CONSUMER-LED NEW PRODUCT DEVELOPMENT. CASE: DAIRY INDUSTRY

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Abstract

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This thesis focuses on consolidation the recommendations on the integration of consumer in new product development (NPD) given in the academic literature, and on the example of the three NPD projects in the case company.

The empirical findings advocate that the case company fulfils the principles of consumer-led NPD, and it is only one-step away of the full consumer empowerment strategy. Therefore, its NPD can be seen as an example of consumer-led NPD implementation. The findings also suggest that the product can be developed in consumer-led way regardless of the source of an idea (product- or need-driven), the target audience and resources assigned, in case when consumer mindset is integrated on all levels of organisation: strategic, cultural, operational and process. It is possible with top-management commitment, internal consumer research group, and the sophisticated consumer research methods.

The specific managerial recommendations are given on developing consumer-led culture, strategy, NPD process and the appropriate consumer research methods and techniques.
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This thesis was an important, interesting, unforgettable and challenging experience for me. The process of writing this thesis remained the sine wave – in the beginning, I was full of doubts and concerns, then the work started to take shape, and then again confusion followed by inspiration. Now, when I am writing this text, I understand that it ended on a positive side. It is largely due to people, who supported me.

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1 INTRODUCTION

The introduction chapter familiarizes the reader with the background of the case and the significance of the study. Then the literature review is given to defining the research gap, followed by the research questions and objectives of the study. This introduction also presents a theoretical framework, definition of key concepts, and the research methods being used. Finally, the structure of the thesis and the limitations of the thesis are given.

1.1 Background

Socio-economic and technological developments occurring during the last decades became triggers for shift of food sector orientation from production to market. In developed countries, a decrease in population growth with an increase of disposable income and food supply resulted in an excess of supply over demand (Costa & Jongen 2006; Linnemann et al. 2006). Consumers’ growing awareness of food production, food consumption, their own health and that of the environment together with global-scale production and distribution and almost permanently availability of products has made consumers highly critical. Moreover, it is harder to define and anticipate their needs, as consumers are heterogeneous and changeable as ever (Costa et al. 2006; Linnemann et al. 2006; Grunert & Valli 2002).

In additional, the customer’s expectations and societal beliefs about the role of the customer in business strategy have changed significantly. Customers are willing not only to voice their opinion about products rapidly on a global scale, but also donate their knowledge and ideas freely for new products to be developed (Mohr et al. 2010, 207).

Therefore, food designers do not have any longer a priority to neglect a consumer. Both scholars and practitioners claim that a consumer should drive all product innovations in food and beverage industry. The variety of consumer-led new
Product development concepts have been proposed (Costa & Jongen 2006; Jaeger & MacFie 2007; Lundhal 2011; Kemp 2013). However, despite the vast literature written on consumer-led NPD, the new product failure rate is still high – 72% of true new products and 55% of line extensions fail (Lord 2000), the failure rate of all new product ideas is even higher up to 70-80% (Cooper et al. 2004).

The one of the possible reasons of such high failure rate is the companies’ unawareness of the benefits of including consumers as part of NPD and inability to integrate the voice of the consumer into new product development. There are only a few examples of companies that have fully embraced a consumer-led approach to NPD, with a consumer-centric culture, consumer-led innovations, and experimentations in co-creation. (Martinez 2013a)

The truly consumer-oriented companies are still rare in Europe. The one of the major obstacle is the lack of concrete guidelines on how to implement consumer-led NPD effectively on different organisational levels in everyday business practices. The existing literature on the topic is mainly fragmented, and authors tend to use their own methodology, what requires further consolidation to be done. (Costa & Jongen 2006)

A case company claims that being a respected global authority on dairy expertise and innovation it has shifted its orientation from purely science and technology towards customers, to adopt to the food chain reversal and gain competitive advantage. The company advocates that consumers’ needs, desires and expectations play a key role in the product development process so that every product is designed with consumers in mind.

Therefore, this thesis aims at developing practical guidelines for consumer-led NPD implementation on the base of available literature and the case company example.
1.2 Literature review

The literature review will familiarize the reader with the main concepts used in this study. The review starts with a discussion on the NPD process in general and continues with the presentation of different consumer-led NPD concepts.

1.2.1 NPD process

NPD is often recommended as a suitable strategy to build competitive advantage and achieve long-term financial success and is commonly regarded as a major success factor in competitive food markets (Cooper 1999; Grunert et al. 2008; 2010, 3-4; Costa & Jongen 2006, Linnemann et al. 2006). NPD is not only important, but also very risky activity for the company – over 70% of new products fail (Lord 2000).

Not surprisingly, the NPD is of a great concern to all companies (Linnemann et al., 2006), and widely discussed in marketing and management literature (van Trijp & Steenkamp 2005; Moskowitz & Hartmann 2008). An understanding of the new product development process (NPDP) has been improved significantly within last 30 years. During this period the number of models explaining the product development process has been developed, tried to capture the key activities involved in the process and help to improve companies’ performance. (Trott 2011, 437) The most authors agree that NPD process can be divided into stages. However, there is no agreement on the number, name, and order of phases (Fuller 2011, 60-67). Trott (2011, 439-442) classified all NPD models in eight different categories:

1) Departmental-stage model
2) Activity stage model and concurrent engineering
3) Cross-functional models (teams)
4) Decision-stage model and activity-stage models – are the most discussed
5) Conversion-process models
6) Response models
7) Network models
8) Outsourced

The food NPDP developed in parallel with other industries (Earle 1997). The early attempts to qualify the important stages into process were made by Buzzle and Nourse in 1967 and Earle in 1968. The NPD process use to be done according to departmental-stage model, where so-called “over-the-wall” approach was employed. Modern NPDP coordinates the specific research activities such as product design, marketing research, process development with the aim of producing an integrated approach to the development of new products that an industrial customer or an individual consumer will buy it. (Earle & Anderson 2001, 111-118) In Appendix 1, the stages of NPD process, developed by marketers and food development specialists are illustrated.

Urban & Hauser in 1993 introduced the first consumer-oriented product development process. Later the consumer-led product development depending on the existing degree of branding and differentiation has been presented (Grunert & Valli 2001). Søndergaard in 2003 has proposed a new product development model that takes an understanding of consumer quality perception as its point of departure (Grunert et al. 2008). Lundahl (2011) emphasized the behavioural component in product choice and developed a behaviour-driven innovation process.

