis of customer data	X	X		X	X
The process in general		X	X	X	X
Roles and responsibility	X	X	X	X	X
Change management		X	X	X	X
Communication	X	X	X	X	X
Social system	X	X	X	X	X
Management's role	X	X	X	X	X
Decision making	X	X	X	X	X
Verification & Validation	X	X	X	X	X
Rounding off	X	X	X	X	X

Figure 2.3 .Interview guide topics for the different projects and phases.

The questions were clearly defined but formulated with the intention to encourage free answers from the interviewees with his or her own words. As Almefelt, L. et al. (2003) mention, "Open questions give the interviewee an opportunity to spontaneously describe experiences, views and opinions in a personal manner and in his or her own words". More specific questions were also used in the interview guides after the warm-up was carried out where more standard definitions or wording were used. All selected participants consented to be interviewed, but one person had to be replaced by another due to schedule problems.

The interviews were carried out on site within the company and in calm and relaxed atmosphere since, according to Karlsson, M. (2011), the best interview environment is calm, without disturbances and it should contribute to creating a positive and open atmosphere. The interviews were held in Swedish with the respondents that had Swedish as their mother tongue and in English with those who were English-speaking. During the 14 initial interviews no interview guide was used and the questions were

spontaneous and open to get an overview and grasp on the problem. The researchers took notes by hand or computer writing. Before the interviews, all interviewees were pre-informed about the topic of the research but not prepared on the questions that they would be asked.

Four of the interview guides were tested on their first time of use, as pilot interviews, to see if they followed a logical order and that the questions were asked in an understandable way. After these pilot interviews, small changes were made. However, the interview guide that was made for the reference project could not be tested since only one person represented this project. During the in-depth interviews one researcher asked the questions to the respondent and the other researcher took notes by computer writing. Audio recording was used as a documentation tool. As mentioned earlier, most of the interviews were carried out with one respondent at the time, except two of them, where two persons were interviewed at the same time. The reason for this was that they worked close and could represent their work together. The interviews started with an explanation of the topic of the study and the interviewees were given information about that they were free to say "I don't know, or I can't answer the question" if they could not or did not want to answer the question. The questions that were not clearly understood were repeated and explained in other words. Questions were reprioritized or skipped during the interviews, if the time ran out or if the interviewee already had covered the answers in an earlier question. The interview was ended with "rounding off"-questions and the interviewees were informed that the notes would be transcribed and then send back to them for possible changes and final approval. By doing so, the information was validated internally.

2.1.3. Analysis of the collected data

All information from the 36 interviews was audio recorded and transcribed, in order to maintain objectivity and not choose occasional comments for the analysis. Ulrich, K. and Eppinger. T. (2008) discusses both advantages and disadvantages with using audio recording as a tool; it is easy to carry out but very time consuming when it comes to transcribing the information. Moreover, some interviewees can feel intimidated by it. This has also been the case in this study, as it took time to carry out the 36 interviews but this was relatively little time spent compared to the time spent on the transcriptions.

To condense and get a full overview of all the collected data, a stepwise data reduction was used. The empirical data was first reduced and then organized and prioritized into separate areas of interest, by the use of the KJ method, as recommended by Karlsson, M. (2011). The KJ-method was used throughout the study, both for the theoretical and the empirical data, see Figure.3.4. Kaulio, M. et al. (1999) mention: "The result from the interviews can be compiled and structured with the KJ analysis as a tool and this work can be extensive. It is an advantage to be a group of people who can discuss and interpret the data and the most important aspects from the interviews together".

Consequently, all KJ analysis was conducted in pair, the two authors together.

The empirical information was thereafter compared to the theoretical framework.

2.2.The time plan

To keep track on the schedule and deliverables, a Gantt chart was made. It was updated throughout the project in an iterative process. According to Coombs, T. (2005), the Gantt chart is used in many different areas and fields. The tasks need to be identified, the time of how long each task takes to complete estimated, and the sequence of the tasks structured. Furthermore, Coombs, T. (2005) states that to start with, it is good to brainstorm around all the tasks involved and then to list them. Eventually, the Gantt chart displays the tasks, time and sequence graphically.

For full overview of the Gantt chart see Figure 2.5. On the left vertical side the different deliverables and tasks are stated and on the horizontal bar the time in days are showed. The blue bars illustrate the initial planning and the green bars represent the end result of the time disposition. In conclusion from this, the planning and tasks have not changed much from the beginning until the end. It can be seen that 1/3 of the project duration was spent on the initial phases where general understanding of the subject was gained.

Finally, the time schedule was planned to contain little or no buffers, in line with Maylor, H. (2011), who states that buffers lead to inefficient work due phenomena such as the student syndrome or Parkinsson's syndrome. However, a realistic time planning brings a risk of delaying the end result, or the quality or scope of the end result, if not strictly kept to. To avoid that, much time has been spent in the early phases so to grasp the problem, the research area and to clear out the mission.

ID	Task Name	Start	Finish	Duration
1	Get general understanding	2013-01-14	2013-02-15	5w
2	In depth Theory Research	2013-02-11	2013-03-15	5w
3	Interview preparations Prepare Interview Guide, select interviewees	2013-03-04	2013-03-15	2w
4	Check progress/result with Supervisors	2013-03-14	2013-03-14	0w
5	Gather emprirical data Conduct interviews, study complementary documents, complementary group interviews	2013-03-18	2013-04-12	4w
6	Interview transcribation	2013-03-18	2013-04-12	4w
7	Data interpretations Quote matrix, tree diagram, ischikawa	2013-04-15	2013-04-26	2w
8	Data interpretations Quote matrix, tree diagram, ischikawa	2013-04-15	2013-05-03	3w
9	Analysis	2013-04-15	2013-05-03	3w
10	Analysis	2013-04-15	2013-05-17	5w
11	Present result on Monday meeting	2013-04-29	2013-04-29	0w
12	Evaluate improvement suggestions	2013-05-06	2013-05-10	1w
13	Evaluate improvement suggestions	2013-05-17	2013-05-23	1w
14	First version Report send in	2013-05-03	2013-05-03	0w
15	Finalize Report	2013-05-06	2013-06-07	5w
16	Finalize Report	2013-05-06	2013-06-14	6w
17	Opposition Other Thesis	2013-06-05	2013-06-05	0w
18	Prepare presentations	2013-06-04	2013-06-10	1w
19	Presentations VCC	2013-06-10	2013-06-14	1w
20	Presentation Chalmers	2013-06-11	2013-06-11	0w
21	Final Report hand in	2013-06-14	2013-06-14	0w

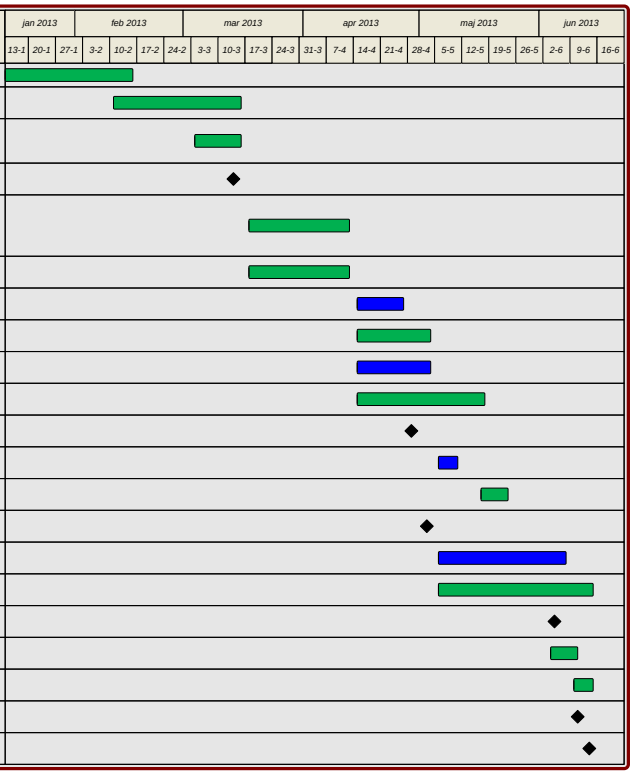


Figure 2.5. Comparison between Gantt charts, the projects initial time plan in blue colour and the final one how it actually turned out are in green.

2.3.Method justification and critique

Since the study only concerns three of today's car models, and a reference project that does not represent the current work at VCG, there is a risk that VCG has other ways of working for other models which have not been looked into. However, the three projects were chosen in discussion with several key persons at VCG, and they all were selected with a clear motivation and should thus be the most interesting to look into.

The chosen participants in the study were also carefully selected, by the use of several recommendations. There were 14 initial interview conducted before the set of participants was chosen. Where the same large set of names continuously came up, so that an overview picture was gained before the most relevant and important participants could be chosen. However, the restricted number of interviewees cannot mirror the total population of their departments and the whole organization.

When searching for literature, important information might have been missed since the "snow ball effect" was applied to recommended literature, where reference lists of recommended articles were used in order to find more relevant references. This came with the risk of missing important perspectives, since the articles are based on each other. However, recommendations of literature were complemented with separate searches on Google Scholar, so that the most referred to literature also was included in the study.

The interview guide was based upon the literature study as a means to stay objective towards what to ask for. Moreover, similar information tended to be brought up during the interviews, even when the interviewees spoke without waiting for the questions. This could be considered a mean to confirm that the content of the interview guide was relevant.

The quality of the interviews is, according to Karlsson, M. (2011) affected by several aspects, including the interviewer as well as the interviewee. The researchers took turns in executing the interviews and taking notes, which might have affected the result. However, due to a detailed interview guide, the answers should be fairly comparable. Moreover, in order to cope with differences in note taking, all in-depth interviews were, as mentioned before, recorded and fully transcribed. However, in the group interviews, there is an imminent risk that the interviewees can have affected each other's answers in the group interview.

The fact that only one person represents the whole reference project could make the result regarding the reference project questionable, in a research perspective. However, the project is not the core focus of the study, but rather a means to compare what methodology VCG has had but might have lost. Thus, no more than one interview could be fitted into the time frame of the study.

In order to stay as objective as possible, all data was transcribed and each quote addressed separately. By creating headings by the use of the KJ- method, the quotes could be moved around until a satisfying overall picture was found. This way, the selection of quotes was made with knowledge of what was deselected.

There is a risk that the interviewees mention things they do not really mean, or that the interpretation of the quotes are misunderstood. To address the first issue, all relevant information was sent back to the interviewees for validation. On the other hand, there is also a risk that corrections from the interviewees were of the bad kind, that reliable information was instead corrupted, since the interviewees did not remember their context anymore. However, at least all quotes used in the study are approved by the interviewees.

3. Theoretical framework

This chapter provides the theoretical framework that will be used as a base in the analysis of the empirical information, in order to answer the research question. The section is structured into the three headings "customer orientation in general", "doing the right things" and "doing things right" to mirror the division of the scope.

3.1.Customer orientation in general

The aim of this section is to give an introduction to general concepts related to customer orientation, and to provide a theoretical base for areas that concern both Doing the Right Thing and Doing Things Right.

A customer-oriented product cannot be guaranteed from the involvement of users (Rexfelt, O. 2005). Rexfelt, O. (2013) mentions the three cornerstones of user centeredness. The first one is mind-set, which includes the developers' attitudes, not least among the decision makers. The second cornerstone is resources, which means to have enough resources available, and the third is competence, referring to the right time and place in the development process. "If it is really bad, the company possesses none of these cornerstones, yet says that "we focus on the customer". The optimal is to integrate all of these in a good way" (Rexfelt, O. 2013).

However, Kujala, S. (2005) mentions that involving the user can be seen as a means to "´do a quality job', 'get it right the first time', and as a selling argument and image factor for the company in making profits."

3.1.1. The impact of the vision on customer orientation

"Lofty vision and strategy statements don't translate easily into action at the local level" (Kaplan, R.S. and Norton, D.P. 1996), which also apply to visions of customer orientation. They further states that for people to be able to act upon the vision and strategy statements, they must be expressed in terms of understandable objectives and measures, and must also be communicated by all senior executives.

Collins, J. and Porras, J. (1996) lift the concept of using bold missions, so called BHAGs ('Big Hairy Audacious Goal'), as a powerful tool to stimulate progress. They stress that there is a difference between having a simple goal and having a BHAG, which is a clear and compelling goal description that serves as a catalyst for team spirit. They mention that people understand a BHAG right away, with little or no explanation.

As an example of a BHAG, Collins, J. and Porras, J. (1996) mention the vivid description of the goal of Henry Ford; "I will build a motor car for the great multitude…. It will be so low in price that no man making a good salary will be unable to own one and enjoy with his family the blessing of hours of pleasure in God's great open spaces…. When I'm through, everybody will be able to afford one, and everyone will have one. The horse will have disappeared from our highways, the automobile will be taken for granted…[and we will] give a large number of men employment at good wages."

3.1.2. Common obstacles for customer orientation

Despite the general agreement among many authors of the necessity of working in a customer-oriented manner, as presented in The Introduction to the thesis, there also seems to be a common understanding that there are many obstacles towards succeeding. However, few authors stress the same issues as most important but instead provide a diversity of obstacles.

Karlsson, M. (2011) mentions the lack of efficient methods and tools as an obstacle for customer-oriented development, as well as a lack of resources and skills within the company, and the issue of attitudes not promoting customer orientation, the fact that customer requirements are difficult to elicit and that they change over time and also that it is difficult to identify who the customer is. Nielsen, J. (1993) mentions high cost and complexity as obstacles. Furthermore, he points out that cost savings from increased usability might not become visible until after product release. Kujala, S. (2005), in turn, points out obstacles related to motivation of the developers, the identification of appropriate users, obtaining access to and motivating the user, and finally, using the contact in a beneficial way.

Rexfelt, O. (2005) brings out four main reasons for not implementing customer requirements. First, he mentions external barriers; such as organizational, technical, competitive and social reasons. The other kind of obstacles regards poor management of the specification of requirements, different perspectives in the project group as well as unawareness of the limitations of the user-study methods.

3.2.The concept of Doing The Right Things

This section presents core concepts from relevant authors concerning how the most important and suitable customer requirements are identified and prioritized. The following structure of the chapter is a modified version of Kaulio, M. et al. (1999), where each subchapter represents an important aspect of how to manage to do the right things.

As Kramers, E.R. (2007) mentions; ”It is possible to be everything to everyone”. However, he continues stating that if the actual user group is not understood accurately, or if it is not continuously in focus, the product can end up not serving anyone’s needs.

3.2.1. The concept of data gathering

This subchapter provides an overview of important aspects of data collection, in order to understand the needs and wishes of the customer.

“Collecting new information from customers’ is the second highest weighted success Factor.” (Lager, T., 2005)

Engelbrektsson, P. (2004) states that customer study methods can be described in terms of the four aspects; Participants, Data collection method, Mediating object and Context. These four aspects can be varied, according to Kaulio, M. et al. (1999), and all aspects influence what kind of information that will be elicited. This section is structured in accordance to these four aspects, to visualize the consequences they might cause on the quality of the customer requirements.

Engelbrektsson, P. (2004) raises the issue that user requirements can be more or less accessible. Karlsson, M. (1996) talks about captured, elicited and emergent user requirements, referring to that the user could either be aware of problems with the product and thus can easily articulate requirements (captured requirements). The user could also not be aware and might even have compensated for problems with the product (elicited requirements). Finally, the user cannot be aware of some requirements before a new solution is presented to them (emergent requirements).

Participants

The first part that makes up a customer study method is the choice of participants. Kaulio, M. et al. (1999) stress that the choice of participants in the data gathering process is one of the most important steps in order to understand the user, sometimes more important than the choice of collection method. Kaulio, M. (1997) further states that involving the wrong customers might lead to “a misunderstanding, rather than an understanding of customer requirements”.

Wallgren, P. (2013) stress that it is important to understand both the ones who buy the product, as well as the ones who don’t, in order to be customer-oriented.

Data collection methods

The next part that makes up a customer study method is the choice of data collection method. To choose method for data collection is not just a matter of what information that is aimed for, but depends also on the time and resources available as well as what competence the company possess within the area (Kaulio, M. et al. 1999). A study by Karlsson, M. (1998), showed that companies found it difficult to know what data gathering methods to use in different situations. Kaulio, M. et al. (1999) mention that different methods have different strengths and weaknesses, and by combining different kinds of methods, synergy effects can be achieved.

A short summary of some user data collection methods will be presented in this chapter for the reader's general interest.

Field studies can, according to Wixon, D.R. et al. (2002) be described as a "collection of tools and techniques for conducting studies of users, their tasks, and their work environments in the actual context of those environments", such as observations. The method is suitable also with short of time or relatively low budget (Kujala, S. 2005) and is promising in early user involvement. However, the author further states that field studies are not widely used in practice, for example due to that it is difficult to effectively analyse user needs and to discover relevant issues from the aspect of product development. Also Rexfelt, O. (2005) stress that observations give poor control over the experiment but mentions that it is by studying how the user tries to satisfy its needs that the needs become visible.

Griffin, A. and Hauser, J.R. (1993) found that in order to find 90-95% of all possible product requirements, only 20-30 interviews was needed, given the right participants. Matzler, K. et al. (1996) mention that customer interviews are useful for finding product requirements and customer problems, but less useful for finding new and latent product requirements. Rexfelt, O. (2005) summarizes interviews as flexible, but time consuming with results that are hard to analyse and compare.

Focus group interviews are similarly suitable for eliciting user needs and attitudes, according to Rexfelt, O. (2005) but the results are difficult to analyse and compare. Engelbrektsson, P. (2004) mentions that focus groups are suitable for idea generation for new products and to prove background for quantitative studies. Matzler, K. et al (1996) mention that focus group interviews often are used by market research institutes as a mean to determent product requirements on the assumption that group dynamics enhance the diversity of the customer needs that can be discovered.

There are many other methods for collecting user data as well. Usability testing and other recent methods have shown to be the most used methods, in a study on user-centred design practitioners (Vredenburg et al. 2002). Rexfelt, O. (2005) summarizes the method as that the design solutions are tested by the user by solving tasks with it. The lead user method, on the other hand, takes advantage of the users who are in the "frontline" of new technology and thus expect more from the product than ordinary users (Engelbrektsson, P. 2004). Questionnaires, in turn, are according to Rexfelt, O. (2005) useful to measure attitudes and preferences but inflexible and time consuming. Finally, there are also methods such as Critical incident technique, which does not involve the user directly but instead

evaluate critical incidents that occur such as accident (Rexfelt, O. 2005). However, Gould, J.D. and Lewis, C. (1985), Kaulio, M. et al (1999) as well as Kaulio, M. (1997) stress that direct contact between the user and the developer is crucial.

Mediating objects and tools

Another part that makes up a customer study method is the choice of mediating tools and objects. Communication with customers, in order to identify customer requirements, are found difficult and complicated by many companies, since developers and users have different vocabularies, interests and values (Kujala, S. 2002 and Kujala, S. 2005). According to Smith, G. and Smith, S. (2012), customers tend to use non-technical words when asked to describe their wants and needs. As example, they mention "At the (aspirational, emotional, functional, physical) levels, customers want ('prestigious', 'exciting', 'easy to use', 'blue' 'camera') phones".

Engelbrektsson, P. (2004) mentions that different forms of use experience affects the user's ability to formulate customer requirements. With 'problem experience', the user can describe its reality and the problems related to the product, whereas the experienced user has collected stories of situations where the product had performed in a dissatisfactory manner.

Prototypes, models and other mediating objects can, according to Kaulio, M. (1997), improve and ease communication between user and designer. Early and simple models of the product can be an effective tool in communication. Engelbrektsson, P. (2004) points out that users can find it difficult to fully understand the concept without interaction with a prototype, and in one of his studies, it wasn´t possible to comment on the product on a detailed level until participants were faced with a full-scale prototype..

Mediating tools favour in particular elicited and emergent requirements, which are the requirements that the customer is not fully aware of and might even have compensated for, as well as the kind of requirements that emerge during use of a new product as a consequence of new use experience (Karlsson, M. 1996).

