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SHOULD CUSTOMER VOICE BE HEARD?

The acquisition and significance of customer information in new sports product development

Master's Thesis
in Marketing

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1 INTRODUCTION

1.1 Listening to the customer

Despite all the modern interaction tools the current technology offers, the Internet included, consumers' needs and wishes are still often ignored in product development. Many companies seem to neglect the fact that they are not designing products or services to themselves, but to their customers. Problem is often the assumption that companies think they know what their customers want, although they never actually asked. Present-day consumers are very well informed and, for example, the Internet offers then an effortless access to compare different brands and products. Customer orientation, the strategy to cover customer needs first and then coordinate all activities to satisfy those needs (cf. Parasuraman, Grewal & Krishnan 2004, 5), has been a widespread topic for over two decades in new product development, but some companies still seem to face problems to execute it, while others have made conscious decisions to rule out their customers' voice in their product development.

Involving customers' opinion in organization's development process has been somewhat debated topic in the literature. It is not given fact that consumers are able, or even willing to reveal their needs and wants. While some might claim that paying too much attention to current customers' needs is like looking at back mirror instead of reaching for the future, others argue that ignoring customer's opinion in development of new goods is a foundational problem, because it has caused so many new products to fail. For instance, according to Pitta, Franzak and Katsanis (1996, 49) companies face major difficulties in introducing successful new products in spite of great emphasis on new product development activities. Businesses-to-business marketers take advantage of customer input in new product development significantly more than consumer product manufacturers. Van Kleef, van Trijp and Luning (2005, 181) argue that in order to develop successful new products, companies should gain deep understanding on their customers' needs also in consumer product markets. To make this debated topic even more complicated, for instance, Kaulio (1997, 7) states that strong scientific evidence shows that understanding customer requirements is a critical success factor, but trusting on standard customer research is not sufficient in developing innovative products.

Prahalad and Ramaswamy (2000, 79–80) state that many company managers and researches have concentrated on creating understanding of the company-company networks, and largely ignored the consumer, the party which is now dramatically transforming the industrial systems. Due largely to the Internet, consumers have been increasingly engaging themselves in an active dialogue with manufacturers, and the

dialogue is no longer being controlled by companies. The authors see modern consumers as a new source of competence, because of the knowledge and skills they possess, and their willingness to learn and experiment.

Involving customers' opinion in new product development is acknowledged to be important, even vital for company's continuity, and therefore, customer orientation study is a subject of a true interest (Heiskanen, Hyvönen, Repo & Saastamoinen 2007, 37). Nevertheless, many companies have found it very difficult to execute it in a sense that it would actually benefit them. Therefore, the core issue of listening customers when creating new products, is not whether to do it or not, but instead, the concern should be *how and when* to do it. The previous research of acquisition of customer information for product development purposes is wide, but clearly reflects the lack of structured and good-to-be-proven results and example cases. Heiskanen et al. (2007, 13) profess that theory offers many sophisticated methods, but they are often very company or industry-specific, and their generalization is in most cases impossible or useless.

The research field of customer, consumer or user information in new product development is an extensive and interdisciplinary research field, involving theoretical components from cognitive psychology, design theory, engineering design, human-computer interaction, marketing, organizational theory, product development management and quality management (Matthing, Sandén & Edvardsson 2004, 482). Traditionally market research methods have been the means to gather customer information, but the research field has, and still is evolving. According to Hyysalo (2006b, 157) the use of customer information in product development is transforming into three directions. First, the research is evolving from traditional quantitative market research into more complex qualitative research methods. Second, market and buyer survey methods are evolving into direction of usability and use context studies. The third development phase, the diffusion of user information knowledge in all functions in the organizations is the most recent and still ongoing development phase.

It is worth noticing that there are several divergent research streams of acquisition of customer information in new product development. Those are, for example, market-oriented product development and the role of market information in product development in different development contexts (e.g. Biemans & Harmsen 1995; Hart, Tzokas & Saren 1999; Ottum & Moore 1997; Søndergaard & Harmsen 2007; Trott 2001; Veldhuizen, Hultink & Griffin 2006), user and use context research (e.g. Heiskanen et al. 2007; Hyysalo 2006a; Jääskö & Keinonen 2003, 81–108), user-centered development (e.g. Hsieh & Chen 2005; Kujala & Mäntylä 2000), innovative and lead user research (Lüthje 2004; von Hippel 2001; 2005), value co-creation with customers (e.g. Berger, Möslein, Piller & Reichwald 2005, Prahalad & Ramaswamy 2000; 2004a) and the possibilities of the Internet (e.g. Pitta & Fowler 2005a; Rowley, Kupiec-Teahan & Leeming 2007). After all, there is lot of resemblance between

different research disciplines, and the purpose is to find tools to determine the acquisition and significance of customer information in sports and outdoor equipment development. Of the variety of research streams, I will concentrate similarly to Matthing et al. (2004, 482) on literature covering activities and the nature of customer involvement and customer research techniques, which are used to support learning from and with customers.

1.2 The purpose of the study

Some companies are struggling with the problem that they do not know the most suitable actions to gather information about their customers' needs and how to create valuable customer knowledge. The methods to involve customers' opinion or acquire useful information from customers for new product development purposes are not well-known by companies (cf. Dahlsten 2004). Companies are often unaware of the approaches which are most suitable for them, and how customer information should be used in new product development. In addition, it should not be obvious that using customer information or involving customers' opinion in new product development is always useful. In this study the aim is to find out how customer information is acquired for product development purposes of sports and outdoor equipment and how highly companies in this industry value customer information.

The purpose of this study is to analyze the acquisition and significance of customer information in consumer product development.

The study problem is divided into three research questions:

1. What kind of information can be acquired from customers, and how does it involve customers to company's new consumer product development?
2. What kind of means can companies use to acquire customer information to support new consumer product development?
3. What is the significance of customer information in new consumer product development?

The views and opinions of marketing and product development professionals from sports and outdoor equipment producers is the focus of this study. The sports industry is particularly interesting field to study acquisition and significance of customer information in product development, because presumably consumers often develop an emotional bond with their sports equipment. Sports and outdoor equipment are mainly middle or high priced, buyers often gather information and make comparisons before purchase, and brand has a strong impact on the product choice (cf. Kotler & Armstrong 1996, 276–277). Sports equipment is part of their users' scarce free time, and active sports hobbyists usually demand high quality from the sports equipment, especially if

they are prepared to invest in well-known brands. Furthermore, sports products' level of technicality can be usually understood by ordinary users (Lüthje 2004, 687), and therefore, consumers can be considered as a potential source of information.

1.3 Key concepts and research structure

Several terms have been introduced to describe the use of customer-related information acquired from the market to support company's new product development (NPD) actions. For example, the following terms have been used: customer input (e.g. Ulwick 2002), customer orientation (e.g. Salomo, Steinhoff & Trommsdorff 2003), customer integration (e.g. Enkel, Perez-Freije & Gassmann 2005), customer involvement (e.g. Dahlsten 2004), user involvement (e.g. Alam 2002; Kristensson, Gustafsson & Archer 2004), user orientation (e.g. Veryzer & Borja de Mozota 2005), customer participation (e.g. Heiskanen, Kasanen & Timonen 2005), customer voice (e.g. Hsieh & Chen 2005), customer focus (e.g. Kaulio 1997) and customer interaction (e.g. Gruner & Homburg 2000). Furthermore, some terms can be typical to some industries, for example, user involvement or user-centered design are typically used for customer participation in software development (e.g. Kujala & Kauppinen 2004), but they have been more recently applied to other industries as well.

Terms *customer*, *consumer* and *user* are often inconsistently used in academic literature to describe current and potential end user of a consumer product. Nevertheless, term consumer seems to be more general in NPD-related marketing literature (e.g. Pitta & Franzak 1996), while term user is mainly used in product development literature (e.g. Kristensson et al. 2004). Both research disciplines also use term customer to describe potential and current product end user (e.g. Brockhoff 2003; Kohli & Jaworski 1990). Therefore, in this study, the term *customer* is generally used to refer to current or potential end user of a consumer product.

This study approaches customer input in company's product development with two aspects; it is seen as the *information* customer provides, and as providing the information, as the manner how customer is *involved* in the product development. I will refer to information acquired from and about customers with term *customer information*. As mentioned, the terms customer, consumer and user are used inconsistently in marketing and product development literature, consequently, also the concepts of *customer, consumer, market and user information or research* are used in variable manner to describe the acquisition of customer input in NPD. However, for example, Hart et al. (1999, 22) see customer information as the information received from and about customers during new product development. Thus, also in this study, the customer information is limited into context of product development, and it refers to all

types of information customers can provide to product development, for example, about their needs, requests, preferences, opinions, ideas, buying behavior or product use. *New product development* in this study refers to development of innovative products, product improvements, product modifications and new brands the firm develops through its research and development actions (cf. Kotler & Armstrong 1996, 312).

Literature does not provide one clear definition of customer involvement in product development, but, for example, Kaulio (1998, 142) describes *customer involvement as the interaction between customers and the product development process*. In this study, both customer information and customer involvement aspects are used to describe the data that can be gained from customers for new product development activities. Dahlsten (2004, 143) claims that in order to understand customer involvement in NPD, interaction with customers should be studied.

Table 1 presents the theoretical concepts used as the basis of this study. In the left column the research questions of this study are repeated. This study will be based on the conceptual elements of Alam (2002) and Heiskanen, Hyvönen, Repo and Saastamoinen (2007, 8–10) on customer information acquisition and significance of customer information in new product development. Their concepts are introduced in the middle and right column, and they are used as basis of defining the research questions of this study. The approaches of Alam and Heiskanen et al. partly differ from each other and in this study the models are used to complete each other.

Alam (2002, 252–257) identified in his study of financial services four key elements of customer involvement in new product development. Four key elements for companies to consider customer involvement decisions are *degree of involvement*, *methods of involvement*, *development stage of involvement* and *objectives of involvement*. According to Heiskanen et al. (2007, 8–10) involving customer information in new product development can be viewed from following different approaches: *company-customer interaction methods*, for example, direct interaction with customers vs. use context study, *stage of innovation development process*, *level of product innovativeness*, *type of customer* and *type of industry*. Type of industry will be considered as background information in this study, because only one industry is studied.

Table 1 Theoretical concepts used as the basis of this study

Research questions (chapter 2)	**Alam (2002)**	**Heiskanen et al. (2007)**
Question 1 (2.1.): Information types, nature of customer involvement	Degree of involvement	
Question 2 (2.2.): Means to acquire customer information	Methods of involvement, Stages of involvement	Interaction methods; direct customer contact vs. use context study, Stages of innovation development process
Question 3 (2.3.): Significance of customer information	Objectives of involvement	Level of product innovativeness, Type of customer

Next, the content of this study is introduced briefly. In chapter 2 the theoretical part of this study is presented as discussed above. In chapter 3 the research design of this study is described. The empirical part of the study takes qualitative approach; the data is collected with semi-structured theme interviews. In chapter 4 the results of this study are described. Three aspects will be reported: What kind of information can be acquired from customers and how does it involve customers in new product development; what kind of methods can be used to acquire the needed information; and how significant the customer information in new product development is, and furthermore, which factors affect on the significance of customer information. Significance will be studied from three aspects; objectives of customer information, product innovativeness and type of customers. The research conclusions and summary are presented in chapter 5.

2 ACQUISITION OF CUSTOMER INFORMATION

2.1 Customer information and involvement in NPD

As Kaulio (1998, 142) defines, the customer involvement is the interaction between company's customers and its product development process. Dahlsten (2004, 143) agrees that customer involvement can be regarded as an interaction process where customers' tacit information is co-opted by the company. Matthing et al. (2004, 487) define customer involvement as a process of acts and interactions where producer collaborates with current or potential customers to learn about the market. In spite of available definitions, several researchers have pointed out that the research field is lacking examples of how knowledge is created and understanding achieved from real and potential customers and transferred into NPD process (e.g. Matthing et al. 2004). According to Alam (2002, 252) the literature of customer involvement in new product development is fragmented and inconclusive, because existing studies differ according to their background factors, such as industry, product type, and customer type.

Customer involvement research, which is transforming from traditional market research, has been partly developed from business-to-business relationships. B2B contexts are easier to study than B2C contexts, because industrial customers are often well-known and easy to reach. B2B study has somewhat facilitated the study of customer involvement also in consumer durables development, and some B2B research methods have been applied in B2C studies (e.g. Brockhoff 2003; Gruner & Homburg 2000; Lagrosen 2005; Neale & Corkindale 1998). Several researchers state that research field is still lacking established theory and methods for customer involvement in product development and the use of available methods (e.g. Enkel et al. 2005, 425).

Nonetheless, interacting with customers during new product development process is said to be a critical factor in creating superior new products and to understand customer expectations and needs, and thereby to improve new product development performance (Hsieh & Chen 2005, 771). Customers can be asked to provide diversity of input to augment new product development. In this study the customer input will be examined in forms of customer information and customer involvement. Hyysalo (2006, 8–9) defines different forms of customer information to be used in NPD, whereas Alam (2002) and Kaulio (1998) describe customer input in different forms of customer involvement in new product development. These aspects will be discussed next.

2.1.1 Types of customer information

Market orientation entails learning about customer needs, the influence of technology, competition, and other environmental forces. It means that organizations continuously learn about their markets through processes of market sensing. Market sensing includes the collection and distribution of information about the customer needs, expectations, and requirements. (Matthing et al. 2004, 480.) Biemans and Harmsen (1995, 9) defined *market-oriented* product development as development of new products, which is based on the generation of market information, the dissemination of the information across company's departments and responsiveness of various departments to it. They defined *market information* as all information that influences customer needs and preferences, including competitors and other external actors. In this study market information is considered to be limited to information received from and about consumers, and therefore, not the information acquired from other external sources, such as competitors.

Hyysalo (2006a, 8–9) has divided the information gained from customers into three types; market information, current customer information and user information. Table 2 displays how these three information types differ according to, who the customer is, what kind of information the customer can provide, typical sources to require the information, and strengths and weaknesses of each type of information when used in new product development.

Market information provides mainly general information about the potential customers, and is acquired to provide a broad description of the target market. Customer base is then all potential customers. Typical market information sources are general quantitative and qualitative market research methods and statistics, and its purpose is to provide information on typical target users. Market information can reveal general values and needs of target customers, but without further refining it is often too general to contribute to product development. Market information is widely acquired to provide information for marketing purposes. (Hyysalo 2006a, 8–9.)

Current customer information refers to company's current product users who are able to provide information on their actual product experiences, for example, in forms of feedback or improvement suggestions (Brockhoff 2003, 467). Current customer information provides more detailed information about actual customers than the basic market information is able to reveal, but the information about product use if often diseased, because not all users are active in giving feedback. Information received from current customers in forms of suggestions for improvements or feedback can provide information for companies about customer satisfaction and product success. (Hyysalo 2006a, 8–9.) As mentioned in Table 2, the current customer information appears to be quite fragmented, which can hinder its further use for product development purposes.

Customer feedback can be very useful, if it is combined with other, more structured forms of customer information (Hyysalo 2006a, 45).

Table 2 Differences between market, current customer and user information for NPD (adapted from Hyysalo 2006a, 8–9)

Information type	**Information about customer**	**Information source**	**Strengths**	**Typical weaknesses**
Market information: Who might purchase, where and how?	General characteristics of target customer	Market research, concurrent comparison, group discussions, statistics	Gives general overviews of buyers, established way to describe customers	Often too general to solve product development-related problems
Current customer Information: Who has purchased and where? Product feedback	Problematic use situations, preferred product features, improvement proposals	Customer and product feedback, customer discussions, sales people, partners, customer surveys and studies	Actual information on actual customers	Fragmented, emphasizes certain customer types, difficult to analyze how factors relate to each other
User information: By whom, how, for what and why the product is used?	Information about product use and use context, customer's priorities in product use and use context	Current and potential customer studies, cooperation with current and potential customers	Provides detailed understanding on how and why users behave, and what they want. Combines market and customer information	Companies often lack knowledge on how to execute user research. User information should be combined with wider market research

The third information type, the *user information*, provides more profound customer understanding to the development project. User information is the most valued customer information type for product development purposes, but also the trickiest (and most resource-demanding) to acquire. This information type provides customer prospect from several angles at the same time, because user information does not provide information only about customers, but can be also used to describe the product use and use context, and most importantly it aims to understand why the customers behave the way they do. User information can be acquired from both potential and current customers, and often can be used as the glue to combine understanding of market information and current customer information. (Hyysalo 2006a, 8–9.) According to Leonard and Rayport (1997,

105–107) companies can try to study following user-related aspects with user research, which are not possible to study with conventional market research:

- To study circumstances when people are prompted to use the product.
- To study how the product fits into users' daily routines.
- To study whether the users redesign the product to fit better their purposes.
- To study intangible product attributes and unarticulated user needs.

Combination of current and potential customers as the information source will provide broader customer understanding than market or current customer information is able to provide alone. Deep customer understanding should be created with user study, because it is looking for answers to how, why and by whom the product is used. (Hyysalo 2006a, 9.)

The reason why these three types of customer information are compared is that both market and current customer information are normally gathered to assist product development or marketing actions in organizations (Hyysalo 2006a, 8–9). Market information has been traditionally collected through marketing functions, but user research occupies also product developers. Thereby one of the benefits of user research is that the information is directly integrated into product development decisions (Salomo et al. 2003, 446), because product development teams are usually part of the user information acquisition. Traditional market information is generally unhelpful when company has developed a completely new technological innovation which is not tied to any previous consumer context (Leonard & Rayport 1997, 104). According to Enkel et al. (2005, 432) market information is able to provide general information about future customer preferences, but does not reveal latent customer needs. Latent needs are needs that do exist, but customers are still unaware of them (Narver, Slater & MacLachlan 2004, 336).

The academic literature offers very few examples of comparison or combination of market information and user information. Nonetheless, the comparison is useful for companies that do not know the actions they should take to understand their customers better. User research has been partly developed from market research methods, when the weaknesses of market research methods as product development support have been acknowledged. (cf. Hyysalo 2006b, 157.)

2.1.2 Types of customer involvement

Kaulio (1998, 141) describes the nature of customer involvement and company-customer interaction in new product development by identifying three types of customer involvement; design for customers, design with customers and design by customers. In the first type, *design for customers*, the product is developed on behalf of the customer

and the customer is basically an object from which it is possible to elicit general customer requirements (Kaulio 1998, 147). It uses data on potential buyers, general theories and models of customer behavior attained by market research or based on designers' own intuitions. Also specific studies on customers can provide information, gained, for example, by customer interviews or focus groups. (Kaulio 1998, 142–143.) Also Dahlsten (2004, 146) agreed that traditional market research provides information for design for customers approach, when customers are seen as objects and design process is guided by consumer data (Kaulio 1998, 147).

The second involvement type is *design with customers*. It refers to involvement where customer is participating in product development to certain extent. In design with customers approach customers are asked to provide information about their preferences, needs and requirements as in design for customers approach, but also some form of product testing is involved. In design with customers approach, the formal dialogue with customers is maintained in different testing situations, such as concept testing, prototype testing and usability testing, and customers are asked to react on different product solutions. (Kaulio 1998, 143–148.) Customers in Dalhsten's (2004, 145–146) Volvo Car case were involved according to design with customers, because they participated, for example, in prototype testing and gave their contribution on several car concepts. They participated in the project a total of three-year-period (Dahlsten 2004, 146), but since they were not considered as part of the development team, the products were not designed by customers.

The third and most demanding involvement type is *design by customers* when customers are actively involved in the development process (Kaulio 1998, 143). According to Kaulio (1998, 146) design by customers as an active company-customer interaction refers to broadly discussed methods, such as lead user method (e.g. von Hippel 1986; 1989) and consumer idealized design (e.g. Ciccantelli & Magidson 1993). When customers are given this role, they are actively included in the process of developing and selecting different design solutions (Kaulio 1998, 147).

2.1.3 Degree of customer involvement

According to Alam (2002, 252) the *degree of the customer involvement* is one of the key elements of defining company-customer interaction during new product development. Degree of customer involvement refers to the amount and type of interaction the company and customers have, how reliable customers are considered as an information source, and how well the target customers are known. To describe the company-customer interaction during development process, Alam (2002, 255–256) identified an involvement continuum from low customer involvement to profound

customer participation in product development process. He divided the involvement continuum into four levels as displayed in Figure 1.

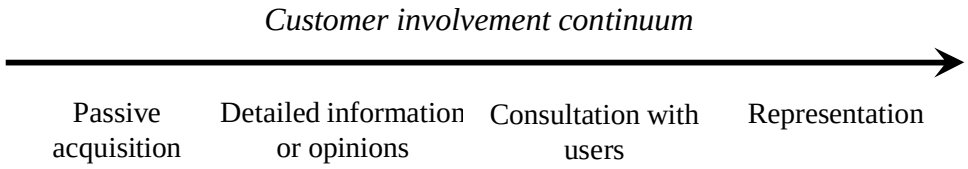

Figure 1 Levels of customer involvement in NPD

Alam (2002, 255) named the weakest form of customer involvement as *passive input acquisition*. The customer takes initiative to provide information, although the organization does not ask for any contribution, and therefore, the level of customer involvement is very low. Brockhoff (2003, 466–467) refers to company-customer interaction of this kind as unsolicited customer cooperation. The interaction can appear in forms of complaints or suggestions. Complaints can be seen as an inexpensive source of possible product improvements, but they rarely lead to new products. Besides complaints, customers often offer suggestions to improve products. The Internet has made provision of unsolicited customer input extremely easy and common method to gain information. Alam (2002, 255) regards customer ideas on customer initiative also as passive input. If we consider Hyysalo's (2006a, 8–9) customer information types, usually the current customers provide unsolicited feedback on current products.

When the organization proactively requests *information and opinion on certain items*, the level of involvement is higher. An interaction such as this can be practiced at various stages of the development process. (Alam 2002, 255.) From now on the customer involvement is regarded as solicited customer cooperation, because the company is the interaction initiator party (Brockhoff 2003, 470). Acquired information and feedback is often detailed and can be provided by Hyysalo's (2006a, 8–9) market information and current customer information types. When certain items are asked from customers, the degree of involvement refers to Kaulio's (1998) *design for customers.*

To take leap to even higher level of customer involvement, company can employ *extensive consultation with users*. The degree of involvement is remarkably high and customers are invited on give input on predetermined subjects. Such means can be, for example, detailed interviews. Customers are selected carefully and cooperation can last rather long period, for example even several steps of NPD process. (Alam 2002, 255.) The information type according to Hyysalo's (2006a, 8–9) classification is user information or market information acquired with qualitative methods. Such approach is similar to Kaulio's (1998) involvement type *design with customers*.

Representation refers to extremely high degree of customer involvement in NPD. Representation means that customers are invited to join the development team, where they contribute to specific stages of development process in their capacity as a team member. (Alam 2002, 255.) Customers are integrated as co-developers and they interact intensively with product developers and facilitate the strongest customer input (Salomo et al. 2003, 453). According to Kotro and Pantzar (2002, 39) in current digital technology development, including sports products with digital elements, interaction with customers and co-creating product use are central innovation elements. The information type here refers to Hyysalo's (2006a, 8–9) user information. Customer involvement of this kind is presumably related to product's professional or semi-professional users instead of ordinary users. Representation approach refers to Kaulio's (1998) involvement type *design by customers.*

Table 3 summarizes the discussed aspects to define customer information and involvement in NPD. The table shows the link between the concepts. Hyysalo (2006, 8–9) defined three customer information types which can provide input for NPD. I connected the information types with two different customer involvement classifications; type of customer involvement according to Kaulio (1998, 146), and an involvement continuum indicating four different levels of customer involvement according to Alam (2002, 255). These three aspects indicate the degree of customer involvement in new product development.

Table 3 The link between customer information and involvement

Customer information in NPD:				
Type of customer information	Current customer information	Market and current customer information	+ User information	+ User information
Customer involvement in NPD:				
Type of customer involvement	No involvement	Design for customers	Design with customers	Design by customers
Level of customer involvement	Passive input acquisition	Request for information and opinion	+ Consultation with customers	+ Representation
Degree of customer involvement	*Low*			*High*

As can be concluded from the table, the *degree of customer involvement depends on the customer information acquired.* For example, when company's product development actions can be considered as design by customers, all types of customer

information can be exploited and all levels of customer involvement can be met, and the degree of customer involvement is very high. In Alam's (2002, 255–256) study an extremely high degree of customer involvement was rare. In his study, most of the studied companies agreed that there should be more customer representation in development teams than there in reality is. However, they considered lower degree of involvement to be less expensive, less time-consuming and easier to manage. It is worth noting that Alam studied financial services in business-to-business sector, but this involvement classification seems to be suitable for organizations in other industries as well. Also Dahlsten (2004, 142–143) suggests that customer involvement in NPD should constitute more of participatory learning for sake of increased market orientation by proactively integrating customers in product development. It should create more value than traditional market research. Different types of customer information and different levels of customer involvement also require distinct customer research methods. They will be discussed next.

2.2 Methods to acquire customer information in NPD

As concluded above, the customer involvement in new product development depends on the information acquired from customers. Simultaneously, the customer involvement in NPD can be defined by how the customer information is acquired; what kind of methods are used to involve customers in NPD and to acquire the customer information. For example, according to Hyysalo (2006a, 8–9) market information acquisition and user information acquisition exploits different kind of sources and methods. Similarly Kaulio's (1998) customer involvement types and Alam's (2002, 255–256) levels of customer involvement require different kind of interaction methods. Alam (2002, 252–257) conceptualized the customer research methods as *methods of involvement*, by defining the means which can be used to obtain customer information. Heiskanen et al. (2007, 8–9) approached the research possibilities by defining company-customer *interaction methods* as direct interaction methods or indirectly studying the product use context.

A difference can be made between two customer research types that can be exploited to create knowledge about customers. Several researchers have not made any difference between them, but rather concentrated on comparing distinct research methods (e.g. List 2005; Nijssen & Lieshout 1995; Salomo et al. 2003; van Kleef et al. 2005). The research types are *market research* and *user research*, and some researchers have highlighted the differences between them (cf. Heiskanen et al. 2007; Hyysalo 2006a; Hyysalo 2006b). Here the research types are assessed separately by determining the

suitable research methods for both research streams to further comprehend the diversity of customer information acquisition in NPD.

Marketing teams have been traditionally responsible of conducting market research. User research is still an evolving research stream and with certain products, such as software products, user research seems to be more general than with physical products. However, user research can be conducted with any product that requires some kind of use. As market research often provides short non-face-to-face contact with customers, in user research cooperation with customers often lasts longer period. The strategic and operational difference between user research and market research seems to be the fact that user research is considered part of product development actions while market research is defined as marketing-related actions.

As it has become harder to rise to the challenge of creating successful new products, the means for understanding and infusing customer information into NPD process has evolved. Companies have traditionally tried to understand consumers by performing product-focused research, but new kind customer research has evolved, which is actively-focused research. Actively-focused research includes modes of high degree of customer involvement, for example, instead of asking customers, their behavior can be visualized and observed. (Veryzer & Borja de Mozota 2005, 134.) This means transformation from traditional market research techniques to more qualitative methods and even further to user research and use context study (cf. e.g. Hyysalo 2006b, 157).

However, not only the exploited research methods are important, but also the stage of product development process, where the customer information is fed into the development project, has substance. The choice of product development stage, where the information is acquired, is argued to have an important impact on the success of the new product (Brockhoff 2003, 474). Therefore, Alam (2002, 255) conceptualized the product development *stage of customer involvement* to be one of the key elements of customer involvement. Similarly, Heiskanen et al. (2007, 8–10) discussed about *stage of innovation development process.*

As the disciplines participating in the customer involvement discourse are many, so are the methods to acquire customer information. Hyysalo (2006a, 67) mentions that hundreds of specialized methods to interact with customers during NPD process have been developed by several disciplines to create interaction with customers during the development process. Hyysalo adds that most of the hundreds of methods are mainly based on few well-known general methods which then have been further developed into different variations or combinations of methods. For instance, the interview method, which is one of the methods to acquire information for NPD, can be divided into four main types; survey, structured interview, semi-structured interview and open interview. All of these four types have several variations, and naturally they can be combined with other research methods, for example, with observation. In any case, according to Kujala

and Mäntylä (2000, 2), the selected methods to study customers or users should be easy and simple, but suitable to reveal new information on variety of topics.