Stewart-Knox and Mitchell (2003) argue that if in the past the step-wise product development process was deemed as a key for success, now these models are creating constraints for the successful NPDP, and a concurrent or overlapping, flexible, team oriented NPDP is more advantageous. Costa and Jongen (2006) and Stewart-Knox and Mitchell (2003) consider the end-to-end model developed by Dahar and Hauser (2001) that emphasizes the integration of different steps and repeated evaluation of throughout the process as a way to increase the realism and effectiveness of the consumer-led NPD. The end-to-end PD model is illustrated in Figure 1. However, whether holistic approaches for the food product development can be successfully applied remains to be demonstrated.
Although the different stages are outlined as an independent activity, it is wrong to assume, that they are not interconnected and overlapping. NPD process should be agile, to be successful. Another important issue in NPD is the fuzzy front end – a chaotic idea generation stage. Quite often companies consider it as a pre-study and do not include in the actual NPD. However, although, the fuzzy front end does not require significant capital investments, quite often it can consume half of NPD time. The inclusion of the fuzzy front end is needed, to evaluate the NPD process properly. (Trott 2011, 365-367)

The overview of different PD models in the food industry shows that there are two main streams: 1) the evolution from the over-the-wall approach to integrated stage-gate model, and from stepwise to funnel, the spiral approaches; 2) the appearance of consumer-led product development and its further variations.

### 1.2.2 Consumer-led product development in the food industry

There is a significant discussion towards the role of the customer in NPD for decades. Earle (1997) stated that a consumer-oriented product development is a new stage in the evolution of the food NPDP. The food industry has succeeded in
developing and applying a variety of preference and a hedonic testing so that any product cannot be launched without consumer's acceptance. However, the concept of consumer-led NPD goes beyond consumer and sensory testing.

Fork-to-farm approach to food chains, in which all actors in the food chain should maximize value creation for the end user, has existed for many years. It has become imperative that food product developers acknowledge and apply in practice the long established and growing body of evidence that advocates putting the consumer at the start of the 'food chain'. (Moskowitz & Hartmann 2008; Grunert et al. 2008).

Both scholars and practitioners claim that consumers should drive all product innovation in the food industry (Costa & Jongen 2006; Jaeger & MacFie 2007; Lundahl 2011; Kemp 2013). There are different terms are used to describe consumer orientation in food development and innovation. The most discussed are consumer-led product development proposed by Urban and Hauser in 1993, and the user-driven innovations at first introduced by Hippel already in 1970th (Grunert and Valli 2001, Grunert et al. 2008; 2010, 3-20; Costa 2003; Costa & Jongen 2006; Lord 2000). Concurrently, Earle (1997) and Linnemann et al. (2006) refer to consumer-driven product development, Kemp (2013) to consumer-driven innovations and Currie (2008) to consumer-centric product development. Additionally, the "terms new product development" and "innovations" are often used as interchangeable (Pye & Jaeger 2010, 89). In this thesis, the term consumer-led NPD will be used.

Although, there is a difference in terminology all the mentioned above concepts imply that the consumer needs should be a starting point of NPD, and the integrated research and cross-functional teams are needed. (Urban & Hauser 1993; Costa & Jongen 2006; Earle 1997).

Along with the mentioned concepts used in the food industry, there is a number of related concepts exist in the literature, including – user-driven innovation (von Hippel 1986), early customer integration (Gassmann & Wecht 2005), and user-
centred development (Ketola & Ahonen 2005). In follow, the most discussed in literature approaches are presented.

**Consumer-led product development concept**

As it was mentioned above, Urban and Hauser introduced the consumer-led product development in 1993. Since that, the concept has been advocated in the food product development literature (Costa 2003; Costa & Jongen 2006; van Trijp & Steenkamp 2005).

**Figure 2.** The consumer-led new product development concept (Costa, 2003)

Consumer-led NPD can be seen as a tangible way of putting market orientation into practice, and its implementation should improve company’s performance. (Costa & Jongen 2006). Costa (2003) claims that customer-led NPD is closely related to the market-orientation. Thus, the key stages in formulating consumer-led NPD concept repeat the principles of market-orientated approach: need identification, idea development to address the need, product development to realize the idea and the product's market introduction to communicate the fulfilment of the need. The concept of the consumer-led product development is illustrated in the Figure 2.
The main pillars of consumer-led product development are (Costa & Jongen, 2006):

- Consumer needs should be the starting point of NPD
- NPD should aim at the fulfilment of consumer needs, not merely at technology
- The success of NPD is determined by the degree on which the product satisfies the targeted consumers’ needs

Costa and Jongen (2006) suggest that the lack of concrete guidelines for the effective implementation in everyday business practices is one of the major obstacles to the implementation of consumer-led food innovation strategies in NPD.

**User-driven innovations**

The next stream is the user-driven innovations in the food industry presented by Grunert et al. (2008) as a broader concept of consumer-led innovation, as users can be both customers and end users. User-oriented innovation is “a process towards the development of a new product or service in which an integrated analysis and understanding of the users’ wants, needs and preference formation play a key role”. The objective of consumer-driven innovation is to create the right product to fulfil consumer needs and expectations.

At first user-driven innovation was introduced by von Hippel in the 70s and since that the use of the term has been extended considerably. Von Hippel documented a number of cases where the user has initiated the innovation, by modifying and adapting existing products according to their own needs. However, now it covers also “all forms of innovation where there has been a good measure of user involvement in the innovation process”. (Grunert et al. 2010, 16-17)

If consumer-led product development aims on translating consumer subjective needs into concrete product attributes (Costa & Jongen 2006), the literature on user-driven innovation focus on understanding the preference formation process.
The basic assumption is that consumers are limited in their ability to articulate their needs for truly innovative products. In order to deal with this problem, the innovation literature has proposed a term latent needs – needs about which people were not aware until a product appeared on the market. However, there is no theoretical foundation in buyer behavioural literature for the latent needs. Whereas the main emphasis is done on the consumer preference formation. (Grunert et al. 2008)

When dealing with mass-market it is not possible to innovate with interactions of all users. Therefore, companies use sampling technique or in-depth characterization of users, whose insights are considered especially valuable. This type of innovation is called arms-length. (Grunert et al. 2008)

Grunert et al. (2008, 2010, 16-17) define two relevant streams of the user-innovation development: (i) how consumers form preferences for products and services with the use of The Total Food Quality model, developed by Grunert in 1996; (ii) how the consumer oriented innovation processes can be managed in the organization; (iii) and how two or more partners can innovate jointly. The major questions of the second stream are how to integrate a consumer into the innovation process and how to create cross-functional co-operation.