Gulliksen, J. et. al. (2003) mentions that "abstract notations such as use cases, UML diagrams or requirements specifications are not sufficient to give the users and stakeholders a concrete understanding of the future use situation". Instead the authors suggest that prototypes, simulations or other representations and terminology, which are easily understood, should be used.

Context

Understanding the context of use when developing user-oriented products is so conventional, it is standardized by ISO 13407 (1999). Kaulio, M. (1997) argues, in line with this, that several researchers emphasize that "the context poses crucial preconditions" and that the product thus must be studied in its context when customer requirements are to be elicited. Also Kujala, S. (2005) stress the importance

of studying the user in its own environment. Many approaches, such as Gemba and contextual design, encourage the developers to meet the users in the user's own environment (Engelbrektsson, P. 2004).

Engelbrektsson, P. (2004) mentions that studying a user which is interacting with a prototype in the users living environment, both give the designer a deeper understanding of the future users and their requirements, but also make the user understand the product better and can thus provide richer information. Moreover, the author argues that "users with use experience carry with them the context of use". See an example of a situation that benefited from meeting the users in their own context in Example 3.1.

Example 3.1

Wallgren, P. (2013) mentions an example where developers of ITT Flygt pumps attended a fair where they met with farmers who were interested in their products but the pumps were not suitable for the farmers' purpose. This kind of information never reached the developers normally, but suddenly they realized their need of going to visit the farmers to fully understand the use situation.

When the developers reached the farm, they realized why the farmers could not use their pumps, because manure creates a hard cake at the top of the tank. With their competence as developers they realized two things. A) An agitator was needed to keep the manure liquefied, and b) propellers for stirring should be attachable to ITT Flygt's sealed motors, instead of pump housing. This way, a new family of products (agitators) was created.

3.2.2. The concept of customer data analysis

This subchapter provides a theoretical framework of a customer-oriented customer data analysis approach.

Data interpretation requires professionalism

As Nielsen, J. (1993) points out; Users are not designers. Rexfelt, O. (2013) mentions that it is in fact the product developers that most often have the best ideas, but they would have even more potential if they knew more about the customer. Kaulio, M. et al. (1999) mention that it is the company that, by understanding the user's situation, problems and preferences, can understand and realize what the user's needs are and wishes. They further mention that customers are not professional product developers and thus describe their problems and desires from their situation and experience.

Understanding the future customer and its needs and wishes

Users don't know what they will need in the future, have difficulties articulating their needs and don't understand the technical possibilities and limitations of their requests (Kujala, S. 2002). This is in line with the famous quote "had I asked people what they wanted, they would have said faster horses."

Nielsen, J. (1993) stresses that users find it difficult to foresee how they will interact with future systems of which they have not yet been in contact with. As Matzler, K. et. al. (1996) describes it; "If customers are only asked about their desires and purchasing motives in the exploratory phase, the results are usually disappointing and the answers already known." Instead, other approaches to understanding the customer must be adapted.

In addition, according to Kaulio, M. et al (1999), the customer sometimes take things for granted and thus don't consider them when asked. Matzler, K. et al (1996) redistribute the responsibility of finding such things to the developer by pointing out "Striving for customer satisfaction means understanding and anticipating what customers want of the products in the future but do not expect of them",
In order to understand the customer requirements it is important to understand the root cause of their existence, not just note that they exist (Kaulio, M. et al.1999). Grönroos (2000) states that customers search for solutions that serve their own value-generating process, instead of buying a product are they after the benefits the product provides. These benefits must thus be understood.

Matzler, K. et al. (1996) stress that the product expectations, which are spoken out loud by the customer, are only the top of the iceberg, as in Figure 3.1. It is necessary to ascertain the "hidden" needs and problems.

Figure 3.1. The spoken requirements are only the top of the iceberg. The "hidden" needs and problems must also be found, as mentioned by Karlsson, M. (2011). Picture by dykarna.nu (2013).

Avoiding assumptions

If a project is to be developed in a customer-oriented manner, assumptions should be avoided. Oxford dictionaries (Oxforddictionaries, 2013) define the word assumption as "a thing that is accepted as true or as certain to happen, without proof". Hasenkampa, T. et al. (2009) mention that assumptions often are made during the product planning and development concerning, for example, consumer behaviour, load conditions or ambient environmental conditions. Nielsen, J. (1993) raises that "your best guess is not good enough" and that users have infinite potential for doing things differently than the developer imagine.

The phenomena of building a car for oneself

In a study by Kujala, S. and Mäntylä, M. (2000), developers who happens to be users themselves were found to incorrectly think that the users shared similar patterns of behaviour and values as themselves (Kujala, S. 2005). Also Nielsen, J. (1993) points out that designers are not the users and that one with knowledge of a system can fit extra information into the picture and thus interpret it correctly. As the author further states; "Knowing about a system is a one-way street. One cannot go back to knowing nothing."

Nielsen, L. (2013) mentions that many designers and engineers talk about the users without having met any and further states that "To be able to do so, they draw on their individual and general knowledge of people they find is like the users. This is the same everybody does when facing strangers; we use our cognitive ability to categorise people into fixed types based on our previous meetings with persons and our cultural background".

Methods for avoiding assumptions when analysing customer data

Kaulio, M. et al. (1999) mention that the difference between hearing the customers' voices and understanding their needs and wishes lies in the analysis of the user data. Thus, proper methodology can be a way to stimulate a better analysis of the customer data, with fewer assumptions from the developers. For example, according to Lewins-Beck, M.S. (1995), data analysis involves the systematic application of statistical tools. Some other recommendations regarding methods for avoiding assumptions will be presented below.

Structuring data can be comprehensive work where, according to Kaulio, M. et al. (1999), a group discussion is preferable in order to compare interpretations. This provides a system view and the relative importance of the requirements can be elaborated. Also Ulrich, K. and Eppinger, T. (2012) mention that the same interview notes can be translated differently by different analysts, meaning that the translation process should be conducted by a group of people.

Visualization of the analysis result can create a foundation for good discussions and is used for spreading the same picture of the customers' situation. "The result of a good analysis does thus provide a clear "picture" of the users' situation, their problems, needs and preferences" (Kaulio, M. et al. 1999).

By continuously presenting the motive or reason for the existence of a requirement, throughout the development process, the data can be interpreted more direct, and the prioritization of requirements is visualized (Kaulio, M. et al. 1999). This can be used as a mean to avoid incorrect assumptions since the background information is clearer.

Important to consider about the data of analysis

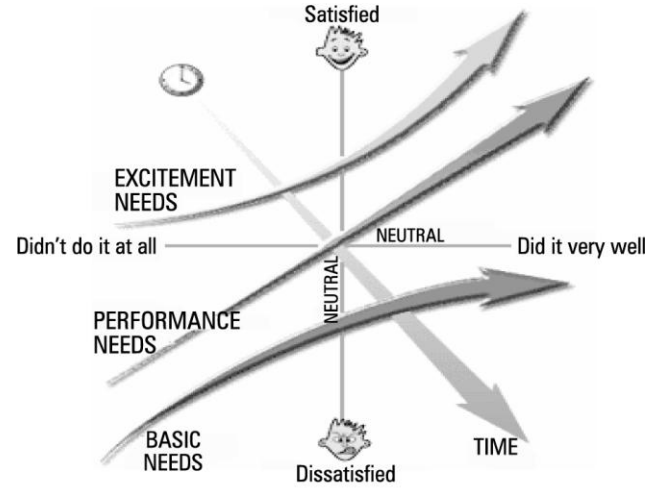
"If the data are bad, then they will yield no interpretation, or a false one" (Lewins-Beck, M.S. 1995).

Hence, it is important to be aware of the limitations of the data to be analysed. Reasons for why the customer data is unreliable can be due to both the user and the listener. Ulrich, K. and Eppinger, T. (2012) lift the issue of latent user needs, which can be glimpsed in, for example, the form of humorous remarks, less serious suggestions, frustrations and nonverbal information among the participating users.

On the other hand, regarding the listener, Lindvall, J. (2012) mentions that humans have a limited capacity of perceiving its environment and can only focus on few stimuli at the time. What attracts the attention of the listener depends on frequency, personal recognition, stimuli characteristics, news value, motive and interest. This can also affect the relevance and validity of the gathered data.

To be able to identify different kind of customer requirements

To work in a customer-oriented manner, all kinds of customer requirements must be understood. A Kano survey aims to classify users' needs and wants into tactically important categories (Johnson, J-A. et al. 2006). Moreover, Kaulio, M. et al. (1999) mention that the bottom line of the Kano model is that customers can't articulate all requirements and that the final requirements list does not always contain all requirements it should. The Kano model can help visualizing these different needs and be kept in mind when the choice of data gathering methods is done, in order to find a more all covering set of requirements. Figure 3.2 show the different requirements of the Kano model. The figure can be used as a mean to interpret customer requirements in a successful manner.



Source: Reproduced from ReVelle *et al.* (1998)

Figure 3.2. The Kanomodel visualizes different categories of customer requirements (Tan, K. and Pawitra, T. 2001).

The must be requirements, the customer take for granted, and according to Johnson, J-A. et al. (2006), the user is indifferent to high performance, but if they are not fulfilled the user will be very unsatisfied. The one dimensional, or performance requirements, are usually explicitly demanded by customer since they are used by the user to compare products (Matzler, K. 1996; Engelbrektsson, P. 2004), for example better engine or increased battery running time. User satisfaction increase or decrease linearly with the performance of the product. On the other hand, as Rexfelt, O. (2013) mentions, performance requirements do not necessary bring a competitive advantage, since everyone is aware of these. However, the "attractive", or "excitement" requirements, are according to Engelbrektsson, P. (2004) the user not aware of, and they have the greatest influence on the customer's satisfaction with the product (Matzler, K. et al. 1996). With the "attractive" requirements (or "excitement" requirements), the user is indifferent to low performance on the specific requirement but excited if the product is performing well (Johnson, J-A. et al. 2006).

Rexfelt, O. (2013) mentions that excitement requirements become performance requirements with time, in the same way as performance become basic with time. Fricke, E. et al. (2000) raise the example of cars to illustrate the phenomenon of changing functions. A speedometer in a car was earlier there for situation analysis, today automatic speed control is common and tomorrow automatically controlled driving will become standard. This should also be taken in consideration when doing the data analysis, so that each requirement is addressed in a proper manner.

Balancing the set of customer requirements.

Balancing is defined, in line with Almefelt, L. (2005) as "the management of properties of a product concept in order to provide user value in a cost-efficient way". A good balancing of the product features and properties is thus crucial in order to provide customers with satisfactory products. Cooper, R. and Kleinschmidt, E. (2000) raise product advantage as the number one success-factor, and unfold the concept into balancing superior price/performance characteristics, to find superior benefit for the customers, and relative high product quality in terms of the customer's own definition of quality. Similarily, Cooper, R. and Kleinschmidt, E. (2000) mention that the key often is to understand what a benefit really is and what superior performance is, as well as what quality means and what customer value depends on.

Rexfelt, O. (2013) mentions that the most common is that the requirements that customers has provided gets lost through the different steps in the process, which is likely to result in a non-ideal end-product. Moreover, as with the bus situation in Example 3.2, problems can be solved in more or less suitable manners, and it is similarly important to keep the customer in focus when doing the requirements balance instead of solving internal problems and ending up not serving anyone's needs (Rexfelt, O. 2013).

Example 3.2. Problems can be solved in a counter-intuitive manner.

Bussar utan passagerare håller äntligen tidtabellen

PITEÅ Bussarna på linje 3 kunde inte hålla tidtabellen på grund av alla passagerare som klev på. Linjebuss i Piteå har löst problemet genom att bussarna numera kör en väg där det inte finns några hållplatser.

– Det var vår enda chans att snabba upp linjen. Vi är tvungna att hålla i gång bussomloppet, säger Birger Eriksson, platschef vid Linjebuss till Piteå-Tidningen. (TT)

Busses without passengers finally keeps to time table

PITEÅ The busses on line 3 could not keep to the time plan because of all passengers that entered the buss. Linjebuss in Piteå has solved the issue by letting the busses drive a road where there are no bus stops.

- It is our only chance to speed up the line. We have to keep the bus circulation going, says Birger Eriksson, site manager at Linjebuss to Piteå-Tidningen (newspaper of Piteå)

Users don't complain about a system for doing too much, but unused features means potential development savings that doesn't benefit the user (Nielsen, J. 1993). This is in line with what Almefelt, L, (2005) states about that late changes, which might have arisen due to cost cuttings or adjusted product offer, may result in a product containing features and performance levels which are not being utilised.

Also, related to the previous chapter, fulfilment of some kind of requirements does not imply a high level of customer satisfaction (Matzler, K. et al. 1996). The balancing must thus consider how to satisfy different kinds of needs, which more easily can be done if a Kano-categorisation is done of the

requirements. Furthermore, Meyer, C. and Schwager, A. (2007) state that "The secret to a good experience isn't the multiplicity of features on offer." This is in line with what Nielsen, J. (1993) states regarding "Less is more"; "Having fewer options will often mean better usability because the users can then concentrate on understanding those fewer options".

Even more aspects are relevant if a good balancing is to be achieved. For example, according to Kaulio, M. et al. (1999), there are requirements which can be considered "low hanging fruit", which means that they are easy to satisfy and to a low cost. These requirements might be prioritized despite the fact that the customer does not value them high. Moreover, Almefelt, L. (2005) stresses the importance of finding synergies instead of compromises. A high level of synergy can be described as "the performance of the solution combination is clearly higher than the sum of the individual items' performance" (Almefelt, L. 2005). Almefelt, L. (2005) states that most synergies and conflicts are visualised, and thus can be best managed, when alternative sets of solutions are combined. Using alternative solutions also reduce the phenomenon in which "concept solutions presented in a team quickly tend to become fixed in people's minds", and instead make people more open to other ways of balancing after the initial trial.

Finally, Cooper, R. (1994) states that the factor that has most influence on whether a product is a winner or loser, is if it contains unique benefits and unique product value to the users. This should thus also be taken into consideration when analysing the customer requirements in order to perform a good analysis.

3.2.3. The concept of validation of customer requirements

This subchapter aims to provide a theoretical background to what role validation, as opposed to verification, has in a customer-oriented project.

Validation of customer requirements is not the same as verification of requirements. According to Bahill, T. and Henderson, S. (2004), verification of requirements means to prove that each requirement has been satisfied. Validation of requirements on the other hand, means to ensure that the set of requirements is correct, complete and consistent, and also that the product can satisfy these requirements. Similarly, Kaulio, M. et al. (1999) state that validation means to control that the set of requirement is correct, and mentions that this requires customer contact.

Kaulio, M. et al. (1999) mentions that along the way from choosing participants, analysing data to realizing the concepts, several choices are made, where in each choice there is a risk of misinterpretation of the reality. As example they mention that a technical specification, such as "the weight of the product shall be less than 2,0kg", is easy to verify, but it does not mean that the customer requirement is fulfilled, which was "simple to handle". Thus, validation is important in order to make sure that the product reflects what the customers want.

Bahill, T. and Henderson, S. (2004) illustrates issues that can arise with poor validation with the examples in Example 3.3;

Example 3.3
The Ford Edsel automobile had good requirements that were verified, yet the car did not sell, since people did not want it. Management had ignored marketing research and instead produced a car that management wanted instead of what the customer wanted, resulting in that they produced the wrong car.

Similarly, at Coca Cola Company, a blind tasting test was conducted between Coca Cola and Pepsi Cola where the result showed that most people preferred the taste of Pepsi. They then changed the taste to taste like Pepsi without realizing the strength of Coke's branding. After severe complaints the Coca Cola Company changed back to the original taste. In conclusion, they did the requirements development fine by doing a marketing survey, which they obeyed. However, they did not make what the customers wanted which is a validation mistake.

For Titanic, on the other hand, verification was bad, because they did not build the ship right as opposed to build the right ship (Bahill, T. and Henderson, S. (2004).

To seek customer inputs and validate concepts with customers is an iterative process, where customer inputs should not cease after the pre-development market studies (Cooper, R. and Kleinschmidt, E. 2000). Moreover, a typical problem is to involve the wrong users, give them the wrong tasks or not

include restrictions or other limitations that the real-world user would face (Nielsen, J. 1993). The author further states that the designer should be open to the input the customer provides.

There is also the issue whether the validation is reliable or not. There are two ways to perform validation; internal versus external validation. Internal validation means that validation is conducted using only participants from the model's derivation set (Bleeker, S. et al. 2003). External validation, on the other hand, refers to generalizability and is typically studied in independent validation samples from a different but "plausibly related" population (Steyerberg, E. et al. 2003).

3.3.The concept of Doing Things Right

This sub-chapter highlights core concepts and ideas concerning how the identified and prioritised customer requirements are turned into successful products while being balanced against restrictions such as cost and capacity, in a customer-oriented way.

3.3.1. Customer orientation in the development process

This section provides an overview how the product development process can affect how customer-oriented a company is.

What the company's overall development process looks like can stimulate or counteract a customer-oriented way of working. Kaulio, M. et al. (1999) describes this as: "Customer-focused product development processes must be seen as an interrelated set of factors and activities organized in a layered structure which taken together provides the conditions for creating an understanding of customer requirements." Furthermore, Gould, J.D. et al. (1997) state that product development both should be iterative and incremental. Thus, it is important that the process stimulates such behaviour. Furthermore, a good process that manages customer requirements should have a clear customer, should be clearly defined and there should be one person responsible for the customer that follows the process, according to Kaulio, M. et al. (1999).

The importance of front end process

Early management reviews are important since, according to Wheelwright, S. and Clark, K. (1992), this is when the management has most power to influence and least money is consumed. In line with this, Cooper, R. (1994) states that in order for a product to succeed, the initial stages are critical and the key success factor depends on how well the products are defined in the beginning, (Cooper, R. 1994).

Moreover, the importance of front end processes in customer-oriented product development is also stressed by others. For example, Gould, J.D. et al. (1997) stress that early user focus should guide the development, and Kujala, S. (2005) mentions that at the beginning of the product development process, when the product is defined in relation to its customers, user involvement is particularly important. Kujala, S. (2005) also mentions that in order to be practical in product development, the early user involvement needs to be simple.

Benefits of a stage gate system

A stage-gate system can benefit customer orientation. When the planning of the project starts, clearly defined milestones should be identified, according to Kaulio, M. et al. (1999). They form the base for the project follow up and they are important steps during the project. A product process that is built as a stage-gate system provides a good overview for the senior managers which results in better management and control due to a better structure and provided vocabulary, according to Cooper, R. (1990). Furthermore, stage-gate systems contain checkpoints to control that a project has a high standard of execution, and provide the project leader with deliverables for each gate, Cooper, R. (1990). If customer awareness is applied suitably, such factors can provide the necessary conditions for being able to work with the customer in mind.

3.3.2. Customer orientation in the decision-making process

This section provides a theoretical framework for how the decision-making process can affect a customer orientated way of working.

How customer oriented decisions in the projects are, regarding the product, have direct impact on how customer-oriented the end product is. Similarly, Gulliksen, J. et al. (2003) mention that user requirements are not always implemented, despite good quality user studies, and suggest that this is instead due to decisions in the project. Furthermore, Kaulio et al. (1999) mentions that each project member affects the project results by their opinions and decision making, based upon their perspective and background knowledge. Consequently, the team members affect the decisions which in turn affect the end product. Thus, the decision making process must encourage customer orientation.

As mentioned in *chapter 3.1.2 – "Obstacles for customer orientation"*, Nielsen, J. (1993) mentions that cost savings from increased usability might not become visible until after product release. As a result, recommendation has been given to shift the responsibility upwards in the organisation: from the development managers towards middle and upper management.

Kaulio, M. et al. (1999) mentions that if the origin and background of the requirements are understood it is easier to assess the requirements' significance. One way to reach understanding of the background is to map the system "user – product- task- context", which provide a good overview of who the customer is, why the customer needs the function, what its purpose is and in what context it is to be used (Kaulio, M. et al. 1999), see Figure 3.3. This way, decisions can more accurately be taken regarding the significance of the customer requirements.

Schneider, S. C and De Meyer, A. (1991) propose the following categories of factors which influence strategic decision processes: the managers' individual characteristic, group dynamics, internal organizational context and environmental factors.