2.2.1 Market research methods

Company's aim is to try to understand present and future customer needs, and to use the information to develop products that contain an optimum combination of attributes desired by customers (Bogue et al. 1999, 302). Recognition of customer needs and user solutions is said to be the most important source of new product ideas (Urban & Hauser 1980, 126) and substantially important to manufacturers looking for customer input to improve product success (Brockhoff 2003, 477). Parasuraman et al. (2004, 9) describe market research as a set of techniques and principles which are used to systematically collect, record, analyze and interpret data that can aid decision makers.

Customer understanding for marketing and product development purposes is traditionally collected through market research methods. Urban and Hauser (1980, 167) argued that if carefully used, they can lead to creative insights into consumer wants and needs. Market information can be gained by using both quantitative and qualitative research methods, and major part of customer research conducted for new product development purposes consists of focus groups, surveys and demographic data (van Kleef et al. 2005, 182). According to Parasurman et al. (2004, 159–160) market research can be conducted by selecting a questioning or an observational approach. The questioning approach includes all methods used when consumers are asked something, including, for example, questionnaires and interviews. This study looks into the following basic market research methods which have been used also as the basics of more sophisticated research methods:

- Surveys and questionnaires
- Interviews
- Focus groups
- Observation
- Consumer tests

Traditional market research is highly based on quantitative *surveys and questionnaires* when consumers can be asked variety of product-related questions, whether it is about their product use, opinions, buying intentions, etc. Questionnaire-based surveys can be, for example, face-to-face, telephone, mail or web-based surveys (Parasuraman et al. 2004, 166). If the product is well understood, traditional marketing science provides sophisticated ways to gain useful information from potential customers. Consequently, practices of marketing surveys are effective in context where consumer is already familiar with the proposed new solution because of previous

experience with it in a different context. (Leonard & Rayport 1997, 104.) Questionnaire has also been a basis for other further developed research methods, such as category appraisal and conjoint analysis based on product rating (e.g. van Kleef et al. 2005).

Qualitative *interviews* are extensively used in market research to predict consumer behavior (Kvale 1996, 71). Interview is a traditional customer research method to gather customer information for product development purposes. It can be simultaneously used also in pairs or small groups of people. (Mariampolski 2001, 49–50.) As Hyysalo (2006a, 7) indicated, several sophisticated market research methods are based on interviewing; for example, free elicitation, in which consumers are asked to express product attributes they consider as relevant, or laddering to understand consumers knowledge on certain products (e.g. van Kleef et al. 2005). Interviews can be conducted at any stage of the development process, also for idea generation.

As mentioned, interviews can be done also in groups. Another traditional qualitative market research method is the *focus group*. It can be used for various purposes and stages of the development project, for example, to establish user needs, test product designs and evaluate concepts. (Lofthouse & Lilley 2006, 741.) It can be also used to test customers' acceptance on a new product ideas (Parasuraman et al. 2004, 66). May-Plumee and Little (2006, 54) suggest that customer attitudes and feelings toward new products can be examined with focus groups. There have been several developments from focus group method to other group discussion methods, such as mini-groups and telephone focus groups (Mariampolski 2001, 46–47.) The key to run a successful focus group is the preparation; it is important to identify how the group will be facilitated, the length of the event and size and consistency of the group (Lofthouse & Lilley 2006, 741). Focus group method is widely used, but it has received a lot of criticism like any other traditional market research technique, because people do not always do what they say and they are not able to predict their own future behavior (e.g. Fellman 1999, 21).

A methodology designed especially to involve ordinary group of consumers as an idea generators from the beginning of the NPD process is called consumer idealized design (Ciccantelli & Magidson 1993; Kaulio 1998). In this method actual or potential consumers are involved in an unconstrained design or their ideal product. With this method is assumed that when given proper tools, average consumers are able to design products that are required for situations they are familiar with. (Ciccantelli & Magidson 1993, 342.) This approach deals mainly with conceptual design and customer requirement analysis and focuses on involving users in the early phases of the development process. Basic idea is to get customers to forget existing products and ignore the feasibility of new ideas. (Kaulio 1998, 145.)

Observation is another feasible qualitative research method offering means to understand consumer behavior by providing a window to the product experience, where and when it takes place (Abrams 2000, 7). Basically observation means that the

researcher watches how customers use the product (List 2005, 3). Observation can be used to reveal customers' unarticulated needs, which direct interaction might be unable to do (Abrams 2000, 34). Observation can be either natural observation, where customer reactions and behavior are observed in real-life situation or contrived observation, when artificially set up environment is used (Parasuraman et al. 2004, 178–179).

Qualitative market research can contain also some *consumer testing*. For example, Urban and Hauser (1980, 375) have divided consumer tests in three types. There are single product evaluations when the customer is asked to give their opinion or feedback on one single product. They also introduced two basic comparison tests, the blind tests with several products, and evaluations of alternative product formulations. Concept testing is used when choice should be made between some tentative product ideas (List 2005, 9), and it is proved to be effective to separate successful new products from unsuccessful ones (Ozer 1999, 83). Different kind of information can be obtained with concept testing, for example, information on buying intentions and product preferences (Dubas, Dubas & Atwong 1999, 50), and predicting new product's market positioning and features, understanding product usage, and even designing completely new products (Ozer 1999, 79–80). Ozer (1999, 79–80) evaluated different concept testing types that can create market information; they can be, for example, based on purchase intentions, product attributes and focus groups. One of the key aspects of market-oriented product development approach is also the evaluation of competitive products and an understanding how they are perceived by customers, thus determining where new opportunities exist (Bogue et al. 1999, 303).

2.2.2 User research methods

Although consumers may not always be able to express their wants and needs, it is important to understand how they perceive products, how their needs are shaped and influenced, and how they make product choices (van Kleef et al. 2005, 182). As the traditional market research methods are only able to skim the surface of customer needs, the researchers have started to emphasize the involvement of user in product development (Kristensson et al. 2004, 5). According to Hamel and Prahalad (1994, 104) the best foresight to customer needs comes from deep-down customer insight with direct exposure to customers, and not from second-hand market research.

In user research the aim is to get close to user, and to provide product designers an opportunity to understand user's thoughts and values, physical environment and practical actions. Then only few carefully selected users can provide a lot of information. (Jääskö & Keinonen 2003, 91.) Most of the methods used in market research are used also in user research, but in user research combinations of qualitative

and quantitative research methods are exploited. Also ethnographical research has somewhat replaced traditional marketing surveys, because consumers' ability to answer direct questions is limited. Ethnography entails study of customer behavior in its natural settings. (Elliott & Jankel-Elliott 2003, 215–216.)

Urban and Hauser (1980, 130) suggested that product users not only have needs, but may possess also *solutions*, and companies should put an effort to find and facilitate users' product situations, because innovation or improvement can occur through user's product modification. However, Ulwick (2002, 92) emphasizes that ordinary customers should not be asked for solutions, because they are not experts of the product development, but they should be asked only for *outcomes* and companies should find solutions to solve the problems by studying users.

There are two basic approaches to perform user research. First, in direct participation in new product development means that customers are in direct contact with the company and are involved at some part of the development process by providing information on their ideas and expectations. Involvement of ordinary customers is usually with short period. Second, when customers or users are not able to reveal their future needs, the product developers go to them by interviewing and observing them in their own use context. (Heiskanen & Hyvönen 2006, 103.) Nevertheless, companies starting to develop more customer-oriented product development should stick to the basics and try to find simple, well-timed methods to support their own active input and knowledge (Heiskanen et al. 2007, 39). Hyysalo (2006a) has listed simple, basic user research methods which should be used in combinations. Those are (also Heiskanen et al. 2007, 39):

- User interviews
- User observation, self-documentation
- Prototypes, concepts and other forms of testing
- Developer's own intuition or expert users

Interview and observation techniques can be used similarly as in qualitative market research. *Interviews* are important part of user information acquisition as such or as an indirect method, because interviews or any kind of questioning is usually part of user research. Interviews are easy to conduct and can modified into changing situations. (Hyysalo 2006a, 117–119.) But interviews do have some pitfalls in user research, because users are not generally good at answering questions and they forget details or things that are obvious to them (Kujala & Mäntylä 2000, 3). The interview conversation topics with potential users about products, product use and possession can be about preferences, emotions, motivation or values (Jääskö & Keinonen 2003, 92).

Observation offers valuable method to observe different use phases, and the customer, who is being observed, can be asked to tell about his or her actions during the product use (thinking aloud), or he or she can be followed through several different use

situations (Jääskö & Keinonen 2003, 93.) Observation is often considered to be difficult to perform and too resource-demanding (Hyysalo 2006a, 46), and therefore, is not very widely used. As it is often too expensive to carry out participant observation in user research (Elliott & Jankel-Elliott 2003, 218), customer behavior can be studied also by *self-documentation*, when users are asked to report on their actions according to predetermined tasks (Jääskö & Keinonen 2003, 93). One of those methods is customer diary which gives insight into product's everyday use (Lofthouse & Lilley 2006, 743). Customers can be asked to document on their product use also with photographs or video diary (Elliott & Jankel–Elliott 2003, 219).

One of the developed techniques involving customers in new product development is called the emphatic design, a combination of interviewing and observing methods (Leonard & Rayport 1997; Leonard-Barton 1995, 193). In emphatic design the product developers create empathy for the problems customers encounter with the product (van Kleef et al. 2005, 192). Although mentioned by several authors, the literature does not provide too many examples how to execute emphatic design. One example is provided by Heiskanen et al. (2007, 23) in development of new hybrid media technology. According to Hyysalo (2006a, 93) observation and user interviews should be common methods used in development of sport equipment, because with those products the developer must be aware of the use context and needed development directions.

One of the means to involve customers in product development, and to conduct user research, is to employ them as different forms of *product evaluators*. Physical products can be evaluated and tested in many ways, but the company can try to achieve a test which indicates how the product will perform under actual product use situations, testing can start when company has some new ideas on paper or in physical format. Ozer (1999, 78) listed the following stages of new product evaluation process in the following order: concept testing, prototype testing, test market and launch, each test stage containing several possibilities to execute product testing with potential users. They are not concern in this study, regardless of the important role of test market and launch in new product development (see e.g. Panigrahi, Ede & Calcich 2003). Following methods to use potential customers in product testing will be viewed; concept testing, prototype testing and usability testing. They are not three completely different testing methods and exclusionary to each other, but are rather complementary and simultaneous in several product development stages.

Concept feedback is collected at the early stages of product development when the product is still just a concept or an idea. *Concept testing* can have multiple forms in user research, but it is mainly used to test company's new ideas. Is can be used, for example, in form of user clinics, when several models are shown to potential users and their estimation is completed with questionnaires or group discussions. (List 2005, 9.) Stimulus materials, such as sketches, models, mock-ups and first prototypes and verbal

communication of the product-to-be should be used with concept tests (Kaulio 1998, 144).

The second testing aspect where customers can participate is *prototype testing*. There can be differences among the types of models considered prototypes; they can range from a two-dimensional sketch to a fully functioning product exposed in a real working environment. The usefulness of presenting an idea in prototype form depends on the information gap needed to be filled when communicating with customers. If product functionality or ergonomics are being tested, the product should be functioning well. (Leonard-Barton 1995, 123–124.) On of the disadvantages of customer testing can be product's unfinished from, as Deszca, Munro and Noori (1999, 616) argue that consumers cannot imagine product at its final form, if it is presented as unfinished.

Prototype testing has several forms. In beta testing customers use the product for a certain period in their own use environment and report on their product experiences. In gamma testing customers use the product indefinitely and report on any problems they encounter with the product. (Ozer 1999, 86.) Also user trials are one way to test products, although they are often undertaken as part of initial research to evaluate existing products (Lofthouse & Lilley 2006, 742). Future or current products can be tested also at in-home testing, where products are given a place in people's homes in their natural use environment in exchange for their willingness to report their likes and dislikes about the product (Panigrahi et al. 2003, 4). Pound, Duizer and McDowell (2000, 819) argue that it has become difficult to attract customers to test new products, and as a consequence, testing at home has become increasingly popular.

Another important aspect of user research is *usability testing*. Usability testing means that company wants to evaluate how well customers are able to carry out actions with the product. Usability testing is rather easy to conduct and it allows direct customer observation and is able to reveal clear product flaws. (Hyysalo 2006a, 155.) In usability testing a group or individual users go through usage scenario, in which they probably encounter various challenges and opportunities (Mariampolski 2001, 43). Usability focuses on functional aspects of the product: performance, effectiveness and user satisfaction. In addition to understanding the usability, more profound understanding of the use context has become increasingly important in creation of new products. (Heiskanen et al. 2005, 100). According to Kujala (2006, 9) usually study of four to eight users are enough to discover most usability problems.

User-centered (or user-oriented) development is a product development approach, where the true end user is participating in the product development during the whole process (Jääskö & Keinonen 2003, 83). In user-centered development, customers, or users, should be involved in the product development process from the beginning to the finalized product. This approach focuses on requirements of usage and relation between the user, the product, required tasks and the use context. (Kaulio 1998, 143–146.) User-

centered design usually begins with usability testing, and is complemented with user research. The approach contains direct contact with actual users throughout development process when product is improved and retested. (Kujala 2006, 9.)

User research is still evolving. *Contextual study* focuses on how products fit into consumers' everyday life and usage patterns. Methods in such approaches can be more or less participatory; ethnographic methods, such as participant observation, interviews or informant diaries can be used to follow how users interact with new technology. Even more extreme user research form is user-oriented future studies, when researchers try to find out what the users want their life to be like in the future, and on the basis of this, derive the necessary new technological solutions. (Heiskanen et al. 2005, 98–101.) Always the user is not the best source of information. In many cases it is important to trust *developer's own experience* on customers, but it requires already existing data or information on the customers. (Hyysalo 2006a, 71–73.)

Potential valuable source of customer information in industrial markets have been experienced product users, called the lead users (Pitta et al. 1996, 53). Von Hippel (e.g. 1986; 1989) is the pioneer of studying lead users, and developer of *lead user method*, which aims to identify and involve progressive users into NPD process. Lead users differ from ordinary customers with two characteristics. First, lead users face needs months or years before the bulk of the marketplace encounters them. Second, lead users benefit by obtaining a solution to those needs, and therefore, are motivated to contribute in product development. Lead users are most useful in high technology industries. (von Hippel 1986, 796.) The purpose of the lead user method is to identify new customer needs, which although explicit to lead users, are still latent for the majority of the consumers and developing products to meet these latent needs allows firms to anticipate trends and to overcome competitive products (Ulrich & Eppinger 1995, 40).

Table 4 presents the link between customer information, customer involvement and example methods to involve customers in new product development. When the company does not ask for information proactively, hence the information is based on customers' initiative, the involvement is low (Alam 2002, 255) and customer information is feedback or improvement suggestions (Brockhoff 2003, 466–467). When customer information refers to rather low customer involvement (Alam 2002, 255), the design for customers, traditional, mainly quantitative market research methods are used, and customers are seen as research objects, not a proactive source of information (Kaulio 1998, 147). With higher degree of customer involvement (Alam 2002, 255), in design with customers, the customers are used as partners in different forms of testing, for example, in usability testing or prototype testing (Kaulio 1998, 143–148). When customers are participating in product development, participative methods are used. They can be, for example, lead user method or consumer idealized design. (Kaulio 1998, 143–148.) All information types should be then available for the company.

Table 4 The link between customer information, involvement and customer research methods

Type of customer information	Current customer information	Market and current customer information	+ User information	+ User information
Type of customer involvement	No involvement	Design for customers	Design with customers	Design by customers
Degree of customer involvement	*Low*			*High*
Methods to acquire customer information e.g.	Customer feedback, suggestions	Market research methods	+ Different forms of testing	+ Participative methods, e.g. Lead user method, Consumer idealized design

As can be concluded from the table, the nature of *customer involvement depends on the customer information acquired and on the methods used to acquire the information*. As Kaulio (1998, 142) defined, customer involvement is the interaction between company's customer and development process. Thereby, the customer information types and the methods to acquire the information act as the means of interaction.

2.2.3 Methods during the development process

As Alam (2002, 255) defines, the product development *stage of customer involvement*, is one of the most argued topics of customer involvement study. Customer information should preferably be collected before the product is launched, but according to Pitta et al. (1996, 48) companies often focus too much on post-mortem analysis of what went wrong, and look at consumers as isolated from the product development process. Hanna, Ayers, Ridnour and Gordon (1995, 53) argue that in order to be successful, there must be high customer involvement in the NPD process from the idea generation stage to the product launch. Ongoing customer information flow distinguishes successful from unsuccessful products (Pitta & Franzak 1996, 79), but, for example, Hart et al. (1999, 20) argue that there is too little empirical research showing what kind of customer information is required during each phase.

Figure 2 shows how the status of customer information can change throughout the new product development process. Customer involvement can be applied at every stage of the development process, but at the early stage when new product ideas are created and evaluated, customers can have more significant impact on the product, because

company has made less previous decisions to limit product possibilities. However, customers might find it difficult to contribute at this stage, because product is not yet in concrete form. When customer voice is involved at later stages, the information is more limited, but customers' contribution is based on perception of physical product model. (Heiskanen et al. 2007, 8.)

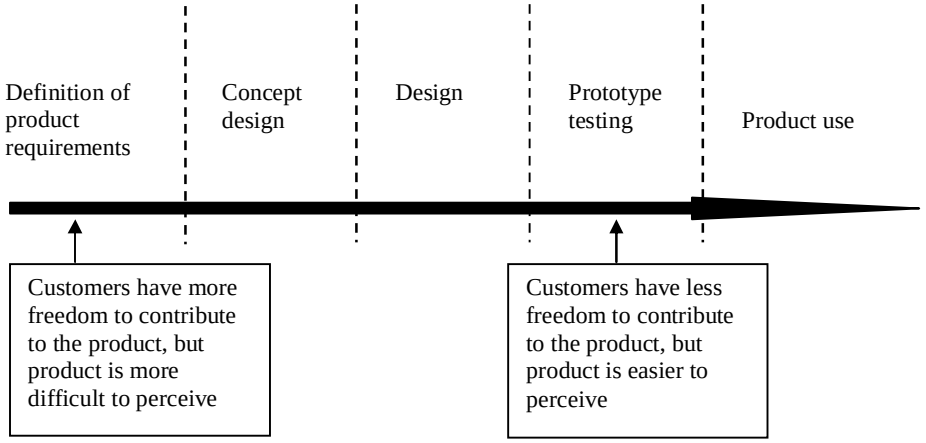

Figure 2 Status of customer information during product development stages (Heiskanen et al. 2007, 9)

Also Day (1994, 14) argue that to gain value from customer information, it should be acquired early in decision process so different alternatives can be considered. On the other hand, study of Gruner and Homburg (2000, 10–11) stated that customer involvement is more valuable with concept development than idea generation, because the product is in more concrete format. However, they also concluded that customer involvement has the highest value on testing stage, because at this stage it is still possible to adapt the product to customer requirements.

Brockhoff (2003, 474) and Lagrosen (2005, 426–427) suggest that companies should interact with customers at every stage of the development process, but it is not necessary that the same customers are listened to at every stage, but some customers could be involved at every stage. Product development process can have multiple forms; the process and stages can vary on amount and order of stages (extensive overview e.g. Sandberg 2005, 84–85). Product development can be considered as a simplified process of three stages; idea generation, development and testing stages. These three phases differ significantly according to their activities and task requirements (Lettl 2007, 55), and therefore, it is suitable – and simple enough – to describe customer involvement.

Figure 3 presents the simplified process and sources of information the company should acquire during each development stage. As some researchers suggest that customer information should play a focal role at the *idea generation stage*, others assume that involving customers in idea generation will lead to imitative and

unimaginative products (Nambisan 2002, 394). In Lagrosen's (2005, 430) study more than every second industrial producer involved customers at the idea generation stage. Kaulio (1997, 20) states that at the idea generation stage 20 to 30 interviews are enough to capture most of the existing customer needs. Bogue and Ritson (2006, 44–45) and van Kleef et al. (2005, 181) argue that customer involvement is most widely applied during final stages of the development process, ignoring the beginning of new product development process, when new ideas should be created.

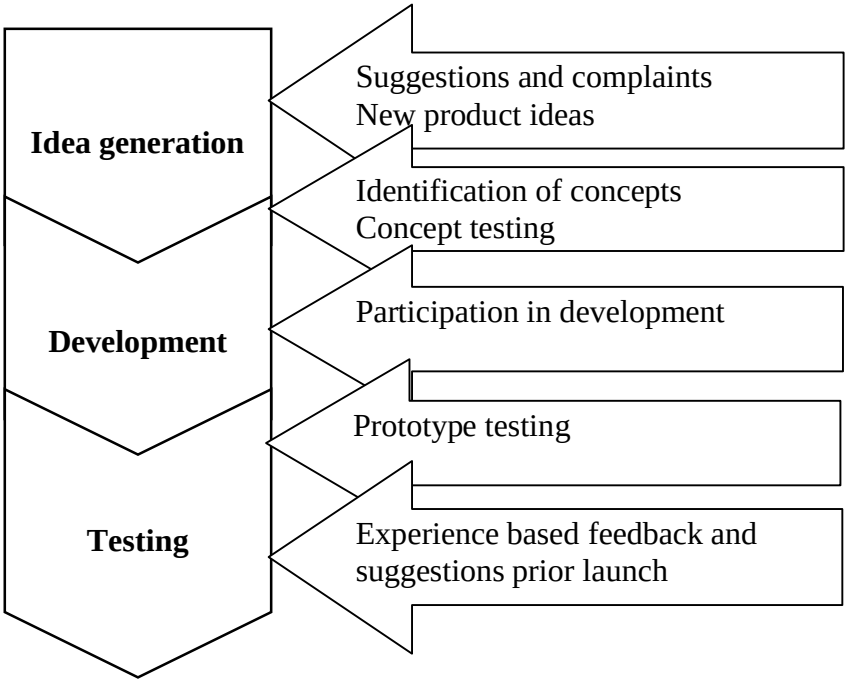

Figure 3 Information sources at NPD process stages (adapted from Brockhoff 2003, 475; Enkel, Perez-Freije & Gassmann 2005, 426)

According to van Kleef et al. (2005, 181) it has been increasingly recognized that successful product development depends on the quality of new product ideas. During the first development stage, the idea generation stage, traditional market research can be difficult to perform, because it is unsure how or what to ask about customers' needs. It is also argued that consumers do not know what they want. On the other hand proper market research conducted before any further development can partly guarantee new product's success, but the reason behind this is probably the thought that market research can raise the odds of avoid completely failure product.

Customers can contribute to variety to development activities during *development stage*, including the validation of product choices, prioritization of product features and specifications (Nambisan 2002, 395). Customers can be asked, for example, to estimate new product concepts (Nijssen & Frambach 1998, 306). Although Nambisan (2002, 395) highlighted that taking customers as a part of product development team is more

common practice with industrial products than with consumer goods, some consumer co-creation examples can be found from the literature; Rowley et al. (2007) studied co-creation in extreme sports equipment development and Berger et al. (2005) promoted miAdidas program, in which consumers are able to design their own Adidas trainers. However, Gruner and Homburg (2000, 10–11) point out that companies ought to rely on their own skills during technical product development and not to expect contribution from customers.

Customer involvement at the product *testing stage* can enable firms to detect product flaws early in the development process. And equally important, involving diverse set of customers in testing, for example, in prototype or usability testing, companies can gain rich understanding how the product would carry off in a variety of user contexts. (Nambisan 2002, 396.) Traditionally customer feedback is acquired after the product is finalized, but previous research indicate that customers should be listened to earlier, and some kind of customer approval should be obtained before the development is taken further (Brockhoff 2003, 474–475; Heiskanen et al. 2007, 7).

Companies should also consider which research methods are most suitable at each development stage. Different kind of customer information and methods are needed at different stages (Dahlsten 2004, 142–143). Some methods or approaches the literature introduces are intended to be used throughout the whole product development process, such as user-centered product development or lead user method (Kaulio 1998, 146). Table 5 provides one example of different kind of methods employed to acquire customer information.

Table 5 Examples of NPD tools (Nijssen & Frambach 1998, 306; Nijssen & Lieshout 1995, 29)

NPD question:	**NPD stage:**	**Suitable information tools:**
What kind of product to develop?	Idea generation	Brainstorming, synetics, focus group, interview, survey, user observation, Delphi method
How the product should be designed?	Development and testing	Conjoint analysis, quality function deployment, concept tests, prototype tests, in-home tests

According to Urban and Hauser (1980, 169) focus group method is more suitable at the idea generation stage than questionnaires, although questionnaires are often used to acquire customer information. Nijssen and Lieshout (1995, 29–43) suggest that, for example, brainstorming and synetics, both creative but systematic group ideation methods, are creative idea generation methods, and focus group, interview and observation are non-creative ideation methods. Also study of van Kleef et al. (2005, 197) concentrated particularly on methods used in new idea generation. They suggested for example focus group, free elicitation and laddering methods in product improvement

development, and emphatic design and lead user method in new innovative product development.

Next to different methods of customer testing, such as concept tests and prototype tests, Nijssen and Lieshout (1995, 29–43) suggest conjoint analysis and quality function deployment during product development stage. They are both employed in study customer needs and preferences to identify preferred product features. Their purpose is to transform customer preferences into technical requirements and thereby they are part of technical product development. (Nijssen & Lieshout 1995, 43; van Kleef et al. 2005, 197.)

2.2.4 Internet as an interaction tool

The Internet has made the connection between companies and consumers definitely more comfortable and cost effective than it has been ever before. The Internet provides immense opportunities for new product development and evaluation (Ozer 1999, 90). The speed, convenience, interactivity, and worldwide coverage of the Internet match the requirements of the different activities in the new product development process, which involves uncertainties and risks, and requires firm to notice the customer point of view and to introduce new products to the market faster (Ozer 2003, 10). For example, on the Internet it is possible to gather sophisticated customer information in few days instead of 5 weeks with traditional market research methods (Dahan & Hauser 2002, 333).

The emergence of new communication possibilities has initiated a radical transformation of customer-producer relationships with important implications to new product development. If communication between companies and their customers has previously been poor regarding new product development actions, new technologies have the potential to enhance the connectivity in a cost-effective manner, and to support new models of NPD to involve customers even as partners. (Nambisan 2002, 392–393.)

Many companies have brought traditional customer *questionnaires and surveys* to the Internet or to email applications. The Internet allows obtaining continual feedback from the market by creating intensive links with customers. (Walters & Lancaster 1999, 801.) Companies can form *panels* of web-enabled respondents to complete online tasks at the same time around the world (Dahan & Hauser 2002, 333–334). Ozer (2003) views potential of the Internet throughout the development process: it can be used for *evaluation of new product ideas* and *preliminary appraisals* of other potential factors, for *testing and validation* of new products and to *collect opinions* from potential customers. It can also help performing *online prototype tests* and naturally can be used during commercialization stage to make potential customers aware of new products.

As questionnaires and surveys are popular functions on the Internet, also qualitative research is possible. Scholl, Mulders and Drent (2002) discuss about *individual and group interviewing* on the Internet. Dahan and Hauser (2002) introduce selection of tools for companies to use the Internet as the communication tool throughout product development process. They suggest web-based interviewing and virtual testing by using modifications of traditional research methods. For example, *conjoint analysis*, a traditional research method based on preferred product features by consumers, can be used to involve consumers in product development process.

Virtual product testing has also become more widespread to assist to reduce the risks involved in product testing and lowering the testing costs. Virtual testing is not restricted anymore to software products, but can be used also with consumer goods. Websites can be used for evaluation of design features of new products, where potential customers react to product prototypes by sending suggestions and feedback. (Brockhoff 2003, 476–477.) The Internet also allows earlier concept and prototype testing than physical testing does (Ozer 1999, 90), nevertheless, virtual testing can lead to problems with physical products, because it can be difficult to make the sample representative (Ozer 2003, 14). New possibilities will bring more customer input in product development, but also new Internet-based methods will encourage a greater number of concepts to be explored and tested with customers (Dahan & Hauser 2002, 351)

The Internet is also a fertile ground for creation of *virtual consumer communities* which have been recognized as productive source of customer feedback, or even foundation of new products (Nambisan 2002; Pitta & Fowler 2005a; 2005b; Rowley et al. 2007). Consumer communities are evolving rapidly and can influence consumer behavior in unpredictable ways (Prahalad & Ramaswamy 2004b, 54). Online forums support communities formed around specific interests, they can be, for example, hobbies, brands or a certain type of sports product. Producers can obtain all kind of product-related information, such as data on desired and undesired features, data on unexpected markets or uses of products. Online forums can be used also as customer research function; they can be used, for example, for preference research and concept testing. (Pitta & Fowler 2005a, 266–272.)