Based on the literature review, it can be argued that there is a research gap in the concrete guidelines on practical implementations of consumer-led NPD. Thus, Costa & Jongen (2006) advocated that it can be a one of the main obstacles to the implementation of consumer-led food innovation strategies in NPD. Grunert et al. (2008) highlight the importance of consumer-driven innovation management. Currently, the recommendations on the consumer-led NPD management are fragmented and limited. The literature on consumer-led product development emphasizes that for the successful implementation the top-management commitment and cross-functional teams are required. (Costa 2003; Grunert et al. 2008). The discussion on consumer-led NPD, process, dimensions and methods used in consumer-led NPD will continue in the Chapter 2 and 3.
1.3 Research objectives and questions

The objective of this research project is to provide guidelines on how to incorporate the voice of the consumer into NPD, based on the academic perspective and practical experience. The aims of the study are better understood through the research questions that are formulated below.

Main research question:

*How to integrate the voice of the customer into new product development?*

Secondary research questions:

1) *What strategy, culture and management should be to enhance incorporating the voice of the customer?*

2) *What the NPD process should be like depending on the source of product development (product or need-driven)?*

3) *What consumer research methods should be used depending on product development phase and the target audience?*

1.4 Theoretical framework

Figure 3 is an illustration of the theoretical framework of this thesis. It is visible that the study focuses on the integration of the voice of the customer into NPD. A company’s overall ability to integrate the voice-of-consumer depends on the following elements: the New Product Development process (NPDP), the organisation and management of the NPD, the NPD strategy, and culture.
Figure 3. Theoretical framework

As it is shown on the diagram, the customer is seen as a core of NPD, his or her voice should be integrated on every stage of the NPD process (NPDP), by means of different consumer research methods and sensory evaluation. Consumer-led NPD does not occur in isolation as a separate functional activity. It should be rather linked to the overall business strategy (Earle 2001). For consumer integration into NPD a company culture with the consumer-mind set is foremost (Kemp 2013, 115).

1.5 Definition of key concepts

Voice of the Customer (VOC) – “is a process for capturing customers’ requirements. It produces a detailed set of customer wants and needs, which are organized into a hierarchical structure, and then prioritized in terms of relative importance and satisfaction with current alternatives. There are four aspects of the VOC – customer needs, a hierarchical structure, priorities, and customer perceptions of performance” – Griffin & Hauser, 1993
Consumer-led new product development - “is an integrated concept concerning the application of consumers’ current and future needs, and its determinants, in the development of innovation products with true added value” – Urban & Hauser, 1993

Consumer research / Marketing research – “is the function that links the consumer, customer, and public to the marketer through information used to identify and define marketing opportunities and problems; generate, refine, and evaluate marketing actions; monitor marketing performance; and improve understanding of marketing as a process. Marketing research specifies the information required to address these issues, designs the method for collecting information, manages and implements the data collection process, analyses the results, and communicates the findings and their implications” – AMA (2004)

Sensory evaluation – “scientific discipline used to evoke, measure, analyse and interpret sensations as they are perceived by the senses of sight, smell, taste, touch and hearing” – Gatchalian, 1999

New product development – “a process of transforming business opportunities into tangible products” – Trott (2010, 418)

1.6 The research method

The theoretical part of this thesis is based on available literature about NPD explored from different perspectives of consumer-orientated NPD and innovations mainly in the context of food and beverage industry, including academic books and journals.

The empirical part includes a qualitative study of three NPD projects and the NPD organization in the case company. The selection of NPD projects should cover the company’s NPD practise. The projects vary in 1) source of the idea: product and need-driven, 2) target audience: children and adults, Finland, Russia, Sweden; 3)
level of product newness – incremental and new product; 4) the stage of the NPD. The process of these product development projects will be compared and analysed, and the consumer research methods being used will be compared with the help of categorization scheme explained in section 3.1.1 (categorization scheme for consumer-research methods). The data were gathered by the actual participations in planning and implementing the projects in practice. The process of these product development projects will be compared and analysed, and the consumer research methods being used will be compared with the help of categorization scheme explained in section 3.1.1 (Categorization scheme for consumer-research methods).

1.7 Delimitations of the study

There are a number of perspectives from which to analyse NPD this study focuses on a marketing perspective. Therefore, the technical, financial and production elements, which are undoubtedly an essential part of the NPD concept, are out of the scope of this study. (Trot 2011, 419)

The case company is constantly launching new products, but the evaluation of the company’s NPD is limited to three different projects. In additional, it is not possible to assess the projects’ success as the products are going to be launched after this study will be completed, and a year is needed to evaluate the commercial success.

1.8 Structure of the study

Figure 4 is the graphical representation of the thesis structure. The thesis starts with the introduction and follows with theory chapters. At first, the literature on consumer-led NPD and its dimensions will be reviewed, and then the consumer research methods and techniques applied in NPD will be reflected. The Chapter 4 is dedicated to the empirical analysis of the case company NPD, and the three NPD projects with the support of the theory reflected in Chapters 2 and 3. Finally,
the discussion and conclusions part gives answers to the research questions, proposed in Introduction part.

**Figure 4.** Structure of the study
2 CONSUMER-LED FOOD PRODUCT DEVELOPMENT

This chapter continues theoretical characterization of NPD in the food industry. It starts with the characteristics of the food industry and the evolution of the consumer role in food NPD. Next, the review of consumer-orientated concepts will be reflected and the triggers for consumer orientation in the food industry will be given. Finally, the integration of consumer-led NPD into a company's strategy, corporate culture and consumer-led product development process will be discussed.

2.1 Consumer role in food industry

As it was already mentioned, the consumer became a core of the food industry. For better understanding of the research topic, in follow, the characteristics of the food industry will be given and the evolution of consumer role and consumer-led NPD in the food industry will be discussed.

2.1.1 The nature of food industry

The food industry has started its development a century ago. With new technology development and socio-economic changes, it has evolved from the supplier market, where farmers provided consumers with a poor choice, to buyer-driven giant industry. Today, in the Western world consumers can buy whatever and wherever they want. (Linnemann et al. 2006) The number of new food and beverage product launches accounted for 140 thousand in 2009. For comparison, all non-food products accounted for 110 thousand. (Jaeger & MacFie 2010, p. 88).