Managers are often responsible of making decisions and are often in charge of the consequences of the same. However, Papadakis, V. et al. (1998) mention that different managers of a company may interpret the same internal or external stimulus quite differently. Furthermore, they state that "the way managers categorize and label a decision in the early stages of the decision-making process strongly influences the organisation's subsequent responses.". Finally regarding manager's role in the decision making process: Nielsen, J. (1993) points out that "vice presidents and other corporate executives should realize that they are no more representative of the end users than the developers are".

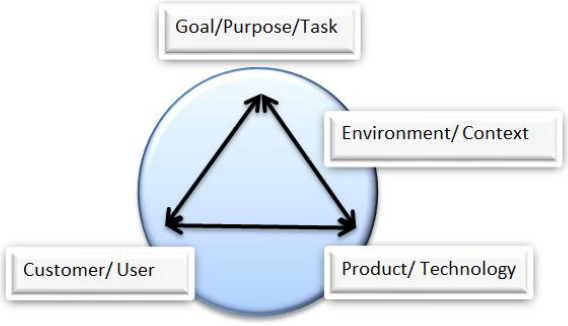


Figure 3.3. A system view can provide understanding of a requirement's background (Kaulio, M. et al. 1999).

Lastly, Herrera, F. et al. (1997*)* mention Arrow's impossibility theorem, which states that it is impossible to unite individual preferences into group preference in a completely rational way. In line with this, they continue stating that consensus, as a unanimous agreement, rarely is achieved in real situations and that the process of reaching consensus can be unacceptably costly.

3.3.3. The effect of roles and responsibilities on customer orientation

This section provides a theoretical framework for what effect different setups of roles and responsibilities have on customer orientation.

According to Lester, A. (2007), in every project there are people who have their key roles to be responsible for in the project. It's important to have the right competence in the group, where social ability, driving force and other competences also counts, according to Kaulio et al. (1999). The project manager, for example, has the responsibility and authority to achieve the project objectives within the cost, performance/quality and time frame, according to Lester, A. (2007). Every person in the project team makes decisions and have opinions based on their role and background, which of course affects the project result and outcome (Kaulio, M. et al. 1999). However, according to Lester, A. (2007), it is important to create a common understanding within the group and work towards the same goal in an effective way. The common understanding of all roles, should thus stimulate a customer-oriented development, if the company is to develop customer-oriented products.

To work cross-functional is both important and difficult in practice, according to Kaulio, M. et al. (1999), who further states that integration between the departments often occurs too late in the projects. This could thus be an obstacle towards developing customer-oriented products. Kaulio, M. et al. (1999) state that a good project manning is characterized by a high level of cross functionality, good ability to move the project ahead and that both representatives from market as well as development department have contact with the customer. Also Gulliksen et al. (2003) state that the development process should be run by effective multidisciplinary teams.

In order to make sure the customer continuously is in focus in the development process, Kapor, M. (1990) suggests that there should be a usability champion within the project team, early and continuously throughout the development process. Similarly, Rexfelt, O. (2005) concludes that a product development process, which aims to be user-centred, should have a user representative who is responsible for the customer.

Finally, as Almefelt, L. et al. (2003) describe it; "being passionate about the product overcomes many problems. Thus, product development processes and organisations do not solely determine the ability to design attractive products." It can thus be assumed it also comes down to the individuals involved in the development how customer-oriented a product is likely to become.

3.3.4. Customer orientation in relation to Change Management

This section provides a theoretical framework for the aspects of change management that are relevant for a customer orientated development process.

As Fricke, E. et al. (2000) propose, "If your business is in a dynamic environment, changes of designs and architectures are necessary to stay competitive". He states that elimination of engineering changes is both undesirable and unrealistic since they contribute to improving products, also from a customer perspective. "Managing changes has to be understood as a major practice for developing successful systems, and it is up to each company if changes will be a problem or an opportunity" (Rouibah, K. and Caskey, K. 2002). Rouibah, K. and Caskey, K., (2002) mention that if a company's ability to manage changes during development phase gets better, cost can be decreased, development times shortened and higher quality achieved. Focus should thus not only be on the cost of changes but also on the opportunities.

Moreover, also *late* changes are necessary, according to Fricke, E. et al. (2000). It is not always suitable to validate and measure the product against the initial customer requirements, since the customer requirements changes with time (Wallgren, P. 2013). As a result, Fricke, E. et al. (2000) recommend implementing changeability within the organizational system architecture, to make late changes less costly.

Rouibah, K. and Caskey, K., (2002) mention that it is beneficial to make design decisions early, but that changes often are required later on in the process due to design constraints and conflicts, manufacturing difficulties or due to emerging product requirements – requested by for example the customer. Fricke, E. et al. (2000), however, propose other main categories of reasons behind changes. First, he stresses the swifting customer needs due to today's dynamic environment, which can become troublesome with long development times and short changing cycles. Moreover, the relative impacts that all parameters have on each other in a complex project are difficult to control, causing "cause-change-effect network". Also, full knowledge is rarely present early on in the projects in new product development. The fact that different organizational units and persons perform tasks which interrelate to each other give rise to changes due to insufficient communication, and as decisions are based on old or irrelevant information, this creates even more changes. Furthermore, some companies change specifications in order to keep to schedule.

Finally, Fricke, E. et al. (2000) point out lack of discipline of engineers and managers in decision making as a major cause for changes. He mentions that this is related to the company culture and concerns two aspects; decisions without a basis and postponing necessary decisions. Also Clark, K. and Fujimoto, T. (1991) mention this issue, by saying that up to 66% of all changes are due to low discipline and bad communication. Rexfelt, O. (2005) point out, in line with this, increased time pressure, changed economic situation, changed technical opportunities, poor management of specifications of requirements, different perspectives in the project group as some of the most common reasons for trade-offs from original plan. Al these changes together can be used for good or for bad from a customer perspective. Thus it is important that the customer is in focus when changes are implemented,

and that avoidable changes that do not benefit the customer are pre-calculated and to the best possible extent avoided. For example, as a means to build in changeability longer during the development process, Toyota explorers a set of solutions instead of modifying a point solution, (Ward et al. 1995).

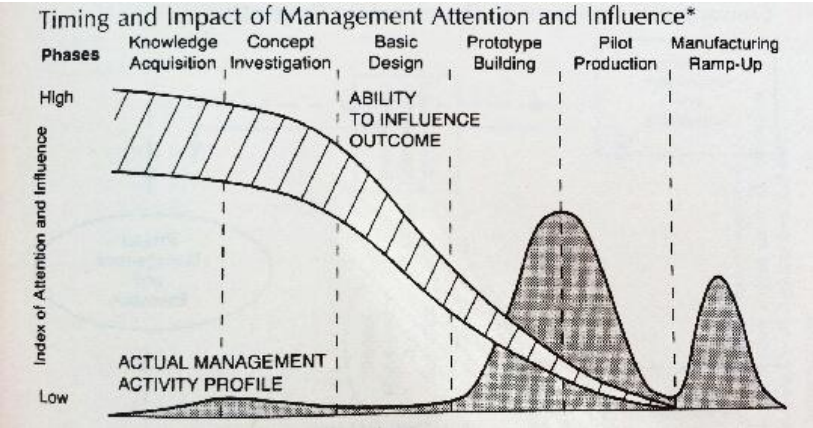


Figure 3.4. ***It is in the early stages of the development process that the ability to influence is the largest, but the management activity profile is usually low. (Wheelwright, S. and Clark, K. 1992).***

Again, Wheelwright, S. and Clark, K. (1992) mention that it is in the early phases of the development process that the ability to influence the outcome is at its largest. Yet, the management activity profile commonly is limited early on, and becomes significant later, when it might be too late to succeed with the effort, see 3.4.

Rouibah, K. and Caskey, K., (2002) mention that many tools exist to support strategies for changes, and mention quality function deployment as one of them. Kramers, E.R. (2007) mentions that continuous customer surveys can be used as a mean to understand how the user profile and satisfaction changes over time.

3.3.5. Communication and knowledge transfer of customer information

This section provides a theoretical framework for the aspects of communication and knowledge transfer of customer information that are relevant for a customer orientated development process.

”To be good at gathering and analysing customer requirements but bad at communicating the information internally in the organisation is just as bad as being bad at gathering customer requirements but good at communicating them” (Kaulio, M. et al. 1999). Rexfelt, O. (2013) stresses the importance of, within the company, describing and creating understanding for the system of which the customer is part, see Figure 3.4, including the customer, its situation/context, its goals and the artefacts is uses/will use in order to reach these goals. He further mention the complexity and multidimensionality of doing so, and proposes that there thus must exist many ways to communicate. Furthermore, an important property of the communication channels is to be able to create empathy for the customer so that the developer really can understand the systems view of who the customer is, its goals and so on.

Rexfelt, O. (2013) mentions that bad customer synchronization can be due to a lack of resources or competence, but more common is that the information disappears later on in the development process. As a mean to avoid this, Kaulio, M. et al. (1999) mention that the customer requirements can stay in focus if the ”voice of the customer” remains visualized throughout all generations of requirements and specifications in a project.

Moreover, Almefelt, L. & Andersson, F. (2004) state that presenting requirements is a matter of appropriately communicating the requirements to those who are concerned, not just creating a document. Just like in Chinese Whispers, every interpretation or filtration reduces the quality of information (Kaulio, M. et al. 1999). Consequently, in order to communicate the customer requirements to the whole organisation, it is important to focus on what the message is and to keep it that way.

Furthermore, useful results are, according to Kaulio, M. et al. (1999), dependent on that the project team can master both discussion and dialog for knowledge transfer. Kaulio, M. (1997) mentions that in particular, the collaboration and internal communication between Marketing and R&D is important for customer focused product development. Almefelt, L. et al. (2003) concludes that informal requirements management is essential, such as inter personal requirements dialog. Furthermore, he states that “collaborative work requires interpersonal trust and involves a lot of agreements, meaning that team members need to meet face-to-face to really have a constructive dialogue”.

Almefelt, L. & Andersson, F. (2004) point out factors which prevent fruitful communication, and gives examples such as geographical distance, different time-zones, language differences, competence differences as well as unclear goals. Almefelt, L. et al. (2003) mention formal and informal meetings, e-mails and data bases as important methods for transferring information. Wallgren, P. (2013) mentions that there are many ways to describe the customer, including his and her activities, goals and context of use, and suggests images, film, text, personas, user scenarios, info graphics (“this is what a day for the user looks like”) and physical mock-ups, such as the one in example 3.4.

Example 3.4.

When developing the Walkman, Sony used a piece of wood to illustrate what size the product should have. Cassette tapes and other related things could then be developed in relation to the size of the piece of wood. “The block of wood symbolized the final product along several important dimensions – principally size and simplicity.” (Leonard-Barton, D. 1991)

A few methods for communication of customer requirements are presented below.
A user profile can be used as a communication method and commonly include detailed information on demographic characteristics, behaviour during use as well as satisfaction and loyalty measures (Kramers, E. 2007). Another method is the usage scenario which emphasize why a typical user needs the product,

the context of use as well as all tasks that the product will need to do in order to satisfy the needs (Kramers, E. 2007). Bjelland, H. and Tangeland, K., (2007) mention prototypes as important means for visualization, verification and communication of product concepts that can give more relevant feedback on the concepts. This can be read more about in *chapter 3.2.1 - "the concept of data gathering"*.

Personas are discussed by many authors as good methods for transferring knowledge about the users, and can also serve as a general communication vehicle in a project group (Miaskiewicz, T. and Kozar, K,. 2011; Koltay, Z. and Tancheva, K., 2010) Personas are, according to Pruitt, J., and Adlin, T. (2006), "fictitious, specific, concrete representations of target users" and can, according to Nielsen, L. (2013), help the developers to have the user in mind instead of themselves in the development work. Brandt, E. (2003) suggests the use of simple diagrams that can work as deposits for post-it notes with viewpoints and suggestions as well as function as a boundary object and conscription device.

Almefelt, L. & Andersson, F. (2004) suggest a set of questions that can be used as a method to transfer information on customer requirements as well as to review customer requirements, see Figure 3.5. They state that the questions can provide a fruitful discussion even though the appropriateness of the questions varies from case to case.

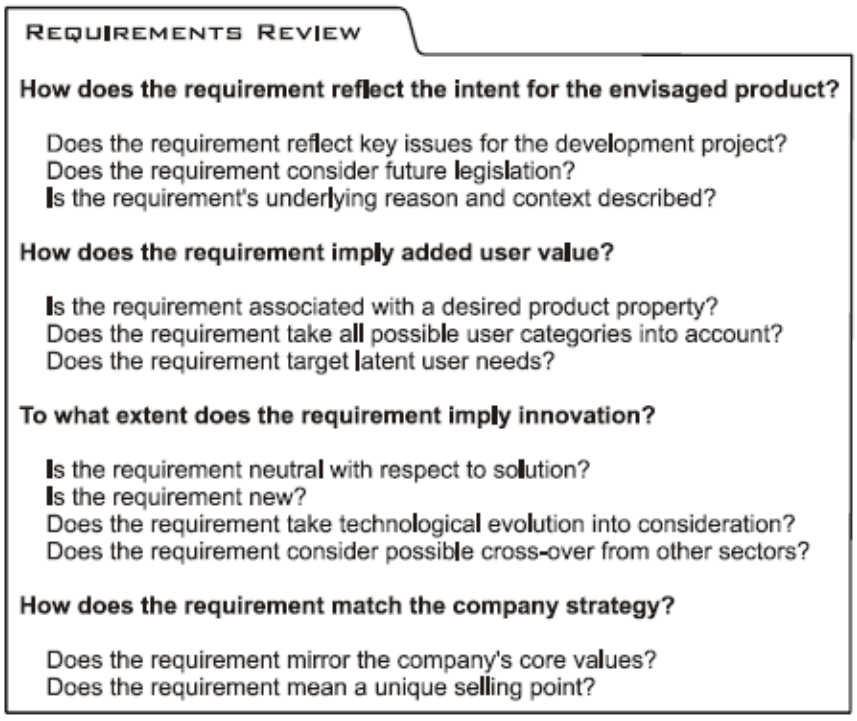


Figure 3.5. A set of questions proposed by Almefelt, L. & Andersson, F. (2004) that can serve as a base for discussion around customer requirements.

4. Result and analysis

In this section, the empirical information is presented and analysed according to the same structure as the theoretical framework. Each chapter is summarized in the end of the chapter to help the reader navigate the information. Chapter 4.4 contains a comparison to the reference project, a project that can be considered successful and customer-oriented. Finally, in chapter 4.5, a concluding summary is presented for the whole analysis.

4.1.Customer orientation in general at Volvo Car Group

The aim of this section is to analyse general concepts related to customer orientation, which concern both Doing the Right Thing and Doing Things Right.

4.1.1. Who decides if someone is customer-oriented?

As Rexfelt, O. (2005) mentions, a product can be customer-oriented without involving customers in the development process, as long as the customers are satisfied with the end product. Many of the interviewees seem to be aware of this considering quotes such as; "It is not until after that you know if it was customer-oriented or not". It can be concluded that it is the customers who decides whether a company is customer-oriented or not, and several interviewees share this idea.

4.1.2. Ambiguous definition of customer orientation

Yet, on the question of what defines customer orientation, almost no answer is the same as another, neither in theory nor within the interview sample at VCG. A few answers from the interviewees are:

- "Customer orientation is about carrying the customer's perspective with you all the time, what the customer expects to receive"
- "To ask yourself what the customer value is in the things you do"
- "Customer orientation is about creating news-value and "want to have"-feelings. That will make the customer happy."
- "To be customer-oriented is about understanding what will be offered in the future and to have an offer that shapes the future market."
- "Customer orientation is not just to do as the customer says, but rather to make the customer pleased in the end"
- "You can be very satisfied with things that are not important and you can be very unsatisfied with things that are very important. To me, this is what being customer focused is all about."

A few of the definitions are in line with how customer orientation is defined in this thesis. It leads to the discussion on whether or not people refer to the same concept, when talking about customer orientation at VCG in general. One line manager states that: "I think for a lot of people, they may think they are being customer centric but from the way I define costumer centric, they are not" and also:

“Nobody will admit to not being customer-oriented, it’s just the definition of what it means. That’s the problem.” Another line manager states that; “There is so much talk here [regarding customer orientation], it is hard to realize there is nothing behind it. It took me a long time here to see it is all just opinions”.

The conclusions from this are that it appears that the concept of “customer orientation” has become a hackneyed phrase that does not necessarily trigger the behaviour among the employees that it is meant to. This is in line with what Rexfelt, O. (2013) states about that some companies possess none of the corner stones that create customer orientation, but yet call themselves customer-oriented. It can be assumed that this definition issue is an obstacle in the work of VCG to become more customer-oriented.

4.1.3. “Designed Around You” has ambiguous meaning

Kaplan, R.S. and Norton, D.P. (1996) stress that a vision or strategy statement must be expressed in terms of understandable objectives and measures. Similarly, Collins, J. and Porras, J. (1996) state that a mission should be a clear goal description that can serve as a catalyst for team spirit. Despite this, the major part of the interviewees has raised the issue of the ambiguous meaning of ‘Designed Around You’. A concerned line manager expresses “’Designed around you’ means putting resources where they matters. It’s not about giving all customers what they want but rather make life less complicated for them. This means that we should not meet every need of every customer, instead we need to focus on a specific customer who is interested in our offer – uncomplication.”

Another one states: ”Designed around you has turned into a double edged sword because, on the one hand, it is a kind of differentiator for VCG, we are trying to say that we are human centric and that is what makes us different from the brands that are interested in technology. On the other hand, my perception is that there is a lot of people who have used ‘Designed around you’ as an excuse to, or justification for, designing something around themselves“.

From this, it can be assumed that the concept of ‘Designed around you’ is difficult to decipher. This can lead to it being misused and thus counteract a customer-oriented way of working, despite the fact that the visions core purpose is to increase focus on the customer. One interviewee states that; ”I don’t think we have a clear vision on what we want that is easy to communicate”. Another one expresses that; ”There has to be a clear vision, otherwise we cannot communicate this to everyone”.

4.1.4. The interviewees opinion on obstacles for user centredness

Just as with the definition of customer orientation, there is a diverse view of what is most difficult with working in a customer-oriented manner. This can be due to that employees at VCG define customer orientation differently, but likely also because of their different backgrounds and what responsibilities they have had, as will be discussed further in *chapter 4.3.3 – “roles and responsibilities”*. However, both the presented theory and the interviewees seem to have a common understanding that there are many obstacles. A few that have been lifted by the interviewees are:

- “The customers are so different”
- “The most difficult part is to put your personal opinion aside and think that it is the customer that is supposed to be satisfied and not yourself.”
- “I think it is difficult since you work with the future. And the society change.”
- “The most difficult part with being customer-oriented is that there is a lot of opinions and sometimes difficult to find facts.”
- “To act upon things that go against your inner conviction”
- “To understand why the customer answers the way he does and to understand what he is saying”
- “To assess what is one or two customers’ opinion compared to what is a lot of customers' opinion.”

Again, the issues found as obstacles are likely related to what the interviewees are limited to be aware of. The relevant question, in this respect, is whether VCG lets these obstacles stop the employees from working in a customer-oriented manner. That will be evaluated in the remainder of this analysis, as major topics have been selected and evaluated separately.

4.2. Is Volvo Car Group doing the right things?

In this chapter an analysis is presented on whether or not VCG has a good process for gathering different kinds of customer requirements, if the user data is interpreted in a representative manner, and finally if it is validated in a good way. Together it composes 'Doing the right thing'.

4.2.1. Volvo Car Group's approach to customer data gathering

Collecting new information from customers is, according to Lager, T. (2005), an important success factor. VCG's approach to the four aspects of data gathering will be evaluated separately in this section. However, Engelbrektsson, P. (2004) and Karlsson, M. (1996) stress that not all requirements are as accessible as others, depending on the awareness of the user. VCG appears to have at their disposal experienced professionals within the area of doing customer research, who also are in charge of executing the research. That is a good start for understanding the complexity of capturing customer requirements. Also, VCG appears to make use of external expertize;" We use neutral research companies in order not to control the discussion or provide leading questions, because it is important that we get to know the truth."