In spite of all the positive development the Internet offers, companies ought to be careful that they are talking to the right customers and that the results are reliable. Therefore, companies should combine face-to-face and electronic communication with customers. The web also exposes to new security and technological challenges. (Ozer 2003, 13–15). Pitfalls of the Internet-related research techniques, at least with qualitative research, are lack of verbal and visual signs, difficulties perceiving deeper meanings and motivations, and lack of commitment (Scholl et al. 2002, 213–215).

2.3 Significance of customer information in NPD

One of the reasons why companies should try to discover their customers' needs is the fact that so many new products fail. Leonard-Barton (1995, 177) argued already in mid 90's that almost 50% of resources devoted to product development or marketing were spent on products that were later cancelled or failed. Therefore, some researchers call for bold actions. In companies to remain competitive, as Prahalad and Ramaswamy (2004b, 1–33) put it, the future product development should rely on co-creation of value and experiences together with customers. This means that customers should play a focal role in new product development, but instead of developing one-dimensional physical goods, company should be creating values and experiences together with customers. The reason behind the idea of co-creation is the companies' current disability to satisfy customers' needs.

Also other researchers have condemned companies that do not pay enough attention to discovering consumers' needs and requirements. Narver et al. (2004, 334–335) argue that without being proactively market-oriented, companies can wave goodbye to knowledge about their customers' unexpressed needs, and therefore, those companies will end up competing solely with prices. By proactive market orientation they mean aim to discover, understand and satisfy the latent needs of customers. Therefore, acquisition of customer information in new product development can be considered as important to guarantee success of new products. Variety of previous research evidences this; for example, Baker and Sinkula (2005, 496–497), Hanna et al. (1995, 53), Ottum and Moore (1997, 269) and Veldhuizen et al. (2006, 364–366) have concluded that market orientation and knowing the customer needs is one of the factors positively affecting on new product success.

Although there is a lot of evidence that market-oriented product development has a positive impact on success of the new product, there is clearly lack of research providing information on the actual use of customer information in new consumer product development and how significant the information is for companies. Because, although the use of customer information in new product development offers several advantages, it is not given fact that it would improve the product development. For instance, the variety, fragmentation and even complexity of available methods can be confusing, and when complex methods are used, they can become unintentionally self-purposeful. Organizations should monitor how the customer input is actually strengthening and improving the product development. (Heiskanen et al. 2007, 3.) According to van Kleef et al. (2005, 181–182), in spite of the variety of available methods to involve customers in new product development, majority of them are used in ad hoc basis, which may be due to lack of familiarity of useful methods, the use of incoherent terminology and difficulties to access the subject.

However, knowing customers' needs and interacting with them during product development process still does not guarantee the product success. Significance of customer information is not apparent under all product development circumstances. Companies can have very different objectives and purposes to acquire customer information and its perceived importance differs among companies. The significance of customer information also defines what kind of customer information the company acquires and how it is acquired. Alam (2002, 254) defined the concept of *objectives of customer involvement* to study why customer information can be significant in product development. Also the *level of product innovativeness* affect on how significant the customer information is in new product development (Heiskanen et al. 2007, 8–10). Some previous research indicates that acquisition of customer information should be different when developing completely new products in comparison to product improvements. Simultaneously, another problem of customer information acquisition is that customers are not always able to provide the information the companies need. Therefore, the selection of right kind of customers and adequate information about the customers is necessary. Another aspect of significance of customer information in NPD is the *type of customer*, because not all customers can contribute the same (Heiskanen et al. 2007, 8).

2.3.1 Objectives of customer information

The development of superior and differentiated product is regarded to be the most common reason to involve customer information in new product development (Dahlsten 2004, 142) and to create detailed customer knowledge and understanding (Alam 2002, 254). One of the key elements of customer involvement, according to Alam (2002, 254), is to consider the *objectives of customer involvement*, to determine why customers are listened to in new product development, and on the other hand, why are they not (Alam 2002, 254). All companies have their own reasons to listen to their customers, and in Alam's (2002, 254) study all researched companies had multiple reasons to execute customer-oriented product development.

According to study of Nijssen and Lieshout (1995, 35) the main reason for companies to conduct customer research for NPD purposes was to identify the problems companies face in the development of new products. The second most important reason was to improve the new product's success. Other reasons were to support company's sales force and to assist in the marketing of new product. Brown and Ennew (1995, 348) argue that traditional market research is often seen as a safety measure; a tool to reduce the risk of product failure. However, according to Day (1994, 13), customer research should not act solely as a 'security blanket', but is should also provide new information.

May-Plumee and Little (2005, 54) propose that the purpose of market research is to identify new market opportunities for new product development and to understand the evaluative criteria used by consumers.

Table 6 shows three purposes to collect user information according to Heiskanen et al. (2007, 11). First, user information can be collected *to support company's decision making*. Then companies want to get their customers' opinion or approval on some new product or idea, or they may collect new ideas from customers. Methods then used can be, for example, surveys or product testing. (Heiskanen et al. 2007, 10–11.) User information as a decision support is used to test or improve existing ideas or products (Hyysalo 2006a, 69).

Table 6 Purpose of user information acquired with different methods (Heiskanen et al. 2007, 11)

Purpose	**Decision making support**	**Background information**	**Creation of new solutions**
Methods to gather information	Surveys Testing Idea contests Customer panels	Customer discussions Focus groups Idea contests Customer feedback Lead users workshops	User toolkits Open product development

Second, user information should be collected to *create background information* about customers, and to create basis for deeper knowledge about product's target users. Methods to get background information are, for example, discussions with customers, focus groups and idea contests. Their purpose is to reveal customer needs and wants. (Heiskanen et al. 2007, 10–11.) Information should be collected by using certain systematic method or combination of several methods to see the changes in customer preferences (Hyysalo 2006a, 69). Third, customers can be encouraged to *create new product solutions* to match their needs and solve problems, naturally with support from product developers (Heiskanen et al. 2007, 11). Hyysalo (2006a, 69) calls the customer involvement approach behind this purpose as the user-centered product development. Then information is collected with participative methods as customer becomes part of the development team. Customers' feedback is then often based on their professional know-how, and customers are assumed to be able to provide new kind of solutions or ideas which company would be unable to find alone.

Lofthouse and Lilley (2006, 471) have identified some general benefits that can be derived from company-customer cooperation for new product development purposes. First, involving customers in the development process should reduce the chances for poorly designed or misused products. Second, customer information should provide insight into the complex relationship between people and their products, which

companies should try to understand in developing satisfying products. Third, knowing the customer needs and having actual proof of them, often offer persuasive tool for communicating wants and needs to company's higher management. Moreover, with customer information companies should gain insights into the actual practices, habits and needs of the customers they are developing for.

Table 7 shows some short and long term benefits of user research listed by Heiskanen et al. (2007, 38). Long term benefits relate to strategic competence, which will assist product development in long term, whereas direct connection with customers, feedback, improvements and new ideas can be regarded as short term benefits. They also mentioned the energy customer involvement brings to the development process.

Table 7 Long and short term benefits of user research (Heiskanen et al. 2007, 38)

Long term benefits	**Short term benefits**
- Accumulation of long term customer knowledge in the company - Strategic knowledge on innovation possibilities and limitations	- Connection with future customers - More energy to development process - Feedback to product concepts and prototypes - Improvement suggestions and ideas for new products

Nonetheless, ordinary customers as an idea source are sometimes neglected. However, according to studies of Kristensson et al. (2004) and Matthing et al. (2004) in mobile phone services, user involvement in product development can aid in receiving new product ideas from users at least in service industry. Study of Kristensson et al. (2004, 11) revealed that ordinary users were able to come up with significantly more original and valuable ideas than professional developers, but on the other hand, professional developers created more realizable ideas. They also discovered that new ideas generated by customers in their own use environment, seemed to be very likely to contain unique features, but they were difficult to detect. However, the study does not reveal, how many of the users' ideas were worth realizing. Matthing et al. (2004, 490) discovered that involving customers early in the development process will help to create new ideas and to get insight even into customers' latent needs.

2.3.2 Level of product innovativeness

The problem often with customer involvement in new product development is that customers' ability to guide the development of new products is limited by their experience and their ability to image and describe possible new products (Leonard & Rayport 1997, 103). New product types can be classified into five groups: *new-to-the-world products, new-to-the-company product lines, additions to existing lines, product*

improvements, *cost reduction products*, and *repositioning of existing products* (Trott 2004, 395–396). In customer involvement literature special highlight has been given to use of customer information in new-to-the-world product development, also called discontinuous innovations (Lynn, Morone & Paulson 1996; Trott 2001; Veryzer 1998) or radical innovations (O'Connor 1998).

In spite of companies' desire to discover customer needs and aim to satisfy those needs, they often have difficulties to get the wanted information. Consumers' opinion is not very valuable on a product which does not exist yet (Deszca et al. 1999; Leonard-Barton 1995; Trott 2004). If the new product is entirely unknown to customers, they cannot provide fertile feedback, because their insights into new product needs and potential solutions are based on their experiences with current products and they are very unlikely to support new product concepts which conflict with the familiar products (Trott 2001, 119; von Hippel 1986, 791). According to Deszca et al. (1999, 618–619), when involved in radical innovation development, the customers should be educated about the new product before any feedback is collected. Also the results of Lagrosen's (2005, 431) study indicate that customers lack the competence to suggest valuable development ideas, because they compare current products to the new product ideas.

Some researches have pointed out that companies are also lacking the knowledge of how to deploy effectively customer information in any kind of new product development (Dahlsten 2004; Hart et al. 1999). The knowledge how to make also current products better is considered as valuable information, because less than 10% of all new products are innovations and almost 60% of new product developments are improvements and additions in existing product lines (Trott 2004, 396).

Conventional market research has received lot of criticism. Traditional methods, which are used to ask about consumers' opinion about something, can misguide companies to miss possible successful innovation (Deszca et al. 1999, 616; Lynn et al. 1996, 14). The good results of qualitative and quantitative market research methods in forecasting customer needs and market potential are limited to insights in respect of product improvements (Enkel et al. 2005, 425). According to Matthing et al. (2004, 479) it is very difficult to access, understand, and meet latent needs of the customers by only using surveys and interviews. Also Hamel and Prahalad (1994, 99) argue that ordinary customers are lacking in foresight, and if a company wants to be pioneer in something new, simply asking the customer is not enough. Yet, since there are still several problems and uncertainties associated with new kind of customer research, traditional market research still dominates in customer understanding (Matthing et al. 2004, 493). Therefore, development of innovative products requires different information than incremental products, which can be a challenge for companies.

Veryzer (1998, 144–145) discovered several factors that make customer information requirements different with radical innovations. First, the customers' *lack of familiarity*,

which will affect on their reaction to new product, can be a problem. Consumers are easily resistant against unfamiliar, completely new products. The reason can be that the new product does not fit into their current consumption patterns. The second problem is *irrationality*. Potential customer, as providing information, can focus on irrelevant attributes and might ignore the important product aspects. The third factor, which will affect on customer information in radical innovation development, is *user-product interaction problems*. This means that customer might misuse or misunderstand the new product.

Figure 4 adapts the view of Leonard-Barton (1995, 180–204) and Hyysalo (2006a, 226–360) on use of customer information in different new product development situations and means to acquire the needed information. According to the model, two dimensions affect on what kind of information company needs: the *innovativeness of the product*, and the *targeted customer base*. These two dimensions determine the type of information needed from the market. The vertical axis presents innovativeness of the product, whereas the horizontal axis displays the degree to which product aligns with the wants and needs of the current customer base in comparison to new customers or unknown markets. Generally companies can be quite familiar with current customers' needs, but the market uncertainty increases when moving from left to right in the model. When entering to new markets, companies often have not even identified the correct set of users when the development starts. (Leonard-Barton 1995, 180–182.)

The most common new product development situation is *improved solution to a known need*. Customers should be able to give information about their needs, which can be collected by using variety of simple market research methods or inquiries. (Leonard-Barton 1995, 184–185.) New product development work is mainly small improvements of current products (Hyysalo 2006a, 226–227). Customers' ability to give suitable information about their needs decreases when moving upwards in vertical axis (Leonard-Barton 1995, 184–185). As Hamel and Prahalad (1994, 101) put it, market research can be helpful in fine-tuning known product concepts to meet the target customer demands, but it is seldom the spur to fundamentally new products.

When the product is not radical innovation and current customer base is familiar with the product technology, customers are expected to be good source of new ideas (Leonard-Barton 1995, 180; Nambisan 2002, 394; Trott 2001, 120). However, in *technology driven development* the new product is developed for existing needs, but the product or technology is completely new, and consequently, customers cannot know what kind of solutions, enhanced features or capabilities new technology may offer. Therefore, product developers should not rely on customer views, but rather on their own intuitions. (Hyysalo 2006a, 227; Leonard-Barton 1995, 184–186). Wind and Majahan (1997, 2–3) claim that use of market research methods, such as focus groups, surveys and use of demographic data with new product development can be one of the

reasons for relatively low new product success rates, and O'Connor (1998, 153) argue that traditional market research can even destroy major innovations projects. On the contrary, Salomo et al. (2003, 445–446) argue that *qualitative* market research can be useful even in innovation development.

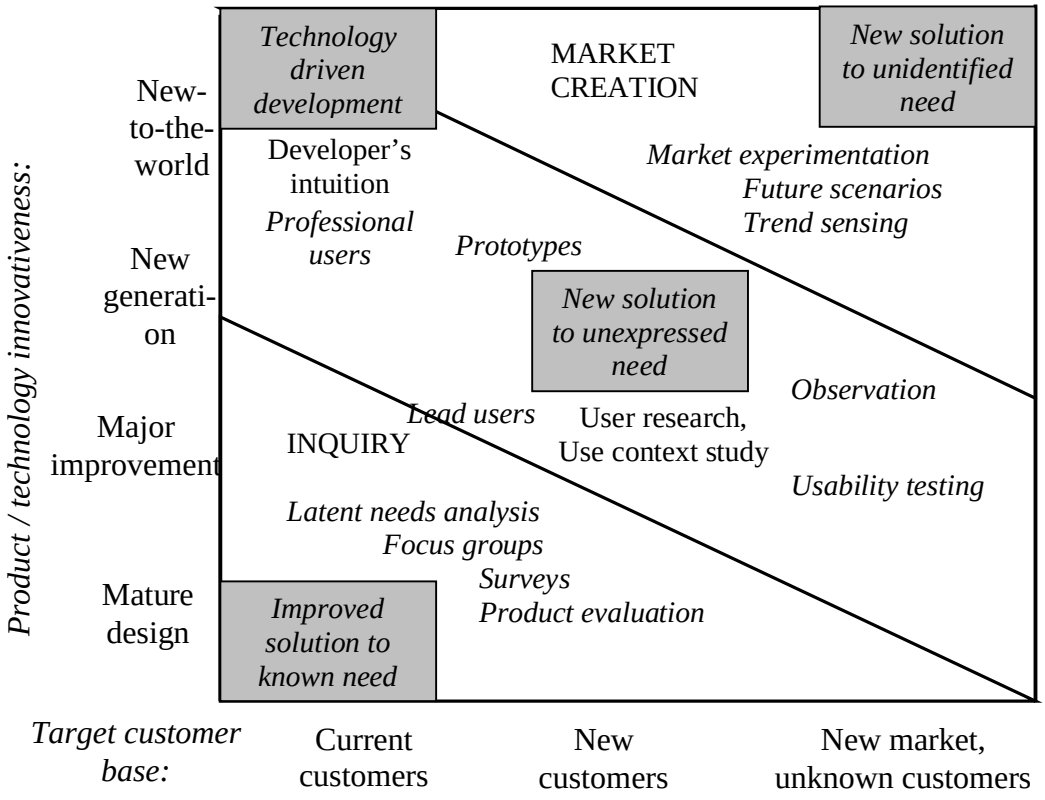

Figure 4 Importing information from the market (adapted from Hyysalo 2006a, 226–230; Leonard-Barton 1995, 180–204)

New solution to an unexpressed need requires usually user-context development, and different methods of user research, for example, in-depth interviews, observation and prototyping (Hyysalo 2006a, 227–228; Leonard-Barton 1995, 184–187). The attempt to gain valuable information from customers becomes more difficult, but more important. Before the new product or technology exists, customers cannot even imagine its form or function, and therefore conventional market research is not an effective source of information. Developers should immerse themselves in a user environment and user context should drive product development. (Leonard-Barton 1995, 184–187.) As traditional market research techniques are proved to ignore the customers' latent needs; customers should be observed in their own environment and be more involved in the development process (Matthing et al. 2004, 481).

New solution to an identified need means that mature and well-understood technology is applied to completely new set of users. Ordinary users are not usually able

to see the technology in new context, and consequently, the value of customer information is very small, as it is in creation of new technology or markets. In the upper right corner the technology is running ahead of consumers' acceptance and understanding, and therefore, asking current customers' opinion would not serve the purpose. (Leonard-Barton 1995, 184–187.)

As can be seen from Figure 4, different product development situations require different customer information. Communication with the product concept and elicitation of customer reactions becomes much more difficult and expensive as the situation moves from *inquiry* toward *market creation*. Customers are mainly able to tell about their needs in the lower triangle area. Methods, such as surveys, focus group and product testing are suitable methods to develop small or larger improvements. (Leonard-Barton 1995, 189–191.) Lead users can be used to predict future needs of ordinary consumers (e.g. von Hippel 1986). According to Leonard-Barton (1995, 192) the lead users can carry developers a step further into the future, but also they will need some reference to existing products, then at least one generation of the product is necessary to aid with development. Also some sophisticated qualitative research methods to identify latent customer needs can help to product developers, but according to Leonard-Barton (1995, 192–193) even they will help only to some extent.

The broad area between two triangles presents an area where customer input is difficult to get via conventional market research methods, such as questionnaires. With new technology, Leonard-Barton (1995, 195–197) suggests relying on developer's own intuitions or on special user-developers who can be company's employees, industry experts or professional product users. If new product or technology concept is for new customers, Leonard-Barton (1995, 200–203) suggests employing user research methods, such as ethnographical research, by observing and interviewing possible users in the use environment, and the purpose is to create new product concepts by reveling consumers' unarticulated needs.

When the product represents radical innovation with completely new technology to unknown customers, neither conventional marketing inquiries nor user research is useful. Useful information could be received, for example, by exploring societal, technological, environmental trends for creating future scenarios. (Leonard-Barton 1995, 206–209.) Similarly, Veryzer and Borja de Mozota (2005, 138) argue that new technologies offer many new possibilities, but will not most likely emerge as a success, if they are not developed to be consistent with evolving consumer trends. Also Sandberg (2007, 253) suggests that companies should act proactively toward customers in terms of anticipating and influencing their future needs to build bridge between innovation and the market.

2.3.3 Listening to the right customers

To make a choice of which customers to study can be complicated, when several different groups of people are considered as customers. For some products one person (the buyer) makes the buying decision while another person will use (the user) the product. The best approach would be to gather data from the end user in all situations. If there are several market segments addressed, the information should be gathered from each segment in order to understand the differences in their needs. (Ulrich & Eppinger 1995, 40.) If wrong customers are involved in the product development project, the result can be misunderstanding, rather than understanding the customer, and it may even result in a commercial failure of the project (Kaulio 1997, 24). Therefore, companies have to know that they are talking to the right customers.

Selecting the right customers is not easy, because their tastes change over time, and therefore, continuous information on customer needs is necessary (Urban & Hauser 1980, 45). Lettl (2007, 55–56) distinguished two dimensions to describe how to select the right customers to contribute to new product development. First, companies need to know, *which customers are capable* to provide valuable information to the development project. Company should be able to select and segment capable and interesting customers and decide who the customers with interesting characteristics are. A clear understanding of interesting customer characteristics enhances the effectiveness of the search for valuable customers. Company should know their interesting target customers, because the needs of early adopters will differ from those who will make the bulk of the market (Deszca et al. 1999, 618).

Consumers chosen should be representative customers, in order to understand the target user group. Customers differ in their interactions with a product, because of their personal characteristics, interests, needs, and skills, and as a consequence, typical customer is difficult, but important to find. (Kujala & Mäntylä 2000, 3.) In qualitative research the customer selection should be conducted carefully, because usually only few people are studied. The company also needs to know *what kind of methods* are suitable to acquire the needed information; they should decide at which personal level it needs to interact with customers, for example, whether they use structured surveys or face-to-face interviews. Company should also decide the number of customers from whom they would prefer to receive input during different phases of the development project. (Lettl 2007, 55–57.)

There is also a difference to be made between *current customers* and *potential customers*, because their knowledge level and attitudes may differ. Customer's *experience* on the product or similar products should be paid attention to when selecting interesting customers (Heiskanen et al. 2007, 12), because customers with broad product knowledge will most likely bring different kind of input than customers with

very little knowledge. When customers are familiar with the product, the quantity of accessible information in their memory is higher and more specific customer needs can be inquired (van Kleef et al. 2005, 184). Also Salomo et al. (2003, 449) argue that customers, who are experts in the market, in the product category or technology, should be able to provide useful information even for innovation development. Yet, the pitfall is that ordinary consumer is seldom an expert.

Companies can face some challenges in involving customers in product development process, especially if the customers do not have any previous experience with the product. Lettl (2007, 54) identified two barriers that relate to customers. *Barrier of not knowing* can occur especially when company is developing an innovation. It can appear if customers are not able to think outside their current use context. Naturally users are also often unable to provide valuable inputs if high technological complexities are involved. The risk of barrier of not knowing will diminish when company is using current customers' input in product development project, because previous knowledge on similar products will lower the barrier of not knowing.

Barrier of not wanting occurs when customers are not willing to contribute on the development project. Reasons can be costs, or lack of time or motivation. When dealing with consumers, it can be challenging to attract them to participate in company's operations. Proper rewarding system and minimized pestering will lower the barrier of not wanting. (Lettl 2007, 54.) There are also several possible company-related barriers, such as lack of resources, because naturally customer involvement entails costs (Lagrosen 2005, 431). Companies can find involving customers in product development too time consuming and expensive to be useful (Kujala & Mäntylä 2000, 1).

Potential valuable source of customer information in industrial markets have been experienced product users, called the *lead users* (Pitta et al. 1996, 53), who are often fanatics on something (Kujala 2006, 11). Pitta and Franzak (1996, 73–78) suggest that also consumer durables producers can find lead user method profitable, although they are difficult to find because companies seldom know their customers personally. Lead users are also expected to be more motivated to contribute to company's operations than ordinary users, and therefore, study of both, ordinary and lead users, could be fertile (Kujala & Mäntylä 2000, 3) According to Enkel et al. (2005, 426) if lead users are found, the can contribute during the whole development process.

According to Parasuraman et al. (2004, 65–66) new product development research can be performed by interviewing knowledgeable individuals, which the authors call key-informant or expert opinion study. Then companies seek out and talk to individuals with expertise in areas related to the situation being studied. The approach is usually very subjective and flexible procedure with no standard approach. Pitta and Franzak (1996, 78) argue that lead users can be identified from ordinary consumers. Company can use their customer databases in combination with questionnaires to identify

pioneering individuals for longer-term interaction. Using lead users have also received quite a lot of criticism, for example, Ulwick (2002, 93) suggest that because lead users are not average customers, their needs seldom reflect ordinary consumer's needs. Also Hyysalo (2006a, 90) reminds that ideas from lead users should be tested with bunch of ordinary consumers.

Some researches have identified innovative users among consumers, for example, users of outdoor sports equipment (Lüthje 2004) or windsurfing (Rowley et al. 2007; von Hippel 2001). They can be considered as lead users, because they have discovered new uses for the products. However, only estimated 2% of consumers can be regarded as innovators, who are willing to try new things at risk, and 13% as early adopters who can be identified as opinion leaders (Kotler & Armstrong 1996, 167–168). Kotler and Armstrong (1996, 168) and Lüthje (2004, 691) suggest that innovating firms should try to study those innovators and early adopters to get new product ideas, because they are most likely to come up with innovative ideas and improvements.

Customer involvement in new product development should not be restricted to a relationship between producer and customer at one specific level. Companies should consider information from all levels of relationship chain, including distributors, suppliers, dealers and consumers, but the final user should have a strong voice in the process. (Brockhoff 2003, 465.) Integrating customer information consistently within ongoing relationship is very difficult and customers have their personal interests which probably do not coincide with company's interests. Then, customers often expect some reward for their cooperation. (Pitta et al. 1996, 49.) Lead users will expect some financial reward, especially if their ideas lead to new products (Lüthje 2004, 686). Companies also have to be cautious when executing customer ideas, because customers' suggestions can present some legal liabilities (Urban & Hauser 1980, 125). Some companies are including retailers as substitute for consumers, because they are often available throughout the whole development process and have a lot of contact with buyers (Pitta & Franzak 1996, 75–76). Yet, this can be problematic, because retailers often have their own interests in mind which do not necessarily coalesce with consumers' needs.

2.4 Theoretical framework of the study

Figure 5 illustrates the theoretical framework of this study. *The research purpose is to analyze the acquisition and significance of customer information in consumer product development*. The purpose of the first research task is to determine what kind of information can be acquired from customers and how does it involve customers to new consumer product development. The research task is determined by defining the nature

of customer information and involvement in new product development. Customer research can provide three types of information; market, current customer and user information, and. Degree of customer involvement depends on the information acquired. Degree of customer involvement can be further defined by types and levels of customer involvement.

Degree of customer involvement depends also on research methods used to acquire customer information. The second research task is to define the methods that can be used to acquire customer information to support new consumer product development. The methods are viewed as market research methods and user research methods. Also the Internet as a customer research tool is evaluated. The product development stage, where customer information is acquired, is also an important aspect of the customer information acquisition, because it is important to consider, which methods are used at which product development stage.

The third research task is to evaluate the significance of customer information in new consumer product development. Companies can have several objectives for customer information acquisition. In this study the objectives are regarded as an indicator of the significance of customer information in new product development. Also the level on innovativeness of the new product affect on the significance of customer information, because different forms or methods of customer information is required depending on the newness of the product. Similarly, type of customer, whether they are ordinary consumers or lead users, affect on the significance of customer information, because not all customers can contribute alike.

The third research task is connected to the first and the second research tasks; customer information, methods of customer research, and therefore, customer involvement in new product development depends on how important the customer information for company's product development is. Companies' customer information objectives should define what kind of information about customers they acquire, and how do they acquire it. Similarly, the level of product innovativeness should affect on what kind of customer information company needs and how it is attained. The type of customer, affect on what kind of tools can be used to acquire the needed information from target customers, and how they should be involved in the product development process. The conceptual model presented in Figure 5 will be used as the basis of the empirical part of this study.