There are several reasons for such turbulence in the food market. First, the level of competition has increased dramatically, due to appearing of global players and retailers’ success in vertical integration. The second reason is rapidly changing customer needs and expectations. Third, is the high rates of technical obsolescence. Finally, a product life cycle has shortened significantly. These factors force companies to adjust their strategies to competing through product
differentiation and time-to-market, rather than by cost reduction. (Linnemann et al. 2006; Lundahl 2011)

The nature of food industry prevents it from radical innovations and truly new products. Well-known fact is that people are conservative and hold a dualistic attitude towards new food. (Moskowitz & Hartmann 2008) The generalist or omnivore paradox implies that humans hold an inherent tendency to approach (neophilia) and avoid new food (neophobia) (van Trijp & van Kleef 2008). For example, gene technology is well accepted in the medical industry, but causes doubts, when relates to food products (Costa 2003). Even new flavour varieties proposed by customers, are not always accepted by them. Thus, despite consumers' statements that they want more varieties of taste within dairy products, the most sold once still have the traditional tastes, such as vanilla, strawberry and blueberry (Ross 2009).

Therefore, there is always a risk that consumers will not accept a new product. At the same time, technology driven innovations often require high investments in marketing to create awareness among users. In order to averse risk and save resources, the majority of companies prefer to wait until the market will be ready, rather than push the technology. (Moskowitz & Hartmann 2008)

Fear of new product failure has resulted in low rates of innovativeness, the share of radically new launches are only 2.2 %, compared to 77% of product launches representing nil or incremental level of novelty (Costa & Jongen 2006). The focus of innovation migrates from the product itself to marketing, packaging, distribution (Earle & Anderson 2001, 82).

Lundahl (2011) claims that the food industry has not been able to find a solution on how to constantly innovate and bring to the market successful breakthrough products. Lack of breakthrough innovations is making it harder for the consumer to perceive the benefit of slightly improved products (Martinez 2013a) and even differentiate the competitors' products (Earle & Anderson 2001, 197). In this way,
the fear to launch new origin products and utilization of “safe” approach perpetuates the high failure rate of new food products (Knox & Mitchell 2003).

Even if food industry is often accused in listening to the customer too carefully (Moskowitz & Hartmann 2008), the advocates of consumer-led NPD argue that the “incremental innovation trap” can be caused only by responsive consumer orientation that refers to generation, assimilation and utilization of the information based on the current customers and their expressed needs. At the same time, proactive approach aims at discovering and satisfying future and latent needs of current and future customers, and enhances the development of really new products. (Grunert et al. 2008; Mohr et al. 2010, 191)

2.1.2 The evolution of consumer role in NPD in food industry

The food industry started to develop a century ago, and in the course of time, the views on the NPD underwent a very thorough change. There is pervasive in debates about the future of new product development in the food industry. For many years, the food market consisted of products that farmers and food processors offered to the market. However, with the development of new technologies, the supply of food exceeded demand in developed countries, and markets became saturated and customers more demanding. Therefore, the product satisfaction of consumer needs became vital and the industry evolved from supply-based to demand based. Moreover, consumers became a centre of product development in the food industry, regardless the type of products: industrial or commodities (Costa & Jongen 2006; Linnemann et al. 2006).
The evolution of thinking and approach of the role of the consumer in NPD in the food industry is shown in the Figure 5, in which views of different specialists combined. (Earle 1997, Buisson 1995; Linnemann et al. 2006; Costa & Jongen 2006; Kemp 2013). In the first half of XX century, new technologies allowed to produce large quantities of new food. In 1950th the innovations such as self-stores, supermarkets and a new type of packaging emphasized the need of the market place and two approaches in food NPD, one dominated by marketing, and one dominated by R&D appeared. However, the both approaches neglected the consumer and the product failure rate was high. This led to consumer-driven product development. (Earle 1997)

Considering the past 30 years of NPD process evolution, Buisson (1997) found similar changes in approach and thinking. In the 1960th companies believed that had enough internal resources to produce successful new products internally. In the 1970th companies to find high growth niches and markets started to conduct marketing research. In 1980th and 1990th two approaches were combined, allowing companies to produce products that meet both - customers’ needs and corporate goals.

Figure 6 illustrates the domination of marketing activities over technological in NPD in the food industry. At the same time, there is an assumption, that truly market-oriented food companies are still rare in Europe (Costa & Jongen 2006),
what means that majority of companies in Europe have not fully integrated voice of the customer into NPD process.

**Figure 6.** Classifications NPD activities across different industries (Trott 2011, 572)

### 2.1.3 The development of consumer-led NPD perspectives

Figure 7 depicts several research streams in consumer-led literature. At first Urban and Hauser introduced consumer-led product development in 1993. Later this paradigm was advocated in the academy. Van Trijp and Steenkamp (2005) discussed the principles and practices of the consumer-oriented new product development. Costa (2003) and Costa and Jongen (2006) described the key stages of the consumer-led product development process, the main pillars of the concept, the three major obstacles to the implementation the consumer-led innovation strategies, and propose further researches on how to overcome those obstacles in the food industry.

**Figure 7.** Evolution of consumer-led NPD
Concurrently, the different methods and approaches of putting consumer-led NPD into practice were proposed. The means-end chain theory and Quality Functional Deployment have received the most attention as methods for implementing consumer-led NPD in practice (Benner et al. 2003; Costa et al. 2004; van Trijp & Steenkamp 2005; Grunert & Valli 2001).

Van Kleef et al. (2004) made a critical overview of stages of the new product development process along with representative consumer research methods, with the emphasis done on the understanding consumer needs stage, where ten different methods were evaluated. In addition, they developed a categorization scheme against which similarities and differences between methods can be made more apparent.