Participants

The choice of participants in the interview research is crucial if the customer data that is to be representative, otherwise the data might do more harm than good Kaulio, M. (1997). VCG creates a requirements list based on the chosen target group, and make use of an external expert market institute to help finding representative participant that fulfil those requirements. However, when doing home visits the participants are, according to one interviewee, chosen from the participants of the focus groups; "The participants of the focus groups which are considered interesting, talkative or with whom a reasonable contact has been made, can be selected to participate in home interviews." If so, there is a risk that these people, who stand out from the mass, do not mirror the typical buyer.

Wallgren, P. (2013) points out that it is important to understand both the ones who buy the product, as well as the ones who do not. VCG use participants not only from current owners, but also owners of the competitors' cars, which can be considered rejecters of VCG's cars. But what is in particular requested according to some of the interviewees are those who had VCG on their shopping list and yet decided not to buy a VCG. One project manager states for example; "It is difficult to find the ones who didn't want the car, the rejecters, because they are not listed in our customer database. Then you have to buy larger samples and see if you can catch some of those who had the car in question on their shopping list". Another one states; "The information we lack is from those who were interested in the car but chose not to buy it. Why did they reject it? That information is not so easy to come by so we should put in a little more effort here, I think".

Data collection methods

VCG makes use of a variety of different data collection methods, such as customer clinics, interviews, benchmarking, databases, they listen to the marketing and sales companies, to media, go to fairs and so on. This can, according to Kaulio, M. et al. (1999), trigger synergy effects since all methods have strengths and weaknesses. Moreover, the selection of data collection methods depends on the purpose, time and resources available as well as competence within the company, according to Kaulio, M. et al. (1999). This is also what an employee of the department of Market Intelligence[1] (MI) states; "We have many different methodologies for doing customer research. Which one we choose depends on the purpose with the research in question". It can also be assumed that what methods that are suitable depend on what phase in the development process it concerns. As mentioned by Wheelwright, S. and Clark, K. (1992), exploratory research is more important early on in the process. This will be further discussed in chapter *4.3.1- "The process in general"*.

It appears that VCG perform much research that benefit the kind of requirements that Karlsson, M. (1996) calls captured, where the customer is aware of problems with the product and thus can easily articulate requirements. One interviewee states that; "We do customer research to ask customers in a certain segment what they want, how they live and what is good with the current car". Information from sales and marketing companies are received and can support with information on what the customers think about today's cars.

However, Matzler, K. et al. (1996), Rexfelt, O. (2005) and Kaulio, M. et al. (1999) also talks about the need to find latent and new (elicited and emergent) requirements. Such requirements can be difficult to find with methods such as interviews but more easily by field study methods such as observations.

Regarding the home interviews, one interviewee states; "Focus groups can provide good information but to go home to a customer and see how it lives, and to talk about things that do not just concern cars, that is very useful. You can ask about what is important in their lives, what they like in their homes that they consider to be good design, you can talk about everything. We usually video tape it and take photos to internally at VCG bring the customer to life". Also; "In Project B we tried to understand what magazines, newspapers and fashion magazines the customer reads in order to see what ideals they acquire". Moreover, VCG also gains more understanding about the customer by looking into macro- and consumer-trends, such as if the mankind get taller, older or go towards a more environmentally friendly mentality.

However, so far little observatory customer research takes place, despite the fact that many of the interviewees see the need and that Rexfelt, O. (2005) stresses that it is by studying how the user tries to satisfy its needs that the needs become visible. For example, at the department of MI, one states; "We want to start making behaviour studies in order to, in early phases, understand how the customer behaves for example when they get to work. Do they want to start up a new device or do they want to put their home device in the car? We are not yet there at VCG, but this is probably done in other businesses".

[1] The department of Market Intelligence (MI) is in charge of planning, executing and providing the rest of the company with customer research, often in cooperation with the other departments.

It seems as if money is not spent on such kind of observatory research yet, but in order to become a customer-oriented company, such investigations can be argued as crucial. Moreover, as Kujala, S. (2005) states, field studies are suitable also with short of time or relatively low budget and are promising in early user involvement.

Finally, much data is generated internally in the company, from different departments at VCG or generated at the suppliers; ”We receive much information from the suppliers and development departments, since they work with a specific area. Then it is up to product planning to look around and organize the ideas.” However, as one interviewee says; ”It is very important to connect ideas to a customer need.”

To sum up, VCG uses complementary methods, chosen with the customer research’s purpose in mind. However, it is important that all kinds of requirements are searched for and thus that the exploratory phase includes methods that also allow identification of latent and new requirements.

Mediating objects and tools

Communicating with customers, in order to identify customer requirements, can according to Kujala, S. (2002) and (2005) be complicated and developers and customers do not use the same vocabulary. Thus, the use of mediating objects can be crucial for the customer and developer in order to understand each other. The different projects have all used mediating tools during the clinics, for the reference groups, during home visits and likely on more research sessions, in terms of for example photos, clay- and hard models and smaller prototypes. What mediating objects that are used depend on what phase the project is currently in. Mediating tools favour in particular elicited and emergent requirements (Karlsson, M. 1996), which thus might compensate for the lack of observatory research as mentioned in “data collection methods”, earlier in this chapter. Additionally, one interviewee points out that “The institutes that assist in conducting clinics have methods for understanding the customer.”

Context

Many researchers emphasize that the product must be studied in its context when customer requirements are to be elicited. This can provide the designer deeper understanding on the user and its requirements but also make the user understand the product better and can thus provide more rich information.

Much of the customer research that is being conducted by VCG takes place away from the users’ ordinary use context. Focus groups, for example, are conducted in a specific local which does not necessarily trigger the relevant responses that the use environment would.

However, again, VCG has conducted home interviews in at least one of the studied projects, which can be assumed to be a good complementary way of better understanding the user’s daily life. Moreover, customer clinics are performed in different countries and markets separately so that different user

cultures can be mapped and an overall and diversified picture provided. Data is also collected from market extensions in different countries and PKV[2] performs tests all over the world.

Summary

There are different kinds of customer requirements and it is important that all are captured. How well they can be elicited from the user depends on the choice of data collection method, participants, mediating tools and context, in combination. There are three main categories of requirements and it appears that all three are approached by VCGs data collection setup. However, there is still a striking risk that some aspects of the customers' needs and wishes might be missed, since little field research is conducted, and in particular of observatory nature.

[2] PKV is short for "Provning Komplett Vagn" (approx. Testing of Complete vehicle") and is a sub-unit under R&D which does practical validation of cars.

4.2.2. The Analysis of customer data at Volvo Car Group

Nielsen, J. (1993) points out that users are not designers and Rexfelt, O. (2013) mentions that it is in fact the developers that often have the best ideas, after having learnt about the customer. It can be concluded that it is not sufficient to gather information on what the customer needs and wishes. More than that, the data must also be interpreted into a product that is attractive on the market. If the customer had known best, VCG as a company would not exist. A line manager states that; ”You have to have your own professional opinions to balance out what the customer says, and add a kind of confidence” and another interviewee states that ”customer research cannot answer the strategic question but it can be used as a base for the strategic thinking”.

However, the customer data must be taken notice of, in line with what Rexfelt, O. (2013) mentions about that the developers have more potential of developing satisfying products if they know more about the customer. One of the interviewees states “The customer input has to be taken very seriously. Exactly what value to put on the person depends on the customer in question as well as the phase and so on, but we have a screened sample which should be representative of the segment to which we are going to sell to, so you have to take it seriously.”

The question that is relevant is if VCG listens to the representative data, and if this data is interpreted in the best manner; ”Just because it is facts does not mean that it is true, it depends on how it is used”. One interviewee states that: “People at VCG don’t have expertize, they don’t know how to listen to customers and react to their problems.” In this chapter, an analysis will be made on whether or not VCG has a good process of analysing the customer data, seen from a customer-oriented perspective.

Issues with understanding the future user and its needs

The customers do not know what they want in the future if you ask today

Customers do not know what they will want in the future, and simply asking about their future needs will, according to Matzler, K. et al. (1996), usually result in disappointment among the developers. Moreover, as discussed earlier, some needs might be more difficult to assess than others. In line with this, most interviewees also mentioned the fact that you cannot simply ask a customer what they will want in the future; ”when you ask the customers, they will not tell you things that will impress on you. If you know this business, the customer will never tell you anything other than what they have heard, and that’s what you were working with three years ago” and ”You cannot ask the customer what features he or she wants in five years, because he or she expects things that today’s cars has.”

Due to this fact, and in accordance with Matzler, K. et al. (1996), it is important to not just ask about desires and purchasing motives early on in the process, but instead understand the under-lying motives and drivers for the needs.

The under-lying motives for the needs must be found

Many of the interviewees appear to be aware of that the root cause of the requirement's existence must be found, as Kaulio, M. et al. (1999) and Matzler, K. et al. (1996) point out. An examples of quotes regarding this is; "If I can say the consumer has a need to reduce the amount of stress in their lives or the need to carry heavy objects on a day to day bases, if they want a more comfortable seat arrangement due to the state of the roads, simple things like that which can have a huge impact on the final consumers experience in the car".

Again, it is important that all kinds of requirements are identified and understood. Quotes such as the following show that there is an understanding that requirements are not easy to ask about but can be figured out by the developers if they understand the life and choices of the customers; "The issue that we have had in the past is that we don't have any kind of data of the soft, lifestyle and attitude material but from a product perspective it is not always necessary if you just want to be competitive. But if you want to differentiate and stand out from the crowd then you need to have a good deep consumer understanding so you can offer something that not anybody else is offering." and that; "One can question and observe the customer (e.g. in their home) about their lifestyle, what they would do if they had to retire today and yet had plenty of money, about other important brands and what they would do if they were financially independent – with unlimited much money, then what's important - what are their dreams and associations with luxury?

On the question "how" finding underlying motives are approached at VCG, diverse answers were supplied; "It goes back to the concept work, if there is a common understanding of for whom you are making the car and who's going to buy it." Another one mentions three parts that are used to understand the future customer needs. "First, what does the customer see today in a certain segment. In what way and how much do they think? Second, what trends are relevant when the car is to be launched, what cycle are we in? And finally, how much does the trend swing? The car must last the whole cycle". A third interviewee states that; "When the future is to be forecasted, different scenarios and hypotheses have to be identified and evaluated. "

However, the main question is whether this mind-set is applied in the analysis of customer data. In the previous section it was concluded that some, but maybe too little, effort is spent on research to gather rich enough data regarding the life and attitudes of the customers. However, the need for understanding the under-lying factors has been brought up by several interviewees, far from all though. One interviewee said that too few people worked with this kind of questions and another one mentioned that these early, qualitative studies tend to get cancelled.

There is thus a risk that the root cause of the customer needs and wishes is not examined early enough and thoroughly enough, and consequently there is a risk that the most important factors are not found and measured during the development process. This cannot be considered a customer-oriented way of working.

Volvo Car Group's approach to avoiding assumptions

It is important that incorrect assumptions do not occur and as Nielsen, J. (1993) stress, the customer can do many things differently from what the developer can imagine. However, as mentioned earlier in this chapter, decisions cannot only be based on facts since factors such as what the customer will want in the future, or what technology a company can offer, are uncertain. Being able to make good guesses about such things is to some extent what makes VCG sell cars. One interviewee says that; "this is fact and then you can say that the one or the other thing will become less important by time, and this is where your gut instincts become relevant. You learn to recognize patterns."

Developers tend to build a car for themselves

However, it is two different things to, on the one hand, use experience and gut instincts to analyse future needs and base the interpretations on customer information, compared to, on the other hand, use experience and gut instincts to analyse future needs but not base the interpretations on customer information. Nielsen, J. (1993) states that "Knowing about a system is a one-way street. One cannot go back to knowing nothing." One interviewee states in line with this that "Once you have been in this business you are corrupt. You can't put yourself in the customers' shoes; you have to accept that they see the world differently than you do. That's not always an easy thing to understand. It takes some practice and expertise. "

Moreover, almost all interviewees bring up the phenomena in which the developers think that the customers are just like themselves and that the developers thus design a car for themselves instead of having the customer in focus. At VCG they self-ironically call this "Hisingesyndromet", referring to that VCG is located at the Hisingen and that it is easy to assume the rest of the world looks just the same. This is a human behaviour according to Nielsen, L. (1993) but can be assumed to be the kind of assumptions that counteract a customer-oriented development process. This is a central issue at VCG that many interviewees point out. One goes as far as calling it a cultural issue; "They think that the data they have actually make them customer centric or they think that by talking to their neighbour, they are being customer centric. I think it's a cultural thing, and how do you change culture, normally I think it happens from the top down. I think you need to have a boss who lives and breathes this and who tries to drive it into the organisation. "

Several interviewees propose that "Hisingesyndromet" is wide spread at VCG since most engineers have a similar background, from for example Chalmers, and the main part of the employees have not been positioned outside the headquarter at Hisingen, in the same city. One line manager states that; "I guess it was easier before, when the focus of the sales was in Sweden. Then the customers were more like us. But with China, it probably becomes a different thing, it's easy to think that we know what it's like to live in China, but we do not know that". Another one states that; "We don't have enough diversity and we don't have enough developers who are from other countries, companies and cultures. It's too many Swedish Chalmers educated Gothenburg engineers. That's the core but you need some external inputs and influences".

A main issue here seems to be that the assumptions on what the customers are like is cascaded into the organization and not supported by the information that has been collected from the customer research. The following two quotes are highly relevant in this issue; “Everyone think they know the customer but Sweden is very different from the rest of the world.” and “As a consequence [of not being outside Gothenburg] we very often end up talking to ourselves or getting back to my neighbour – wife- son”. A line manager states that; ”In every country there are different factor prerequisites that drive your purchase decision. And it’s really important to understand how different those are in different companies, in different cultures, in different countries.”

Consequently, if VCG has issues with ”Hisingesyndromet” and the different markets are not correctly understood and targeted, this could indeed be considered a threat to being customer-oriented.

Methods for avoiding assumptions when analysing customer data

Avoidance of assumptions, when analysing customer information, is both about basing decisions on customer facts, but also about interpreting the facts in a good way. The latter will be discussed in this section. One representative from MI states that; “the research we conduct is misinterpreted and spread in a crazy way, “it is like when the devil reads the bible”. It is difficult to cure and there is too much of it. We try to educate people and we go top-down from the senior management and down, but we are too few”. Many of the interviewees agree that data is being used in a none-representative manner.

VCG also makes use of cross functional teams in order to get a rich analysis of the customer data. This is in line with what Kaulio et al. (1999) and Ulrich, K. and Eppinger, S. (2012) states, that cross functional teams can provide a system view and aggregate more perspectives. Cross functional teams will be discussed further in chapter *4.3.2 – “Roles and responsibilities”*.

Next, after VCG has conducted customer clinics, all attendees are told not to spread any of the information they have heard but instead wait until MI and the research institute have constructed an objective report on what conclusions to draw from the research. After that, all attendees are summoned to a meeting where they can discuss around the result and leave with a united picture on what the research result is. First after this discussion, an official report is released to the company. "This is what they tell everyone that comes along to a clinic; when you sit there and listen you get a certain perception. But what conclusions should you really come to if you are professional? Then, maybe the conclusion shouldn’t only be based on the little fragment of data that you take part of, but perhaps you should draw conclusions from a greater whole. And that's what the clinic organizer is there to help us with”. One of the interviewees states that; ”it is good to have experts involved to deal with all the information from the research, so that you can get stacks and curves of it all.“

In the earliest of the studied projects, it appears that the objective report and following discussion did not have time to take place until a go/no-go decision was being made. On the other hand, in another one of the studied projects, the team had such a discussion and came to a united image of the result. When the results were presented, the background customer information was presented together with the interpretation of it. This appears to be a good way to spread a united picture, which is based on

customer data, and also where the customer background data is mediated to others in the company who will eventually base other decisions on the same background data. This is in line with what Kaulio, M. et al. (1999) state as a good analysis; one clear picture of the user's situation, their problems, needs and preferences. This however, appears to be a new way of working at VCG.

A couple of interviewees point out experience as a way to do good interpretations of the customer data. "The only way to get a more balanced content is to collect as much facts as possible and create experience" and "MI says that one cannot draw conclusions after having talked to three customers, but if you go to dealers all over the world and talk to a few customers each month for a few years, then you have created a bank of knowledge in your head which helps indicate what is correct or wrong. This knowledge is what understanding the customer is all about. The risk here however, is the selection of customers to talk to is not the most representative set of customers, and the information thus is misleading".

MI has a role in this subject. A representative from MI states that; "The integrity of being objective is the most important thing our department has. So we make no interpretations at all on the effects research has on VCG, but instead communicate a result objectively". On the other hand, MI can put results in relation to other research that has been conducted. However, another interviewee from MI further states that; "We are not so good at putting our customer research into a context yet, but I see an opportunity, and we desires to in the future."

Lewins-Beck, M.S. (1995) states that data analysis involves the systematic application of statistical tools. PKV seems to be on this track; "At PKV we are trying to work in a more structured manner with customer research and results, I have hired a statistician to work with customer research".

Concluding this, it appears that VCG has several methods to deal with assumptions in the data analysis process where many seem promising such as cross functional work, objective reports as a base for discussion, and a common clear picture of the results. However, not all agree that the information is being used in a good way, "it is like when the devil reads the bible". That is a very important part of being customer-oriented, so despite several good methods and initiatives it appears that VCG still has some work to do in getting everyone to understand how to interpret the research data.

There is a risk of unrepresentative research data

Analysis based on misleading data is not likely to provide satisfactory products, and unreliable data can be due to both the customer and the researcher. Lindvall, J. (2012) states that the attention of the listener depends on frequency, personal recognition, stimuli characteristics, news value, motive and interest. Thus, the objective report that MI and the research institute creates is very central in getting the data right, since they are experts in how to interpret the customer in clinics. A representative from MI appears to join all research that VCG performs nowadays, which can be considered a good way of reducing the problem of miss-interpretations of the data. Several of the interviewees are on this track, that it is difficult to know what to listen to;

- “You hear what you want to hear, it becomes apparent when you bring people from different parts of the company. That is why it is important to bring a neutral partner.”
- “The things that the participants don’t say should also be noted.”
- “In customer research it is easy to take note of strong statements, despite the fact that four out of five did not say so. You catch the things people say but not the things they don’t say.“
- “It is easy to ignore the things that do not fit into our plans.”
- “It is hard to evaluate what is one or two customers’ opinion compared to what is several customers’ opinion.”

This leads to the issue on if assumptions can be avoided by letting the developers come along on customer research, such as focus groups. Several interviewees have pointed out that seeing real customers helps them focus more on the intended customer instead of on themselves. “You get a different perspective by attending the clinics, other than when you walk around in the everyday VCG-world where you think you are a world leader at Hisingen”. However, only participating in one or two out of a series of focus groups, which together make up a research session, could also give rise to assumptions, since the conclusions are not built on the full sample. This is in combination with the fact that they are likely to listen to, among other things, what is personally recognized, things with high news value and to the things that interacts with their own motives and interests. The attending developers get instructions from MI to not draw any conclusions, and to not spread any information, until the objective report they create is published sometime after, but the impressions are likely to stay despite the fact that they get a report with the official conclusions later on.

One conclusion could be that no, assumptions are not avoided, but on the other hand, more decisions might be based on customer data since the developers’ awareness has been increased, which in turn results in more pros than cons. One interviewee from R&D says; “R&D sometimes comes along on customer clinics and to meet dealers, not just to become better at it, that MI and PS&VLM do, but rather to understand what happens there and to increase the knowledge about it. Then we can become better at absorbing such knowledge, which is necessary when you reason.”