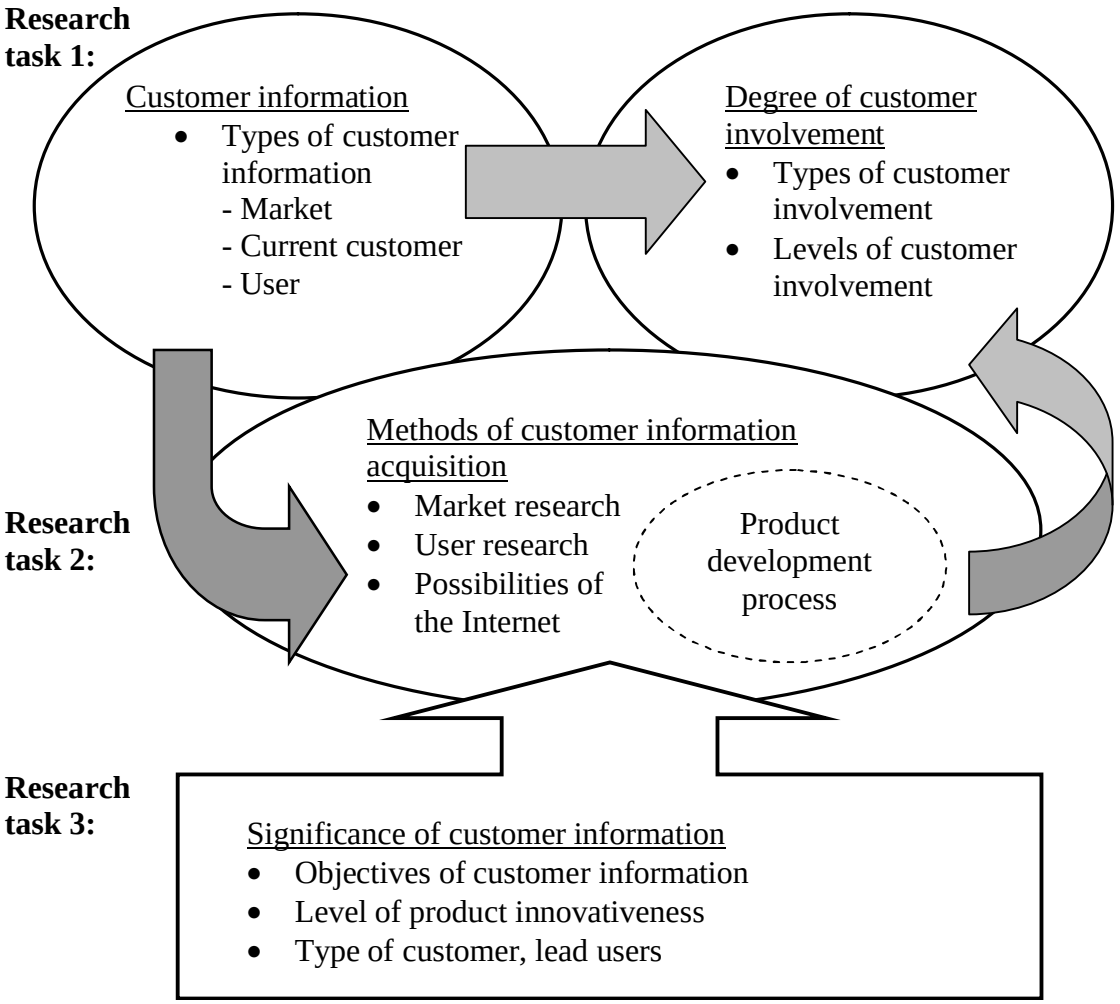

Figure 5 Theoretical framework of the study

3 RESERCH DESIGN

3.1 Qualitative research approach

Research methods refer to systematic, focused and orderly collection of data, and their purpose is to provide material to find answers to research problems. Research methods can be described as qualitative and quantitative. The main difference between qualitative and quantitative research is not 'quality' of the method, but the procedure they are exploited with. In qualitative research the findings are not arrived by statistical methods or quantifications; hence, the difference between the two approaches is rather the different perspective on knowledge and research objectives. Qualitative and quantitative research approaches are not mutually exclusive, but the difference between them is in the overall form and on the emphasis and objectives of the study. The choice of research approach should be determined by the research problem and the purpose of the study. (Ghauri & Grønhaug 2002, 85–87.) Alasuutari (1995, 72–73) describes research method to consist of practices and operations researcher uses to produce observations; and of the rules by which observations can be further reformed and interpreted, so that they can be estimated as clues to the research subject. The method has to be in balance with theoretical framework of the study.

This study adapts qualitative research approach. The study of qualitative research has been developed within several disciplines and research traditions (Eskola & Suoranta 1998, 25); it originates, for example, from psychology, sociology and anthropology, as the researchers are expected to enter the hearts and minds of those they are studying (Malhotra & Birks 2003, 133–134). Qualitative research can be regarded as a mixture of rational, explorative and intuitive elements. Qualitative research is the most suitable approach in this study, because the focus is to uncover research respondents' experiences and opinions. Qualitative research can also be very useful, if the purpose is to understand a little known phenomenon, which is the case in this study. Qualitative research methods are often flexible and unstructured, and they attempt to explain different aspects of the research problem. (cf. Ghauri & Grønhaug 2002, 86–88.)

The decision to conduct qualitative research in this study is derived from the research purpose with two reasons. The first reason is the complexity of the studied phenomenon, which means that the nature of the subject could be more difficult to capture with quantitative research (Malhotra & Birks 2003, 135). Open and flexible nature of qualitative research is most likely to reveal latent meanings, which affect on acquisition and significance of customer information in studied companies, and which are not possible to discover with structured survey methods. Qualitative research is

usually most suitable when the study demands in-depth insight of the subject (Ghauri & Grønhaug 2002, 88). The second reason is the holistic dimension of the research problem, which means that the qualitative nature is to create a complete picture of the context in which the phenomenon occurs (Malhotra & Birks 2003, 135). In this case it means creating understanding of customer information acquisition and significance in studied context.

Flexible research process and rather loose definition of needed information are typical elements of qualitative research (Malhotra & Birks 2003, 63.) The research plan is often kept open during the research process, and can be reformed as the research goes forward. The open nature of qualitative research plan emphasizes cohesion of different research phases. Therefore, in qualitative research process, the data collection, data analysis, interpretation and reporting phases often go hand in hand. (Eskola & Suoranta 1998, 15–16.) One of the characteristics of qualitative research is also its participatory nature (Eskola & Suoranta 1998, 16), because both the research object and the researcher participate in the process, and therefore, the researcher's ability to study is an important factor in the research success (Ghauri & Grønhaug 2002, 86).

3.2 Data collection

In qualitative research the main purpose is not to receive statistically valid conclusions, but rather to understand, gain insights and create explanations (Ghauri & Grønhaug 2002, 120). There are several methods to conduct qualitative research. Malhotra and Birks (2003, 158) divided qualitative research methods into direct and indirect contacts with research targets. Direct research methods are *interview* and *group interview* methods and indirect research methods observation techniques and *projective techniques*. Bryman and Burgess (1999) listed qualitative research approaches as follows: interviews, observation, focus groups, life history and oral history, documentary research, diaries, photographs, films and video, and conversation and discourse analysis.

3.2.1 Interview as a research method

In this study the data is collected by interviews. Qualitative interview is a sensitive and suitable method for capturing the experiences and lived meanings of the respondent's world. Interviews allow the respondents to convey the situation from their own perspective and in their own words. (Kvale 1996, 70.) An interview demands real interaction between the researcher and the respondent (Ghauri & Grønhaug 2002, 83).

The real virtue of qualitative interview as a research method is the open nature (Kvale 1996, 84). The purpose of an interview is to elicit certain information from the target respondent who is assumed to be the most appropriate person to answer the interview questions (Ghauri & Grønhaug 2002, 102).

In this study the data is collected with interviews, because of the nature of the research problem. The interview is the most suitable research method to receive satisfactory data, because it is difficult to predict the directions where the answers and discussions will develop. In the industry in question, a research of this type has not been conducted before, and therefore, it is difficult to predict respondents' answers and opinions beforehand. It is also assumed that the subject will produce complex and versatile answers indicating to several directions, because several different companies are studied. Another reason to choose interview over other methods is to create more profound understanding than just to scratch the surface on this subject. (cf. Hirsjärvi & Hurme 2000, 35.)

Despite its several benefits, the interview method has several weaknesses in comparison to other research methods. Interview is often more expensive and demanding research method than survey methods. Interviews produce also lot of irrelevant data which can complicate the analysis phase. Also the complete anonymity is difficult to assure with interview methods. (Hirsjärvi & Hurme 1988, 15–16.) With interview method the researcher is fully dependent on willingness and ability of the respondents. There can be several reasons that can make people reluctant to cooperate, for example, lack of time, lack of incentive or fear of negative consequences. Interview can be particularly difficult if the topic deals with sensitive issues. (Ghauri & Grønhaug 2002, 82.)

Interview as a research method offers several options. Interview can be seen as a special form of conversation that may vary from very structured, standardized, quantitatively oriented survey interviews to semi-structured guided conversations and free-flowing information exchanges (Holstein & Gubrium 1999, 105). Hirsjärvi and Hurme (2000, 44–45) describe interview method with three forms; survey interview, semi-structured interview and unstructured interview. Survey interview is a structured (often quantitative) research method based on structured questions, and often structured answers. Unstructured interview can be considered as the other end of the interview continuum; it is also called as an open interview or in-depth interview. Semi-structured interview is a mix of structured and unstructured interviews, and which can be also called as theme interview (Hirsjärvi & Hurme 1988; 2000). According to Hirsjärvi and Hurme (2000, 48) the theme interview term is not established in other languages except in Finnish, but in this research the term *theme interview* is used to describe the semi-structured interview method.

3.2.2 Data collection process

In this study the used interviewing method is semi-structured theme interview. In theme interview the research themes are designed beforehand (Hirsjärvi & Hurme 1988, 36). Theme interview is an effective research method, because the interviewer can easily guide the discussion without over-controlling the information flow (Koskinen, Alasuutari & Peltonen 2005, 105). Theme interview is open to some extent, thus the respondent can react and speak quite freely while the researcher makes sure with pre-selected themes that all the same subjects will be discussed with all research prospects (Eskola & Suoranta 1998, 88).

Typical features of the theme interview method are that questions can be reordered during the interview, question wording is flexible, level of language may be adjusted, interviewer may answer questions and make clarifications, and interviewer may add or delete interview probes between subsequent subjects (Berg 2005, 79). As a consequence of its loose structure, the theme interview enables an informal and profound conversation approach (Hirsjärvi & Hurme 1988, 8). The theme interview is a suitable research method to gain considerable amount of data quickly, and it also allows collection of wide amount of information on several topics at the same time (Soininen 1995, 113). The interview discussion is carried through by theme interview framework which focuses on the research themes by predetermined topics, issues or questions (Ghauri & Grønhaug 2002, 101). Theme interview framework of this study is presented in Appendices 1 and 2. Purpose of the theme interview framework in the interview situation is to make sure that the conversation concentrates on correct issues (Hirsjärvi & Hurme 1988, 84–85).

In this study telephone interview was considered to be the most suitable method to collect interview data. Qualitative telephone interview is most likely to be suitable method when researcher has fairly specific questions in mind (Berg 2005, 93), and therefore, semi-structured theme interview is considered to be suitable method in this study, since it has pre-designed framework, but nature of the research problem requires qualitative research. Telephone interview is not highly popular qualitative method, because it lacks face-to-face contact and possibility to interpret non-verbal cues which researchers could use to pace the interviews and determine the interview direction. Under certain circumstances telephone interviews may provide not only effective means for gathering data, but in some instances, owing to geographical locations, it can be only viable method. Consequently, the primary reason to conduct a qualitative telephone interview is to reach a sample population which is in geographically diverse locations. (Berg 2005, 93.)

According to Berg (2005, 93–94) there are three important steps to accomplish successful qualitative telephone interview. First, researcher must establish legitimacy,

which means that the research participant must be invited to the interview beforehand. Second, the researcher must convince the research participant that it is important for the study that he or she takes part in the research, and third, the researcher must ensure that the information obtained is sufficiently detailed to contribute to the study. According to Hirsjärvi and Hurme (2000, 65) qualitative telephone interview questions should be little shorter than in face-to-face interview.

In total 8 companies participated in the study, of which 3 of the studied companies with 2 interviews and 5 companies with 1 interview. Telephone interview was seen as a suitable interview method, because of the geographical scattering of the studied companies. Travel costs around the country would have grown remarkable high with face-to-face interviews. Telephone interview was seen suitable for also in the light of busy schedules of the interviewees. Closely located companies were interviewed face-to-face if they preferred so. Therefore, 8 out of total 12 interviews in this study were conducted by telephone and 4 face-to-face. Furthermore, a test interview was conducted in one of the companies to assure the usability of the interview framework.

4 of the interviewees were marketing managers, 3 were product development managers or specialists, 2 sales managers, 1 product manager and 2 managing directors. All interviewees participate in their companies' marketing and/or product development decisions. Interview duration varied between 25 to 60 minutes. Average interview duration was about 35 minutes. Face-to-face interviews were somewhat longer than telephone interviews. All interviews were recorded, except one on interviewee's request. One interview was in English, rest in Finnish. During the interview process, I also interviewed two representatives from two Finnish *user research consultancies* to broaden the view of customer information possibilities in consumer product development. They were also interviewed by telephone. Interview schedule is presented in Appendix 3.

3.2.3 Research operationalization

Purpose of research operationalization is to turn research concepts into observable form that enables data collection. The operationalization chart combines the research purpose and theoretical elements and concepts of the study with empirical research themes. Table 8 illustrates the operationalization chart of this study. In this study the research purpose is examined with five empirical research themes. The first two themes relate to the first research question. With research theme 1, the nature of customer information, the purpose is to examine what kind of information sports and outdoor equipment producers acquire from current and potential customers. With research theme 2, the nature of customer involvement, the purpose is to shed light on how the customers are

involved in sports and outdoor equipment development by providing the needed information.

Table 8 Research operationalization chart

Research purpose	Research questions	Theoretical concepts	Empirical research elements	Theme
Analyze the acquisition and significance of customer information in consumer product development.	What kind of information can be acquired from customers, and how does it involve customers in new consumer product development?	Customer information types	Market, current customer and user information	Theme 1: Nature of customer information
		Degree of customer involvement	Customer involvement levels and types	Theme 2: Nature of customer involvement
	What kind of means can companies use to acquire customer information to support new consumer product development?	Methods of customer information acquisition	Quantitative and qualitative market research methods, the use of the Internet	Theme 3: Methods to acquire customer information
			User research methods, testing	
		Product development process	Product development stages of customer information acquisition	
	What is the significance of customer information in new consumer product development?	Objectives of customer information acquisition	Reasons to acquire customer information	Theme 4: Significance of customer information
		Level of product innovativeness	Product improvements and product innovations	
		Type of customer	Customer selection, lead users	Theme 5: Customer selection

Purpose of research theme 3, methods to acquire information, is to answer the second research question. The aim is to evaluate the methods the sports and outdoor equipment producers employ to listen to their customers. Purpose of fourth theme, significance of customer information, is to study whether customer information is regarded as important in sports and outdoor equipment development. The objective is also to study whether the customer as an information source differs when the company is developing

innovations instead of product improvements. Theme 5, customer selection, is to examine what kind of customers the sports and outdoor equipment producers tend to listen, and furthermore, whether they listen to specific lead users.

3.2.4 Studied companies

Company selection in this study was limited into companies manufacturing sports and outdoor equipment. This is not an official description of certain kind of companies, but rather informal definition to limit interesting companies. To follow the request of some people and companies participating in this study, the names and product categories of the companies will not be mentioned. Nevertheless, this will not have a major impact on the data analysis or the results, because the purpose is to study the industry in general, not a certain product manufacturer.

In qualitative research the sampling issues are important, for example, relating to whom and how many respondents should be included (Ghauri & Grønhaug 2002, 120–121). However, when working on qualitative research, the amount of data does not have a direct impact on the success of the study. Consequently, there are no general rules to determine the extent or the amount of data. The goal is not to gain statistical generalization, but to describe and understand certain activity or give theoretically interesting interpretation on studied phenomenon. With qualitative research the amount of data should be based on data saturation. This means that further interviews will not produce new information on the research problem. Therefore, the amount of respondents or observations is always case-specific. (Eskola & Suoranta 1998, 61–63.) Kvale (1996, 102–103) mentioned that number of respondents depends on the research purpose. There are enough interviews conducted when the researcher knows what he or she needs to know.

Qualitative research is usually based on small sample which is then thoroughly analyzed (Malhotra & Birks 2003, 63). The scientific criterion for satisfactory data is not the amount of data, but the *quality* of data and its conceptual scope. With qualitative research the research sample is often based on *purposive sample* (Eskola & Suoranta 1998, 18), which means that researchers decide who or what they are going to study. In purposive sampling, also called the *judgment sampling*, the researcher selects the research participants who, according to his or her consideration, represent the research target (Soininen 1995, 103). In this study the research sample was based on purposive sampling. Instead of relying on predetermined hypothesis, purpose of qualitative analysis is to reveal unpredicted conclusions and to provide new learning (Eskola & Suoranta 1998, 19–20).

Since only limited amount of companies in Finland were considered to be interesting in this study, I used two unstructured methods to find suitable companies. First, I browsed through several Finnish company listings published on the Internet and a printed version of Yritystele (2006). I searched extensively for suitable companies during December 2007 and January 2008. The following database listings of Finnish companies on the Internet were used: Inoa (www.inoa.fi), Suomen Yrityshaku (www.suomenyrityshaku.fi) Suomen Yritykset (www.suomenyritykset.fi), Suomen Yritysopas, www.suomenyritysopas.fi), Suomen Yritysrekisteri (www.suomenyritysrekisteri.fi) and Yritystele (www.yritystele.fi). The used services were free-of-charge for information seekers.

For instance, following search words were used to find suitable companies: *urheiluvälineet (sports equipment), ulkoiluvälineet (outdoor equipment)* and *liikuntavälineet (exercise equipment)*. Companies listed in the databases and registers are obligated to pay a certain fee for the entry, and some of the well-known Finnish sports manufacturers were not listed. Therefore, I checked directly some company web sites which were considered to be suitable for the study. These companies are well-known for their brands, products and advertisements.

Prospect companies were not limited in their size, location, or according to any other particular characteristic. In total about 40 companies from company listings mentioned above, or directly from their web sites were found. I viewed them closer for a possible interview by contacting them by email or phone, or by browsing through their web sites to find more information. After the first direct contact or web site browse it was clear that some of them were not suitable for this study, because they were, for instance, importers or retailers. One of them also informed that they do not perform new product development. I contacted randomly interesting 22 companies. Hirsjärvi and Hurme (2000, 59) advice on research participant selection that researcher can start with a rough plan of whom the researcher would be interested to interview, and then discuss with some prospect interviewees to get an impression of their knowledge about the interesting phenomenon. This substantially corresponds with the used procedure, because the industry concerned in this study was decided beforehand, but the studied companies and the prospective interviewees became clear throughout the search.

Preliminary research themes were sent to the prospect participants in the first email. One or two people from either marketing or product development teams were invited to participate in the study, but it was companies' decision to choose the respondents. When an interview with a certain manufacturer of certain product category was agreed, other manufacturers of a similar product were ruled out to get as many as possible versatile companies inside the industry. Therefore, in the end 13 companies were invited to participate in the study, from which 8 companies agreed to participate and were interviewed in the end. Five companies, which did not participate in the study, were

either seen to produce very similar products than companies that already were participating in the research, or were showing too little interest in the study. None of the 13 companies that were invited to participate in the study, directly refused to be interviewed, but presumably due to busy schedules of the prospect interviewees, some interviews were finally never agreed. Perhaps additional 1-2 interviews could have been arranged, but because of the research schedule and data saturation, further interviews were not considered to be necessary.

3.3 Data analysis

The key purpose of a qualitative research is to understand and gain insight into wanted phenomenon. Data analysis is the research stage when order, structure and meanings are brought out from raw data. (Ghauri & Grønhaug 2002, 137.) Analysis of qualitative research should lead to interpretations which should be further connected into discussion with previous research (Koskinen et al. 2005, 229). Hirsjärvi and Hurme (2000, 143–144) describe this process as a continuum of *analysis* and *synthesis*; during analysis the data is classified, reduced and reformed in understandable format, and with synthesis the phenomenon is interpreted in the light of theory and previous research.

As the analysis can be regarded as one of the most essential research phases, it is said to be also the most problematic one (Eskola & Suoranta 1998, 138), even so, it offers researchers several options (Hirsjärvi & Hurme 2000, 136). Eskola and Suoranta (1998, 151) suggest that process of interview data analysis and classification can be performed at least three different ways: 1) The interview data is analyzed at the same when the interview tapes are transcribed. Then the analysis is based mainly on researcher's own intuition. 2) After transcribing the tapes, the researcher first classifies the data and only then analyzes it. 3) Researcher transcribes and classifies the data at the same time, and then analyzes it. In this study I followed the second option by first transcribing the tapes, then classifying the data and finally analyzing the data.

There are also several methods to analyze the qualitative data. They are not always used exclusively, but rather could be used in combinations or completing each other. For example, Eskola and Suoranta (1998, 161–195) list the following methods: quantitative analysis techniques, classifying by type, content analysis, discursive analysis and thematizing. This study was analysed by *thematizing* by using the predefined research themes presented in the operationalization chart. In thematizing the focal research themes are brought out from the data, and then compared and analyzed by their occurrence and manifestation. Successful thematizing requires interaction between theory and empirical part of the research. (Eskola & Suoranta 1998, 175–176.) Hirsjärvi and Hurme (2000, 173) define thematizing as part of the analysis process

when certain elements emerge from data, which can be seen similar among several respondents. Elements are based on the predefined major themes, but usually additional themes emerge, which can be even more interesting than the predetermined themes. With theme interviews the interview framework will assist with encoding the data (Eskola & Suoranta 1998, 153). In this study the data was analyzed according to the five research themes determined in advance.

As there are several methods to analyze qualitative data, also the analysis process can have several different forms. For instance, Berg (2005, 38–40) and Ghauri and Grønhaug (2002, 138) define qualitative data analysis to contain three linked sub-processes that are *data reduction*, *data display*, and *drawing conclusions and verification*. With data reduction the collected material is reduced and transformed into more accessible and understandable format to help to draw out various themes and patterns out of it. Data display means that collected interview material is organized and compressed so that analytical conclusions and interpretations can be drawn. Displays can be in format of data tables, theme sheets or data groupings. Finally, analytic conclusions should be drawn, and they will be defined and verified. (Berg 2005, 38–41.) By conclusions the purpose is to create understanding and explain the phenomenon (Ghauri & Grønhaug 2002, 138). Hirsjärvi and Hurme (2000, 147–149) call similarly the analysis process classification, combining and interpretation. In this study mainly their guidelines were followed with the data analysis.

The usual procedure to start analyzing the qualitative interview data is to have the taped interview tapes transcribed into written texts (Kvale 1996, 163). Also the lettering itself can be done several ways. For example, theme interviews can be transcribed by lettering the discussions word by word, or the researcher can exclusively transcribe the discussions on selected research themes. Alternatively, only interviewees' parts of the discussions can be transcribed. (Hirsjärvi & Hurme 2000, 138.) I followed the first option by lettering the theme interviews word by word, nonetheless ignoring possible sighs, laughs or pauses in the discussions. After transcriptions are ready, data reduction is started with classifying the data (Eskola & Suoranta 1998, 151). In analysis the transcripts should be read through several times, so that the researcher becomes familiar with the data and also to understand it comprehensively (Hirsjärvi & Hurme 2000, 143).

Data classification (Hirsjärvi & Hurme 2000, 147) is an important part of the analysis, because with classified data the framework is created, which is used as the basis of interpretations or data reduction. With classification it is possible to compare parts of discussions to each other. In thematizing the interview data is classified by themes by using the theme framework. In this study the transcribed data was classified according to research themes to Microsoft Excel sheets. Some parts of discussions were placed under several themes, because of some direct and indirect hints, words and part of discussions that referred to one or several themes. In the analysis of qualitative data

the discovered meanings can be condensed into lesser words (Hirsjärvi & Hurme 2000, 137). When the data is classified, usually the next procedure is to organize the data according to classes or themes, and often classes or themes should be combined or divided (Hirsjärvi & Hurme 2000, 149).

The data should be displayed in a form, from which the results can be written. Therefore, *data combination* is needed. Hirsjärvi and Hurme (2000, 149–150) describe the combining phase as the part of analysis when the researcher's aim is to find regularities and similarities in the classified data, but also regular variations and exceptions. In this phase it is important that the researcher understands the phenomenon, not only on empirical level, but also on theoretical level, and is able to combine these two aspects. Mäkelä (1990, 44–45) stated that as it is important to search for similarities in the data, it is as important to search for differences. Searching for differences does not mean that unique features of each interview would be exhaustively described, but it rather refers to systematical and conceptual comparison of studied phenomenon and other related phenomena. There were countless differences and some exceptions found in the data because all the studied companies were different.

In qualitative research the researcher also must be able to *interpret* the data. According to Hirsjärvi and Hurme (2000, 137) it means that the researcher aims to discover aspects and clues which are not directly outspoken in the interviews. The purpose of interpretation was to find clear references to research questions, but at the same time to find hints to understand the studied phenomenon better. With interpretation the researcher should lean on previous research and theory (Alasuutari 1995, 42). With interpretation the aim was to discuss and understand the acquisition of customer information is sports development in comparison to previous literature, and also in the light of differences between studied companies.

3.4 Research trustworthiness

Research quality concerns are often more challenging to manage in qualitative research than in quantitative research, because in qualitative research the researcher always has some inevitable impact on the results. Qualitative research is prone to researcher's own preconceptions and attitudes, and always reflects at least to some extent researcher's own interests. (Soininen 1995, 39.) Research trustworthiness refers to how well and accurately the research is executed and the reliability of the results and the research process. Mäkelä (1990, 52–53) discusses about two aspects which have affect on research trustworthiness; *data adequacy* and *analysis scope*. In qualitative research it is almost impossible to determine the amount of needed data beforehand, but researcher should not gather too much data. An idealistic amount of data would end up to data

saturation, but it is also difficult to know beforehand, when the data becomes saturated. The scope of analysis means that researcher does not select interviewees accidentally, but explains why the respondents were selected. The company selection of this study was discussed in detail in section 3.2.4. Data saturation was quite apparent in this study.

Research trustworthiness depends on the research quality (Hirsjärvi & Hurme 2000, 185) and is usually viewed from two well-established concepts; research validity and research reliability. Research *validity* is understood as the indicator of to what extent certain argument, interpretation or result embodies the research target. By *internal validity* is meant logicality and consistency in the interpretations, while *external validity* describes possibility and quality to generalize the interpretations to other cases outside particular research context. (cf. Koskinen et al. 2005, 254.) Research *reliability* refers to level of consistency, when the results would be the same with different group of respondents in similar context (Soininen 1995, 120). Results are considered to be reliable if two researchers conclude same research outcome (Hirsjärvi & Hurme 2000, 186). *Objectivity* means that results derive from respondents' qualities and contexts, and not from researcher's imagination, interests and motivation (Soininen 1995, 122).

Nevertheless, reliability and validity are often ill-suited for qualitative research (Koskinen et al. 2005, 255). Therefore, other criteria to determine qualitative trustworthiness have been created. For example, Lincoln and Guba (1985, 294–301; also e.g. Soininen 1995, 123–124) proposed to use instead of conventional definitions of internal and external validity, reliability and objectivity, the following four research trustworthiness criteria:

Credibility refers to internal validity in qualitative research, and means that researcher should make sure that his or her interpretations and insights are equivalent to research prospects' insights (Lincoln and Guba 1985, 294–301). The researcher could recheck the interpretations with interviewees to make sure that he or she had made the interpretations correctly. In this study, to meet the credibility criterion, additional questions during interviews were made to make sure that I understood respondents correctly. If something remained unclear, it was checked again with interviewees. Also the tapes and full transcripts affect on credibility, because if something remained unclear, I was able to check them from the tapes. Also the direct quotes presented in chapter 4 were approved by the interviewees.

Alasuutari (1995, 90) introduces *source criticality* to validity criteria. Researcher should be critical towards the data source, especially if the research subject deals with sensitive and morally charged issues. In this study the source are the people participated in the interviews. Generally there is no reason to assume that any of the respondents would have been lying, but as there is always a possibility that they left something unsaid on purpose, or did not mention something that would be unfavorable for their

company. Naturally they also avoided to discuss about matters that could jeopardize themselves or the company.

Fact that could have had some effect on credibility in the first few telephone interviews, were few unintentional leading questions, because lack of eye contact with interviewees or possibility to interpret their body language. With telephone interviews it was sometimes difficult it predict whether the respondent was thinking silently or showing some signs of unwillingness to answer. The disadvantage of telephone interview in qualitative research is the lack of visual clues, and with telephone interview it can be difficult to know, for example, whether the interviewee has understood the question (Hirsjärvi & Hurme 2000, 64). Furthermore, in telephone interviews people tended to think more carefully what they would say and the answers were often shorter than in face-to-face interviews.