Recently the literature on food new product development is focused on concrete examples of applying consumer-led product development process. The Table 1 depicts the articles published on the application of consumer-led product development in the food industry.
Table 1. Examples of articles published on application of consumer-led NPD within food industry

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Name</th>
<th>Key words</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grunert &amp; Valli</td>
<td>2001</td>
<td>Designer-made meat and dairy products: consumer-led product development</td>
<td>Food products, Product innovation, Branding, Consumer, Yoghurt, Beef</td>
</tr>
<tr>
<td>Grunert</td>
<td>2006</td>
<td>Future trends and consumer lifestyles with regard to meat consumption</td>
<td>Consumers; Lifestyle; Extrinsic cues; Convenience; Meat avoidance</td>
</tr>
<tr>
<td>Costa et al.</td>
<td>2007</td>
<td>To cook or not to cook: A means-end study of motives for choice of meal solutions</td>
<td>Means-end; Laddering; Convenience; Meal solutions; Food choice; Dutch consumer</td>
</tr>
<tr>
<td>Costa and Jongen</td>
<td>2010</td>
<td>Designing New Meals for an Ageing Population</td>
<td>Consumer-led NPD, ready meals, consumer behaviour, seniors, Dutch consumer</td>
</tr>
<tr>
<td>Grunert et al.</td>
<td>2011</td>
<td>Use of consumer insight in the new product development process in the meat sector</td>
<td>Consumer behaviour; Concept testing; Idea generation; New product development; Quality perception; Technology acceptance</td>
</tr>
</tbody>
</table>

The next stream of research on consumer-oriented NPD concerns consumer-led and user innovation. In 2007 MacFie has edited a “Consumer-Led product development” in 2007 and in 2010 in collaboration with Jaeger “Consumer-Driven Innovation in Food and Personal Care Products” book (Jaeger & MacFie 2010). In both books, academic specialists and food industry practitioners discuss the consumer-led product development and innovation, propose new or improved methods for integration the voice-of-customer and future trends.
Such phenomena as open innovations is also gaining popularity in the literature on food innovation (Sarkar & Costa 2008; Martinez 2013a, 2013b). Martinez (2013a) based on marketing-consumer collaboration shows that the open innovation is possible to implement in the food industry. Kemp (2013) argues that the consumer should drive food product innovation, and with appearing of new technologies the new way to innovate, in which prosumers work in mutual beneficial collaboration with companies to develop products, often through social networking, became possible.

2.2 Dimensions of consumer-led new product development

In order to implement consumer-led NPD in practise a company should incorporate consumer mind-set on different organisation’s levels: strategic, cultural, and managerial. Consumer-orientation is the matter of degree (Kemp 2013, 110). Therefore, companies can employ different strategies to integrate voice-of-customer. In follow different dimensions of consumer-led NPD including strategy, culture, management and process will be discussed.

2.2.1 The levels of consumer integration

Kemp (2013, 110-111) argues that there are three levels of consumer-led innovation: consumer-focused company culture, consumer-driven innovation process, and co-creation. On a basic level, the company makes consumer central needs a part of the company’s culture and all individuals in the company consider consumer in the daily project work. On more sophisticated level company carries out a systematic program of research with consumers guide and lead innovation process at every stage, so that new food and beverages are initially designed with the consumer in mind. The next level is co-creation with consumers. The WEB 2.0 allowed rapid and flexible co-innovations directly with consumers, so called “prosumerism” that leads to win-win situation for both consumers and companies. Thus, many companies such as Adidas, 3M, Procter & Gamble have built strong online platforms that help integrate their customers’ innovative ideas into the NPD process (Fuchs & Schreier 2011).
Nowadays, consumers are allowed to take control of the processes that used to be exclusively under marketer control. Consumers and companies roles are merging while consumers are becoming involved in the innovation process as active actors. Instead of just studying consumer preferences, companies have started to empower their consumers in the NPD. It is useful to evaluate the level of empowerment based on two dimensions: who creates new designs, and who decides which designs will be produced. (Fuchs & Schreier, 2011)

Fuchs & Schreier (2011) proposed that there are four different strategies of customer empowerment, illustrated in the Figure 8. Zero empowerment means that customers are neglected. “Create” empowerment happens, when customer creates or bring ideas for new product design, but does not “vote” on which products will be marketed. “Select” empowerment occurs, when a company creates new product designs, but empower customer to make a choice, which of them should be launched. In “Full Empowerment” strategy customer designs and chooses which products to launch.

![Figure 8. Consumer empowerment strategies (Fuchs & Schreier 2011)](image-url)
2.2.2 Consumer-led strategy

The company’s innovation strategy should fit in the strategic orientation of the firm and be in-line with corporate and the business functional strategies (Earle & Anderson 2001; Trott 2011; Omta & Folstar 2005). A typical innovation process can be seen as strategy development → product and brand strategy → consumer insights finding → idea generation → concept development → prototyping → scale up → launch → review → continuous improvement (Martinetz 2013).

Product development strategy does not occur in isolation as a separate functional activity. It should be rather linked to the overall business strategy and be coordinated with the product, marketing and technology strategy. (Earle & Anderson 2001, 349; Trott 2011, 556) In this way, the product development sits harmoniously with the strategic direction of the company, the company’s technical and marketing capabilities, and the customers in its ultimate market. (Earle & Anderson 2001, 45)

For successful NPD, a company should be aware of its competences and capabilities, irrespectively whether it utilizes inside-out or outside-in approach to define them. Once core capabilities and competencies are defined, a company should evaluate (i) whether or not a certain NPD strategy will fit in the strategic orientation of the company; (ii) and whether it is better to implement a certain NPD project in-house, or outsource it, or in collaboration with third parties. (Omta & Folstar 2005)

The strategic orientation of the firm is explained by typology developed by Miles and Snow in 1978. There are three types of organizations: prospectors, analysers and defenders. Prospectors aim to develop new products and exploit new market opportunities faster than competitors and be at the forefront of the innovation. Defenders are aiming to maintain a stable environment, in which they have a fixed range of products and customers, and analysers combine the strengths of both and locate themselves in between (Slater & Mohr 2006).
The company’s product development and innovation strategies should be aimed at finding a balance between launching incremental and disruptive innovations as incremental innovations aim for short-term profit whereas disruptive for long-term success. Slater and Mohr (2006) argue that according to the strategy utilized (prospector, analyser or defender) a company develops skills, which encourage and abash different types of innovation, therefore, the company should be able to adopt beneficial skills of different strategies.

2.2.3 Consumer-led culture

People are those who determine success or failure of projects. Therefore, the key success factor for successful innovation is to have a company culture where the consumer-mind set is foremost. The consumer centric company culture should be developed on two levels: corporation and individual employee level. Kemp (2013, 141) argue that simple and cheap step is to start to build consumer-led culture from the bottom up by educating their employees.