One interviewee tells the following; ”During research in Germany, what happened was that some guys from R&D went to the clinic and they came back and they immediately made their own report, based on the 1, 2 or 3 clinic sessions that they experienced. And then they communicated this in R&D. There are few things wrong with this; first, they only saw parts of all the clinics. Second, they are engineers, they are not research professionals, so I can almost guarantee that what they reported probably reflected what they wanted to hear or what they didn’t want to hear or, you know, it’s filtered by them. If a market research report is done properly, it should be objective. It is almost by definition that, if you just come back and say what you heard in one or two clinics, it is not objective. And then what happens is that when they had communicated this in R&D everybody thought this was the official report.”

To be able to identify different kinds of customer requirements

As discussed before, and in line with Kaulio, M. et al. (1999), there are different kinds of requirements, which can be more or less easily accessible. As Kaulio, M. et al. (1999) mentions, the Kano model can help visualizing these different needs, which is important when the data analysis is done so that a full set of requirements is identified and included in the car. Most interviewees seem to be aware of that there are different kinds of requirements, but few answered how these could be identified and separated. One line manager said; "That's a non-issue I'd say, things as qualifiers [referring to must be-requirements] are very apparent" referring to qualitative studies. However, regarding quantitative research the manager states; "An attribute always looks better on a quantitative rate, which makes people appear happier than they are. But in quantitative ratings you can't tell where the threshold [ref. to what is required] is whereas when people are talking, in qualitative research, it's easier to see those threshold things. That comes up pretty easily in talking, that's why we need to do more quant-qual-qual-quant back and forth loops so you can really see which ones drive which type of thinking."

As Rexfelt, O. (2013) mentions, the excitement requirements, which are referred to as halos at VCG, in time become performance requirements. These in turn become the qualifiers (or must be:s) later on. There seems to be awareness about this phenomenon at VCG considering for example safety; "Safety is just a qualifier, all cars are safe today. VCG needs something else to catch the customer's attention."

A main topic in this discussion ought to be if the customer who buys VCG cars gets all its different kinds of needs fulfilled in a satisfying manner. There are risks that, for example, focus is too much on the exciters or that the qualifiers are missed since the customers take them for granted and thus do not express them in the research. One line manager states, in line with this, that; "The halo-features, the short 'yes-feeling', can be super good but if the rest is poor the customer satisfaction will come short anyway." This will be discussed in the next subchapter. However, since a year back, early work with requirements differentiation has become a central part of the early product definition at VCG, in terms of the introduction of a differentiation tool called "the Pyramid".

Balancing the set of customer requirements.

According to Cooper, R. and Kleinschmidt E. (2000), it is important to understand what a benefit really is and what superior performance is, as well as what quality means and what customer value depends on. The central question in this section is if VCG has a good approach to understanding what value is for the customer, so the end product satisfies the customer. This includes the perspective that the cost of fulfilling a requirement with a chosen solution is lower than what the customer is willing to pay for, in order to get the perceived value that the solution provides. One interviewee states; "The easiest would be to say that we should to everything but you can't run a business that way".

Does VCG chose "low hanging fruit" or other features that the customer is not willing to pay for, or does the cars include features that bring attractive synergy effects? Many interviewees mention that the engineers tend to overinvest time and resources in insignificant details;

- “We spend a lot of money on technology that the customer doesn’t want.”
- “An engineer always wants to do the best. To do the best car in the world is super simple, but no company can afford doing it and no customer can afford buying one.”

Another one states a similar message; “You can be very satisfied with things that are not important and you can be very unsatisfied with things that are very important. We are not performing very well where it matters to the customer, contrary to what a lot of people in this building think.”

It appears there are many accessible ideas at VCG but that balancing them is the issue. ”There is never a lack of ideas, the difficult part is to balance them into what the customer is prepared to pay for”

Obstacles that can lead to unbalanced car content

Some of the interviewees mention the excessive cost cuts that appear in the middle of the development process, before the car content is fixed. The defined content is too expensive and in a short period of time, a lot of content is taken out. Almefelt, L. (2005) mentions that late changes, due to cost cuttings or adjusted product offer, may result in a product containing features and performance levels, which are not being utilised. This is also an issue that several interviewees have brought up during the interviews, for example in quotes such as; “An issue is that we include a little too much content which drives unnecessary product cost, development and investments.” and “everybody talks for their sick mum – then it easily adds up to too much”. The interviewed team members from the project that represents the latest phases, however, does not seem to think much was lost later on in the process.

Late changes will be discussed further in chapter *4.3.4 - “Change management”.* There is also the risk that customer value is excluded in the balancing, due to that the company has other complementary restrictions and goals, such as reduced finance availability or technical problems. “It is not just a matter of what the customers want but also what is achievable for the company. Can we afford it and does it fit in among the other models?” and “Cost gets added during construction and then a reprioritization must take place so that we can stay competitive”. However, one interviewee states that “Customer value is often the first to be removed when cost and money to distribute are balanced.

The reason for why the car content becomes too expensive was motivated with several reasons, such as wrongly estimated costs, expensive carry over features and technical problems. Another interesting reason is that; ”No one wants to take responsibility for saying no and exclude things”. In relation to this, the interviewee continues that; ”It is important with a good strategy which supports the removal of content, otherwise all difficult decisions are delegated upwards in the organization, which is not good”.

A couple of interviewees confronted the balancing issue by saying that it is up to the project management to have an overview picture which enables them to balance the car content. However, it is up to all departments of VCG to be satisfied with the outcome, and VCG uses a cross functional core team to encourage good, cross functional decisions; “All departments are interested in their things, that is why everyone sits around a table and bring about the full picture together.” And “It is important to maintain a good relation between the departments so that errors in translations are avoided. It is

important to have a good dialog and a common picture, in particular for the project management so that they can balance the content."

VCG has to be unique to sell cars

Finally in this discussion, it is according to Cooper, R. (1994) important to make unique products, products which the customer wants that not the competitors offer in a better setup. This issue is lifted by a few interviewees, who for example mention that each car should contain some "world firsts". An issue with benchmarking is relevant in this discussion. One representative from R&D states that; "If we are better than the competitors, then we will get customers anyway because then be are relatively best. That is why benchmarking is very effective". However, another interviewee states that; "People come to the wrong conclusions by looking at the wrong car. Sometimes very ugly cars sell quite a lot but it is not because they are ugly, it is despite the fact that they are ugly." It is thus important, again, to understand the customer and its needs and wishes and not just look at the competitors. Another one states: "You have to be brave enough to do something that can't be read in the book. Because everybody has read the book, everyone has information about our customers". The following quote is also very relevant; "Often in this company we are focusing too much on just copy pasting a competitor because we want to do it better or cheaper than they do. That's not necessarily the right approach. The right approach should be about doing things in our unique VCG way. And being very clear about what kind of customer we are going after. And maybe different customers than our competitors."

Sum up

To sum up this section, VCG appears to have a few issues which risks leading to an unbalanced content of the car that does not optimize the satisfaction of the end customer. It does not appear to be the amount of ideas within the company that is the issue but merely how to choose from and prioritise them. Late cost cuts might lead not unutilized features in the car, as well as overspend time and money where the customer is indifferent are examples of risk factors. The fact that there seems to be a reluctance towards deselect content, and rather a tendency to only select content, could also be an obstacle towards providing satisfactory cars for the end customer, which is not to be called a customer-oriented way of working.

Summary of customer data analysis

In this chapter, an analysis is made on whether or not VCG has an appropriate process of analysing the customer data, seen from a customer-oriented perspective. Statements have come up during the interviews such as; "People at VCG don't have expertise, they don't know how to listen to customers and react to their problems."

Customers do not know what they will want in the future, and simply asking about their future needs will usually result in disappointment among the developers. Due to this fact it is important to not just ask about desires and purchasing motives early on in the process, but instead understand the underlying motives and drivers for the needs. At VCG, there is a risk that the root cause of the customer needs

and wishes is not examined early enough and thoroughly enough, and consequently, there is a risk that not the most important factors are found and measured during the development process.

“Hisingesyndromet” appears to be a central issue at VCG that many interviewees point out, which can be explained as the phenomena in which the developers think that the customers are just like themselves and that the developers thus design a car for themselves instead of having the customer in focus. One goes as far as calling it a cultural issue. One interviewee states; “Everyone think they know the customer but Sweden is very different from the rest of the world.” Consequently, if VCG has issues with ”Hisingesyndromet” and that the different markets are not correctly understood and targeted, this could indeed be considered a threat to being customer-oriented.

In one of the studied projects, MI presented the research results in combination with its interpretation. This appears to be a good way to disseminate a united picture within the company, which is based on customer data, and also where that customer background data is mediated to others in the company who will eventually base other decisions on the same background data.

It appears that VCG has several methods to deal with assumptions in the data analysis process where many seem promising such as cross functional work, objective reports as a base for discussion, and a common clear picture of the results. However, not all agree that the customer information is being used in a good way; ”It is like when the devil reads the bible”. That is a very important part of being customer-oriented, so despite several good methods and initiatives it appears that VCG still has some work to do in getting everyone to understand how to interpret the research data.

Since a year back, early work with requirements differentiation has become a central part of the early product definition at VCG, in terms of the introduction of a differentiation tool called “the Pyramid”. Regarding balancing, one interviewee states that; “You can be very satisfied with things that are not important and you can be very unsatisfied with things that are very important. We are not performing very well where it matters to the customer, contrary to what a lot of people in this building think.” VCG appears to have a few issues which risks leading to an unbalanced car content that does not optimize the satisfaction of the end customer. Examples of risk factors are late cost cuts, which might lead to unutilized features in the car, as well as overspent time and money where the customer is indifferent. The fact that there seems to be reluctance towards deselecting or removing content, and rather a tendency to only add more content, could also be an obstacle towards providing satisfactory cars for the end customer.

4.2.3. Validation of the customer requirements at Volvo Car Group

Kaulio, M. et al. (1999) states that validation means to control that the set of requirements is correct, complete and consistent; in this subject from the customers' point of view. It appears that VCG does validation in most of the development process, except in the very first phase where the interviewees are of the opinion that there is yet too little to validate. However, in line with what Wheelwright, S. and Clark, K. (1992) mentions, the later in the process that the validation feedback appears, the more difficult to integrate it into the product. As one line manager states; "When you have the perfect property, as in clay model or hard model that looks like a finished car, and you find out that people don't like it and don't want to buy it, then it's too late to change anything. Then you ignore them".

Is the set of customer requirements validated?

VCG uses methods for validation such as reference groups or clinics. A reference group can be considered a mean for internal validation since the same group of people continuously provides feedback into the development process. Clinics, on the other hand, can be considered external validation since it is more generalizable (Steyerberg, E. et al. 2003), as long as independent participants from similar populations are used. PKV are the only internal customers that validate the product with the whole car in mind, from a customer perspective. "PKV validates the car from another perspective, an overall perspective that covers all the 30 sub-areas, and we are the only one to practically evaluate the whole car."

A line manager mentions that an ideal research process was created only a year ago, which supports validation of the product against who the customer is and its needs and wishes. In relation to this, the interviewee states that validation is an on-going thing, which is in line with what Cooper, R. (1994) states. It can thus be assumed that VCG has great potential to validate the set of requirements with the customers at important occasions in the process.

Is the input from validation sessions employed?

The next relevant question is thus, does VCG take good care of the input it receives? Many interviewees do not think it is so all the time. Quotes such as the following appeared during the interviews;

- "As long as the customer tells us what we want to hear it's fine. But as soon as the customer wants something else it is troublesome for us and we don't listen anymore."
- "It is not difficult for MI to bring about research but it is difficult for the company to accept it. This is a weakness VCG has since we haven't been customer driven".
- "The organisation gladly accepts positive customer feedback but the organisation has more issues with accepting what is negative. It is psychological and probably human."

The validation results appear to, at least partly, be used in a verifying, rather than a validating, purpose. Customer input should be analysed with a professional confidence, as discussed in chapter *4.2.2 – Analysis of customer data*, but validation without listening to important feedback can be considered to not be a customer-oriented behaviour, in line with Nielsen, J. (1993). However, most of the team members of the studied project C, which represents the late phases of the development process, were of the opinion that the results from the validation sessions were not ignored.

Is the validation performed in a representative manner

The final question regarding this chapter is whether the validation sessions are performed in a representative manner. Nielsen, J. (1993) mentions typical problem such as involving the wrong users, give them the wrong tasks or not include restrictions or other limitations which the real-world user would face. The participants appear to be carefully selected, as one at MI states; “We validate first if it is the right screening and sample. Then we have to look at the level of significance so that it is statistically correct, that we always make sure.” In the validation PKV performs, the future aim is to find out what distinguishes the test drivers from the target customers so that it can be corrected for. This is not yet realized though.

However, whether or not the validation sample is exposed to all the restrictions and limitations that the real-world users would face, no information has been found. It can only be speculated in whether or not a focus group environment is fully representative to the real-use-environment.

Sum up of validation at Volvo Car Group

To sum up, VCG performs both internal and external validation and has recently created an ideal research plan that opens up for continuous validation in preselected occasions in the development process. However, many of the interviewees have experienced that the information is not always welcomed, unless it confirms what has already been known. Such attitudes could be considered to disagree with a customer-oriented way of working.

4.3. Is Volvo Car Group doing things right?

This chapter presents an analysis on how customer requirements are implemented in the product, so no important customer aspects are lost along the way.

4.3.1. Does Volvo Car Group's development process support a customer-oriented way of working?

In order to be customer-oriented, companies and organisations need to have a process that supports such way of working. VCG's product development process is not unique and could be compared to a modified version of Almefelt, L. et al. (2003), as depicted in figure 1.1 in *Chapter 1.2 – "The case studied"*.

Understanding the customer in early stages of the process

Cooper, R. (1994), stresses the importance of devoting time and resources early in the development, and states that how well the product is defined in the initial stages is critical for a products success. Many interviewees request more research early on in the process. One employee says "we want to have more information about the customer earlier in the process, but it's hard to prove to the people who make the decisions that research not only costs money".

On the other hand, VCG has recently added early pre-project phases to their development process that support early customer research. However, one interviewee at the department of PS&VLM mentions; "Funding for the new research plan is withdrawn now when there is time for saving". Another one mentions; "We haven't been able to, for time and cost reasons, go through the new steps of the process, so there is no possibility to learn from them." Yet another interviewee states that; "I think many here know that more customer research is needed but we haven't been able to execute enough because of cost reasons." On the other hand, for one of the studied projects, which represent the earliest phase, one new kind of research was conducted much earlier than normally. An interviewee states regarding this; "This project proves the possibilities of doing it less costly so maybe it will be more prioritized in the future." And "It proves that it is possible to execute customer research with less time and money spent".

From this it can be concluded that there is an awareness of the need for customer research and that VCG are taking initiatives to work in a more customer-oriented manner, with more early research. However, there is still more to do when it comes to follow through with the plans and also assign money and resources so that such activities are not cancelled.

Customer orientation with stage-gate system in the process

In order to have clear deliverables and better management control, a stage-gate process can be used, according to Cooper, R. (1990). VCG has a stage-gate development process where, in each milestone and gate, the projects are evaluated so that they are according to plan and that a severe set of deliverables are fulfilled. One interviewee mentions that; "Milestones and gates confirm that we are following the plan" and another states that; "The gates helps us to be aware of things that aren't on track. In addition to that we have continuous anchoring". Yet another one states; "It is clear what is supposed to be delivered in each milestone, and each task has someone assigned for it." Moreover,

according to several interviewees, in each gate customer research is demanded as a means to control the quality of the project.

Wheelwright, S. and Clark, K. (1992), bring up the importance of having early management review, when there is still possibility to influence the product and most money left to spend. One of the interviewees mentions in line with this; “It is good to do research early on, so that little resources are spent if it turns out to be a bad idea” and another one says; “If we are making mistakes, it’s hard to fix them later on. If we don’t do the pre-work well enough, the rest will be no good either”.

As a conclusion from this, VCG’s process structure appears to have potential for early reviews and to continuously evaluate the product with the customer in focus.

Sum up

In order to be customer-oriented, companies and organisations need to have a process that supports such way of working. VCG’s process structure appears to have potential for early reviews and to continuously evaluate the product with the customer in focus. Moreover, VCG have lately been taking initiatives to work in a more customer-oriented manner, with more early research. However, there is still more to do when it comes to follow through with the plans and to also assign money and resources so that such activities are not cancelled.

4.3.2. The Decision-making process in relation to customer orientation

In order to be customer-oriented, it is important that the customer information is used as a base when decisions are made.

Is information used in a good way when decisions are made?

Are decisions generally based upon customer information? Gulliksen, J. et al. (2003) mention that user requirements are not always implemented, despite good quality user studies, and suggests that this is instead due to decisions in the project. It is quite irrelevant to have robust customer background material if it is not used as a base for the decisions. Some interviewees do not think that decisions at VCG are based on customer information;

- ”My opinion is that we often have the information we need. However, we might not use it effectively enough in our decision-making process.”
- “We are soon in in a decision process where we skip the basic facts, and this is probably due to that we are always under a time pressure in a project. The line people don’t have the same time pressure.“
- “Some can, by salary level, claim a lot of things but it's difficult when you have management opinions that are not relevant.”

Kaulio, M. et al. (1999) mentions that if the origin and background of the requirements are understood it is easier to assess the requirements’ significance. A relevant question is thus if the system view with “user – product- task- context” that Kaulio, M. et al. (1999) mentions, is available when decisions continuously are to be made? One interviewee states that this kind of information is placed in “back-up

material", which means it is placed in the back of presentations and not shown until requested; "We can become better at using customer data to strengthen our recommendations each time a decision is made or for recommendations to the senior management. Such material is often placed in "backup" but that is not visualised in the presentation, so decisions are taken without facts about the customer."

If this is the case, there is a risk that decisions are taken without being properly based on the customer information.

Nielsen, J. (1993) mentions that recommendation has been given to shift the responsibility upwards in the organisation: from the development managers towards middle and upper management. This appears to be in line with the decision structure VCG has applied since most interviewees agree that it is the project business manager as well as the senior management that has the power to make the final, and all major, decisions. In order to work in a customer-oriented manner, it is thus important what someone stated in *chapter 4.2.2 - "analysis of customer information";* "I think you need to have a boss who lives and breathes this and who tries to drive it into the organization".

Furthermore, Papadis, V. et al. (1998) mentions that the way managers categorize and label a decision in the early stages of the decision-making process strongly influences the organisation's subsequent responses." This could be considered an argument for the need to have much customer information to dispose early on in the process.

On the one hand, the decisions ought to be based on customer information if the company is to be customer-oriented. As one interviewee states: "The customer should always be included as a parameter in the decisions you make". On the other hand, as discussed in *chapter 4.2.2 - "analysis of customer information"*, the company must use the data as it think is best, because the customer doesn't know what to expect of the future and the company has other limitations; "It is important to listen to the customer and for senior management to bear this in mind when taking certain decisions, but sometimes you can go the other way around. So sometimes we can hear 'oh god, how could they make that decision when the customer told the opposite'. Well, yes, but there might be other parameters that plays out as well then."

To sum up, not everyone think that decisions are based upon information about the customer, which cannot be called a customer-oriented way of working.

The role of Senior Management at Volvo Car Group

Senior Management has great influence, even if not connected to customer input

Nielsen, J. (1993) points out that "vice presidents and other corporate executives should realize that they are no more representative of the end users than the developers are". Having a separate agenda for the company, due to long-term strategies, is one thing but it is another thing when senior management appears to believe that they know the customer better than the developers. This appears to have happened at VCG considering quotes as the following;

- “Senior management can suddenly go in and defy previous work, and make changes, despite the fact that the balancing of the content of the car has been considered carefully and agreed upon in several forums. They have to make decisions but they affect more than they might think.”
- “I believe that there is some top down, so I think it’s very important that you have a CEO and a board that believes in this and behaves in such a way that their decisions are supported by facts, which are based on customer input. Because it is very easy to go with your own opinion.”
- “We think something and the management something else, which is a problem.“

In the occasions in which final decisions are based on someone’s own opinions instead of the customers’, then the working structure cannot be considered customer-oriented.

A previous CEO has changed the company in regards to customer orientation

Another relevant aspect that has been found regarding the role of senior management is that new CEO’s appears to put their own footprint in the company. A major part of the interviewees have experienced that one of the previous CEOs introduced major changes in how much the customer should be in focus at VCG. Many of the new-born initiatives which are highlighted in this report are consequences of the work by this CEO.