Transferability refers to external validity in qualitative research and is used to describe the extent how results can be transferred into other contexts (Lincoln & Guba 1985, 316). In qualitative research the number of studied cases is often so small, which makes generalizations rather questionable, and is not always even useful to make generalizations in qualitative research (Koskinen et al. 2005, 265–267), but according to Alasuutari (1995, 215–217) it is very important that researcher makes sure that how and to what extent he or she presents the results in wider context; the problem of generalization can be solved with references to previous research.

In qualitative research it is almost impossible to repeat the research exactly the same as it has been, but according to Mäkelä (1990, 52–53), the researcher has to give a reader a possibility to *assess and repeat the analysis*. Assessment means that the reader must be able to trace and understand researcher's interpretations and the reader is given a chance to agree or disagree on them. Repeatability, in simply put, means that used classification and interpretation rules are presented as clearly as possible, so that another researcher could attain the same outcome. The researcher has to document on how he or she has arrived to make the decisions to classify or describe the studied phenomenon. Therefore, the researcher has to be able to justify his or her choices in a credible manner. (Hirsjärvi and Hurme 2000, 187–189.) In this study to meet the transferability criterion, I explained earlier how the interview raw data was classified and analyzed. The research was conducted according to the research themes; the theme framework which guided the interviews, is presented in Appendices 1 and 2, and parts of the interview discussions are presented as quotes in chapter 4, for the reader to assess the interpretations.

Dependability was used by Lincoln and Guba (1985, 316) to replace traditional reliability, and to describe the research quality and consistency throughout the whole research process. Hirsjärvi and Hurme (2000, 189) conclude that with qualitative analysis the factors that closest describe traditional research reliability are matters that

describe research *quality*. Dependability then describes researcher's activities during the research process instead of research respondent's answers. Then reliability relates to researcher's actions, such as, whether all accessible material was taken into consideration and have the tapes been transcribed correctly. Similarly, it is important that results reflect as much as possible the respondent's thoughts. Interview outcome is a result of cooperation between interviewer and interviewee.

Quality control is an important part of the research process. It includes, for example, following aspects: well preparation for interviews with well-planned theme framework, preparation for additional questions outside the theme framework; technical preparation with research equipment; improving theme interview framework after the first interviews; and transcribing the interviews as soon as possible after interviews. (Hirsjärvi and Hurme 2000, 184–185.) To guarantee research quality I made careful preparations for the interviews by getting to know the studied companies and products well before, to get the most out of the interviews and by making sure that the interviews were conducted with right people there. With test interview it was possible to improve the theme interview framework after one interview, and some notes for improvement were still made after the first two or three 'real' interviews. With telephone interviews it was essential that the equipment was working perfectly, therefore, it was tested well before the interviews were conducted. To improve the quality, all interviews were transcribed word by word, but as transcription required several hours work per interview, it was not always possible to perform the lettering as soon as I wanted.

Confirmability is used by Lincoln and Guba (1985, 294–301) to describe objectivity. Researcher should make sure that the results are truthful and not derived from researcher's interests and motivations, and the data should be confirmable. In the interview situations the purpose was to take neutral approach. In this study the names of the studied companies cannot be revealed, which makes the confirmation more difficult, but the company names are in the attention of the research supervisors, and some background information of studied companies is given to create a distinct image of the companies.

When conducting research, ethical factors should be paid attention to, and by choosing an interview as a data collection method, *confidentiality* and *anonymity* become important (Eskola & Suoranta 1998, 57). In a literal sense, anonymity means that the respondent remains nameless, but with qualitative research complete anonymity is virtually impossible, but high degree confidentiality must be provided to the respondents (Berg 2005, 65). In this study the companies participating in the study were promised anonymity and confidentiality in the sense that their names, company names and other characteristics that would reveal the information source would remain unidentifiable, if they require so.

4 ACQUISITION OF CUSTOMER INFORMATION IN SPORTS PRODUCT DEVELOPMENT

The purpose of this study was to analyze the acquisition and significance of customer information in consumer product development. In the empirical part of the research the views of sports and outdoor equipment manufacturers were studied. This study assumes that consumers often have an emotional bond with their sports equipment, because they are mainly middle or high-priced, buyers often make the effort in gathering information and making comparisons between different products and brands, and brand has a strong impact on the product choice (cf. Kotler & Armstrong 1996, 276–277). Moreover, sports equipment is part of users' scarce free time, interests and lifestyle.

Active sports hobbyists usually demand high product quality from the sports equipment, especially if they are prepared to invest in well-known brands and products. Technical complexity of sports products is mainly on a level that can be understood by users and they can be expected to be able to improve or give new ideas on them (cf. Lüthje 2004, 687). Therefore, consumers and users can be considered to be a potential source of information.

Table 9 presents an overview of the studied companies. From now on they will be referred as *sports manufacturers* and they are named according to Greek alphabets at random order. All companies have ordinary consumers as users, and four out of eight companies also have professional athletes as users. Most of the companies are internationally active. They have well-known brands among their users. Companies and their brands are originally from Finland, and still at least to some extent, designed in the country. The products are manufactured both in and outside Finland, which perhaps has some effect on the product development actions in these companies.

Table 9 Studied sports manufacturers

Company	**Number of interviews**	**Target users**
Alpha	2 + test interview	Consumers
Beta	2	Consumers + athletes
Gamma	1	Consumers
Delta	1	Consumers + athletes
Epsilon	1	Consumers
Zeta	1	Consumers + athletes
Kappa	1	Consumers + athletes
Omega	2	Consumers

Studied companies are of several sizes but mainly small or middle-sized, which indicate that marketing and product development actions probably have some limitations. Yet, this brings additional value to this study, because companies have to

carefully consider what kind of means they use to acquire customer information. More interest to this study also brings the fact that, although they all design products for consumer markets, they also have professional athletes as users, and their products can be very different. The objective was to bring versatility and richness in the data by studying companies producing different kind of products. I also discussed with two representatives from two Finnish user research consultancies to understand better how market information and user information can be utilized effectively throughout the NPD process. They will be referred as *user research experts*.

4.1 Role of customer information in NPD

The purpose of this section is to discuss the first research task of which objective was *to examine what kind of information can be acquired from customers, and how does it involve customers to company' new consumer product development*. First, the results of what kind of information customers can provide to augment company's product development in sports industry will be reported. Second, the nature of customer involvement in the companies' new product development will be analyzed.

The discussion of use of customer contribution in new product development is truly interdisciplinary. Traditionally customer understanding has been created through different kinds of customer surveys or quantitative market research projects (Matthing et al. 2004, 482). Nevertheless, traditional customer research do not always augment the creation of better, and more importantly, better *new* products, thus it has been stated that different kind of customer information and customer involvement in NPD process is needed.

4.1.1 Types of customer information in sports product development

Hyysalo (2006a, 8–9) described the data acquired via or about customers and consumers with three different information types; market information, current customer information and user information. If companies want to make the most out of their actions to understand customers, they should be familiar with all these customer information types and be able acquire them, and equally importantly, to see the difference between them and be able to combine them.

Market information provides generative image of typical characteristics of target customers (Hyysalo 2006a, 8–9). Sports manufacturers differed significantly in acquiring and valuing market information. Nonetheless, the general impression from the interviews was that traditional quantitative market research is not very systematically

and widely conducted to acquire information for NPD purposes, especially before starting a new product development project. In some of the studied companies the need for systematic market information was not really identified, and they preferred more informal information or secondary data. Hyysalo (2006a, 8–9) stated that one of the weaknesses of market information is that it is often too general to be used as such for NPD purposes. The results support this; in studied companies the focus of market information was to study marketing-related issues and not to concentrate on consumer needs information, which would be more useful in product development.

The reasons to neglect market information as a customer information source could be high costs of the acquisition, besides the fact that not all companies seemed to be aware of what kind of topics can be studied, and how these topics could be studied. One interviewee considered market information as 'nice to know' data which does not help in product development. Especially disadvantages of traditional quantitative market information were recognized, because several respondents mentioned that consumers are not able to provide information which would be beneficial for them.

At least two of the interviewees had noticed the same thing; customers' consuming behavior or future needs cannot be predicted with quantitative research. Market information was perceived as unreliable, for example, because when consumers had said that they liked and preferred some features in products, it did not mean that they would pay for them. This supports the statement of Fellman (1999, 21) that consumers do not always do what they say. In addition, Elliott and Jankel-Elliott (2003, 215) argued that ethnographical consumer research has replaced traditional marketing science, because customers cannot predict their behavior. The sports manufacturers, which had been unsuccessful with market information, did not necessary replace it with other kind of information; rather, any kind of customer information was then neglected. General consumer information was not valued very highly, for example:

> *We have made some consumer surveys even together with other manufacturers… they rarely provide any new information. And we are quite suspicious about them, because they have not been really good at predicting consumer behavior. (Gamma)*

Qualitative market information was more rarely acquired than quantitative one. Only few of the companies arranged, for example, focus group sessions in the early stages of the NPD process. Some companies also preferred informal information from discussions with consumers, or by observing their interest in events and exhibitions to sense what kind of things interest customers. Often the discussion data was not systematically collected, but it was stored in company employees' minds. For example, Day (1994, 14) said that employees in customer contact points are valuable source of information, but its value will vanish, if it is not systematically stored. Nevertheless, several of the studied companies appreciated also other kind of market information to

augment NPD process. Although, the information acquisition was not in most cases systematically repeated, and the research was not systematic part of the NPD process, its purpose was more to understand the end user and to create a general image of the end users or potential buyers:

> *… Information on consumer needs and preferences, and generally our purpose is to learn how consumers perceive the products in this industry, whether they have interest or not, and especially, whether they have interest in our products. We are interested in what our potential buyers are like and what they think. (Alpha)*

In this case the market information was valued as a good option to understand consumer. The need for market information varied widely between different sports manufactures. Companies with market-oriented product development were systematically sensing their environment and updating their information about consumer requirements. Therefore, on the other end, few of the studied companies worked on specified and systematic, and even proactive systems to acquire constant market information, not only about consumers and potential buyers, but also about markets in general, competitors and other industries. For example, one company conducted constant market information research to explore emerging needs:

> *We do a lot of systematic research ourselves, but we outsource a lot of tailored research as well. We repeat some customer studies annually, but also conduct ad hoc research, if we think that something should be studied. (Beta)*

The purpose of market information was also to understand what happens outside company's walls; especially when market information was seen to be the only source to trace potential consumer's opinions. It was seen more difficult to acquire than current customers' opinions, for example:

> *We have a lot of information about our current users, but even more interesting for us are the reasons, why someone did not buy our products and maybe bought another brand. (Alpha)*

To summarize, market information was not valued very highly in development of new products, except if the company had resources to truly explore different markets and customer segments. Market information was not very attractive, because it was not able to reveal consumer needs and was considered to serve more marketing actions than new product development. This supports the argument of Hyysalo (2006a, 8–9) that market information is often too general for NPD purposes. In some companies market was considered to be too fragmented or segments too small to acquire extensive market information, therefore small scale qualitative information was preferred. Qualitative market information was considered to be more useful for NPD purposes, but it was less frequently acquired than quantitative data. Furthermore, acquisition of market

information was not very systematic, and several companies mentioned that they lacked adequate resources for constant and extensive market information acquisition, which perhaps implies that companies were not very market-oriented. Several companies had also noticed the fact that market information is not able to reveal latent consumer needs, which supports, for example, the argument of Enkel et al. (2005, 432).

Current customer information reveals, for example, who has purchased the product and where, and what does the buyer think of it. Current customer information refers to current product use. Current customer information can be valuable, but it is often unstructured, because it is detailed and a subjective view of one customer. (Hyysalo 2006a, 8–9.) Current customer information is basically available for every company that has sold products before. Sports manufactures get current customer information mainly through direct contacts with customers on customers' initiative, in forms of complaints or improvement suggestions via such methods as emails or phone calls.

The Internet was perceived as an important source of current customer information. Despite the easiness of the Internet, even more important source of current customer information was companies' own sales representatives and sports product retailers. Also Hyysalo (2006a, 9) mentioned that sales people and partners are one of the most common sources of current customer information. The retailers were actually the most mentioned source of customer information among sport manufactures; only one company did not mention it as the first source, which indicates that retailers' power is strong in this industry:

> *We get (consumer-related) information from many different sources, but our sales people are probably the most important source; consumers give feedback in stores and the retailer forwards it to us. (Gamma)*

Several of the interviewed companies had very close and active contact with their retailer network. It was seen as the most suitable source of information in some companies, and it was clearly more important source to describe potential buyers than market information. In one case the retailers seemed to know best the consumer needs:

> *The retailer is the best indicator of consumer needs. … We get information (about consumer requirements) from retailers; we will produce what the retailers want to buy. They know what the consumer wants. (Kappa)*

Problem with current customer information is its fragmentation around the company; it can be in possession of several functions and employees (Hyysalo 2006a, 8–9). In addition, if the information is not systematically collected and stored, it can lead to distorted image of consumers' opinion. For example, in the interviews were mentioned few times that loud customers with strong opinions speak out easily, but their opinions do not always correspond with general consumer opinion, and therefore, do not represent true needs of an average customer. Such proactive customers can be, for

example, very active and advantaged in communication. They can also be enthusiastics of some kind, who do not represent the target user. Several interviewees mentioned that they receive a lot feedback and suggestions from all kind of consumers, and in spite of active customers, companies ought to be able to filter out useless, non-suitable messages. As the fragmentation of information was seen as a problem, some of the companies used retailers as filters and source of secondary data:

> *We don't really systematically collect consumer feedback. Important indicator (of the consumer feedback) is what the retailer receives… If the retailers say something about the product that this is a problem that they get a lot of complaints about, then we know it really is a problem. (Omega)*

Nevertheless, the characteristics of fragmentation and lack of systematic acquisition of current customer information were inevitable also when the end user information was received via retailers. This seemed to be basically the situation in several companies. However, the companies, whose retailer power was strong, seemed to rely heavily on retailers' opinion on consumer needs. The strong confidence on retailers' opinion in this industry is understandable, because retailers have a direct contact with end users and potential buyers everyday (unlike most manufacturers), and retailers do have to be aware of new consumer trends, because in sports business new trends develop fast. Still, the problem with strong retailer voice can be, on the other hand, the lack of evidence. As the retailers' opinions seemed often to be driven from assumptions, and not so much from research, manufactures perhaps should consider other methods to acquire information on consumer needs next to retailers' opinion.

Retailer's voice is basically strong, because they decide what they sell in their shops, and therefore, it is difficult without further information to object this, but in general it is difficult to predict other person's preferences and needs, and retailer's view on consumer needs can be very different from consumer's actual needs. For example, Brockhoff (2003, 465) stated that although manufacturers should listen carefully to all levels of the supply chain, the end user should have a strong voice in the process. Nevertheless, the retailers were regarded often as the voice of consumer masses in some companies. One company, also relying on retailers view on consumer needs, wanted to be sure that the retailers' view was correct and concluded:

> *We collect market information also to show outside (to retailers) that this is what the consumers want. (Alpha)*

It can be seen from the data that companies appreciated the current customer information very differently. The companies, which did not systematically collect and store feedback from current customers, claimed that they use customers' suggestions, if possible, in future product development, but it is more based on their own memory and

perceptions. Besides, the fragmentation of current customer information seemed to lead not using it:

> *Customer feedback is more like why don't you have this or why don't you have that. It is often questionable how useful it is, because everybody has their own opinions. (Gamma)*

There can be several reasons why feedback and customer suggestions are not systematically gathered in the companies, but one of them is probably small size of the company, thus structured systems to collect and store data were not needed. However, almost all respondents mentioned that suggestions for product improvements from customers could have led to better products, and to products that satisfy also other consumers. Nonetheless, its value was still considered to be modest in creating new products, for example:

> *We get feedback, but it is more like suggestions for improvements… rarely is it anything (new). (Omega)*

However, some exceptions emerged. One company representative mentioned that consumer's suggestions for improvements are the most valuable information that can be acquired about end users. This indicates that the interviewee did not appreciate other forms of customer information very highly, or perhaps the respondent was not aware of them. Another interviewee estimated that they could use information about current customers more effectively; information should and could be acquired and collected more structured manner, and therefore, it would be more suitable for further use.

Despite the possible pitfalls, one company was very active in acquisition of current customer information. They used current customer information in very structured and proactive manner to assist new product development. For example, after product launch customer satisfaction was monitored for several months by studying users. Purpose was to make sure that the new product was good, but also to know what kind of changes have to be made for the new ones. Companies, which had constant cooperation with certain current user groups, had established methods to constantly collect information by discussing with these users. Another company had developed system of constant acquisition of current customer information, and it was conducted in an informal manner and face-to-face discussion with customers. Nevertheless, a contact of this kind can be difficult to attain, but, for example, if the product is used by certain sports team, the connection is already much easier to find.

To summarize, although the amount of current customer feedback and suggestions was rather high and they were systematically reacted, in several companies the information was not systematically stored and further used to assist NPD. Retailers were seen as the most important source of current customer information and their contribution was heavily relied on. They were considered to be more important source of customer information than market research. Brockhoff (2003, 465) argued that end

user voice should be always heard in the NPD process, but several sports manufactures did not agree with this. Current customer information was clearly fragmented, as Hyysalo (2006a, 8–9) suggested, but it was not considered as a major problem in several companies, although the fragmentation seemed to lead a situation where it was not used at all. Fragmentation was apparent whether it was received via retailers or directly from consumers. Current customer information received from consumers' themselves was mainly detailed information on existing products and suggestion for improvements. Several companies had received new product improvement ideas from current customers, which companies was not able to come up with themselves. Several interviewees also supported the argument of Hyysalo (2006a, 8–9) that current customer information often emphasizes only certain types of customers, which was considered to be a problem. However, few companies were very active in exploitation of current customer information; they combined it with other information types and were active in acquiring it, as they had noticed that it can be very useful.

User information reveals more about the user; about the user needs, how the product is used in the use context, and it exploits the combinations of consumer, current customer and user information to create better customer understanding. User information can be very valuable and useful, but it is complicated and often expensive to obtain. (Hyysalo 2006a, 8–9.) Although the user information is still more commonly acquired for system development and digital apparatus than consumer goods, the interviews with sports manufactures revealed that user information is rather common information source to make sure that the new products satisfy customers' needs.

Still, there were again differences between companies in the acquisition of user information; it is not unambiguous as it varies between companies, and can even mean different things for different companies. This supports the argument of Heiskanen et al. (2007, 13) that the methods companies use to understand their customers are very company and product-specific. With most of the sports manufacturers the user information was highly related to product testing with customers, while for a few companies it meant comprehensive study and cooperation with customers, which could last throughout the whole development process. Some companies had noticed that acquisition of user information starting early from the development process is the most suitable approach to understand future product users.

> *What is useful for product development is the user information. For example, with user interviews we can get more detailed information to support product development. (Beta)*

User information, at least in some form, was seen as a natural part of the product development project for half of the studied companies. User information can be acquired in a group meeting with potential users or give them prototypes for testing:

> *When we make new products, we give them for potential buyers to test and we collect their comments. If it's not possible to make the changes to that product anymore, they will be noticed in the following product development projects. (Epsilon)*

The value of user information was not clear for all companies. For example, they did not see advantages in user information in comparison to market information, or they considered user information to be useful, but there were several reasons, why they did not explore the possibilities:

> *It would be great if we could test product concepts with consumers during new product development, but we seldom have time for it. … But testing (product with customers) would be a suitable method to get an external opinion on the product. (Alpha)*

Companies designing sports products for professional users were continuously collecting user information; the product development was highly based on it. The companies, which were developing products purely for consumer markets, regarded user information as less important. Besides, according to interviewed *user research experts*, the value of user information depends on the product; what purpose it is for, what are the use environments like, and who the users are. User information is not important for all product development. However, some companies' were employing remarkable set of different user research actions to listen to their customers and users, and to make better products for the market, which was truly surprising.

In summary, very different forms of user information was acquired in every second of the studied companies. However, the information was based mainly on different forms of user testing and not so much on concentrating on the user, user behavior and use context, as Hyysalo (2006a, 8–9) suggested that it could be at best. User information acquisition was also more active than market information in the early development stages. User information was not very valued in several companies, also because they lacked knowledge on its advantages. However, there were major differences between companies; several of them considered user information as very valuable. In a few companies the product development was highly based on used information. Several companies used professional athletes for providing information about current products, and their opinions were more trusted than ordinary customers'.

4.1.2 Customer involvement in sports product development

Customer involvement in product development can be defined several ways, but in this study it is defined according to Kaulio (1998, 142) as the interaction between company's customers and its product development process. This study examines the

concept of customer involvement from the degree point of view. Degree of customer involvement is described with two classifications, *types of involvement* according to Kaulio (1998) and *levels of involvement* according to Alam (2002). Earlier in this study an interpretation was made that customer involvement depends on the type of acquired customer information and on the methods used to acquire the information.

The interviews with sports manufacturers revealed that degree of customer involvement in product development differs significantly between companies. In this study, there was a difference between companies designing products only for 1) ordinary consumers and for 2) ordinary consumers and top athletes. If company produced goods only for ordinary consumers, the customer involvement was clearly lower and interaction methods were more formal. Alam (2002, 255) identified four levels of customer involvement from low degree to extremely high customer involvement and cooperation. In *passive input acquisition* the company is the passive and the customer the active party. Basically, every company today receives feedback and suggestions from several sources, whether it is by email, phone or retailers. As well as the sports manufacturers, for example:

> *We have a possibility to give feedback in the net. It has been noticed to be... we get a lot of product feedback. (Zeta)*

All studied companies received feedback, questions and suggestions from their current and potential customers and most of it was via email or filtered from retailers. Brockhoff (2003, 467) stated that suggestions and feedback rarely lead to completely new products. Results of this study support his argument, but on the other hand, most of the studied companies were not exploiting customer feedback very effectively in NPD. This means that degree of customer involvement was zero in those companies, if they did not further use it. Only one company did not actively acquire any kind of customer information, but they acquired general information about markets and retailers and were assured that they are aware of existing consumer needs by using retailers as an information source.

Of all involvement levels, most variety in this study was seen on the second involvement level; *acquiring information and opinion on specific matters* (Alam 2002, 255). This involvement level can be reached, for example, with formalized market research, surveys and questionnaires, whenever customer opinion or feedback on specific item is needed, but degree of customer involvement is rather low. According to Alam (2002, 255) this is the most common form of customer involvement, and the results of this study indicate the same, for example:

> *We haven't really asked for new ideas, but during product development, we have asked a group of target consumers to give opinions about the products. (Gamma)*

Another one of the studied companies had a similar approach. Their strategy was to check potential customers' opinion for new products. If some resistance from customer point of view was perceived, the company made required changes, but customers' ideas to improve the products were not particularly acquired or asked for. This was close to a safety procedure to make sure that the company was making the right decisions.

Customer involvement of this kind implies to Kaulio's (1998, 147–148) customer involvement type *design for customers*, meaning that the design process is guided by customer data. All studied sports manufacturers, except one, are in contact with consumers in certain manner to ask feedback or opinion on something. The most widely used method was perhaps the Internet-based questionnaire, which was used to ask some product-related questions. For example, one company asked consumers to give suggestions on how to improve the basic product with special features they prefer. The communication remained formalized, because their opinions were asked in an email questionnaire.

In the *extensive consultation with users* the customers are selected carefully and the same customer group is often studied for a longer period (Alam 2002, 255), although with consumer products the period is often inevitably short (Heiskanen & Hyvönen 2006, 103). Among studied companies the consultation with users was seen as rather suitable approach to involve customers in NPD; half of the companies seemed to support it. In user consultation the communication with customers can be more informal than in information and opinion acquisition. Only few target users are involved, because the research scope is deeper. An approach of this type was considered to be useful, because of the possibility to interact directly with customers, and to discover information about consumers, which would not be possible with surveys. Still, it requires resources:

> *Sometimes in a long term product development project we've had several meetings with a certain user group, for example, of period of couple months. We see it very useful, but in a short term it's very difficult to gather bunch of target users together. (Beta)*

These companies acquired constant user information and it was seen as an important part of their product development process, and more importantly, was considered to have a positive impact on the new product's success. Often the cooperation lasted for a longer period, at least few sessions. Companies, of which customer involvement cannot be considered as consultation with users, showed interest in it, and had planned some closer cooperation with users in the near future:

> *We are planning cooperation with a certain consumer group. … We give them different kind of products to use and they will give us feedback and tell what they think about them. (Gamma)*

This level of involvement refers to Kaulio's (1998) involvement type *design with customers*, because in communication some formal methods are used, for example, structured testing and interviews or questionnaires. Companies, which had professional sportsmen as customers, were also using extensive consultation with users throughout the development process; nevertheless, they were not always considered to be part of the product development team:

> *We don't tell (users) everything we are doing, but I could say that they are closely followed during the product development process. (Zeta)*

Representation is the most extreme and most rare level of customer involvement in NPD. It means that customer base is represented in the product development by taking some of the customers as part of the development team. (Alam 2002, 255.) Kaulio's (1998) third involvement type, *design by customers*, refers to this level of involvement. Having ordinary consumers as part of the product development team was seen as an inconvenient option for manufacturers producing products only for consumer use:

> *Really having ordinary consumers as part of the product development team would be difficult, because basically they wouldn't even understand what's going on. … However, we have considered of taking users with expert knowledge in product development to gain credibility. … Problem is to find these users, and also the lack of our resources. (Alpha)*

Also one of the *user research experts* thought that having ordinary consumers as a part of the product development team is rare, but it is possible with professional users. Some of the sports manufacturers had tried out using a group of key salesmen as part of the product development team, but consumer needs with only few consumers were seen as difficult to cover, for example:

> *We haven't had (consumers part of our development team, sometimes we have used a group of retailers, but it's problematic… the market is very fragmented; there would be just too many different opinions… (Gamma)*

When companies had professional users and athletes as customers, the situation was clearly different. Sportsmen were deeply involved in product development, and in one company they were considered to be part of the development team. It seemed to be necessary to have a good, direct, informal interaction with those users, and role of the professional users was emphasized especially in testing. Representation was seen to be based on informal relationship or on an official contract with professional users to participate in the product development. The users were naturally expecting and receiving some kind of compensation for the cooperation. Besides, it was also professional athletes' main interest to get the best possible sports equipment, and then active cooperation was natural, because high customer involvement in product development is most likely to succeed, if both parties have equally high orientation to develop a good product (e.g. Brockhoff 2003, 468–469). NPD cooperation with

professional athletes can be considered as profound *consultation with users* or as *representation* depending on the development project and company, for example:

> *The users are the ones who have the last word, whether the product is good or not… We have some professional users as part of our product development team. (Delta)*

Professional users were seen as part of the product development team, and integrated as co-developers as Salomo et al. (2003, 453) described it, because they attended the meetings, participated in testing and product development discussions. Also in another company sportsmen were employed as part of the product development team:

> *Several top athletes use our products, they report on the product and we constantly do the product development with them. They are employed by us. (Kappa)*

Table 10 depicts an overview of customer involvement in new sports product development. Table combines the use of customer information types, and simultaneously how it involves the customers in NPD. The non-italicized parts of the table indicate the results of this study. In summary, the average degree of customer involvement was not significantly high, but not very low either, although the company size, product type and features, target user characteristics, and level of customers' professionalism seemed to have a major impact on the companies' decisions on what kind of information they acquire. Only one company did not actively acquire any kind of end user information.

Most companies employed several different customer involvement levels depending on the actions and projects they conducted. Most common involvement types were *design for customers*, when information and opinions from customers were acquired and *design with customers*, when users were used as consultants. These results support the results of Alam (2002, 256) that these involvement levels are most commonly used. Acquisition of information and opinion was either market information or current customer information and approaches varied extensively between companies. Extensive consultation with users was quite common involvement approach, but the focus was in some companies on top athletes, but importantly enough, in some companies the focus was on ordinary consumers.

The results are inconsonant with Alam's (2002, 256) results that companies would prefer to have more representation in NPD. The sports manufacturers did not support representation, because having ordinary consumers as part of company's product development team was regarded as problematic in every company studied. The value of consumer representation was not seen to compensate all the costs and resources needed. Only one company had users as part of their product development team, and those users were professional athletes. However, Alam studied corporate customers, which is probably an important reason for the difference in results. Apparently only Dahlsten

(2004) has defined similarly customer involvement with consumer goods and that study concentrated only one (Volvo car) development project. To the best of current knowledge, any other comparable study of customer involvement in consumer product development has not been conducted, therefore, comparisons are impossible to make.