Table 2. Framework and approaches for incorporation consumer mind-set into company cultures (Moskowitz et al. 2006)

<table>
<thead>
<tr>
<th>Elements of the framework</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blueprint approach to describing consumers on whom the company wants to focus</td>
<td>Desk research, such as business publications and books, to identify current cultural interests and influential thinking</td>
</tr>
<tr>
<td>Databasing qualitative and quantitative findings</td>
<td>Trend-spotting to identify trends and meta-trends</td>
</tr>
<tr>
<td>Documenting the value set for the person and product (value diagramming)</td>
<td>Census, segmentation and usage and attitudes (U&amp;A) data to understand the target consumer</td>
</tr>
<tr>
<td>Strategies that connect technologies to product features, marketing and consumer</td>
<td>Syndicated research, e.g., from scanners, diary panels for metrics about products in a category, such as product sales</td>
</tr>
<tr>
<td>Ability to value the impact for consumers/customers</td>
<td>Semisyndicated research, i.e., regular studies with a specific purpose that allow for some customisation</td>
</tr>
<tr>
<td>Good communication around consumer issues</td>
<td>Custom research at all stages of the NPD process</td>
</tr>
<tr>
<td></td>
<td>Secondary research services, such as reports on particular topics that give simplified analysis and interpretation of data</td>
</tr>
</tbody>
</table>
Consumer-centric corporate culture can be developed only with the support of senior management. Companies need to have the right structure to make the most of consumer insights gained to be injected into innovation. (Anderson, 2008) Moskowitz et al. (2006) described framework and approaches for incorporating voice-of-customer into company cultures, illustrated in Table 2.

2.2.4 Management of consumer-led NPD

Costa & Jongen (2006) state that the lack of clear guidelines for consumer-led implementation is the reason for its low adoption rate within companies. Grunert et al. (2008) deem innovation management – how to integrate user information into the innovation process and how to create cross-functional cooperation – as one of the major fields for further research in user-driven innovation.

The literature on consumer-led NPD highlights several important aspects. First, the proper organizational structure is needed. Traditionally the consumer has been a territory of marketing, and the consumer research and sensory analysing are located in R&D (Moskowitz & Hartmann 2008). Second, the scholars and practitioners in the food industry recommend considering new product development as a project, to accomplish which the cross-functional team is required. The properly organized and managed cross-functional teams should be a treat for the misunderstanding and enhance open communication among the different functional group (Earle & Anderson 2001, 266; Linemmann et al. 2006).

Consumer research teams from being service providers to consultant with expertise to guide the innovation process. Each innovation project should have consumer experts on the team from the initial planning stage to ensure that the consumer is represented in the process and, what is extremely important – choose the most appropriate tools for integrating the voice of the customer. (Kemp 2013, 114) Finally, the top-management support is needed, the NPD management
should be aligned with the company’s corporate and business strategies (Anderson 2008).

2.3 Consumer-led product development process

The consumer-led NPDP requires a close cooperation between members of functional groups. There are different research methods are used depending on the development stage. They will be discussed in more detailed in the Chapter 3. The consumer-led product development process consists of five stages and gates depicted in the Figure 9. There are also another variations of consumer-led NPDP discussed in Appendix II.

The PDP starts with opportunity identification stage that aims at defining the most prominent markets and generating ideas that can successfully compete in these markets. The opportunity identification stage is supported by careful analysis of company’s own strategic advances and evaluation of them vis-à-vis competitors. In addition, company defines which technological platforms can provide a prominent base for the NPD. In the case if the outcomes of these assessments showed that there are potential markets and prominent ideas, the NPD comes to the design stage, showed in the Figure 10.

New product design process aims at the delivery of Core Benefit Propositions “the unique benefits that the product is to provide customers as well as those benefits required meeting and surpassing competition” (Urban and Hauser 1993, p 164). The design sub process consists of several stages that link voice of the consumer with the voice of the company: it starts with opportunity definition where consumers evaluate those ideas that have been selected during the opportunity identification stage. Such an early consumer involvement should help to avoid the ideas with low market potential before investments are done. Both quantitative and qualitative methods are used at this point. First qualitative methods are applied to identify issues that may need further investigation, and qualitative methods further investigate the expected benefits and their relative importance to consumers. Once the lists of benefits and their relative importance for consumers
are ready, the process comes to opportunity refinement phase and the actual development of the product starts.

Figure 9. Consumer-led NPDP (Costa & Jongen 2006)

During the refinement stage the tasks are: (i) determine the strategic benefits to be delivered vis-à-vis existing products, (ii) segment target consumers based on these benefits, (iii) establish the combination of augmented product’s features that will deliver the desired consumer benefits. The model of consumer choice helps carefully to analyse and measure the relationships between consumer preferences, perception or choices, on the one hand, and the core and augmented product’s features on the other.
If it is possible to create a product that will fulfil consumer needs in a superior manner the opportunity evaluation stage starts, where forecasting of new product sales takes place based on individual preference and choice probabilities for the new product. The next stage is the testing of the product and its marketing campaign and further development of the product. Once the testing is concluded successfully the product is introduced to the market and the life-cycle management starts.

**Figure 10.** Phases of consumer-led product design (Costa & Jongen 2006)
3 CONSUMER RESEARCH METHODS AND TECHNIQUES IN NPD

The discontinuous development and improving of consumer research methods used by scholars and practitioners result in a huge variety of techniques to be used. In the following, different concepts of using and identifying customers and users in the product development process will be reflected.

Consumer research is becoming a daily agenda for the food business. Even the most technology-oriented companies use consumer research to verify that the consumer will accept the product (Van Kleef et al. 2004). In the food industry until recently the sensory testing was dominated, and only at present companies came to a conclusion that the consumer researches are equally important for the success of new product (Moskowitz & Hartmann 2008). In order to develop new, differentiated products in a consumer-led way companies have to understand what motivates consumers to demand particular products (Grunert & Valli 2001).

Moskowitz et al. (2009) set the agenda for successful product development. According to which, success can be guaranteed by defining and meeting target consumer expectations and needs, the right food, proper packaging and preparation, correct positioning at the shelf and in the media, and meeting corporate logistics and financial imperatives. Each of these success determinants requires a right set of consumer research methods to be employed.

The formal research methods are found to be more beneficial rather than ad hoc once. The knowledge obtained through formal methods is easily disseminated across different departments in the company and because of its verifiability and credibility is largely used to a more extend (Maltz & Kohli 1996).