- “We started to talk about the customers for real when [the previous CEO] started at VCG, a giant change, because he started to ask about the customer’s opinion on the matter. We were asked to talk to customers and it became a stress in the company to suddenly ask the customers about everything. But now there is a balance that has led to much greater awareness and openness to the customer input.”
- “[The Previous CEO] came in and shook us a little and forced us to think a bit differently than we had done before, and that was great.”

It can from this be concluded that the senior management, to a large extent, has the power to influence how customer-oriented VCG is. However, it is thus very important that also their decisions are based on real customer information.

The issue of reaching consensus at Volvo Car Group

Herrera, E. et al. (1997) mentions Arrow's impossibility theorem, which states that it is impossible to unite individual preferences into group preference in a completely rational way. In line with this, they also state that consensus, as a unanimous agreement, rarely is achieved in real situations and that the process of reaching consensus can be unacceptably costly.

However, reaching consensus is not the same as making a decision that everyone sticks to. Most interviewees were of the opinion that everyone should have the same opinion of a decision when leaving the room and that this decision later on is what everyone should communicate to the rest of the organization. Otherwise progress is not made and the decision is useless.

- “Everyone does not have to think the same, but you should decide on something and go for it.“

- “If you want to have a good consensus you need to be brave enough to bring it up in that room. It’s much easier to go home and complain to somebody else, and not bring them up directly. It takes less courage and is much more common here.”
- “You need to make sure a consensus exists because otherwise it’s just opinion verses opinion.”
- “There should be a simple set of conclusions that hopefully everybody understands.”
- “We can have a lot of disagreements in the group but once we have decided what we are going to do, there shouldn’t be any disagreement. We should all go back to our respective function and brief our bosses the same way. So that the same message gets out to the company. That’s very important.”
- “It is not all likely that everyone goes back to their departments with the same picture. We must ensure that we really do that, it dies easily in an organization.”

However, several were also of the opinion that reaching consensus is not the way it works at VCG.

- “The problem at VCG is that you decide something but everyone goes away with different versions anyway.”
- “That’s a little VCG disease too, we all like to have our opinion and we all like to debate it. We want to have a consensus. Nobody ever makes a decision. [laughing]. As soon as people go out in the corridor – “that’s a crazy decision, we’ll never support that”
- “The persons to take the decisions are not listening to each other, since everyone wants to make it better on their own. By this, I mean that each person has its own view of what is ‘better’.”

On the other hand, one of the studied projects, which represent an early phase, appears to be considered successful in reaching consensus by both the project team and several line managers.

- “Project B is an example of a successful project where consensus was reached by the use of cross functional teams.”
- “The result of the customer clinics was presented and anchored everywhere so everyone knows that this is what we are going to do”

The issue of reaching consensus is relevant for the result of clinics. As discussed before, MI and the research institute compile an objective report of the findings, which are discussed in group by all attendants before an official report is sent out to the organization. No one is allowed to discuss the results before this final report is sent out, and the content of the report is what they are to stick to. “We don’t want 100 people coming back and making 100 different reports”. However, it is important that everyone understand this setup, so that decisions are not based upon parts of the sample, or those attendees, without expertize in how to listen to customers, take with them unrepresentative data, as discussed in *chapter 4.2.2 - “analysis of customer information”*.

Sum up

To sum up, not everyone think that decisions at VCG are based upon information about the customer, which cannot be called a customer-oriented way of working. Senior management, to a large extent, has the power to influence how customer-oriented VCG is and this can be seen in the positive changes that

a previous CEO caused, in respect to listening to customers. Furthermore, VCG appears to have a problem with sticking to the decisions that are taken. There is a risk that this causes confusion and that previous work with the customer in mind gets lost.

4.3.3. The effect of Roles and responsibilities on customer orientation

How roles and responsibilities are defined within the organisation can also affect the ability to maintain customer requirements in focus when developing products.

It is not clear who is in charge of representing the customer

VCG has cross functional teams all over the organization, as recommended by Kaulio, M. et al. (1999) and Gulliksen, J. et al. (2003), and also in the earliest of phases. Moreover, representatives from all departments appear to take part of customer research, although not equally much.

However, the relevant question ought to be if someone in the team is in charge of representing the customer throughout the process. Both Kapor, M. (1990) and Rexfelt, O. (2005) suggest that there should be a user-representative within the project team, early and continuously throughout the development process. From the interviews, there does not appear to be a united picture of who is responsible to represent the customer. One interviewee at design states; “The way I see it, MI and MSS are responsible for the customer understanding but I could do with more access to such information”. One interviewee from PS&VLM states; “There isn’t any dedicated person to be responsible for the customer, instead there are different persons who are responsible for different things.” Yet another says; “There is no one specific who is responsible for understanding the customer all the way, it’s a shared work”. One interviewee said; “The Product manager follows the process and is the voice of the customer”. On the other hand, one interviewee expresses that; “Everyone runs around and think they are the interpreter of the customer and I think that’s wrong”. In accordance to this, and similar quotes, VCG does not appear to have a dedicated person in charge of knowing the customer in the development process. However, some departments are closer to the customer than others. However, Rexfelt, O. (2005) concludes that a product development process which aims to be user-centred should have a user representative who is responsible for the customer. There is a risk that, when it is not clear who is to know the customer, important customer requirements might get lost during the process.

The individuals and their roles in a team make difference

Kaulio et al. (1999) as well as Lester, A. (2007) discuss the importance of manning projects with the right competence and with driving force and social ability and Almefelt, L. et al. (2003) mention that someone’s passion for an issue can overcome many problems. This was also brought up by several interviewees by quotes such as; ”Who is involved plays an vital role” and “It’s all about having the right people”. One interviewee mentions that;” The project engagement differs with the people being involved”.

Furthermore, Lester. A. (2007) mentions that every team members' role and background influence the decisions taken within the project. Several interviewees seem to be aware of this and as one mentions; "With the same specification, the cars will look differently depending on the people involved and their responsibilities and personalities". And another interviewee says; "You fight for different things when you represent different roles and departments." However, that can be assumed to be what cross functional teams is about. One interviewee thinks so; "Different departments are responsible to stand for different perspectives in the company" and another states that; "In the end people should represent their own department and role. That is what they are paid for."

In conclusion, the individual member of a team has a large impact on the final product, and consequently, how customer-oriented it is depends on the ambitions and objectives of the people involved with developing it. However, as long as the projects are set up with representatives from several departments, as with VCG, and the individuals realize that they are representing their own departments, it can be assumed that several aspects of a product is yet represented in the end product. Finally, it can be concluded that it is important that the teams are staffed with people that are engaged in satisfying the customers if the project is to be customer-oriented.

Sum up

VCG has cross functional teams all over the organization, which is a good base for including several perspectives of the end product. However, none of the team members appears to be dedicated to be in charge of representing the customer in the development process, which comes with the risk that important customer requirements get lost during the process. Moreover, the individuals that staff the projects affect what the end product will be like. It is therefore important that the team members remember what department they represent and that the teams are staffed with people that are engaged in satisfying the customers if the project is to work in a customer-oriented manner.

4.3.4. Change Management at Volvo Car Group

Fricke, E. et al. (2000) and Rouiba, K. and Caskey, K., (2002) mention that changes are necessary in order to be competitive or better than your competitors, and Fricke also mentions that late changes are necessary. Interviewees point out reasons for changes such as cost reductions, change of managers and changing markets, which all are pointed out by Fricke, E. et al (2000) as common reasons. Someone stated that "Cost is a hot topic at VCG in periods; sometimes you have to comply with the amount of money you have and make something cheaper".

Some changes can improve customer satisfaction

Several interviewees claim that the target customer does not change much over the development process, but the market can change a bit which in turn affects the customers. The moving target is assessed by the use of, for example, clinics. One interviewee states that "The moving target is tracked by

the product manager and commercial project leader, they work continuously with finding information on the customer. So we follow this closely, and we keep track of the competitors as well."

However, excitement requirements as well as design appear to do be difficult to settle in the beginning of the development process.

- "It is probably possible to construct a steering rack that will live for 15 years but to pick out a design that will live for 15 years, that is tough. The main difficulty is to know what we will like to have in 5 or 10 years."
- "What is most difficult to predict with a customer is to find the little exciters that makes the customer particularly pleased and you cannot find them 7 years in beforehand. For the rest, what we see is that very little happens, you can use old experience a very long time without the customer changing his mind."

However, most interviewees from the team of project C did not experience that many major changes had to be made.

The risk of implementing changes late

Regarding late changes, Fricke, E. et al. (2000) recommend implementing changeability within the organizational system architecture, to make late changes less costly. VCG has a system to categorise and handle late changes in the development process, with green, yellow and red zone that are to indicate how difficult and costly a change is to implement at a certain point. This system helps keeping track and making appropriate decisions regarding late changes.

- "Everybody come with improvement ideas and these ideas are also entered into the late phases, even though it is split opinions on whether this is good or bad. A lot of people here think that if you have decided to go for something, you should just do it. There is something called the red zone late in projects, at this time, after review and a transparent decision, you can involve small changes but big things cannot be changed."
- "We have a green, yellow and red zone, and in the red zone not changes should be made. That is not true, but you should realize that it is very difficult to make changes in the red zone, because it can mess up the whole launch, so you have to have a great conformance plan in order to get approval."

One project manager thinks the process supports late changes; "You have to allow late changes because things can happen on the market that you did not know before, but if you are in the red zone it is a crises so you would have to be wary. So I think we have a process that allows for late changes." The department of design handles late changes by first deciding on the design architecture and then gradually becoming more detailed.

However, at a certain point, changes cannot be implemented any longer if the product is to keep its launching schedule.

- “Later in the development process, for example in a design clinic with price, customer input can still arrive but then it is more difficult to listen to new information because the car content is already locked, so then we have to handle it in another way. “
- “I cannot receive all information during the last two years because then I’ve finished the car and we are in the process of making tools. At the end of the development cycle there is no time and money to make changes.”

Because of this, it is important to receive as much customer information as early on in the process as possible, when it is still possible to handle it, and when most of the budget is still not spent, as Wheelwright, Steven C. and Clark, Kim B. (1992) point out. However, they also states that early on in the development process, the management activity profile commonly is limited, and instead becomes significant later when it might be too late to succeed with the effort. However, VCG uses a stage gate process with regular management reviews, as mentioned in C*hapter 4.3.1 – “Does VCG’s development process support a customer-oriented way of working”*, which is likely counteract such a phenomenon, so that costly changes later on in the process can be avoided.

Unnecessary changes

Fricke, E. et al. (2000) mentions that many changes are due to those important decisions are postponed. As mentioned in C*hapter 4.2.2 – “Analysis of customer data”,* two line managers has brought up that no one wants to deselect, but only rather select, content in the car, which eventually leads to a point in time where too much content must be deselected at a short period of time. This brings, as mentioned earlier, a risk of creating an un-optimal car content from the customers’ point of view. Again, this is important to avoid if the customer is to be optimally satisfied in the end.

Sum-up

In conclusion, it appears that VCG keeps track of the moving target and also, to some extent, has a process that allows for changes to be implemented in the product before reaching the customer. Consequently, nothing has proved to be contradictory to a customer-oriented way of working.

4.3.5. Communication and knowledge transfer of customer information at Volvo Car Group

It is important to gather representative customer data, but just as important to communicate and handle it in a good way, so that the data do not get lost later on in the process.

Communication across the departments

Almefelt, L. (2005) mention competence differences as a factor that can prevent fruitful communication, which can be assumed to be an issue when different departments communicates between each other. Several interviewees brought statements such as the following;

- "You speak different languages; it is different professions and different focus. That is the point of having departments. The projects should keep it all together and have an overview with all lines included. You don't think the same way".
- "You mean different things with different words. The first thing you must do if you don't understand each other is to try to ask them to define what they mean. It's the hardest thing in our job, is to try to understand each other. Many are proud and it is a bit difficult before that has been stripped of."
- "Yes of course, you value things a bit differently."
- "Different departments use different kinds of requirements, some use functional and others emotional. "

A couple of interviewees also were of the opinion that the different departments understand each other well. However, if the departments communicate differently, the risk is that important customer information might be misunderstood and lost.

The use of communication methods and tools

Almefelt, L. (2005) mentions that communication of requirements is not just a matter of creating a document, but rather to reach out to those who are concerned. In order to ease for communication, methods can be used. However, many interviewees ask for more rich and qualitative information about the customer such as how the customer lives and what it dreams of. It is then important that the communication methods can mirror such kind of information. However, as Brandt, E. (2003) mentions, even simple diagrams can be useful as a boundary object. Some internal communication methods have been found during the interviews, such as Power point presentations, Excel sheets, emails, design prototypes and Lotus notes. Lotus notes are perceived by many interviewees as a good way to catch up on information and decisions when entering a new project. One interviewee states that; "Everything is documented in each phase and is available for those who join a project. But it is better if there are project members who follow the project all the way through, it's much better than trying to read up on what the car is supposed to do." In line with this, Almefelt, L. et al. (2003) concludes that team members need to meet face-to-face to really have a constructive dialogue.

Films and picture are occasionally used to visualize the customers. In one of the studied projects, personas were also used. One interviewee jokes that "When adding features, or changing the product offer, it is popular to make a one-pager that even management can understand [said with a smile]". Many times a one-pager is helpful if you have something that is complicated that you are passionate

about. If you can concentrate it on one side and make it so easy that anyone can understand it, then the message generally reach through and you'll make the effort to think as you communicate that message." One line manager states that; "VCG has an oral culture with many meetings and talk. The problem with the oral meetings is that when people leave it all disappears. By letting people keep minutes they are forced to concretize instead of just talking."

One of the interviewees mentions a fair that was held in order to make information sharing easier; "Last autumn a VCG showroom was filled with different FU (appr. future research) ideas. I stood there and showed my car project and there were also groups who presented other things, such as internal materials, infotainment, gearboxes etc. That way, ideas were concretized and people could come and cross-fertilize their thoughts and idea." A representative from MI states that; "We always write reports when we are out which is distributed within the company."

There is no obvious reason to assume that such tools would not be able to carry all kinds of information, several are recommended by for example Almefelt, L. et al. (2003) and Wallgren, P. (2013). One line manager states that; "We are probably bad at using aids when we communicate with other departments" but also states that "We are trying to streamline the dissemination of information, but we are pretty good."

Filtration of customer information can reduce its quality

However, Kaulio, M. et al. (1999) states that every interpretation or filtration reduces the quality of the data and it is important that the requirements background remains visualized trough all generations of requirements and specifications in a project. Furthermore, Almefelt, A. (2005) mentions that geographical distance, different time-zones and language differences can prevent fruitful communication. The fact that a lot of customer data is gathered from other countries, and during communication with, for example, the quarter in China, causes a major risk that the quality of the customer information is reduced. Interviewees raise this question in quotes such as the following; "There is always Chinese whispering[3]. I've experienced that a lot between us and China."

Moreover, this appears to be a problem also within the headquarter in Gothenburg;

- "The things that are not written down give rise to Chinese whispering. The information changes during the way because it takes long time before it has diffused down into the organisation."
- "I filter information myself, sometimes also to my employees. It depends, sometimes I want them to focus on the essentials so then I try to screen the information for them. But I give very transparent information about what we are doing. "
- "It can be very difficult to interpret everything right, vague formulations can be complicated to understand. But to writing clearly takes time.

However, some interviewees have also stated the opposite, that they have not experienced the issue as a problem.

[3] Chinese whispering is a game where several people sit in a line and the first one whisper a sentence in the next person's ear. The sentence is passed along to all persons this way until it has reached the last one who speaks it out lout. The sentence is normally very different in the end than it was from the beginning.

As a means to avoid filtration, MI has a representative in most project teams and a consult at most departments, which is responsible of visualizing the background to the requirements, in line with what Kaulio, M. et al. (1999) recommend. “We are constantly trying to promote it because we don’t want any room to interpret the results and information we deliver. We try to ensure that it is not misinterpreted along the way, but of course it might be picked up for a new interpretation somewhere. But as long as we have an understanding and can follow, we can make sure it does not change along the way." Another one states that; ”The group leader is in charge of passing on the information.”

However, the suggested requirements review, as presented in *chapter 3.3.5 – “Communication and knowledge transfer of customer information”*, by Almefelt, L. (2005), could be a good way to keep track of the background of the customer requirements.

The risk of not sharing information

One issue that was brought up by many interviewees was the question if everyone must have access to all customer information. There were both supporters and opponents to this idea. Opponents lifted quotes such as;

- “People need to be informed so you have to do what is necessary so that enough people know enough, but everyone cannot know everything. There is no need to spread customer requirements to everyone.”
- “The vast majorities don't need to know, they should just do as they are told. Most jobs have a specific requirement, such as that the bumper needs to be XXX units strong, they don’t need to know who the customer is or how they feel about their car and its bumper!“
- “I don’t think every design engineer at R&D should think about what the customer wants. PP&M[4] should define what the car will do and every design engineer should not have their own opinion because then it becomes a sprawling view.”

On the other hand, spokesmen of a more generous sharing suggested things such as;

- “There's such secretiveness culture at VCG. Although we all work here at VCG, there is stuff that is secret and which must not be spread. “I know things that you do not know”, that definitely exists here indeed. For example, the cycle plan is kind of secret. People start talking in unofficial ways instead of the official way, and that is very ineffective.”
- “To let everyone get to know the customer creates a sense of engagement and solidarity”
- “The most important thing for the company is that as many co-workers as possible has information about our customers. That is much more important than only having some experts knowing all the information, because the experts do not execute the job. “
- “It is not a secret who our customer is, on the other hand, what technologies and price and so on is a secret. “

[4] PP&M stands for Product Planning and Management, and is a unit within the department of PS&VLM

It appears today that not everyone at VCG can access all information about the customer that has been collected from customer research. If it is the case that the information instead goes through unofficial paths instead of official, then there is the risk, as discussed in *Chapter 4.3.4 - "change management"*, that decisions are based on data which is out of date, or might not even be true in the first case. In particular, if combined with "Hisingesyndromet", such a phenomenon can create confusion and does not provide a good base for a customer-oriented way of working.

The communication structure

Information is shared in different meetings and forums according to a communication structure. A couple of interviewees have stated that such a structure makes it likely that information reaches out to all concerned employees. However, if some information does not reach certain forums there is a risk that information does not reach through. There also appears to exist alternative ways to lift information, if someone is of the perception that it does not gain hearing in the regular channel. The issue can then be raised to one hierarchical level higher.

Different departments have different levels of hierarchy, where R&D for example has many levels of employees to communicate to, whereas Design can be gathered in a meeting all at once. This implies that the time to reach to all employees with new decisions is likely to differ. In one of the studied projects, the project team was located together, which a couple of them points out as successful; "To be located together provides a great efficiency." It can be concluded that being stationed together in the project was perceived as a successful complement to the regular communication structure, and thus that the regular meetings might not be enough in order to be as efficient as they could.

However, the risk of sharing information face to face is that other concerned parties might not receive all information. Moreover, having a standardized communication method, such as the meeting hierarchy at VCG, also makes it easier to implement a mindset which encourage that presentations and decisions in such meetings should always be based upon customer background information.

Sum up

It is important to gather representative customer data, but just as important to communicate and handle it in a good way, so that the data do not get lost later on in the process. Most interviewees agree that different departments communicate differently, and this could result in that important customer information gets misunderstood or get lost.

There is no obvious reason to assume that the tools for communication that are used at VCG would not be able to carry all kinds of information but it appears today that not everyone at VCG can access all information about the customer that has been collected from customer research. If combined with "Hisingseyndromet", this can create confusion and does not provide a good base for a customer-oriented way of working.

Finally, VCG has a meeting hierarchy that founds a base for information sharing. However, it has been found that face-to-face meetings are a good complement. On the other hand, this comes with the risk that other concerned parties might not receive all information. Moreover, having a standardized communication method, such as the meeting hierarchy at VCG, also makes it easier to implement a mind-set that encourage that presentations and decisions in such meetings should always be based upon customer background information.

4.4.Comparison to the reference project

This sub-chapter aims to compare VCG's current way of working to the way the XC90 was developed.