Table 10 Overview of customer involvement in sports product development

Degree of involvement	***Level of involvement***	**Studied companies**	**Typical sources**	**Significance**	**Other notes**
Low = No customer involvement	*Passive input acquisition* *Current customer information*	All 8 studied companies	Via retailers and own sales people, direct consumer contact via Internet and telephone	Systems to collect exist, but no systematic further use for NPD, was not valued very highly for NPD purposes	One company interested to further use of current customer information
Fairly low = Design for customers	*Information and opinion* *Current customer, quantitative market, rarely qualitative market information*	6 companies	Different surveys, website / email questionnaires	Not very systematic in all companies, all not convinced about usefulness for NPD, methods often ad hoc basis	Most common of the proactive involvement levels, major differences between companies
Fairly high = Design with customers	*Extensive consultation with users* *User information, rarely qualitative market information*	4 companies: very active in user research, customers were ordinary users and/or athlete users	Combinations of testing and questioning, mostly qualitative	Very important for companies conducting user research. Other companies trying out irregular consultation with users	Common also in smaller companies, systematic and organized, important role in NPD process
High = Design by customers	*Representation* *Informal user information*	1 company, customers ordinary consumers and professional sportsmen	Constant cooperation in development by testing and discussions	Very important for the ones that use it, for others not seen useful	Ordinary consumer information was not seen useful, because of the technicality of the product

In Lagrosen's (2005, 432) study of industrial producers, the companies, which listened to their customers in formalized manner, ended up in low customer involvement. This study supports the results, meaning that with informal company-

customer interaction the involvement was often higher. If company produced goods only for ordinary consumers, the customer involvement was clearly lower and interaction methods were more formal.

The companies, whose main level of involvement was asking information and opinion, were also quite reluctant to acquire customer information and did not appreciate it as highly as the companies that had higher customer involvement. Companies with relatively high degree of customer involvement were active in acquiring different types of customer information. Low customer involvement can be due to lack of knowledge about different kind of methods, but it also depends on the product manufactured; with mass-produced goods the involvement was lower than with products designed for smaller segments.

4.2 Methods to acquire customer information

In the age of marketing orientation, even successful organizations work sometimes on set of assumptions about their customer wants and needs (Pitta et al. 1996, 48), even if extensive selection of different research methods exists. The second research task was to examine *what kind of means companies can use to acquire customer information to support new consumer product development.* As earlier concluded in this study, the customer involvement in new product development depends on the customer information acquired and on the methods used to acquire the information. Alam (2002, 252–257) referred to the research means as *methods of involvement*, whereas Heiskanen et al. (8–10, 2007) approached the research possibilities by defining interaction methods. Unlike many other researchers, Hyysalo (2006a, 44) has made a difference between market research and user research. He referred to market research as quantitative research, concentrating on buyers and factors that affect on buying intentions, and which does not provide virtually any information about consumer needs and use context. He made this difference to highlight the advantages of user research.

However, the user research does not seem to be that far from qualitative market research, at least if it is viewed from the possibilities of different methods. Figure 6 presents the connection between market research and user research methods concluded from the sports manufacturer interviews. The line between market and user research, at least in practice, is rather fine. In figure are listed the methods that were used by sports manufacturers. Methods that can be used in both research streams are very similar. Consumers can be studied with marketing-related qualitative methods, such as interviews, focus groups or observation, similar to same user research methods. Product-related consumer behavior can be studied with natural observation also in market research (Parasuraman et al. 2004, 178–179).

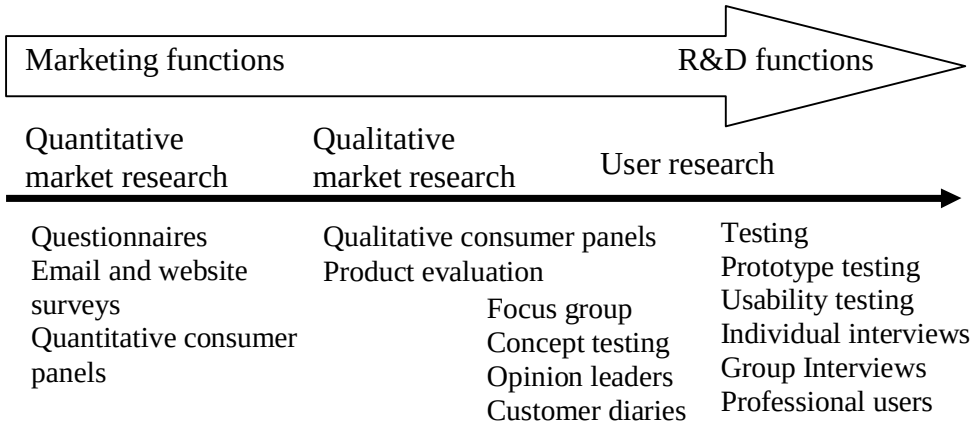

Figure 6 Context of market and user research methods

Also ethnographic research has gained ground in customer research, whether it concerns market or user research (e.g. Elliott & Jankel-Elliott 2003). Moreover, the user research study can contain structured methods, such as forms of questionnaires, but they are completed with other more qualitative methods. When we are talking about user research, the label of customer is changing from 'consumer' to 'user', although the studied person can be the same. Nonetheless, companies are different, also in this study. Especially in small companies there is no always clear difference between marketing actions and product development actions regarding customer research. Nevertheless, it is important that companies understand the difference and the significance of both research types.

4.2.1 Market research and the Internet

Market information can be gained by using both quantitative and qualitative methods, and major part of information is collected by focus groups and demographic data (van Kleef et al. 2005, 182). The studied sports manufacturers used variety of different research methods, such as *quantitative surveys* (also email and web-based), *focus groups*, *consumer panels*, *product evaluation* and *concept testing*. None of the interviewees mentioned that they would conduct in-depth interviews to acquire market information. Many of the companies had very specialized methods to study exactly their products; the methods were often of small scale and conducted in ad hoc manner.

Market surveys and questionnaires were the most common tools, although even they were not very actively used. They were not considered to be very useful in providing new information for product development, because they were conceived as inadequate to provide the information needed for product development. In some companies market research was not seen as a good predictor of consumer needs, because of product

development cycles; companies usually design their products one or two years head, and consumers are not good predictors of what company may offer in one or two years. Wide market research was not seen valuable also because of fragmented markets and small target segments. Qualitative methods were considered to be more suitable in studying fragmented market needs and serving small segments. Especially small companies thought that wide market research was not suitable to study consumer needs:

> *Our target segments are quite small. … So we haven't conducted large-scale consumer studies, and we think that they are not needed. (Zeta)*

Quantitative surveys were more considered to serve marketing purposes, not product development, and consumer needs were difficult to study with surveys and questionnaires. Market research was used, for instance, to check out new product ideas and improvements. For example, if company's aim was to discover whether consumers liked a new color or a feature on a product, they sent an email questionnaire to find out what the customers thought about them. This can considered as a safety procedure to avoid launching a product that would not please consumers. In addition, it was also considered to be an indicator to estimate what kind of things customers prefer and are interested in at that point, not in the future.

Although used market research methods were very diverse and inconsistent, most of the companies seemed to do mainly quantitative market research, but some examples of qualitative research emerged. Two interviewees from two different companies especially mentioned that they prefer to study of consumer needs and preferences with qualitative methods, not quantitative. While some of the studied companies had professional athletes as users, they also used research methods that were mainly concentrating on studying needs of professional users, thus not market research methods. Another reason was that some of the products contained such a high technology that ordinary consumers' input was not seen to give any additional value in new product development in comparison to professional sportsmen's feedback.

Interviews and group discussions, including the focus group, are traditional qualitative market research methods. None of the interviewees said that they would do in-depth interviews to perform market research. Focus group is the most common qualitative market research method, and it usually consists of 6-8 participants for duration of 2-3 hours (Mariampolski 2001, 46), but many other forms of group discussions exist. Some of the studied companies were using different forms of group discussions and consumer panels, including the focus group, but not all interviewees were familiar, for example, with focus group term, although it is well-established in market research literature. Group discussions or consumer panels were used mainly when companies were designing the new collection and ideating new products:

> *We acquire market information with questionnaires… but we have also used consumer panels of 30 people. It has been a group discussion of*

> *half a day and we have collected all possible information about the product concepts… Nevertheless, consumers did not have a chance to affect on the product frame, only to give minor ideas. (Alpha)*

Focus groups and group discussion were both used to gather new ideas and opinions from consumers, but also to get feedback and affirmation on companies' own ideas. One company had a new product development project often starting with focus group discussions to evaluate company's new product ideas:

> *When we are starting a new project, we usually start with focus group discussions in concept phase and test our ideas with potential buyers. (Beta)*

Group discussions were also used when product development got further. This is possible during product development, for example, when prototypes are ready. Some of the companies used consumers as product evaluators, for instance, during prototype stage. They showed the products to group of target users and collected opinions on their likes and dislikes; at prototype stage many changes, at least external features are still possible to change. When developing sports products, the companies have to make sure that not only that the product is good and durable, but that it looks attractive. Therefore, a study of exterior looks of a sports product can create better understanding on consumer preferences. Generally, qualitative research methods, although they were quite rarely used, were considered as useful. One exception was a company which had had consumer panel experiment, and although the outcome had been generally positive, they did not value it highly enough to make it constant customer research procedure, because it was considered to be too resource-demanding. Group discussions were considered to demand too many resources also in some other companies.

Observation is used to research customers' unarticulated needs that consumers are not able to speak out (Abrams 2000, 34), but it is often considered to be too time and resource-demanding. If observation is smartly used, it can be useful and practical method also for consumer goods development. For example, some of the studied companies had observed potential customers during consumer panels, for instance, to study how potential buyers react on the new product concepts and do they seem to be interested in them. This was considered to be sometimes more useful than direct asking. It was considered possible also during shows and exhibitions to observe how potential buyers react on new items. Naturally, at that point the new products are already almost finalized, but it can help to predict consumers' interest. Otherwise observation was not mentioned in the interviews and none of the interviewees said that they would be using any ethnographic research methods in market research.

The Internet provides a vast variety of possibilities to collect information for product development purposes. Some authors have declared the foundational changes that Internet offers for NPD actions (e.g. Nambisan 2002; Walters & Lancaster 1999;

Whiting 2001). Variety of discussion forums and customer communities are being developed in the web, which, if correctly managed, can act as an important product information source for NPD. Companies can absorb information from their users, or even participate in the discussions. (e.g. Pitta & Fowler 2005a; 2005b). Different research methods can be adapted to the Internet, anything between email surveys to virtual focus groups (Whiting 2001) and virtual testing (Dahan & Hauser 2002). Although the possibilities of electronic research are evolving and the most research respondents had paid attention to the possibilities of the Internet, in general, the studied sports manufacturers were not using the Internet for NPD purposes very widely. However, the possibilities were not ruled out:

> *Email surveys could be useful in the future; when we have an electronic customer register, we could send surveys. (Omega)*

However, the main use of the Internet as a communication tool with customers was to provide consumers a possibility to easily contact the company. Not surprisingly, email or websites seemed to be the major forum to receive feedback in sports companies. Only one interviewee said that they are not putting any effort on the Internet as a direct customer contact forum. The main obstacles for more profound use of the Internet for NPD purposes were, for example, possible technical limitations and the lack of possibility for consumers to see a concrete product. Several respondents said that they receive suggestions for improvements and even some new ideas via Internet:

> *We get a lot of feedback via Internet. … We have also made some studies there, the Internet is our most important tool to be in contact with consumers, because it is the fastest and most economical…, but the problem is that the consumer is not able to see the product. (Alpha)*

Although several international companies participated in this study, not all of them were exploiting extensively the possibilities of the Internet to acquire customer information. Perhaps this development stream is still on its way also to this industry, because some respondents said that they see a lot of possibilities in the Internet, but were not able to identity off-the-cut what it would be. Some interviewees considered their market research actions to develop into new direction, when they will perform more study in the net. Some of them even considered the Internet to be a new kind of playground for customer interaction in the future. Still, none of the interviewees mentioned that they would have tried, for example, virtual interviews or focus groups.

One company especially mentioned that they see the Internet as a possibility to communicate with more remote, foreign customers. The connection was in forms of email and web studies, and in the end, a virtual consumer panel would be useful. Connectivity and cost-effectiveness was seen as an advantage, but it was mainly limited in the forms of buyers' demographic data, variety of questionnaires and collecting

customer opinions, feedback and suggestions. Some virtual testing had been tried out by one company, but it had not gained ground.

Internet has been notified to be a fertile ground for virtual customer communities. Consumer communities and discussion forums building around certain product or brand are discovered to be a new valuable source of unbiased customer information. (e.g. Pitta & Fowler 2005a, 2005b.) Nevertheless, the sports manufacturers were not very excited about possibilities of virtual forums. Few of the companies were considering building up one, because their usefulness was notified, but so where the risks:

> *I would like to have, although it can be dangerous, a chat room. …give this sort of freedom to share thoughts and experiences with other customers. Customers can share experiences and learn by experiencing. (Alpha)*

One interviewee from another company said that also they have deliberated the possibility of building up a discussion forum, because it could be a useful tool to get new ideas and feedback when new products are ideated. Also one of the interviewed *user research experts* was skeptical about virtual consumer communities, because without proper moderating, the discussion can break away from the intended subject and few strong individuals usually take over the discussions.

In summary, the used market research methods to study consumers' needs were mainly quantitative, although there were several exceptions. Even the quantitative methods were not very popular. Small scale qualitative methods were also preferred in some companies, but they were not very systematic. Used methods in several companies were based on temporary use and used methods were often very company and product type specific. Companies had different forms of group discussions that they considered to be rather useful. Focus group is said to be the most common qualitative market research method (Mariampolski 2001, 46), but amongst sports product developers it was not popular at al; only two companies were using it. Although Internet-based survey was the most commonly used method, the companies were not exploiting the possibilities of the Internet noteworthy. As opposed to, for example, Dahan and Hauser (2002) and (Ozer 1993) argued, the companies did not consider Internet as a major tool to acquire customer information, although they saw some possibilities in it in the future. Again, exceptions emerged; in one or two companies a constant use of different set of market research techniques was everyday routine.

4.2.2 User research and customer testing

As earlier mentioned, in user research a lot of same methods as in market research are employed. In qualitative user research the aim is to get close to users, and to provide the

product developers an opportunity to understand user's thoughts and values, physical environment and practical actions (Jääskö & Keinonen 2003, 91). In the studied sports manufacturers the user-related study seemed to contain combinations of qualitative and quantitative questioning methods and testing. Single mentioned methods were, for example, *questionnaires*, *interviews*, *group interviews*, *user diaries*, *observation* in artificial environment, and different forms of *testing*, for example, prototype testing, in-home testing and usability testing. According to one of the *user research experts*, a lot of user study is conducted with mass questionnaires. Focus groups, interviews and usability testing are common methods, but extensive projects with observation are rarer.

In general, more diverse methods were used in user research than in market research, and they also seemed to be very company and product-specific. User research was concentrating clearly on the product use and usability; and therefore, on getting potential user feedback on products being developed or improving current products. The focus of user research, in the companies that conducted it, was not clearly on new idea generation. Furthermore, the focus seemed to be in some cases more on product usability than on studying the user itself.

In most studied companies, at least in the smaller ones, the interviewees did not talk about user research, but they used rather terms, such as product testing, product design, usability testing, etc. This might indicate that at least for smaller companies the concept of user research is not very distinct. On the other hand, at least for larger companies, user research was a common term. The user research methods employed were clearly depending, not only on the company, but on the product type and end user type. In sports product development the user study seemed to be often a combination of some form of questioning and some form of testing.

Questioning was performed with several formats. There were, for instance, interviews, questionnaires or open questioning, for example, diaries combined with in-home testing. Also interviews or group interviews were conducted:

> *…in user research we can, for example, with interviews in groups or individually get more detailed information to support product development. (Beta)*

Often questioning seemed to be a formal or structured interview or questionnaire, when potential user was asked to comment on the new product during and after the user research task. When companies were using same users for the whole product development process, also informal discussions were used, at least by one company, during the research process. Also a group discussion was seen as a possibility, and especially in a long term projects same user groups could be gathered together several times. Gathering same user group was also regarded as useful, but it had some practical pitfalls, such as collecting people together in a short notice can already be challenging.

Product testing with customers was generally considered as useful and tolerably effortless to perform, especially if the basic product frame was already developed, for example, testing was considered quite easy to conduct on prototype stage. Although advantages of using customers in product testing were admitted by several interviews, still in some companies it seemed to be rather an ad hoc method and not systematic part of the development project. Sometimes possible product testers were found close, inside the company's walls. It is quite understandable that product developers and other employees are used as testers, at least with sports products, because the employees often represent the target customer. Two companies considered their own employees to be the most natural product testers, for example:

> *Usability and user testing is done mainly with our own employees, because they are our typical users. If we want to test something, we will give it to one of the employees, who will test it every day and tell how the product feels. (Gamma)*

However, not all studied companies agreed with this; one interviewee mentioned that it is often useful to take someone outside the company to test the products, because according to their experience, the product developers themselves are not able to identify all end user's requirements. Another interviewee crystallized the core of user research by saying that they have to test the products with real users, because they will be never be able to completely put themselves in the position of a consumer.

According to Hyysalo (2006a, 10) the purpose of user research is to *create desirable, useful, usable* and *pleasing* products. Sports manufacturers conducting any kind of user research seemed to have developed a useful set of tools to complement their own specific needs. The importance of customer testing was highlighted in several companies, and it was considered to be an important part of the product development process. Their aim was not only to make desirable, but also useful and usable products. In the companies, of which user testing was systematic, it was started early in the development process, when the product is still easy to modify according to customers' requirements. In those companies the customer testing could continue even for months.

The interviews revealed that user research is not dependent on company size. Interviews indicated that even smaller sports manufacturers systematically test their products with users. For example, one company tested most of their product models systematically with different target segments. They performed testing systematically in combination with informal interviews with possible future users, and for them it was extremely useful. Their purpose was clearly to make sure that their products were comprehensively desirable, usable and pleasing at the same time. This obviously requires possibility to direct contact with members of each target group, which was seen problematic in some companies. Also active users who are willing to test the products can be difficult to find, but for some companies it has been easy:

> *I take them for testing (to some target group members), and then I listen to all their comments and opinions, whether it is about the product or the color, this kind of general stuff. (Delta)*

Testing seemed to be comprehensive and systematic, everything between materials, ergonomics and use comfort were studied. To make the study effective and easy for customers, especially because they were ordinary consumers, in some product development projects they were asked to fulfill questionnaire during user research:

> *With new products we usually do user research, not surveys. We do user research and usability study with different prototypes and test them together with user groups. (Epsilon)*

In some companies already concepts were tested with potential users, or later when products were basically ready to enter the market. Couple of the studied companies had a systematic user study throughout the development process, starting with collecting feedback on new product ideas and testing it throughout the development process. Therefore, one of the benefits of user research in comparison to market research seemed to be its early exploitation in the development process. Companies, which were performing systematic user research, started the study with customers already in concept stage in forms of testing product preferences and usability. Users were invited to testing premises to estimate new concepts or prototypes. Several companies also used *home-in tests*, when users were given a product or a prototype to take home for testing it the natural use environment. This is also called the beta testing (Ozer 1999, 86). Home-in testing was completed with self-documentation methods, such as user diaries during testing period, or structured questionnaires to be fulfilled after certain test period.

Product usability seemed to be an important part of user research in sports product development. Usability testing is possible to conduct with different kinds of sports products. Customers' approval was important to get before the product was launched. Although it was mainly only a small group of people testing, it was still considered as important to do. Usability testing can be conducted at different stages of the product development process, depending also on the products, but in sports product development it seemed to be most common when the prototypes were ready:

> *It is very important that the product is tested before it is out there. (We test) durability, usability, comfortableness and functionality. (Zeta)*

There are two basic approaches to perform user research; direct contact between the company and its customers or indirect when customers are not expected to speak out their needs directly. Then researchers can interview and observe them in the product use context (Heiskanen & Hyvönen 2006, 103). One of the progressive elements of user research, in comparison to traditional market research, is that also use environment and use context can be taken under consideration (Hyysalo 2006a, 8–9).

Use context study and *user observation* were not used or widely seen as possible methods in most studied companies, although some of the companies used a variety of user research methods. Studying use context by observing was seen as very difficult to execute in product's natural use environment. According to one interviewee, observation of real use situation can be a fertile source of information, because there is always a possibility that the users do not tell all the problems they face, but it was considered to be too resource-consuming. Nevertheless, user observations were conducted in laboratory situations or users could have been observed while they were testing products. This was not very widely used among different companies. Use contexts are usually difficult to study, and therefore, users can be asked to self-document the use. Different tools for self-documentation exist, for example, user diaries, photographs and video clips. In some of the companies self-documentation on the use context was considered as an affordable method:

> *We have not really studied the product use in its natural environment, because it is difficult to stimulate. But instead of observing the environment, we have used diaries which have been a suitable tool to understand the problems relating the use context itself. (Beta)*

One of the *user research experts* said that understanding the use context is an important part of extensive user research, especially with new products, and with products that are tightly in the same context with other products. Sometimes it can be useful to study how other products in the use context affect on the use of new product.

In summary, in sports products' user research more variety of different methods was used than in market research. User research was mainly based on different forms of testing, including concept testing and usability testing. Study concentrating on the user behavior or use context was clearly rarer, which is often the point that brings extra value on user research (Hyysalo 2006a, 8–9). However, sports manufacturers tested surprisingly lot their products with users and study how well products are perceived by potential users. Also different forms of questioning were very popular, in several companies questioning included informal interviews and discussions, which indicates that there was a purpose to be able to "read between the lines as, for example, Hamel and Prahalad (1994, 104) suggested that the best foresight to customer needs comes from deep-down customer insight with direct exposure to customers, and not from second-hand market research. In this study, user research had clearly more qualitative features and direct exposure to customers than in market research. Again, when diverse set of methods were used, the methods were very company and product specific. Also using professional users in user research was very common, but only in the companies that had professional athletes as users.

4.2.3 Familiarity with customer research methods

It has been stated that there are hundreds of specialized methods which companies can use to study their customers for marketing or new product development purposes, and many companies have developed a set of techniques that are not easy to apply as such to other contexts (e.g. Heiskanen et al. 2007, 13; Hyysalo 2006a, 67). Van Kleef et al. (2005, 181–182) argued that companies are not familiar with useful research methods, and because of their variety and complexity, companies often lack customer research.

This study supports these arguments at least partially; companies had very different approaches to study consumers, but also the companies were different. Their knowledge level of different possible methods varied a lot. Research methods, such as *brainstorming*, *conjoint analysis* or *emphatic design*, which are well-established in academic marketing and product development literature, were not mentioned in the interviews. Even *focus group* was considered as bizarre term. Then again, for example, Heiskanen et al. (2007, 39) and Kujala and Mäntylä (2000, 2) mentioned that companies should concentrate on simple methods which they are capable to control themselves. This perhaps indicates that there is a gap between literature and companies' real-life situations. Lagrosen's (2005, 432) study showed that industrial producers', especially small companies', knowledge about available customer involvement methods is limited and they were rather ignorant against customer involvement. This study can only lean on to interviewees responses. There were differences between product developers' answers when asked whether they would need more information on methods how to acquire customer information.

> *I think the information is available what we need, because we know the channels and we know what sells. I don't think there are things about consumers that we don't at this point know or are aware of. (Gamma)*

The impression from several studied companies was that they know a lot, and they know the possible methods, but the problem was often the lack of resources, for example, lack of people or lack of time. Acquisition of customer information was regarded as demanding, because so many people had to be listened to at the same time. It seemed to be difficult to find one suitable solution that would fit for all study. This perhaps indicates that not all companies had discovered simple and effective methods as, for example, Kujala and Mäntylä (2000, 2) advised to do. The limited resources were seen as an obstacle in several companies, for example:

> *We still have some development to do, but as a small company, we have to do one thing at a time. (Delta)*

Although some companies had lack of resources now, some of them seemed to be responsive to new kind of research in the future. For example, companies, which were not conducting user research, considered qualitative study with group of target users as

a suitable idea in the future. In this case seemed that they did not know what could be done, but since their products were successful already, they though that they do not need the information desperately. They also considered acquisition of user information to be complicated in practice.

The fragmentation of sports markets had caused the problem that consumers cannot be segmented anymore as it was done in the past. One respondent said that segmentation and defining their own target users has become ever demanding, and therefore, the methods to acquire information have changed and become more complicated. Also ethnographic study was considered to be possible in the future and having more understanding on use environment. Yet, these were mentioned by only few interviewees. Some of the interviewees had noticed that new methods to study customers are needed, for example:

> *I'm sure there are some good traditional methods to understand customers, but new methods should be considered, too. I see a lot of possibilities in the Internet, for example. (Epsilon)*

This supports the argument of von Hippel (2005, 33) that consumers' future and current needs are becoming more and more heterogeneous. This could be another reason why mass research methods had lost their glory. This indicates to statement of one of the interviewees that they do not perform quantitative market research, because segments are getting smaller and smaller, and they prefer qualitative study with small groups of potential users.

Figure 7 presents an overview of the methods, which can be used to acquire customer information in sports and outdoor product development. The figure shows the simplified product development process used in this study, and a set of different research methods used by sports manufacturers. Market research actions were mainly concentrating on the idea generation and idea screening stage and later stages before the launch. However, idea generation stage did not indicate to gathering ideas from consumers, but it was rather different forms of improvement suggestions and feedback companies had received from several sources about existing products. Nevertheless, some of the companies did extensive market studies in the very early of the new product development process.

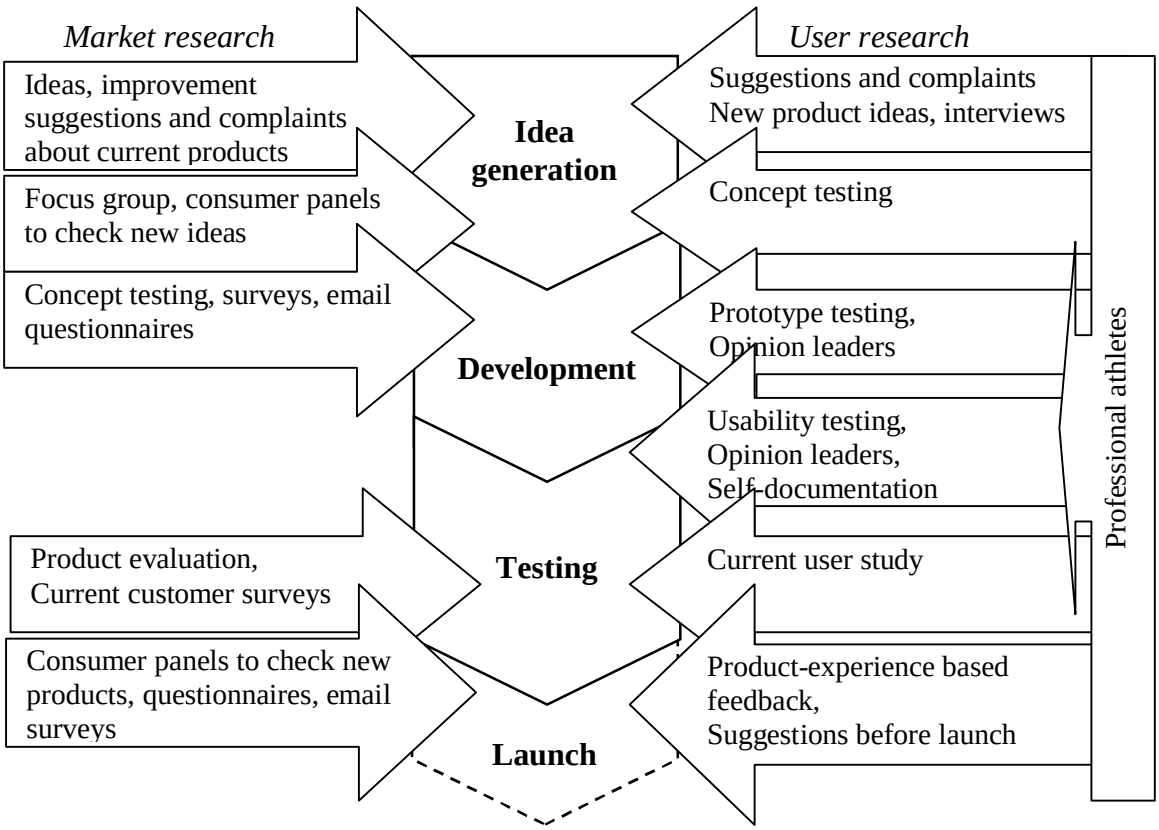

Figure 7 Overview of customer research methods in sports product development

User research actions were more scattered during the product development process, thanks to few companies studying and testing their products with customers during the whole NPD process. The highlight of user research methods was on different forms of testing, starting from concept testing to usability testing with potential users. Professional users were participating in the whole development process and same athletes were used during the whole process for them to see and evaluate on the improvements. Also according to the *user research experts* the customer research should be started early in the development process, already when new concepts are ideated. They also said that the risks of failure in user study reside in the interpretation of the results and research planning.