3.1 The classification of consumer research methods

Today’s food industry is supported by different consultants that observe trends and provide companies with extended data on what people eat and buy, such as
Nielsen and IRI, concurrently companies conducting consumer and marketing researches in-house and outsource them. Consequently, there is no lack of data available, on the contrary, the huge amount of information could prevent the problem solving and result in routine reportages, where the main effort is put into defining awareness and liking rates. (Moskowitz & Hartmann 2008) Therefore, companies should be critical in terms what information they need and review methods and technique that will provide them with the necessary knowledge to develop a successful new product.

There are different approaches for grouping consumer research methods in the food industry: by the stage of the NPD process (Van Kleef et al. 2004; Kemp 2013, 112) and actionability and newness of the product (Van Kleef et al. 2004). Moreover, the general classification methods can be applied in the food industry, e.g. based on innovation type (Mohr et al. 2010).

3.1.1 Categorization scheme for the research methods

Van Kleef et al. (2005) were the first who developed a categorization scheme for the research methods against which the similarities and differences between methods are more visible. This scheme is reflected in Appendix X. Janssen & Dankbaar (2010, 137-141) on the base of this scheme have developed they own specific requirements for the consumer involvement in different situations. In the thesis the categorisation scheme is based on the findings of both mentioned models, it is reflected in the Figure 11.
The different stimulus can be used for the need elicitation in consumer research. The stimulus can be divided in need- and product-driven and in familiar and unfamiliar. In need-driven method, the respondents are asked to reveal their needs without any references to a concrete product. The aim of these methods is to define consumers’ problems and needs. In product-driven methods, the product is used as a cue to identify needs and wants. The more familiar product or its attributes are the easier for respondents to evaluate them. In the valid result, respondents have to have at least some experience with the product or the particular attribute of the product. (van Kleef et al. 2005)

The interactions can be characterised by type – structured and unstructured, level – “for”, “with”, “by”, and delivering of info – directly and indirectly. In highly structured data collection, the questions and the responses are completely predetermined; the obtained responses are directly in quantitative form and require no further subjective interpretation. By unstructured research, it is possible to obtain detailed and in-depth data that may bring new insights into NPD. However, the collection of such data takes longer time, is more expensive and requires non-bias interpretation of data by researchers. (van Kleef et al. 2005)

The “for” level of interaction states for the research in which product are designed based on customer research, but the customer are not involved further. The “with” type refers to the interactions in which customers are involved also in concept testing. Finally, on the “with” level customers actively participate in product design. Consumers can directly articulate the information, or new product developers
derive the information indirectly, by means of observation. (Janssen & Dankbaar 2010, 138)

Finally, the outcome of the research varies in terms of newness of the product of considered – incremental and really new, and addresses – R&D or marketing. R&D specialists require information on how to translate consumer abstract desires into specific product attributes. For a marketing department the information about life-styles and consumption patterns in the future. (Ibid)

In general, for incremental NPD the consumer needs are elicited with familiar, product-driven stimuli. The interactions are structured, and consumer directly articulate their needs. For the really new product development, on contrary, need-driven, unstructured methods, in which researchers mostly observe consumers, are more applicable. (van Kleef et al. 2005).

3.1.2 Classification based on actionability and product newness

Van Kleef et al. (2005) developed a classification scheme for consumer research methods that guidelines, which methods and approaches are the most appropriate to use, depending on the product newness and what department a certain study should support (Fig. 12).

The categorization based on people’s ability to articulate their needs and actionability, meaning how easily research output translated in concrete attributes. The development of really new products requires techniques that do not ask a consumer directly, but rather yield the essential insights that can reveal their latent and future needs, whereas for the incremental new products methods are focused on articulated consumer needs and wants. The actionability of output determines whether methods are more appropriate for marketing or product development department. Accordingly, the more concrete information on product’s attributes is more useful for development, whereas such abstract issues as values and benefits are more applicable for marketing.
3.1.3 Classification based on stage of product development

Encouraging companies use proper consumer research methods for opportunity identifications, van Kleef et al. (2005) made an overview of the stages of NPD process along with a representative consumer research methods with the emphasis done on the earliest stage of the NPD. Kemp (2013) developed a wider overview of consumer research techniques in different stages of NPDP for the food industry, on the base of the stage-gate model developed by Cooper. The discontinuous development of new and improving existing consumer research methods by scholars and practitioners results in a huge variety of techniques to be used. The model is illustrated in Figure 13.

However, despite this diversity, the majority of companies mainly use such standard methods as focus groups, surveys and the study of demographic data.
(van Kleef et al. 2005). It can be a reason for the low new product success rate. The one of the reasons for the rare application of different research methods and techniques within companies can be that companies simply not aware of them. The majority of academic methods are explained in not applicable way for the practitioners. (Costa & Jongen 2006)

3.2 Consumer knowledge and preferences formation

The information on both the product attributes and as well as on the perceived benefits and general buying motives is important for product development. The product attributes can open up which product should be developed, where
perceived benefits and general products motives can be a base for product communication building. (Søndergaard & Harmsen 2007)

Grunert (2005) advocates that even if it is not possible to meaningfully ask consumers, which new product they want to have. It is possible to understand the process by which consumers make preferences for the product once they are on the market, and how these preferences change after purchasing and consumption of the product. This understanding can help to bring potential successful ideas and design instruments that can be integrated into NPD process, which can give hints about the potential success of the product. In order to develop new, differentiated products in a consumer-led way companies have to understand what motivates consumers to demand particular products (Grunert et al. 2008, Grunert & Valli 2001)

To understand users’ preferences a number of models have been proposed, where the most famous are multi-attribute models and hierarchical methods. The one of the most discussed approaches to understand and describe how consumers perceive products is the means-end chain theory (MEC). It is based on Lancaster's New Consumer Theory, which explains that consumers do not value product per se, but rather as a means to fulfil their needs (van Trijp & Steenkamp 2005, 89). It was initially used in supporting product advertising, but recently has been regularly applied as a method to implement consumer-oriented product development into practice (Costa et al. 2004; Grunert & Valli 2001; van Trijp & Steenkamp 2005, 88). Grunert et al. (2010, 6) claim that the means-end approach is the closest theoretical foundation for the latent needs concept in the consumer psychology literature. Several general frameworks that help to understand how consumers perceive a product and make purchasing decisions including the Total Quality Food Model were developed based on the ideas of the MEC theory. (Grunert 2005)
3.2.1 Means-end chain theory

Means-end chain consists of product attributes, consequences and value, e.g., the low fat products (attribute) are deemed good for health (consequence), what gives consumers feeling of security (value) (Grunert & Valli 2001). MEC could be a useful approach in translating subjective consumer needs into objective product specification. Subsequently, once the product is developed, the manufacturer has to translate product attributes in benefits and clearly communicate the benefits delivered. The MEC can consist of more elements: customer needs for a particular attribute → product categorization by valued attribute → consequence → desired benefit → values. (Costa et al. 2004; Costa & Jongen 2006)

Practical application of the MEC includes several steps. First, companies should see how different consumers link product attributes to consequences and values in different ways, from this it would be possible to find the right mix of product attributes in a new product, so that it will appeal to consequences and values of a particular segment of consumers. The data captured by in-depth interviews, then is structured and coded for the quantitative analysis. Later the quantitative analysis is done, and the knowledge is mapped. (Benner et al. 2003)

Consumer researchers should be critical in terms of evaluating the results. Thus, people may buy Body Shop production because of environment consciousness. However, it does not mean that all environmentally conscious people will buy the Body Shop production.