The XC90 can be considered a successful and customer-oriented product since it became the SUV of the year and truck of the year in England, the first year's production was sold out before anyone had seen the car. Eleven years later it is still sold all over the world, and can be considered a cash cow for VCG. After its launch, senior management agreed that; "This is the way we should do it every time", but this is not how any car has been developed ever since, according to the one interviewee that represents this project.

Are the projects comparable?

Can the projects be compared fairly? The XC90 entered a new segment so the customer profile did not change much over the development period. This is not the case for two of the studied projects, which act on mature markets with intense competition and where the customer is severely affected by what the competitors do. On the other hand, the third project was aiming for a new segment. The development time for the XC90 was also shorter than that of the studied projects. However, the aspects presented below could still be considered comparable because, despite a new segment, the customer must either way be understood, the information transferred and the product developed, in line with the model of Kaulio, M. et al. (1999) that has been use as a base for the structure of this thesis.

What parts were done differently than today?

The XC90 was done differently in some aspects, of which a few will be presented and discussed below.

The customers were understood in their home environment

In the XC90 project there was a strong focus on understanding the customer. In a very early stage, the project team flew to US, which is where the target customers were located, and studied them in the customers' own environment. This is encouraged by Kujala, S. (2005), Kaulio, M. (1997) and by ISO 13407 (1999), as discussed in *chapter 4.2.1 – "the concept of data gathering"*.

The data collection consisted of several things but the most important the interviewee describes as follows; "We went to the U.S. and met our own organization, met with investigative agencies, retailers, sat outside schools when the mothers picked up their children, studied statistics of accident. All to see where to place the focus in the car".

Also XC90 made use of a combination of methods but focus was, in contrast to the other projects, on observations in the user's home context. This kind of observatory work can, as discussed in *chapter 4.2.1 – "the concept of data gathering"*, also give rise to identification of emergent and elicited requirements, the kinds that the customer is not aware of or cannot communicate easily. Thus, it appears that VCG had a customer-oriented data collection approach a decade ago that is requested, but not implemented, today.

Fixed customer profile and initial definition

The concept study only took two months, a short period of time compared to now. However, a severe work was done during this period of time. “We did a damn good job before we started: with the definition, the customer and with the car itself relative to the customer. We had a mission, a well-defined product that fitted into the segment we were after. This was verified occasionally where after minor adjustments were made”.

The customer profile and initial definition was set early on after a severe market study, and was not allowed to be change for anything or anyone. ”Design was not allowed to start working until the customer definition was correct, and this was not ever changed again so they had to stick to it.” "There was no room for gut feelings; the customer and initial specification was well defined in a book. Construction and design were not allowed to deviate a millimetre".

It can be assumed that it is even more difficult to keep a fixed initial customer profile and product definition when the market changes more, as due to competition for example. However, several interviewees have stated, as discussed in *chapter 4.3.4 – ”Change management”*, that it is mainly the perception of design and exciters that change much in the projects, not the main parts.

The interviewee proposed that sticking to a strict initial definition, which was based on a thorough background work, was one of the reasons that the car could be so successful. It appears from the studied projects that the initial definition is not as strict today. “The big mistake we do is to let the design go ahead too fast, because it can become a constraint in itself. Therefore, design was not allowed to start until after the ergonomic properties were defined.” One conclusion from this could be that sticking to a well-defined initial definition is desirable if the product is to be based on information about the customer, and that this is not as strict applied today as during the XC90.

A representative customer group was actively used and included rejecters

The XC90 project group created a reference group of females that followed them through the whole process. The interviewee states that this reference group really made a difference. ”The big difference was the female reference group in the U.S., it meant a lot.” The group consisted of 1/3 that had a SUV since before, 1/3 that considered buying a SUV and 1/3 that did not like SUVs. The project team met with the reference group once a month, which was documented on video. The project group was there as audience in order not to interfere and brought mediating tools such as interior images, colour samples, material samples and so on that the group could look at and feel. Much focus was on the use of the car.

However, a reference group has also been used in one of the projects in this study as well, and mediating tools such as described are also used in other projects. On the other hand, the fact that the XC90 made use of people who did not like SUVs means that they worked closely with rejecters. As described in *chapter 4.2.1 – ”The concept of data gathering”* this kind of information is requested by several at VCG today and could be an important part in understanding what satisfies the customers. To study owners of competing cars is not comparable to studying rejecters because it is not certain that the owners of the competing cars have even considered a VCG. The ones that choose not to want SUVs, however, have made an active choice which is of interest when developing a new kind of SUV.

The main focus was not on the competitors

It appears, from the project that represent the middle and late phases, VCG to a large extent decides on what to do by looking at the competitors, see discussion in in *chapter 4.2.2 – "The analysis of customer data"*,. However, the interviewee for the reference project clearly stated that their focus never was placed on what the competition was doing; "If you make a copy of a car you'll never be better than number two, and you don't make money of it." On the other hand, they did have the competition under surveillance; "We checked so that we were not in a too strange direction relative the competitors but we made a car that did not yet exist on the market, so we had different demands than everyone else."

Since the studied projects are more exposed to competition, this might be a misleading comparison. However, it is also a question of uniqueness, as discussed in *chapter 4.2.2 – "The analysis of customer data"*,. XC90 did put much effort in understanding the customers' all kinds of requirements and to make something unique out of it, as recommended by Cooper, R. (1994). However, to little interview data has been retrieved in this study to make a fair assessment on whether this is also the case in the studied projects. On the other hand, statements such as the following, which have been mentioned before, claim the opposite; "You can be very satisfied with things that are not important and you can be very unsatisfied with things that are very important. We are not performing very well where it matters to the customer, contrary to what a lot of people in this building think."

There was a clear vision

The project manager of XC90 had a mantra, a clear and engaging vision, in line with the BHAG described by Collins and Porras (1996). It was; "We are going to make a car not for concurring the world but live harmony with it." The interviewee states that; "When we launched the car, the journalists wrote exactly what we had felt when we developed it."

Such a vision has not been found in any of the studied projects, except in one that represents an early phase, where the product manager had used a mantra in earlier projects and was searching for one to use for the project in question. As mentioned by Collins, J. and Porras, J. (1996), this could be a tool to stimulate progress. As long as the mantra is customer-oriented, it can thus be assumed to be good tool to create a customer-oriented product.

They used a communicator for regular information

The most difficult part was, according to the interviewee, communication and not technology. "If everyone is pulling in different directions, it will be expensive and the project delayed. The challenge is to reach out with all information to everyone so that the work is carried out in the right way." As stated by Fricke, E. et al. (2000), it is important that everyone has access to the latest information, so that decisions are not based upon out-dated information. Otherwise there is a high risk of additional changes. What the XC90 made use of, has not been found in the other projects, is that the project manager had access to a communicator. "Every second week, we wrote an internal letter to everyone in the project with information about the next milestone, what had happened the last time and so on, and about every major decision."

As discussed in *Chapter 4.3.5 – Communication and knowledge transfer*, it can be assumed that in this way, important information reached out to all relevant players and that requirements less easy got lost in the development process.

The interviewee's conclusions of the reference project.

The interviewee mentioned a few conclusions on the subject. First; ”The senior management said directly that all projects should be done like this in future, but I don't think we made a single one in the same way after this." And "We become better but I don't think that we have learnt from what we did with that time, with the XC90." This is in line with what has come up during the analysis of the reference project, that several beneficial parts of the working method from XC90 are not applied in the studied projects.

He further states that; "VCG is occasionally customer-oriented. Those who work at the market-department, MSS, say we are customer-oriented and at R&D they say that we think about the customer, but not in the way that they should. Customer orientation is in the minds of all of us, it is mentioned all the time, but sometimes that is not reflected in the work." This is in line with what has been discussed in this study. He continues; "It is particularly difficult to stop dedicated technicians from being carried away by technology, but that I think we have learned. But being customer orientated - to check with the customer what kind of properties they want - it is so very important." As mentioned, the exploratory and extensive data collection phase, where all kinds of requirements were addressed, is something that the studied projects do not seem to do as well as the XC90 project, and the interviewee think this is a key factor to being customer-oriented.

Final reflections

It appears as if several of the interviewees from the other projects are of the opinion that XC90 worked according to a customer-oriented manner, which is lost today. One line manager states; “I've heard stories about that the current XC90 was developed this way [he refers to a well-defined customer profile which decisions can be based with regards to]. Maybe it was done that way ten years ago. I've certainly heard stories saying that. So maybe we had it, lost it and are trying to get it back.”

However, the project manager of the XC90 project has up until this year been present at the company and it can thus be assumed that the information on how the XC90 was done has not been too difficult to access. Yet it appears, in line with what the interviewee of the reference project states, that the methodology of the XC90 project has not been applied since then. On the other hand, much appears to have changed since a previous CEO came to VCG, and several of the late initiatives such as a more severe customer research period early in the process, appears to be coming back at VCG.

Another reflection is that XC90 is a product which represents what VCG traditionally is associated with; a practical and safe family car, and other successful examples of such cars has been brought to life by VCG

before. It can thus be argued that the success is not only due to a suitable method for customer orientation but could also partly due to experience in developing that kind of cars.

Sum up

The XC90 project can be considered successful and was made differently than the studied projects in a few perspectives. For example, it appears that the XC90 project had a more customer-oriented data collection approach, with observatory research in home environments. Also, the initial customer profile and initial definition appears to have been stricter and better prepared on the XC90 project than today, which can be concluded as desirable if the product is to be based on information about the customer. Furthermore, the XC90 project had access to rejecters, which is requested today and could be an important part in understanding what satisfies the customers and what does not. Moreover, the project manager used a communicator in order to make sure that all important information reached out to everyone, so that the co-workers strived for the same target. Finally, the interviewee states that; “The senior management said directly that all projects should be done like this in future, but I don’t think we made a single one in the same way after this."

4.5.Summary: Is Volvo Car Group customer-oriented?

In this chapter, a summary as well as an overall answer to the research question is presented.

4.5.1. What do the interviewees think when asked directly?

There is a diverse opinion on whether VCG is customer-oriented or not among the interviewees. However, as depicted in figure 4.1, more say no than yes. However, most people have difficulties answering such a question. Below you can find arguments supporting the answers on the question, categorized into "yes", "no" or "maybe"[5].

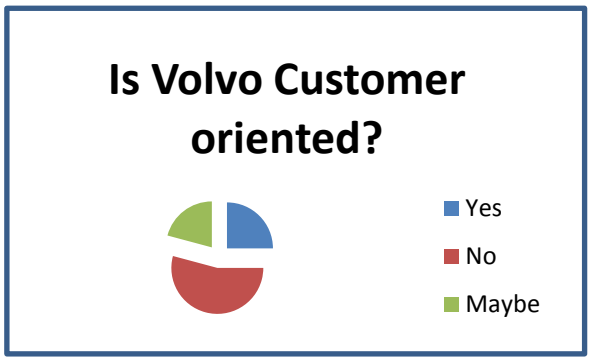


Figure 4.1. A compilation of the interviewees opinions on whether VCG is customer-oriented or not.

Yes

- "When it comes down to it, I think we are. But there is potential to get better. I think that senior management and the top layer of R&D are customer-oriented."
- "I think Project A was a good benchmark for the ideal start. It is clear that we have the potential to do it [work in a customer-oriented manner]."
- "I can't think of a way be more customer-oriented, but I am limited to my experience and what I can do today. The first losers are those who think they know. I guess it depends on what you compare to."

Maybe

- "We are more customer-oriented in some phases than other. Especially in the earliest phase."
- "There has been many good changes towards becoming customer-oriented lately but during my 35 years in the company I have seen many initiatives come and go. It is important that this continues even if you don't see results until much later. A lot of things have started to happen in the company now, just take that they did a focus group early in the Project B phase, apparently it was a long time since last time."
- There is a quest now, and there is a buzz word ever since we got 'design around you'. We started to talk about the customer last year - what the customer would like."
- "I think VCG is about to become customer-oriented. There is a lot of good will, though sometimes a little misinterpretation."

No

- "Not as long as we confirm what we want to hear rather than being open-minded"

[5] Some of the quotes are placed in a category which the interviewee would not place VCG, but instead a certain project.

- “Not as long as we cut down on early research. Senior management should not pull the rug from under our feet and delete customer research in the early phases”
- “You cannot be a customer-oriented company and not invest resources in customer orientation. Either you go for being one or you don’t.“
- “We are not customer-oriented because we do not sell as much as the competition, if being customer orientation gives success”.
- “No, I don’t think so, but we could be. It's probably fairly certain that by becoming more customer-oriented, we would sell more cars. We are infinitely more customer-oriented now than three years ago, partly because we changed managers and strategies and got ‘Designed around you’”.
- “There is the ideal way and there is what we actually do. By saying that I’m telling you that we are not at the ideal yet.”
- “I think VCG is on a journey to becoming customer-oriented. I think today we are still far from being customer-oriented enough. We are not there. I think we finally got ourselves pointed in the right direction, though we have a long journey to go.”

Most of the quotes are in line with what has been found in the study. The next section will present a summary of the analysis regarding if VCG is customer-oriented.

4.5.2. Sum up of the analysis

A summary of the analysis is presented in this section. Each chapter is represented since they all are found to be relevant in order to give a full picture of what working in a customer-oriented manner is about. Some things might appear as unjustified, however, argumentation can be found in the respective chapters.

Customer orientation in general at Volvo Car Group

It is the customers who decides whether a company is customer-oriented or not, and several interviewees share this idea. It appears that the concept of “customer orientation” has become a hackneyed phrase that does not necessarily trigger the behaviour among the employees that it is meant to, and it can be assumed that this definition issue is an obstacle in the work to make VCG become more customer-oriented.

The concept of ‘Designed around you’ appears to have an ambiguous meaning that can be difficult to decipher. This can lead to that it is misused and thus counteract a customer-oriented way of working, despite the fact that the visions core purpose is to increase focus on the customer.

Is Volvo Car Group doing the right things

– Are all relevant customer requirements found and interpreted in a good way?

There are different kinds of customer requirements and it is important that all are captured. How well they can be elicited from the user depends on the choice of data collection method, participants,

mediating tools and context, in combination. There are three main categorise of requirements, in terms of captured, elicited and emergent, and it appears that all three kinds are approached by VCG's data collection setup. For example, VCG uses complementary methods, chosen with the customer research's purpose in mind. However, there is still a striking risk that some aspects of the customers' needs and wishes might be missed, since little field research is conducted, and in particular of observatory nature.

Does VCG have a good process of analysing the customer data, seen from a customer-oriented perspective? Statements have come up during the interviews such as; "People at VCG don't have expertise, they don't know how to listen to customers and react to their problems."

Customers do not know what they will want in the future, and simply asking about their future needs will usually result in disappointment among the developers. Due to this fact it is important to not just ask about desires and purchasing motives early on in the process, but instead understand the underlying motives and drivers for the needs. At VCG, there is a risk that the root cause of the customer needs and wishes is not examined early enough and enough thoroughly, and consequently, there is a risk that not the most important factors are found and measured during the development process.

"Hisingesyndromet" is a central issue at VCG that many interviewees point out, which can be explained as the phenomena in which the developers think that the customer is just like themselves and that the developers thus design a car for themselves instead of having the customer in focus. One interviewee goes as far as calling it a cultural issue. Another interviewee states; "Everyone think they know the customer but Sweden is very different from the rest of the world." Consequently, if VCG has issues with "Hisingesyndromet" and that different markets are not correctly understood and targeted, this could indeed be considered a threat to being customer-oriented.

In one of the studied projects, MI presented the research results in combination with its interpretation. This appears to be a good way to disseminate a united picture within the company, which is based on customer data, and also where that customer background data is mediated to others in the company who will eventually base other decisions on the same background data.

It appears that VCG has several methods to deal with assumptions in the data analysis process of which many seem promising, such as cross functional work and objective reports as a base for discussion. However, not all agree that the customer information is being used in a good way, considering quotes such as; "It is like when the devil reads the bible". Using data as it is intended by the customer is a very important part of being customer-oriented, so despite several good methods and initiatives it appears that VCG still has some work to do in getting everyone to understand how to interpret the research data.

Since a year back, early work with requirements differentiation has become a central part of the early product definition at VCG, in terms of the introduction of a differentiation tool called "the Pyramid". Regarding balancing, one interviewee states that; "You can be very satisfied with things that are not important and you can be very unsatisfied with things that are very important. We are not performing very well where it matters to the customer, contrary to what a lot of people in this building think." VCG appears to have a few issues which risks leading to an unbalanced content of the car that does not

optimize the satisfaction of the end customer. Examples of risk factors are late cost cuts, which might lead to unutilized features in the car, as well as overspent time and money where the customer is indifferent. The fact that there seems to be reluctance towards deselecting or removing content, and rather a tendency to only add more content, could also be an obstacle towards providing satisfactory cars for the end customer.

Moreover, VCG performs both internal and external validation and has recently created an ideal research plan, which opens up for continuous validation in preselected occasions in the development process. However, many of the interviewees have experienced that the information is not always welcomed, unless it confirms what has already been known. Such attitudes could be considered to disagree with a customer-oriented way of working.

Does VCG do things right?

– Is the knowledge about the customer implemented in a customer-oriented way?

In order to be customer-oriented, companies and organisations need to have a process that supports such way of working. VCG's process structure appears to have potential for early reviews and to continuously evaluate the product with the customer in focus. Moreover, VCG has lately been taking initiatives to work in a more customer-oriented manner, by adding more early research to the predevelopment phases. However, there is still more to do when it comes to assigning money and resources so that such activities don't get cancelled.

Not everyone think that decisions at VCG are based upon information about the customer, and that cannot be called a customer-oriented way of working. Senior management, to a large extent, has the power to influence how customer-oriented VCG is and this can be seen in the positive changes that a previous CEO brought to VCG, in respect to how much the organization listens to customers. On the other hand, VCG appears to have a problem with sticking to the decisions that are taken. There is a risk that this causes confusion and that previous work, which has been based on the customer, gets lost.

Regarding roles and responsibilities, VCG has cross functional teams throughout the organization, which provides a good base for not missing important perspectives in the end product. However, none of the team members in the projects appear to be dedicated to be in the role of representing the customer in the development process. This comes with the risk that important customer requirements get lost during the process. Moreover, the individuals that staff the projects affect what the end product will be like. It is thus important that the team members remember what department they represent and that the teams are staffed with people that are engaged in satisfying the customers if the project is to work in a customer-oriented manner.

Furthermore, it appears that VCG keeps track of the moving target and also, to some extent, has a process that allows for changes to be implemented late in the process. Consequently, nothing regarding change management has proved to be contradictory to a customer-oriented way of working.

It is important to gather representative customer data, but just as important to communicate and handle it in a good way, so that the data do not get lost later on in the process. Most interviewees agree that different departments communicate differently, and this could result in that important customer information is misunderstood or gets lost. Moreover, there is no obvious reason to assume that the tools for communication that is used at VCG would not be able to carry all kinds of information. Yet, it appears that not everyone at VCG can access all information about the customer that has been collected from customer research, due to secrecy. However, it appears that the information take unofficial ways instead, which, If combined with 'Hisingesyndromet', does not provide a good base for a customer-oriented way of working.

Comparison to the reference project

–XC90 can be considered a customer-oriented project, was anything done differently then?

Finally, The XC90 project can be considered a successful and customer-oriented project. It was done differently than the other studied projects in a few perspectives. For example, it appears that the XC90 project had a customer-oriented data collection approach, with observatory research in home environments, which lacks in the projects today. Also, the initial customer profile and initial definition appears to have been stricter and better prepared on the XC90 project than today, which can be concluded as desirable if the product is to be based on information about the customer. Furthermore, the XC90 project had access to rejecters, which is requested today and could be an important part in understanding what satisfies the customers and what does not. Moreover, the project manager used a communicator in order to make sure that all important information reached out to everyone, so that the co-workers strived for the same target. Finally, the interviewee states that; "The senior management said directly that all projects should be done like this in future, but I don't think we made a single one in the same way after this."