4.3 Significance of customer information in sports product development

It has been argued that to develop successful new products, companies have to create clear understanding on their customers' needs, but at the same time it has been noticed that it is difficult to catch those needs (e.g. van Kleef et al. 2005, 181). What kind of

customer information companies acquire and what kind of methods they use to acquire the information depends on how significant the needed information is for companies. The third research task was to analyze *what is the significance of customer information in new consumer product development*. The factors that are used in this study to define significance of customer information in NPD are *objectives of customer information*, *level of product innovativeness* and *type of customer* (cf. Alam 2002; Heiskanen et al. 2007).

There were major differences between the companies when the significance of customer information was studied. Some companies seemed to establish the product development on constant customer study running throughout the product development process, by starting, for example, with trend sensing and extensive market research actions to discover possible future consumer needs, and to end up in a final product, of which success is widely studied after the launch. On the other hand, there were companies, also in this study, which do not rely on consumer feedback. However, this does not mean that they would not receive information on consumer needs, but it was more passive acquisition and relying on retailers' view on consumer needs.

On average, although perhaps an average does not describe the phenomenon correctly, the customer information was not appreciated extremely high in the studied companies. As said, there were striking differences between the manufacturers. Companies, which did not see customer information as useful, thought that it does not provide additional value for NPD. The other reasons could have been unsatisfactory outcome in quantitative surveys, or fragmentation of the market. Other companies regarded customer information as an absolutely necessity to maintain competitiveness in the market and to stay at the peak of emerging customer needs. Those were mainly the ones that constantly acquired customer information, and had noticed it to be useful. They also seemed to value direct customer contact during the product development:

> *To make new interesting things, we need direct (customer) contact in there (in product development process). (Epsilon)*

Consequently, one uniform conclusion on how significant customer information in sports companies actually is cannot be drawn. Several factors seemed to affect on how significantly customer information was valued. For example, if the retailer power, but also the trust on retailers' knowledge about consumers was considered to be high, direct end user contact was seen less important:

> *I would say that with our products the retailers are very competent and they know the products very well. Therefore, we can rely on them on the customer information, because they have constant direct contact with end users. (Omega)*

One interviewee considered direct manufacturer-end user contact to be harmful, because it leaves out the retailer's point of view from the communication. In companies

designing goods for mass production, the customer information was also seen less significant. This was the case, for example, when company was serving several segments with very similar products, and they did not have a possibility to study every segment separately. Consequently, they considered consumer research to be less useful. In addition, if company's current customers were rather satisfied with their products, the pressure to study consumer needs seemed to diminish in some companies. And vice versa; in companies, in which study of customer needs have led to well-received products and satisfied customers, the customer research was perceived very important. Customer information was also perceived as an indicator of a possible next success product:

> *The information revealed in user study is usually a good indicator of the future success of the product. If the studied users are excited about the product, we can predict that other consumers will be, too. (Beta)*

The pressure to constantly develop something new seemed to put pressure on companies to study consumer needs. Companies exploiting new technologies and materials seemed to be driven to study possible customer needs and use customers as testers. As a result, if product development pace of new products was steady, the pressure was less strong to constantly sense the end user needs. Also companies' resources seemed to be an important determinant on acquisition and significance of customer information in new product development.

4.3.1 Objectives of customer information

Dahlsten (2004, 142) argued that the most common reason to involve customer information in product development is the aim to create superior and differentiated products. Heiskanen et al. (2007, 10–11) mentioned that user research can be seen to have three objectives; to support company's decisions, provide background information to start new product development projects and to create new solutions.

One sports manufacturer representative admitted that, if they do not try to trace consumer future and current needs, they would end up developing less interesting products, because they are not able to enter the mind of the true end user, and therefore, all information sources available, should be sought out. Furthermore, although some companies know their customers well, they can still find it useful to get outside opinion on new products, because they often bring new aspects and thoughts on the studied matter. The sports manufacturers, which valued customer information, seemed to value it very highly. Some companies seemed to appreciate the idea that consumers themselves are the ones who can tell what they want:

> *It is very important to collect information about customers, because they are the end users who will buy the product. If the product does not serve their purposes, why would they buy our products anymore? (Beta)*

Nevertheless, the main reason to study customers seemed to be good sales, thus success of the new product. As one of the interviewees put it; they want to make products that sell, and if information on customer needs will augment the sales, they will acquire it. One interviewee was concerned that they will not be able to develop products to satisfy customers' needs, if they do not try to study those needs beforehand. This was especially important if product users were professional athletes. One message was that product should not be brought to market without adequate customer research and user testing, especially if the product was based on high quality:

> *We test everything with potential users, because it will go really wrong, if we, at the product development, who don't represent the end user, start to finalize these decisions. Everything is tested at the bottom of the pile. (Delta)*

Customer information was also regarded as evidence to company's interest groups, whether it was for retailers, owners or for markets. One important reason to acquire customer information was to strengthen company's own assumptions about consumer needs and to *support decision making*. For example, if customer study results contradicted with company's intentions, the company performed further research, thus in the end it was acquired to develop more satisfying products. Similarly, one reason to acquire customer information was to make sure that company knows what the customers want. Customer information was also acquired to reveal some specific new information that companies were not yet aware of. In some companies customer information was considered to be useful, but then again, the lack of adequate resources was seen as a problem:

> *Generally it is useful to listen to customers, but it depends… it requires a lot of commitment and changes in company. The product development process is easily against it. (Alpha)*

Customers were clearly also an *information source*. Other objectives of customer research were, for example, the desire to understand consumer needs better; to get into consumer's mind and discover what they really think about the products. It was clear that some of the interviewees had internalized what *profound* customer involvement can be; it could be created into direction of cooperation even in consumer goods:

> *It is important that we receive customer opinion on product durability, improvements, visual outlook and desirability… and the consumer is the best source to give this information. Also retailer's point of view is important; from retailers we get some indications of behavior of consumer masses. (Epsilon)*

Table 11 summarizes the factors which are considered to have an impact on significance of customer information in new sports product development. Despite several objectives, customers were considered rather as an inadequate idea source, although, for example, Heiskanen et al. (2007, 38) listed users as an idea source as one of the user research benefits. However, when professional users were involved in the product development, their role was seen as very comprehensive; they were expected to bring value and solutions that the manufacturer was not able to create on its own.

Table 11 Significance of customer information in sports product development

Factors affecting on low significance:	**Factors affecting on high significance:**
Stable markets	Fast-developing markets, new technologies emerging
Strong retailer power, retailers' high knowledge level of consumers needs	Retailer power not strong, retailers not seen as an consumer information source
Unsatisfactory experience with market research	Satisfactory results from previous research
Research highlight on quantitative surveys	Research highlight on variety of research methods
Customer role in product testing not important	Customer role in product testing important
Satisfied current customers; no pressure for customer research	Satisfied current customers; research necessary to maintain satisfied customers
Consumers' limited ability to provide new information	Also professional athletes as users
Customer information as 'nice to know', no direct additional value for NPD	Customer research an important part of NPD process, or some stage(s) of it
No direct end user contact needed, because information received from other good sources	Direct end user contact important, consumer important source of information
No adequate resources available	Resources can be limited, but are smartly used
Products manufactured in large series, similar products serve several segments	Previous research has been useful
Fragmented markets, no possibility to study every segment	
Technical complexity	

The left column presents the factors that can affect on companies' decision not to acquire customer information for new sports product development, and in the right column are listed the factors that affect on customer information significance positively. As can be seen from the table, the interviewees mentioned few more disadvantages of customer information than advantages. Some of the studied companies were somewhat prejudiced against ordinary consumers as a source of new information; often its value was seen as the affirmation for their own opinions, but none of the companies made

major changes merely relying on customer opinion. The list below presents objectives sports and outdoor product manufacturers had when acquiring customer information. Further objectives must exist, but these were highlighted in the interviews. The customer information objectives were, for example:

- To remain competitive, customer information provides additional value
- Sales; product which satisfies customer needs sells
- To learn about customer needs, to know customers, to understand them better
- Support company's decisions making, test company's ideas
- Get specific information about customers
- To improve products, to make better products
- Good marketing and sales story
- Evidence of high quality
- Information and evidence for company's interest groups

In summary, the results indicate that the main purpose of customer research is not to develop completely new products, but rather make sure that the current ones are satisfying their users and to improve the current and new products, and most of all to understand customer needs better. One of the main purposes was not to find new market opportunities, except perhaps in one company, as May-Plumee and Little (2005, 54) suggested. There were several reasons *not* to conduct customer research. The most important reason was clearly the lack of adequate resources, but also the fact that some companies did not consider customer information as very valuable; they either though they would receive the information elsewhere or it was not needed at all. On the other hand, companies that perceived customer information in new product development as important, had several reasons to acquire it. Most important reason was clearly to create better products and satisfy customer needs, as also Dahlsten (2004, 142) and Alam (2002, 254) suggested. Also previous successful research was a force to drive to new customer research.

4.3.2 Product innovativeness and value of customer ideas

Significance of customer information depends naturally on for what kind of purpose it is for. *Level of product innovativeness* sets some demands on customer research (Heiskanen et al. 2007, 10). Innovative product development is important in sports product development, because of possibilities in new materials and new technologies, new ways of do sports, and emergence of new trends, such as predominant wellness trend. Less than 10% of all new products are innovative (Trott 2004, 396) and true innovations are infrequent also in sports product development. There is a clear argument in literature that in radical innovation development customer's voice is not useful, or it

can be even harmful for the product development. In radical innovation projects the companies do not necessarily even know who the end user will be. (e.g. Deszca et al. 1999, 616; Lynn et al. 1996, 14.) Then it is pointless or even impossible to *ask* customers' opinion.

In this study, sports manufacturers were not asked about their on-going innovation projects, but their opinion about using customer information in development of completely new products was inquired. The general opinion of respondents was that true innovations are developed from new technologies or emergence of new kind of market needs, and often after a long research or technological development process. Future products can be sensed by studying different markets and industries, and tracking new technologies, but it is not useful to ask consumers. If users were involved at some point in new innovation development, they were professional sports product users. And when physical product exists, consumers could be used as test users.

One of the interviewees told about innovation which was developed from identification of unfulfilled need, but the need was not outspoken by the consumers; they had to sense it from the market. A respondent from another company said that their new product with minor innovative features was developed for identified customer needs, but the customers themselves were not asked; the information about the needs was perceived from new market trend which was sensed from other industries and new technology. In general, consumer role was seen as rather insignificant in innovation development, for example:

> *At least with us, the consumer is kind of follower. I don't think that consumers are able to tell about forthcoming trends, the trends are coming from the world. … Our new product is not developed from consumer needs, but (from new technology). (Gamma)*

This relates also to notion that consumers are not able to identify their latent needs by asking, and trends and new technologies are identified from the market:

> *There are always some pioneer users… But we monitor consumer trends from international markets and trend charts. Usually consumer whishes are concrete; they want certain product features or colors. (Epsilon)*

It was also clear that methods of traditional *marketing research,* such as consumer surveys, are not good source of information when it comes to developing something completely new. For example, one of the studied companies had had an intention to enter to new market. They did not want to do it with existing products, but wanted to develop a new product that would fulfill the needs of new customer base. They tried to figure out what would sell in the new market and asked target users with survey. They developed the product according to consumer requirements, but the product did not succeed. This means that they wanted to develop a major improvement or new generation product for a set of new customers and wanted to discover their needs by

survey. However, for example, Lenard-Barton (1995, 184–187) and Hyysalo (2006a, 227–228) stated that when company is reaching new solution to an unexpressed need, company should try methods as in-depth interviews, observation and prototyping, not consumer surveys. The message was quite clear also in this study that with surveys it is possible to get minor improvements. For example:

> *We can try to sense new consumer trends by asking consumers if they know something that we don't. However, often it is like looking at the back mirror, but we can get some new ideas about product details which we didn't think ourselves. (Alpha)*

All studied companies, except one, mentioned that retailers, sales representatives and professional buyers are good source of end user information. Retailers were not mentioned by Leonard-Barton (1995, 180–204) or Hyysalo (2006a, 226–230) when they defined significance of market information in different use contexts (Figure 4), but retailers' role cannot be very innovative, because often what retailers tell about consumer needs, is already developed by someone else. Therefore, the level of retailer information newness is probably quite moderate.

According to one interviewee, the *user research* provides possibilities to discover product solutions or improvements that customers are not able to speak out directly, but company can discover them by studying users, for example, by interviews. This indicates that user research can be useful for discovering unexpressed customer needs. Clearly companies, of which customer information acquisition was leaning on quantitative consumer surveys, understood that customers were not able to create innovations. Consumers are able to be messengers some kind of new trends, although they would be available somewhere else first. For example, visual appearance of sports products is important for consumers; several interviewees mentioned this. In several companies consumers have been asked about, for instance, product colors and graphics and they have been useful information for companies.

According to Leonard-Barton (1995, 195–197) professional users are very good source in new technology and innovation development, and interviews with sports product manufacturers support this; professional sportsmen were deeply involved in new component and technology development. When the new product was based on high technology, which is possible also in sports products, ordinary consumer's input was relatively low, because ordinary consumer with modest amount of experience were not able to evaluate the functionality of the product. One interviewee said that they would not use consumers in material development, but could use professional athletes in new component and technology development. Then there is no purpose to deeply study needs or ordinary consumers, for example:

> *Ordinary consumer doesn't understand the high techniques of the product. … Consumers make the buying decision according to brand image, color, or sales person's advice. (Kappa)*

Few interviewees said that if company starts to rely on consumer information in new product development, it is like looking at the back mirror, because customers are able to think only in the current product context, and therefore, it is not useful in innovation development. This was especially difficult with long development projects when new product development projects are stared even years before their launch. General opinion among interviewees was that customer information is not useful in innovation development. However, lead users were seen as a possible information source, but they were difficult to find.

> *I don't think (consumer information) is useful (in innovation development). It is more like sensing the forthcoming market trends. Of course there are always some exceptional individuals, but finding them can be difficult. (Zeta)*

Companies seemed to rely more on available research information, market development information and trend charts, which was considered to be more useful information to predict what is going on in the world during the next few years. One of the interviewed *user research experts* said that user research can and should be used in innovation development, but the user has to be given a possibility to learn the product, otherwise it is not useful.

The study of Lüthje (2004, 688–691) indicated that end users of outdoor sport products are often able to generate new improved ideas for their product, because more than every third user had some kind of idea for improvement. 70% of the new product ideas from users were improvement for existing products and almost every third invented a new solution which was not offered by any manufacturers. Customers with vast amount of experience with the product were the keenest to improve and ideate. Also Kotler and Armstrong (1996, 316) argued that consumers often create new products on their own and companies could benefit from finding those product ideas.

On the other hand, the results of Lagrosen's (2005, 431) study indicate that customers lack the competence to suggest valuable development ideas, because they compare current products to the new product ideas. Several interviewees in this study agreed that consumer ideas were available, but their value was not appreciated very much. Idea suggestions was received often from inventor type users and product enthusiastic users, sometimes even with bizarre suggestions:

> *We get some feedback also from innovator kind of users, they can have ideas and even patents, but they are seldom financially affordable to make. (Gamma)*

In studied sports manufacturers, the ordinary customers' ability to create new ideas was seen quite limited and a customer as an idea source was not heavily relied on when it comes to completely new ideas. Companies seemed to be even somewhat prejudiced against consumers' ability to provide fertile ideas. Apparently, the companies were not systematically collecting customer ideas and none of the interviewees mentioned, for instance, brainstorming sessions, when also customers could let their ideas fly. One of the companies mentioned an idea contest, but they asked mainly for product improvements; then the expected product improvements were minor. Nevertheless, companies did not completely neglect customers' idea creation competence, but it was more controlled than just letting the ideas fly. Some companies saw their customers as a potential source for improvement ideas, but customers' ability to think out-of-the-box was criticized, or consumer ideas were not possible to realize, for example:

> *Consumers are able to give small improvement ideas… Consumers are able to give a lot of improvement ideas, they often relate to exterior product features and even technical features, but they are seldom financially affordable. (Alpha)*

Several sports and outdoor companies regarded their customers, for instance, as good source for testing new product ideas or product models. Quite a few of the respondents mentioned that consumers have been able to provide new improvement ideas for current products with details, which companies were not able to think of themselves. One company especially asked for possible ideas in their web site. Another company had patented a new product feature according to consumer's idea, but even that was a new product improvement, not a new product. Also the patent ownership can then become an issue, as Urban and Hauser (1980, 125) mentioned that legal rights of customer innovation can be a problem. Also the interviewees that considered consumer ideas as useful were questioning consumers' possibilities to think outside the current product context, regardless of some exciting customer ideas:

> *Yes, we get new ideas from consumers by email … Our customers are active, but usually these comments relate to further development and improvements of current products, because it is the easiest and most concrete thing, so consumers find it easiest to comment. (Epsilon)*

In summary, in all sports companies the consumers' ability to provide new ideas or innovate was considered to be rather insufficient. Although methods to involve customers to innovative new product development have been developed, such as emphatic design and lead user method (Heiskanen et al. 2007, 10; Leonard-Barton 1995, 180–204), most sports manufacturers were not aware of them, and none of them mentioned that they would be using, for instance these methods. One company was searching for latent customer needs with profound user research. Companies considered market and new technology sensing and trend charts to be more useful in innovation

development than pure customer information. Interviewees seemed to be very aware that traditional market information seldom provides new innovative ideas.

Although previous literature presents several different results of customers' ability to ideate and innovate, sports manufacturers did not have faith in it. For example, when the product is not radical innovation and current customer base is familiar with the product technology, customers are expected to be good source of new ideas (Leonard-Barton 1995, 180; Nambisan 2002, 394; Trott 2001, 120). In several studied companies the consumers had provided small improvement ideas or details, but still companies considered consumers to be poor source of ideas. Lüthje's (2004) study indicated that sports product users can be a fertile source of new ideas for companies and experienced product users innovate.

Also the study of Kristensson et al. (2004, 11) showed that ordinary consumers were very capable to provide new ideas. Clearly only two studies are not adequate proof to state that consumers would in every case and in every context be able to give new valuable ideas, but it shows that it can be possible. In the study of sports manufacturers, although the value of consumer ideas might have been somewhat acknowledged, because consumers were expected to be able to provide some improvement ideas, none of the companies was actually encouraging their end users and potential buyers to ideate new products or concepts, although customers had provided some new ideas before. Apparently, the main reason was not the possible liability concerns, but rather the belief or concern that customer ideas would not be valuable or suitable for realization.

4.3.3 Finding the right customers

The *type of customer* has an impact on what kind of customer information a company can acquire and what kind of methods can be used (Heiskanen et al. 2007, 8). Researches have set some basic requirements for customers the companies are going to study. Ulrich and Eppinger (1995, 40) stated that if company is serving several segments, their needs should be studied separately. Clear difference should be made between current and potential users, because they differ in their experience with the product. For example, Heiskanen et al. (2007, 12) argued that companies should pay attention to customer's experience when selecting the customers to talk to. For qualitative research the customers should be selected carefully, because usually only few people are studied. One interviewee said that one of the pitfalls of user research can be the small user sample:

> *Information is acquired often from small group of customers. … We have to make sure that we don't make wrong decisions according to too small sample. (Epsilon)*

Other studied companies did not seem to be particular worried that they would not find the right customers, especially if they acquired information about ordinary consumers. The lack of consumers' previous product experience was not seen as a problem in all companies, but customers' personal characteristics seemed to be more important. When companies were using qualitative research methods, it was important that right kind of consumers were studied, for example, they had to be open and bold to speak out and tell about their opinions.

As many companies used potential customers and users from *outsourced research agencies* for market and user research, the consumers were usually selected with target group screening. In screening the companies select consumers who correspond to their target user's profile. This seemed to be suitable method to find right kind of customers in several companies. Also customers with no any previous product experience were seen as an interesting target group, although they were seen very difficult to reach. One company had their employees to talk to ordinary consumers with no previous product experience, as it was seen a suitable method to have a direct contact with consumers outside of main target segments. Yet, if resources were available, an outsourced consumer panel was one option:

> *Of course we are interested in what kind of people (use our products), but we are interested in also our potential buyers who don't own our products. … We find them in outsourced consumer panels. (Alpha)*

A current user as an information source was seen as controversial. Although in one interview, the respondent said that current customers are poor source of NPD information, because current product users are not able to think outside their current use context, they were regarded as a considerably valuable information source to improve current products. Other companies considered current users a fertile and interesting information source and possibility to avoid making same mistakes repeatedly:

> *We often talk to our current users; we want to know about their product experiences, what kind of problems they have had, and what has been good (about the product). This information is collected for the next product generation development. (Beta)*

Current users should be fairly effortless to find, because nowadays many companies sustain some kind of customer register or database. Although databases were seen as a suitable system to store and create information, one company considered it to be problematic, because of the nature of mass product. Consumer information databases were also seen as a retailer's tool more than manufacturer's tool. According to one of the *user research experts*, companies should not neglect current users as an information source, because they can have a lot of valuable information that can be used with new products.

Some of the companies revealed their interest to gather continuous communication and testing groups among target customers. Their purpose would be a long term "partnership" in product development, especially testing new products and ideas. Development of these groups requires time and effort, but they were considered to be useful. One of the *user research experts* stated that potential customers can be found everywhere where is people, for example, from the street or shopping center. In a qualitative user study, it is important to know the level of experience of the studied users; if the end user is not yet known; wider consumer segments should be studied. In qualitative study it is important that the customer is motivated, and if the research task requires a long term participation and effort, the customer expects some kind of reward.

Lettl (2007, 54) warned that customers can two basic barriers that can prevent customer involvement in NPD, the *barrier of not knowing* and the *barrier of not wanting*. The problem of coming across with customers who do not know or do not want to provide information, are quite easily eliminated by using outsourced recruiter or outsourced consumer panel. Outsourced recruiter can screen target users on amount of knowledge they have, therefore even the barrier of knowing can be dealt with. Barriers of not wanting and not knowing would be then more apparent if companies were not willing to pay for customer involvement. If they wanted to talk to *any* consumer (not commercial consumer panel) or even their current product users, they could encounter some resistance. Although they might be current product users, there is a chance that they are not willing to provide needed information, if they do not get something in exchange. According to Lettl (2007, 54), the barrier of knowing is not apparent when studying current users, but they will expect some reward to hinder the barrier of not wanting.

Lüthje (2004; Lüthje, Herstatt & von Hippel 2005) has conducted two studies on consumers' ability to create ideas to improve existing sports products, and he argued that the technical level of sports products usually does not exceed consumers' ability to evaluate product's functionality, and therefore, consumers can be seen as good sports product evaluators (Lüthje 2004, 687). Nevertheless, *barrier of not knowing* was seen as an obstacle in some of the studied sports manufacturers, because of consumers' inability to evaluate product's functionality and usability. Also the technical level of some products was considered to be too high for customer to evaluate it. In those cases the companies were often using professional athletes. In some cases companies preferred expert usability testers over consumers, because they assumed that consumers cannot identify all product flaws.

4.3.4 Pioneers and professional users

Several researchers have advised to search for innovative or pioneer users to augment product development (e.g. Lüthje 2004, 686; Parasuraman et al. 2004, 65–66). The *lead user method*, developed by von Hippel (cf. 1986, 1989) suggests that certain customers or users are able to recognize new needs which ordinary customers will not possess until months or even years later. Lead users could be expected to provide new ideas and predict future needs. For example, Pitta and Franzak (1996, 78) have argued that lead users can be used also in the development of consumer products, but their recognition is difficult. Hyysalo (2006a, 89) mentioned that typical product development partners for companies are, for instance, leading experts or top athletes. In the interviewed sports manufacturers, the *technically oriented* users or *very experienced* users were not generally much appreciated, because their needs were expected to differ significantly from ordinary consumers' needs, and furthermore, expert users often expect a customized product, for example:

> *Professional users' needs would not match the needs of our users, they are more difficult to please and they often want a customized product and that would be difficult to give (within serial production). (Omega)*

Professional users, or even very active consumer users, were not seen as a very valuable information source for product development purposes in companies of which products were designed only for consumer masses. To support the argument of Ulwick (2002, 93), some interviewees thought that the needs of active or professional users would differ a lot from ordinary consumers, and therefore, they did not consider it as useful to talk to professional athletes. Von Hippel (2005, 5) agreed with this by stating that innovative users are more useful in very heterogeneous markets, because lead users start to innovate when only mass products are available. Yet, with mass products, when one product is designed to satisfy large segments, lead user information, or professional athletes' feedback was not highly valuable.

On the other hand, other companies, also producing mass products thought that active hobbyist, or even professional sportsmen, could be helpful, for example, in testing and usability development. Having a sportsman in a product development team, can be also a good marketing story, they could act as testers:

> *But we prefer talking to ordinary customers instead of product freaks, because their needs unlikely meet. … Heavy users or professional users could be used in usability study, because they have a lot of experience (on the product). (Alpha)*

As can be interpreted above, some consumer goods producers do not consider using opinions of professional athletes, enthusiastic users or very experienced users as very valuable in new product development. What is worth noting is that these companies

were not very active in using customer information in NPD in general, then also the use of lead users can reflect this strategy. Kotler and Armstrong (1996, 168) and Lüthje (2004, 691) recommended innovative companies to try use innovative users and early adopters, also called opinion leaders to support NPD. Some of the interviewees mentioned that *pioneer users* or *early adaptors* could be used to get new ideas and that they are actually valuable source of information in new product development. However, these interviewees also highlighted that pioneer users were very difficult to find. At least one company used some identified early adaptors as part of product development.

As mentioned earlier, half of the sports manufacturers studied develop product also for top athletes. There was a clear distinction between the products that are used also in world-class sports and products that are used only by ordinary consumers. Companies, which designed products also for top athletes, used comprehensively their expertise and input in product development. They considered them as vital source of information, especially in testing new products and reporting on their functionality:

> *We test a lot. In practice we have tens of testers and they are all top athletes. Only top products are tested and later the technology is adjusted to products for ordinary consumers. (Kappa)*

Experienced users or top athletes, although they are not the only target group, can provide valuable information without being systematically part of company's development team:

> *If we think, for instance, some athletes that are very technically oriented and they use products from several manufacturers, can sometimes share their product experiences. It's good because we cannot test everything ourselves and are sometimes unable to see things from user's point of view. (Beta)*

One interesting point in using top athletes in NPD was their role as innovators. Although their input was valued significantly and their contribution was an important part of the sports product's development process, and in success of a new product, it does not mean that they would be highly innovative users or lead users. None of the interviewees mentioned that professional users would be important because of the new ideas they are able to provide. Their contribution related highly to constant testing, for example, detailed usability and durability matters, but their position was not to create completely new ideas. Therefore, it seems that the concept of professional user in product development is not the same than lead user, at least according to the interviews. As was seen earlier in Figure 4 in the theoretical part of this study, the role of professional users and lead users is different; professional users can contribute on new technology development, but opinion leaders' or lead users' value is the characteristic to be able to tell something about forthcoming needs of new customers. According to one

of the *user research experts*, the lead users are usually pioneers who are interested in new technology and they often desire to be the first ones to try out everything new.

Table 12 depicts an overview of customers who can be considered to be a useful partner in NPD according to interviewed sports and outdoor manufacturers. In summary, finding interesting customers was not seen as a challenge in studied companies, because companies did not have high demands for ordinary customers participating in market and user research. Therefore, these results do not support Lettl's (2007, 55–56) argument that interesting customers would be difficult to find, at least in consumer goods development, because companies can use outsourced recruiter or their own database. Customers were expected to be companies' target users and they often had clear regulation how to find those target users. Level of customer's experience was considered to be important in user research, because only few users are studied, as Heiskanen et al. (2007, 12) also suggested. However, they were still easy to find.

Two interviewees even mentioned that they would like to have a consumer group for a longer and constant cooperation. Companies were using both current and potential customers in research actions, depending on the research purpose, although current users' potential in NPD was not very appreciated. Table 12 also concludes different type of customers' ability to create and reveal new information. Companies were not expecting completely new information from customers in market research, but in user research some companies were expecting to find latent information, however, this was not dependent on the studied customers, hence the used research methods.

Table 12 Overview of selecting customers for sports product development

Customers	**Customer source**	**Customer features**	**New ideas**
Customers participating in market research	Commercial panels, company's own user register	Target users, potential users, not current target users	Not likely, indication of current needs, product improvements
Customers participating in user research	Commercial panels, company's own user register	Target users, current users, users' level of expertise important	Improvements more likely, indication of latent needs
Pioneers / lead users	Informal sources, difficult to identify, difficult to attract	Innovative, technology oriented, high knowledge or expertise	Possible
Professional users	Contracts, long term partnerships	High expertise, high interest	Possible, improvements more likely

Pioneer users were considered to be useful source of new information in some companies, but they were very difficult to find, and even difficult to attract. They were considered to have high knowledge on the product, but the assumption in many companies was that their needs would not match with the needs of ordinary users, as,

for example, Ulwick (2002, 93) suggested. Most of the studied companies did not have any experience of exploiting lead or pioneer users in new product development. The companies that were reluctant in customer information acquisition in general, were reluctant also in using pioneer users. Professional users were the most important source of customer information in the companies producing equipment for top athletes. Their involvement was based on high expertise and equally high interest. Both pioneer users and professional users were expecting to provide new information in those companies were it they were used.

5 CONCLUSIONS

Communication is easier and faster than ever; modern technology offers companies a possibility to have direct and fast contacts with consumers and consumer groups all over the world at the same time. Thanks to all the new technology available, listening should be easy, but *understanding* consumer needs seems to be more difficult than ever before. Companies have major difficulties in introducing successful new products, regardless of great emphasis on new product development (Pitta et al. 1996, 49). Understanding customer needs is a critical success factor in NPD, but trusting on standard customer research is not providing the needed information anymore (Kaulio 1997, 7).

Throughout the research process, I had an opportunity to have very interesting discussions during this research process about the dilemma of how to get inside consumers' head. One of the most logical advices received was from one of the user research experts interviewed for this study; he stated that *we should listen to consumers and users, but we should not believe everything they say*. He brought me to the core of the matter: If companies want to know their customers, they should find tools to listen to them, but if their answers are not reliable, companies should have tools, which do not rely on what consumers say, but on what can be *interpreted* from what they say and how they behave.

Marketing and market research have traditionally provided information about consumers and end users throughout company's functions including marketing and product development. Still, market research is said to be a failure in predicting future consumer needs, and it has caused new product to fail or even to miss possible major innovations (e.g. Deszca 1999; O'Connor 1998). As a result, new research directions to understand customers and users have evolved. New research tools concentrating instead of listening on *interpreting*, are needed. Therefore, qualitative research methods, for example, from ethnography and anthropology have gained ground in customer research. They are used in qualitative market research, but in addition, they are used in user research which brings together the user, the use context, the product and the product development process.

As more qualitative methods have been introduced in customer research, the dimension of customer role in NPD has also transformed, and the concept of *customer involvement* in new product development has become current. Customer involvement in NPD has evolved, for example, from business-to-business relationships where company-customer interaction is usually longer and more profound than in company-consumer relations. Nevertheless, concept of customer involvement can be also used to define the interaction between the company and the consumer. Different degrees of customer involvement exist also in consumer goods development, as the results of this study indicate.

The purpose of this study was to analyze the acquisition and significance of customer information in consumer product development, the focus being in the development of sports products. The first research task was to *analyze what kind of information can be acquired from consumers, and how does it involve customers to company's new consumer product development*. Customer information was viewed with three information types according to Hyysalo (2006a, 8–9). There were major differences between companies in the use of customer information for NPD. Traditional market information as a customer information source was not valued significantly, and the sports manufacturers were not extensive acquirers of it. Some of the manufacturers were not active in customer information acquisition to begin with, and others had noticed, which supports previous literature that market information does not provide the knowledge they need. Yet, it was interesting to notice that if market research was noticed to be insufficient; not all companies were actively searching for new more suitable methods, at least it did not come up during the interviews. Naturally, there were also other reasons not to acquire customer information, such as lack of sufficient resources, which also indicates that market information was not highly valued.

Market information acquisition was is several companies based on non-systematic ad hoc procedures, and more importantly, often they were not tightly combined with certain stage of the product development process. This also implies that market information was not indicated for NPD purposes. An interesting outcome was also that some companies had noticed small scale qualitative methods to be more effective in customer research for NPD than quantitative methods. However, the differences were striking between studied companies, because few of the studied companies were extremely active also in market information acquisition.

Current customer information was very fragmented as also Hyysalo (2006a, 8–9) stated, but interestingly enough, it did not seem to bother several companies. Methods to store and acquire current customer information were often informal and current customers as an information source was not very significant. It was also interesting to notice, how important retailers were as an information source about end users' needs; because retailers was the most important source of all end user information. Also the information received from retailers was fragmented, and not significantly factual, because the information seemed to be based on retailers' perceptions, not actual facts. Retailers' voice is clearly strong in this particular industry. This also supports the argument that consumers are not able to tell what they need, because then a secondary source is regarded as a suitable method to inform about consumer needs.

User information had different forms in sports product development. In was notably popular, although in few companies it was mainly involving customers in different forms of testing, and not so much on studying the user behavior or use context. However, in some companies the product development was at least partly based on it.

And the companies, which were active in acquiring different kind of user information, seemed to appreciate the information very highly. Furthermore, the companies, which did not acquire actively customer information, did not seem to need for any new kind of information. Some of the companies had also tried out different possibilities and thought that they are better without them. In addition, although the interviewees did not directly to reveal it, it seemed that some of them did not know the all possibilities that exist to study customers' needs.

By studying company-customer interaction with customers, the customer involvement in new product development can be defined. The interaction between company's customers and product development process defines customer involvement in NPD (Kaulio 1998, 142). Customer involvement in product development has been mainly used to define corporate customers' input for product development (e.g. Alam 2002; Gruner & Homburg 2000; Lagrosen 2005). Apparently, before only Dahlsten (2004) has defined end user involvement in new consumer product development similar to this study. Dahlsten was studying only one product, but as Dahlsten and this study indicate, customer involvement can be defined also in consumer product development.

Degree of customer involvement was defined by using customer involvement classifications according to Alam (2002) and Kaulio (1998). Very high degree of customer involvement in consumer product development is rare. In only one of the sports manufacturers the highest level of customer involvement, the representation, was met, and those customers were professional sports product users and not ordinary consumers. Manufactures of ordinary consumers' products did not consider representation to be suitable for their product development. However, interestingly enough, several of the studied companies had extensive consultation with users during new product development. Direct, often informal contact with customers, testing products and listening to customers' opinions was seen as important aspect in product development. This indicates that more informal methods and more direct customer contact will lead to higher degree of customer involvement in NPD.

Nevertheless, asking for information or opinions from consumers was the most widely used level of customer involvement, although it was often non-systematic acquisition of market information. Customer involvement is different between companies, even between consumer goods manufactures; this seemed to depend on company size, product characteristics, and target user characteristics and level of customers' professionalism, but clearly also on what kind of information the company *wanted to acquire*; what kind of objectives they had. From the interviews can be interpreted that these factors have a major impact on customer involvement in companies.

The customer involvement in new product development depends on the customer information acquired and on the methods used to acquire the information. There are also

several product development process stages when the information is acquired. Therefore, the second research task was to examine *what kind of means companies can use to acquire customer information to support new consumer product development*. Variety of different methods exists, but in this study the possible methods were regarded as market research methods and user research methods. Multiple sophisticated methods exist and companies tend to develop a set of tools, which suit the best for their purposes. This is why it can be difficult to reproduce used customer research methods into new contexts or companies (e.g. Heiskanen et al. 2007, 13). This appeared to be the situation also in this study; companies had specified methods developed for certain tasks during product development, and furthermore, they were often conducted ad hoc basis.

Variety of methods was utilized also for market research, but traditional surveys were the most popular means, although companies did not seem to be particularly pleased with them. In few companies they were seen as the most convenient method to approach customers, but on the other hand, two interviewees from two different companies mentioned that they prefer small scale qualitative study over large surveys, because surveys would not provide new information about fragmented markets. Popularity of surveys was seen also as the popularity of Internet-based surveys. Otherwise possibilities of the Internet were not really explored, although some of the companies said that this will take place in the near future.

Versatile and wide use of user research methods was an interesting outcome of the research. Several companies had intense customer testing throughout the product development process, including smaller companies. Some companies were relying heavily on customers' needs and opinions in product development. Also in some of the companies it had been noticed that new customer research methods will be needed next to traditional market research methods. User research methods were used quite extensively during the whole development process when market research was conducted mainly in the end of the process or in the beginning of the process, depending again on the company. User research also seemed to be more systematic than market research in some of those companies that conducted it. Also professional athletes' role was highlighted in user research.

The knowledge level of how to study consumers and to acquire customer information seemed to vary widely between companies. As some companies stated that they do not need further information and they know the methods already they need, some interviewees admitted that they will need better means to study small segments better. Market research and user research seemed to be tightly connected to each other. This highlights that cooperation between market functions and product development functions is very important when it comes to understanding customers. This came up also in the discussions with *user research experts*; the lack of proper cooperation

between these two teams, and unclear roles in them can be one of the reasons of lack of further development of user research and better customer understanding. This could be also an interesting further research stream regarding this subject; to study how successful companies combine different functions to maximize the customer information value.

What kind of customer information companies acquire and what kind of methods they use to acquire the information depends on how significant the knowledge is for companies. Therefore, the third research task was to determine *the significance of customer information in new consumer product development*. It is not a given fact that customer information is always significant, because the significance can differ according to different contexts, depending on the company, the product being developed, and what kind of customer is in question. Therefore, objectives of customer information, level of product innovativeness, and type of customer were used in this study to define the significance of customer information in new consumer product development.

There were major differences between companies how important customer information was for them; in few companies the perceived significance was very high, but in several companies it was not considered to be very important. Despite their different states, most companies seemed to be satisfied with their situation. This study revealed a list of factors that had moderating effect on customer information significance in sports product development. Main reasons for moderate significance were, for example, previous unsatisfactory experience with customer research, needed information was received elsewhere, and customers' inability to provide the needed information. The companies, which did not have active systems and methods to acquire customer information, were considering customer information as less significant than the companies with active customer information acquisition. Also the lack of resources was seen as an obstacle in several companies.

This study also discovered factors that have a confirming effect on customer information significance. The most important factors were, for example, direct customer contact was considered to be important, previous research had been useful in creating more successful products, and it was seen as an instrument to maintain satisfied customers. Studied companies had several objectives to study customers or for NPD purposes and they were related to the factors that confirmed high significance of customer information in product development. For example, the objectives to better understand customers, to make better products and to sell more were the most important ones. The companies, which were active in acquisition of customer information in product development, considered customer information as very significant. They also had developed systematic, versatile and profound methods to acquire customer information. Moreover, they considered customer understanding to be one of the

success aspects of a new product. They also performed user research widely, which indicates that the purpose was also to study customers' latent needs and thoughts.

Level of product innovativeness also sets some demands on customer research (Heiskanen et al. 2007, 10). Although customer information was very significant for new sports product development in some studied companies, customers' ability to innovate and create new ideas was criticized or was not appreciated very much. Sensing markets, other industries and technologies; gathering market development and trend data were seen as a possible source to enable innovations, but direct customer information was not seen useful in development of new innovative products. Only one company was studying potential future customer requirements with extensive user research, others did not think customer research methods would exist to find out latent needs. Only professional users were considered to provide some level of valuable information also for more innovative development.

What was quite unexpected in the results was the contradiction in users' ability to provide ideas, especially current users'. Customers' ability to provide new ideas was not supported; although previous research indicates that ordinary customers are able to provide original new ideas, even in sports product development (Lüthje 2004; Lüthje et al. 2005), and customers had provided new improvement ideas in studied companies. In sports product development, the main approach to acquire customer information was apparently to get support on company's own decisions and ideas, not to receive completely new information. Additional research could be useful, because, as one of the interviewed *user research experts* said, some companies might have a tendency to think that the next new product is the next new radical innovation which will revolutionize the markets. Then, current customers' opinions are not highly valued.

Another aspect of the customer information significance is the type of customer. Some customers are expected to be better and more motivated to provide information for NPD purposes than others. When studying ordinary consumers, the sports manufactures found interesting customers easily by using consumer data banks or panels. Companies can also study their current users, which was, surprisingly enough, quite rare. Current users were often regarded as an inadequate source of new information. Yet, the communication access is quite easy, for example, if own data bank exists. In qualitative user research it is quite important to find the proper customers, because only few users are studied. In general, companies did not have difficulties to find users; that was not seen as a problem.

However, another interesting research stream relating to type of customer is the *lead users*. Using lead users or pioneer users in sports product development was both supported, but also objected. In mass production their value was not significant, because several respondents thought that ordinary users' needs would not meet the needs of advanced users or pioneer users. In some companies they were seen as a potential

source of new information, but finding them was regarded as very problematic. Companies were studying also professional athletes. They can be considered also as innovative users, but, according to the results, professional users were not particularly lead users or pioneer users. One interviewee mentioned that extremely technically oriented professional athletes can be a potential source of new ideas.

Although lead user method was not mostly accepted in consumer product development, lead users or pioneer users could be considered a good source of new ideas and information, at least some previous research support this (e.g. Parasuraman et al. 2004, 65–55; Pitta & Franzak 1996, 73–78), and also few of the studied sports manufacturers supported this. Finding them can be a problem, as some of the interviewees said. However, if it would be, in reality, possible to find users who encounter new needs in one or two years before the bulk of ordinary consumers, it could be a considered as a valuable source of information. Innovative and lead users are studied constantly, and further study of innovative ordinary consumers would be useful, because only few examples currently exist, and they seem to be related some sort of extreme product users (Lüthje et al. 2005; Rowley et al. 2007; von Hippel 2001).

On the whole, the sports manufacturers appeared to be quite satisfied with the knowledge they had about customers, thus, the results did not reveal that companies would have major difficulties in predicting consumer needs. However, more detailed information about studied companies could help define the different situations; when customer information was seen useful and how was it acquired. One or two interviews per company are only able to provide a limited amount of information.

Then, should the customer voice always be heard? Although customer information acquisition can be highly successful for companies, is should not become compulsory. Acquiring information demands a lot of work and resources from companies; and it should not become self-evident; if several successful Finnish sports and outdoor product manufacturers are able to sell their products to the market without listening to their potential buyers first, then it should not have to be always heard. However, if the products are not moving out from the shops, then it is probably time to find out what the customers actually want.

Listening to the customers demands ambition from companies, because it is seldom simplistic or economical, and there is no guarantee that it succeeds, but equally enough, the outcome can be prosperity. To success properly in listening to the customers, it should be done with proper planning and preparation, and it should be even conducted systematically. However, if the company wants to provide something extra for their buyers, something that competitors do not provide, then the effort is probably worth it. There is nothing superior to a high quality product in which development every minor detail has been weighted against future user’s needs and requirements. Then can be truly stated that customer voice have been heard, and it has been worth it.

5.1 Research contribution

The main purpose of scientific research is to produce new insights and knowledge. It can be new theories or models, concepts, methods or techniques and facts. New insights can be acquired by demonstrating new practical implications of a theory as well, for example, by testing existing models derived from theory, and by applying a method to a new problem. (Ghauri & Grønhaug 2002, 29.) In this study one single theoretical model does not exist, but several previous theories were combined to create comprehensive understanding about acquisition and significance of customer information in new consumer product development. Previous study of acquisition of consumer information in companies is mainly relating to marketing actions and product development has been the secondary source.

Another research stream used in this study, the customer involvement in new product development is mainly based on either corporate customer contexts or software development, but there are very few previous studies defining customer involvement in new consumer product development. This study and earlier study of Dahlsten (2004) are one of the few indicating that there are major differences between companies even in same industry, but also that rather high degree of customer involvement do exist in consumer product development. This study also combined the concept of customer information to the concept of customer involvement in new product development to deepen then understanding of different forms of customer input in NPD.

There is lot of evidence that customer input in new product development is important for new product's success (e.g. Hanna et al. 1995; Ottum & Moore 1997, 269). However, there is no indication of previous study of how consumer product manufacturers actually use customer information in NPD and how its significance is perceived in them. Therefore, hopefully, this study provides suitable example, because in results revealed several factors that affect on the significance of customer information. Furthermore, there is very few previous research of combination of market research and user research in consumer product development, when they are viewed separately.

Hopefully, this study will also provide information for consumer product manufacturers to reconsider the significance of customer information for new product development, and furthermore, to consider other research options to study consumer needs than traditional market research. It has been suggested that sports manufacturers should know their customers and acquire their input in NPD (Hyysalo 2006a, 93), but customer input from manufacturer's point of view has not been studied before, at least not in Finland. This study offers a new point of view on what can be possible in sports development, and possibly also in other consumer product development.

5.2 Research summary

Customers' voice is often ignored in the new product development (NPD) process. Some companies claim that they do not need the information from consumers, because products can be developed and satisfy buyers without asking them. Others have not been able to find the right tools to acquire customer information, because understanding consumer needs is more difficult than ever. Consumers' ability to provide new information for companies is widely criticized, especially in development of innovations. Most of the new products fail; therefore something is done incorrectly.

The study objective was to create more understanding on this matter by studying what kind of role customer information has in sports and outdoor product development. *The purpose of this study was to analyze the acquisition and significance of customer information in consumer product development.* The purpose was divided into three research questions. 1. What kind of information can be acquired from customers, and how does it involve customers to company's new consumer product development? 2. What kind of means can companies use to acquire customer information to support new consumer product development? 3. What is the significance of customer information in new consumer product development?

In this study a qualitative research approach was adopted. The data was collected with semi-structured theme interviews. 12 manager-level company representatives from 8 Finnish sports and outdoor manufacturers were interviewed.

The theoretical framework of the study was created according to the research questions. First was studied what kind of information customers can provide for NPD. There are three different information types, market information, current customer information and user information, which can be used to describe customer input in new product development. Traditionally market information is acquired to create customer information to company, but it has been slowly replaced by other information types. Customer information acquisition can be defined with customer involvement concept. Customer involvement is the interaction between company's customers and product development process. Degree of customer involvement in new product development can be defined according to type of involvement and level of involvement.

The results of this study indicate that quantitative market information is most widely acquired information, but it is not very significant for companies. Companies were not assured that it would provide new valuable information. Some of the companies were not active in acquiring customer information, because they did not see a direct customer contact valuable. Current customer information was mainly received via retailers or consumer emails. Retailer feedback was valued highly, but otherwise current customer information was not very important or systematically acquired. User information was regarded as very valuable in the companies that acquired it. It was considered to provide

better information than pure surveys. Degree of customer involvement varied between companies, but ordinary consumers were not considered as part of product development team. Most common involvement levels were consultation with users and asking customers' detailed information and opinions.

Second, acquisition of customer information can be defined by different research methods. Literature provides extensive array of methods. This study divided them as market research and user research methods. Basic methods can be, for example, questionnaires, interviews, group discussions and observation. User research also contains different forms of product testing with customers and can combine the user, the use context, the product and the product development process in the same study. The possibility to conduct customer research on the Internet was also considered.

Sports manufacturers used variety of methods, but quantitative market research methods were most utilized. It was mainly conducted on ad hoc basis and companies were not extremely pleased with it. User research was surprisingly popular and it was performed throughout the NPD process. User research methods were mainly questioning combined with testing. Companies conducting user research, considered it to be highly valuable, but in other companies it was not considered to be important.

Third, significance of customer information in NPD is an argued topic. Customers are seen as a poor source of information for NPD, because of their inability to provide new information and to predict their own behavior. Customer information is most questioned in innovation development. However, it is clearly argued that many new products fail, because companies are not able to predict their customers' needs. Significance of customer information was considered to depend on company's objectives to acquire customer information, level of product innovativeness and type of customer. Literature has introduced concept of lead user or pioneer user who should encounter certain needs months or years before ordinary consumers.

Customer information was not valued extremely significantly among sports product developers, but major differences emerged between producers. While some companies were establishing the product development on consumer needs, other saw customer information not to add any extra significance on the product development. Companies that acquired customer information actively and systematically considered it to be very important in their NPD, and vice versa. All companies seemed to agree, that consumers are not significant source of new innovations or even new ideas. Consumers can provide new product improvement ideas, but they were not actively acquired. Customers' ability to see outside their current use context was also considered to be inadequate. Finding right customers was easy, especially if outsourced recruiter was used. Several companies also used professional athletes as part of their products development process. Lead users or pioneer users were seen as a valuable source of new ideas in few companies, but they were also very difficult to find.

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APPENDICES

APPENDIX 1 THEME INTERVIEW FRAMEWORK (ENG)

- Preview into the studied company and its products
- Interviewee's background (title and work history) and role in the company

Theme 1: Nature of customer information

1) In your case, who, and what kind of is your customer?
2) How do you acquire or receive information about customers?
3) What kind of product-related information would you acquire from customers? Difference between current and potential customer, for example:
   a) General information about target group's opinions, attitudes and buying intentions?
   b) Feedback on current products, suggestions for improvements?
   c) Information on customer needs?
   d) Information on product user and use environment?
   e) Information about future trends?

Theme 2: Nature of customer involvement

4) How would you describe your customer contacts that you have, or could have:
   a) Information on customer's initiative?
   b) If needed, you can ask certain information related to certain product?
   c) Continuous cooperation with certain customer or customer group?
   d) Customer group is continuous part of product development team?
5) Could you consider building a continuous cooperation with certain customer group? Advantages?

Theme 3: Methods to acquire customer information

6) Market research:
   a) Your experience, opinions and usefulness? When in NPD process?
   b) Used techniques?
7) User research:
   a) Your experience, opinions and usefulness? When in NPD process?
   b) Used techniques?
8) New product ideas:
   a) Your experience, opinions and usefulness, how do you receive?

   b) Feedback on company's new ideas, ideas for product improvements, completely new ideas?
9) Product testing:
   a) Your experience, opinions and usefulness? When in NPD process?
   b) Semi-finished product testing (concept or prototype testing)?
   c) Usability testing?
10) Other means :
   a) Internet
   b) Sales force
   c) Direct customer feedback
   d) User or consumer community
11) Do companies need more information on different methods and their usability to acquire customer information? If yes, why?

Theme 4: Significance of customer information

12) Do companies know enough about their customer needs?
13) Why do companies want or should want to collect customer information? What kind of objectives companies may have?
14) How customer information can be used and exploited in companies?
15) What kind of obstacles and disadvantages customer information might have?
16) How significant is the role of customer information in product development, and how significant it should be?
17) How does the significance of information differ in development of product innovation / product improvement?

Theme 5: Customer selection

18) What kind of customer is able to provide the most useful information? New potential / current customer?
19) What kind of customer's opinions does not matter, or do they exist?
20) How much customer's previous experience with the product matter? Usefulness of expert users or lead users?
21) How are the interesting customer reached?

APPENDIX 2 THEME INTERVIEW FRAMEWORK (FIN)

- Katsaus yritykseen ja sen tuotteisiin
- Haastateltavan tausta (titteli, työhistoria) ja tehtävät yrityksessä

Teema 1: Kuluttajatiedon olemus

1) Millainen ja kuka on teidän tapauksessa kuluttaja-asiakas?
2) Miten hankitte tai saatte tietoa kuluttaja-asiakkaista?
3) Millaista tuotteisiin liittyvää tietoa voisitte hankkia asiakkailta? Nykyisen / potentiaalisen asiakkaan ero, esim.
   a) Yleistä tietoa kohderyhmän mielipiteistä, asenteista ja ostoaikomuksista?
   b) Palautetta nykyisistä tuotteista, parannusehdotuksia?
   c) Tietoa kuluttajan tarpeista?
   d) Tietoa tuotteiden käytettävyydestä ja käyttökontekstista?
   e) Tietoa tulevista trendeistä?

Teema 2: Kuluttajan osallistamisen olemus

4) Miten kuvaisit erilaisia kuluttaja-asiakaskontakteja, joita teillä on, tai teillä voisi olla? Esim.
   a) Tietoa asiakkaan aloitteesta?
   b) Kysytte tarvittaessa jotain yksittäistä tietoa?
   c) Jatkuva yhteistyö tietyn kuluttajan tai kuluttajaryhmän kanssa?
   d) Kuluttaja tai kuluttajaryhmä jatkuvasti osana tuotekehitystiimiä?
5) Voidaanko rakentaa jatkuva yhteistyö jonkun kuluttajaryhmän kanssa, miten? Millaiset hyödyt?

Teema 3: Asiakastiedon hankkimisen keinot

6) Markkinatutkimus:
   a) Kokemus, mielipiteet ja hyödyllisyys? Missä tuotekehityksen vaiheessa?
   b) Käytetyt keinot?
7) Käyttäjätutkimus:
   a) Kokemus, mielipiteet ja hyödyllisyys? Missä tuotekehityksen vaiheessa?
   b) Käytetyt keinot?
8) Uudet ideat:
   a) Kokemus, mielipiteet ja hyödyllisyys, miten saadaan?
   b) Yrityksen ideoiden testaus, ideoita tuoteparannuksiin, täysin uudet ideat?
9) Tuotteiden testaus:
   a) Kokemus, mielipiteet ja hyödyllisyys? Missä tuotekehityksen vaiheessa?
   b) Puolivalmiiden tuotteiden testaus (konsepti tai proto)?

c) Käytettävyystestaus?

10) Muut keinot: Esim.
    a) Internet
    b) Myyntikenttä
    c) Suorat asiakaspalautteet
    d) Käyttäjä- tai kuluttajayhteisöt
11) Onko yrityksillä tarvetta tietää lisää erilaisista menetelmistä ja niiden hyödyllisyydestä, jos on niin miksi?

Teema 4: Kuluttajatiedon merkitys

12) Tiedetäänkö asiakkaiden tarpeista riittävästi?
13) Miksi kuluttajista yleensä halutaan tai kannattaa kerätä tietoa? Millaisia tavoitteita yrityksillä voi olla?
14) Miten kuluttajilta saatavaa tietoa voidaan käyttää ja hyödyntää yrityksessä?
15) Mitä esteitä tai haittoja kuluttajan kuuntelemiselle voi olla?
16) Millainen merkitys kuluttajatiedolla on, tai voisi olla yrityksen tuotekehityksessä?
17) Miten kuluttajatiedon merkitys eroaa, jos kyseessä on innovaatio / paranneltava tuote?

Teema 5: Kuluttajien valinta

18) Millaisen kuluttajan mielipiteet ovat mielenkiintoisia yrityksen kannalta? Uusi potentiaalinen / nykyinen asiakas?
19) Millaisen kuluttajan mielipiteillä ei ole merkitystä, onko sellaista?
20) Millainen merkitys on asiakkaan aikaisemmalla tuotetuntemuksella? Erityinen asiantuntevan, kärkikäyttäjän merkitys?
21) Miten mielenkiintoisia kuluttajia löytää, joiden tarpeita halutaan selvittää?

APPENDIX 3 LIST OF INTERVIEWS

Sports and outdoor equipment manufacturers:

Date	Interview
18.1.2008	Alpha test interview
15.2.2008	Beta 1
15.2.2008	Beta 2
19.2.2008	Gamma
20.2.2008	Delta
21.2.2008	Omega 1
21.2.2008	Omega 2
26.2.2008	Alpha 1
5.3.2008	Alpha 2
6.3.2008	Epsilon
6.3.2008	Zeta
10.3.2008	Kappa

User research experts:

Date
18.2.2008
29.2.2008