4.5.3. Final reflections

From this overall perspective of customer orientation, it can be concluded that VCG is customer-oriented in some respects, and not in other. However, in order to get to be called a truly customer-oriented company, a few issues have to be resolved. Justification can be found earlier in *chapter 4 – Result and Analysis.*

- There should be methods for approaching all kinds of customer needs and wishes, but today it appears that there is too little field research conducted by VCG, and in particular of observatory nature.
- The products should be developed with the customer in mind. However, VCG appears to have severe issues with "Hisingesyndromet", where the developer have themselves in mind instead of the customers when developing products.
- A customer-oriented organisation should listen to the customer input, but VCG appears to have problems with selective hearing; the information is not always welcomed, unless it confirms what is already known.

- Finally, time and resources should be assigned to customer research activities. However, it appears that critical research activities too often get cancelled at VCG.

On the other hand, several important customer-oriented initiatives have been implemented recently at VCG and many interviewees look optimistic on the future.

5. Proposal of improvements within the company

Through this study, areas have been highlighted to help VCG to become more customer orientated. In this chapter final recommendations and improvement suggestions to VCG are presented.

5.1.Conduct more exploratory research in early phases

Engelbrektsson, P. (2004) and Karlsson, M. (1996) stress that not all requirements are as accessible as others, depending on the awareness of the user. Matzler, K. et al. (1996), Rexfelt, O. (2005) and Kaulio, M. et al. (1999) talks about the need to find latent and new requirements, more than just the kind of requirements that the customer can easily express. As discussed in *chapter 4.2.1 – "The data gathering process"*, such requirements can be difficult to find with methods such as interviews, but is easier to find by the use of field study methods such as observations. However, so far, little observatory customer research takes place at VCG, despite the fact that many of the interviewees see the need for it and that Rexfelt, O. (2005) stresses that it is by studying how the user tries to satisfy its needs the needs become visible.

As mentioned by Wheelwright, S. and Clark, K. (1992), exploratory research is more important early on in the process. This is when the power to influence the end product is the greatest and when least money is spent. Moreover, Kaulio, M. et al. (1999) and Matzler, K. et al. (1996) point out that the root cause of the requirement's existence must be found, which is preferably done in exploratory research. Understanding the customer needs and wishes right from start forms a good basis for being able to find a well-balanced product offer, without spending money on content that will later be taken out.

However, it has been found in the study that such early exploratory research activities tend to get cancelled due to cost reductions. There is a start of a good plan with early research but it is not followed through. However, as Kujala, S. (2005) states, field studies are also suitable with short of time or relatively low budget and are promising in early user involvement. Moreover, it appears that the XC90 project had a customer-oriented data collection approach, with observatory research in home environments, just like the kind that is lacking and requested today, so knowledge on how to proceed ought to exist in the company.

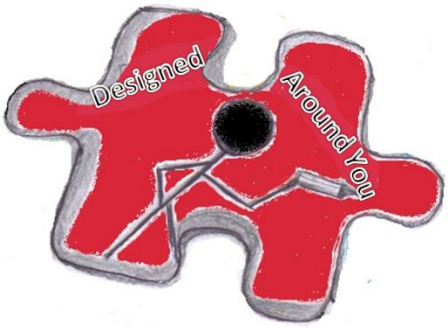
Thus, the first recommendation is to conduct more exploratory research in the early phases of the development process, in particular of observatory character, in order to become more customer-oriented.

5.2.Clarify the concept of 'Designed around you'

Kaplan, R.S. and Norton, D.P. (1996) stress that a vision or strategy statement must be expressed in terms of understandable objectives and measures. This does not appear to be the case for 'designed

around you', which can be considered as a kind of vision in the company, as discussed in *chapter 4.1.3 – "'Designed Around You' has ambiguous meaning".*

Despite this, the major part of the interviewees has raised the issue of the ambiguous meaning of 'Designed Around You', in quotes such as; "'Designed around you' has turned into a double edged sword because, on the one hand, it is a kind of differentiator for VCG, we are trying to say that we are human centric and that is what makes us different from the human brands that are interested in technology. On the other hand, my perception is that there is a lot of people who have used 'Designed around you' as an excuse to, or justification for, designing something around themselves". This can lead to that it is misused and thus counteract a customer-oriented way of working, despite the fact that the visions core purpose is to increase focus on the customer.



It is thus important that the concept of 'Designed Around You' is clarified to everyone in the company. For example, Collins, J. and Porras, J. (1996) mention 'BHAG', which is a clear and compelling goal description that serves as a catalyst for team spirit. They mention that people get a BHAG right away, with little or no explanation, see an example of Ford's BHAG in *chapter 3.1.1 – "The impact of the vision on customer orientation".* For example, the project manager of XC90 had a mantra, a clear and engaging vision, in line with what was described by Collins, J. and Porras, J. (1996). It was; "We are going to make a car not for concurring the world but live harmony with it."

Both a BHAG and a straight clarification of 'Designed Around You' by, for example email, would both serve its purpose as long as its meaning reached out to everyone in the company. Moreover, such a clarification could possibly also unite people in their view of what customer orientation means, which does not appear to be the case today. However, it is likely that a greater effort than an email is needed for everyone to be on the same page. For example, it might be more suitable with an internal marketing campaign, with presentations and brochures, and a chance for employees to ask questions and interact, and that way become engaged with the concept or vision.

Consequently, the next proposal of improvement, in order to become more customer-oriented, is to clarify the concept of 'Designed Around You' to everyone in the company.

5.3.Take vigorous actions to suppress "Hisingesyndromet"

Nielsen, J. (1993) raise that "your best guess is not good enough" and stress that users have infinite potential for doing things differently from what the developer imagine. Nielsen, L. (2013) mentions that many designers and engineers talk about the customer without having met any and further states that "To be able to do so, they draw on their individual and general

knowledge of people they find is like the users. This is the same everybody does when facing strangers; we use our cognitive ability to categories people into fixed types based on our previous meetings with persons and our cultural background". Developers who happens to be users themselves was in a study by Kujala, S. and Mäntylä, M. (2000) found to incorrectly think that the users shared similar patterns of behaviour and values to themselves (Kujala, S. 2005).

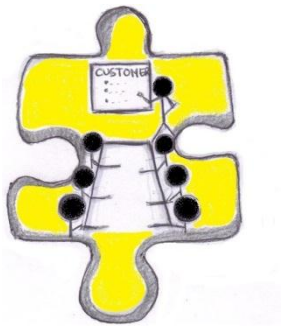
Accordingly, it is important to have knowledge of the user and not have yourself in mind when developing products. However, almost all interviewees mention that "Hisingesyndromet" is a central issue at VCG, which can be explained as the phenomena in which the developers think that the customers are just like themselves and that the developers thus design a car for themselves instead of having the customer in focus. Several interviewees propose that "Hisingesyndromet" is wide spread at VCG since most engineers have a similar background, from for example Chalmers, and the main part of the employees have not been positioned outside the headquarter at Hisingen, in the same city, Gothenburg.

Consequently, if VCG has issues with "Hisingesyndromet" and the different markets are not correctly understood and targeted, this could indeed be considered a threat to being customer-oriented. Therefore, this behaviour must be suppressed. First of all, education is required. The employees of VCG are not likely to realize that they are doing "Hisingesyndromet" until they realise what the customer is like, and that "Hisingesyndromet" is a common phenomenon. MI has already started a work of educating some of the departments, but it appears they do not have endless means; there are yet too few resources for such kind of work.

As discussed in chapter *4.2.2 – analysis of customer data*, one way to change company behaviour is to work top down. As one of the interviewees mentions; "I think you need to have a boss who lives and breathes this and who tries to drive it into the organisation."

Therefore, the third recommendation for becoming more customer-oriented is to take a tough stand to suppress "Hisingesyndromet".

5.4. Put customers in the foreground when making decisions



Kaulio, M. et al. (1999) mentions that if the origin and background of the requirements are understood, it is easier to assess the requirements' significance, which can be assumed to be crucial in decision-making in a customer-oriented company. However, several of the interviewees do not think that decisions are based upon information about the customer. One interviewee states that this kind of information, if any, is placed in "back-up material", which means it is placed in the back of presentations and not shown until specifically requested. This means that decisions are not based on facts about the customer.

Upon this, it appears that many of the interviewees have experienced that customer information is not always welcomed, unless it confirms what has already been known. Such attitudes could be considered to disagree with a customer-oriented way of working. Thus, it is important that VCG finds ways to visualise and simplify for basing decisions on customer information.

On the other hand, for example in a presentation, too much information cannot be shown. As suggested by Almefelt, L. (2013), one way to certify that recommendations are based on information about the customers, even though there is not enough time or space to show all required background data, could be to introduce a customer label, similar to Ecolabel[6]. When that label is placed on the presentation material, it is a sign that the recommendation has been synchronized with the most important customer requirements. Another suggestion is to work top down, as suggested in previous section, and make sure all managers base their decisions with customer information in mind, and also demand everyone else to as well.

The fourth proposal of improvements is to find ways to visualise and simplify for making decisions based on customer information.

5.5.Improve the information supply in the projects

Kaulio, M. et al. (1999) states ”To be good at gathering and analysing customer requirements but bad at communicating the information internally in the organisation is just as bad as being bad at gathering customer requirements but good at communicating them”. Furthermore, Almefelt, L. et al. (2003) mention that it is just to create a document of the requirements, but rather to reach out to the concerned that is important.

Today, as discussed in *4.3.5 –“Communication and knowledge transfer of customer information”*, it appears today that not everyone at VCG can access all information about the customer that has been collected from customer research, due to secrecy. However, it was brought up during the interviews that information in those cases goes through unofficial paths instead of official, which brings the risk of that decisions are based on data which is out of date, or might not even be true in the first case, in line with what Fricke, E. et al. (2000) state. In particular, if combined with “Hisingesyndromet”, such a phenomenon can create confusion and does not provide a good base for a customer-oriented way of working.

In the project of XC90, the project manager used a communicator in order to make sure that all important information reached out to everyone, so that the co-workers strived for the same target. Every second week, the project manager wrote an internal letter to everyone in the project with information about the next milestone, what had happened the last time and so on, and about every major decision. As discussed in *Chapter 4.3.5 – “Communication and knowledge transfer of customer*

[6] Commonly referred to as Svanen-märkning in Swedish.

information", it can be assumed that in this way, important information reached out to all relevant players and that requirements got less easily lost in the development process.

One of the interviewees suggests that each time an important competitor releases a new car model, or another interesting car, a workshop could be held around it at VCG. Then each department could look from their perspective on "what customers the car maker aimed for, what the car communicates, what features it has, and so on". If a conclusion was compiled, based on all the participating departments input, this could be communicated in an internal letter, such as in the XC90 project, that reached all project members. This way, a common and well considered perspective of important information could be encouraged.

Finally, the last suggestion of improvement, in order to become more customer-oriented, is therefore to establish a more regular information supply, directed from the project manager to all project members. The information should include updates about what has happened since last time, what important decisions have been taken and other information that is relevant at that time. This way, a more stream-lined perspective of how important information should be interpreted could be obtained.

6. Discussion

The following chapter provides a discussion of the report scope, methodological approach and result, based on the authors' own speculations.

6.1.The problem

There is no established definition of what it means to be customer-oriented, and this has been experienced difficult in the project. Instead, almost anything can be included in the scope of customer orientation since it is all up to the customer, after product release, to decide whether it is customer-oriented or not. This means that there has been no clear requirements list to follow, which in turn has brought high demands on the delimitations. In particular, the lack of pre-set delimitations was apparent since the research topic was suggested by the interviewees, meaning that no boundaries were given to the problem.

Moreover, the perspective of profitability was included as a parameter in the study. Had it not been, it would have been much easier to highlight what makes a customer satisfied, and if VCG has a good process for supporting so. On the other hand, the reality is more complex and the result was assumed to be useless unless the topic was well-anchored in reality. However, this decision had a major effect on the content of the study.

It could be argued that the scope is so broad and shallow that it is unrepresentative, since too few references have been used for each question of analysis. However, by using relevant authors and making the analysis of the results large, the conclusion has been reached that so is not the case.

6.2.Method

Much time was spent on defining the scope of the thesis, which has been considered very valuable in order to understand the problem and find relevant people to interview. On the other hand, the thesis has required more working hours than a master thesis is intended to. The main reason is that the set of interviews was too large, with subsequent errors such as a massive amount of data to process. Despite of that, the time plan has proved reasonable.

The study has been conducted in a structured manner with sequential phases. For example, the interviews were based on interview guides, which in turn were created based on a carefully selected theoretical content. This has resulted in that the information received from the interviews has been very relevant for enabling the theoretical framework to be analysed in the application of VCG.

The fact that the study was based on the literature study was a mean for staying open minded on what the most relevant aspects on customer orientation is, and how VCG stands in relation to that. By basing the literature study on recommendations from external experts, as well as from the top articles of Google scholar, high quality data can be assumed to form the base of the study.

In order to validate the empirical information, the quotes that were to be used in the study were sent back to the interviewees for confirmation. However, this provided a mixed result. The major part accepted the quotes whereas some experienced that they were taken out of their context and did not consent to approve them until they were presented in the finished text. However, at the end, all used quotes were validated, which can be assumed to have provided a quality check on the report content.

Much of the result is relevant also for the methodological approach of this study, such as the quality of the answers are not better than the quality of the questions, or that no questions should be leading, or that some answers were welcomed whereas and others ignored. To avoid such behaviour, all interviews were recorded and fully transcribed. Thereafter each quote was attended to separately and placed in the topics of interest. This way, few quotes could be ignored until the full set of information was dealt with. Moreover, as with customer requirements, the information is likely to be unequally easy to access from the different interviewees, depending the interviewees' background, experience and depending on the type of question. It could thus be argued that the use of mediating tools could have provided better research data.

6.3.The result

The result is extensive but can be considered well distributed over the main chapters, except from "analysis of customer data" which has received extra focus since it was found a critical area by many authors. The fact that similar information came up during many interviews can be considered a confirmation that those aspects are relevant for the topic.

However, there is a risk that too little time has been spent at the company in order to evaluate if VCG is customer-oriented or not, perhaps it is really like what one of the interviewees states; "There is so much talk here it is hard to realize there is nothing behind it."

7. Conclusions and recommendations

This chapter provides a concluding summary of the result, discussion and recommendations for the future work at VCG.

It can be concluded that VCG's new product development process is customer-oriented in some respects, and not in other. Some of the positive aspects are that VCG uses complementary methods, chosen with the customer research's purpose in mind. Moreover, it appears that VCG keeps track of the moving target and also, to some extent, has a process that allows for changes to be implemented in the product before reaching the customer. This way, changes in for example the market can be adapted to in a late stage. On the other hand some of the negative aspects that were identified have been found to be of particular importance. First of all, there should be methods for approaching all kinds of customer needs and wishes, but today it appears that there is too little field research conducted at VCG, and in particular of observatory nature. Second, the products should be developed with the customer in mind. However, VCG appears to have severe issues with the phenomena in which the developers have themselves in mind when developing products instead of the customer, self-ironically called "Hisingesyndromet" internally at VCG. A customer-oriented organisation should listen to the customer input, but VCG appears to have problems with that the information is not always welcomed, unless it confirms what is already been known. Finally, time and resources should be assigned to customer research activities. However, it appears that critical planned research activities too often get cancelled at VCG.

Regarding the reliability of the results found in this thesis, a few aspects are important. First of all, the project started out with a literature study, which in turn is based on recommended and commonly cited articles, as a mean of staying open minded for what can be considered the most relevant aspects on customer orientation. Also, all empirical information that has been used in the study has been sent back to the interviewees for confirmation. The fact that similar information has come up during many interviews can be considered a confirmation that those aspects are relevant for the topic. An finally, there is a risk that too little time has been spent at the company in order to evaluate if VCG is customer-oriented or not, in line with what one of the interviewees states; "There is so much talk here it is hard to realize there is nothing behind it."

A few suggestions of improvements have been raised, which together cover the most important aspects to address if VCG desires to work in a customer-oriented manner. The first recommendation is to conduct more exploratory research in the early phases of the development process, in particular of observatory character. The next proposal of improvement is to clarify the concept of 'Designed Around You' to everyone in the company. Moreover, the third recommendation is to take a tough stand to suppress "Hisingesyndromet". The fourth proposal of improvements is to find ways to visualise and simplify for the use of customer information when decisions are to be made. Finally, the last suggestion of improvement is to establish a more regular information supply in the projects, in order to get a more stream lined perspective of how to interpret important information.

Lastly, several important customer-oriented initiatives have recently been implemented at VCG and many interviewees look optimistic on the fact that VCG has potential, and are on the way to become, customer-oriented in the future.

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Appendix A – One of the Interview Guides

Name:

Department:

Title:

- **Purpose:** The purpose with this interview is to answer the question "is Volvo customer oriented?". The question will be approached from two perspectives; both if you understand the customer correctly and also if this is applied as supposed in the development process.
- **Definition**: One can talk about two aspects of customer orientation; either the future user is in focus, or the future buyer. The buyer is more affected by marketing and the offer, so we have chosen to define customer orientation with the user in focus. We call this customer orientation.
- We have signed secrecy commitments and will not press anything which is secret for the company and the information will be confirmed by Anders Gustavsson before being used.
- **General:** We will not use your name in presentations; however, results might be presented together with your role description. We will give you a chance to confirm the information you have provided. It is okay to say that you don't know the answer of a question. We will record the conversation if it is okay with you?

  This interview focuses only on the xxx phase for project B, so the questions will only concern this. Please keep that in mind when answering the questions.

Introductionary questions

1. What is your background?
2. What is your role in the company?
3. How long have you worked here?
4. How long have you worked with similar tasks?
5. Do you share your work time between different projects?

Data gathering

1. What information about the customer did you receive from the Annual phase?
2. What data gathering methods did you use in order to understand the customer and its needs?
3. How did you certify that the customer and project team understood each other?
4. In what context was the data collection/-s performed?
5. Did you work according to an iterative process?

Analysis

1. How did you reason when it comes to how much you should listen to the customer?
2. How did you get ideas of what the customer might want in the future, but not yet is aware of?
3. How did you work to avoid assumptions in the project group?

The process in general

1. Did your deliveries encourage you to think from a customer orientated perspective?
2. In which way could you get information about the chosen customer sample?
    - Was it easy to find the information?
    - Is your experience that the customer requirements were a base for decision making?
3. How much of the work was done in cross functional teams?

Roles/responsibility

1. Who was responsible for the understanding of the customer during the process?
    a. If none;
        1. What would that person do?
        2. What should be the consequences for such a person?
        3. Do you think it's a good idea?
    b. If someone;
        1. What had this person for tasks?
        2. What are the demands on this person to succeed?
2. Who took part from the earlier phases (annual) in this project?
3. Did you feel that it was a clear role and responsibility distribution in the project?
    a. Did everyone know what their tasks were?
    b. Did all take a common responsibility?
    c. Was there anything important that nobody took responsibility for?

Change management

1. Which were the most common reasons for changes in the product content?

Communication

1. How did the communication/cooperation work within the project group?
2. Did you use any methods to spread the information about customer requirements between you in the project? Which? (Ref/personas/mediating tools /prototype/etc.)
3. Do you think different departments communicated in different ways?
4. Is your experience that important information tends to be filtered and adjusted along the way?

Social system

1. What role do you feel that politics play when it comes to balancing of the product content?
2. Do you think that personalities and individuals' drive have large impact when balancing the product content?

Management, decisions, validation

1. In the end, who had the power to make decisions in this phase and project?
2. Was the mere part of the involved united in their look upon the outcome of the phase?
    a. How was this information communicated to the next phase?
3. In your opinion, were the decisions in this phase based on facts or on intuition?
4. How did you validate the decisions? (How did you confirm that the decisions were right?)

Round off

1. How do you feel about the project today
2. What is a customer oriented project in your opinion?
3. What do you think are the main difficulties about working customer oriented?
4. Do you know any other company which is good at working customer oriented?
5. Do you think Volvo is customer oriented?
6. Is there anything else you would like to add or wonder? Anything we missed to touch upon
7. Can we come back to you with additional questions if needed?

Appendix B – Flowchart of the project process