3.2.2 The Total Food Quality Model

If consumer-led product development aims on translating consumer subjective needs into concrete product attributes (Costa & Jongen 2006), the literature on user-driven innovation focus on understanding the preference formation process. The basic assumption is that consumers are limited in their ability to articulate their needs for truly innovative products. In order to deal with this problem, the innovation literature proposes a term latent needs – needs about which people
were not aware until a product appeared on the market. However, there is no theoretical foundation in buyer behavioural literature for the latent needs. Whereas the main emphasis is done on, how consumers make preferences for products that came on the market. (Grunert et al. 2008)

Grunert et al. (2008) claim that the Total Food Quality Model, has proved its usefulness for integration methods on how consumers make expectations about products, and how relationship between quality expectation and quality experience affects satisfaction and future purchases, in one conceptual framework (Fig. 14). This framework gives a comprehensive overview on the quality perception of food analysis.

The Total Quality Perception Model highlights that the quality perception on food should not be limited only to product features. Linnemann et al. (2006) claimed that food perception of consumer is affected by: (i) individual factors: demographic variables and physiological factors; (ii) food factors: product characteristics and production system; (iii) contextual factors: consumption moment, time and place; and (iv) environment: family and societal characteristics.

According to this model, before the purchase there are several factors affect the intention to buy. They are - cost cues, extrinsic quality cues that relate to the way in which product was produced, such as fair trade, use of pesticides, brand, and intrinsic cues that relate to physical product characteristics. These factors create an expected quality. After purchase the meal preparation, eating situation, and sensory characteristics create an experienced quality that determines the future purchases.
3.3 Consumer research methods at different stages of development

Consumer-led product development proposes to conduct consumer research on the every stage of the NPD process (Grunert & Valli 2001), what should assure a new product success (Moskowitz & Hartmann 2008). In practice, companies conduct the researches mostly during development, testing and launch stages, considering the consumer incorporation during opportunity identification stage as difficult activity (Van Kleef et al. 2005).

3.3.1 Consumer research methods for opportunity identification

Even if the implementation of consumer research methods during the earliest stages of NPD found to be the most difficult and unclear, the product development literature has posed different techniques to be used. Thus, Cooper and Dreher (2010) found that the voice-of-customer methods give the best ideas for a new product. The most prominent of them are ethnographic research, customer-visit teams, customer focus groups, the customer or user design, customer
brainstorming, customer advisory board or panel, and community of enthusiasts. Van Kleef et al. (2005) classified and evaluated the different techniques to be applied during the opportunity identification stages. Some of the methods will be reflected further.

*Consumer ethnography and emphatic design*

Ethnography and participant observation entail the extended involvement of the researcher in the social life of those he or she studies. The ethnography as a method came from colonials that studied the natives by living with them, learning their language and observing their lifestyle, traditions, ceremonies, etc. The received information they reflected by writing monographs. At present consumer ethnography became an essential research method for companies. Understanding consumer consumption is a key for financial and sustainable business success. Ethnography brings a broader overview of a research topic as it helps to understand consumption in its social and cultural context. (Shouter 2012)

The goals of ethnography (I) to gain reach, holistic, textured understanding of behaviour in its social and cultural context, (ii) to understand life as people live it, not merely as they report living it (Martin et al., 2007). The ethnography method is interconnected with the emphatic designed used in high-tech industries. The foundation of empathic design is the observation of customer behaviour, while they are using a product or service. As Mohr et al. (2010, 195) state: “empathic design is an approach that focuses on understanding user needs through empathy with the user world rather than from users’ direct articulation of their needs”.

The consumer ethnography does not imply living with consumers; however, it is possible to observe people in their own culture. The observation method originates from ethnography is more used. By observing customers, a company can get lucrative insights about triggers of use, how users cope with imperfect work environments and the surfacing of inarticulate user needs, different usage situations, customisation of products, and the inarticulate importance of intangible attributes. (Mohr et al. 2010, 196-197). It is possible to reveal the reasons why
certain products and ingredients are used, how meals are served, and what input has a social context on it. (Moskowitz & Hartmann 2008)

Trott (2011, p. 534) argues that the problems in NPD arise because a product is viewed in isolation of its context, the way it used and the role of customer-supplier relationships. Properly conducted ethnography research can be a cure for these problems. Cooper and Dreher (2010) view ethnography as the greatest insight into the user’s unmet and unarticulated needs, and a very powerful source in bringing breakthrough products. At the same time, Mohr et al. (2010, 196) argue that the ethnography cannot replace traditional marketing research and should be seen as a source of new ideas and additional warranty.

Obviously, the main disadvantage is the timing and cost of the research. The ethnographic research may last for few years, what can be rather challenging, especially in fast moving goods sector. However, new technologies can reduce the time. Thus, the web-cameras can be installed in kitchens to observe consumers when they make meals. Johnsonville Sausage, a major U.S. food producer, has successfully used this method. (Cooper & Dreher, 2010)

Lead users

In terms of breakthrough innovations and rapidly developing fields, traditional marketing research tools when companies collect data from a representative sample of customers, and based on this data, decide which ideas to develop, fail. The reason is that potential customers are not able to define their future needs in the present. Hence, companies cannot create an accurate understanding of products or services, which could provide a solution for future customer problems. Considering this dilemma, the U.S.-American professor and economist Eric von Hippel developed the lead-user concept in 1986. He defined lead users as “users whose present strong needs will become general in marketplace months or years in the future”. These users are familiar with present conditions, which will prospectively be faced by a greater amount of people. In addition, lead users often seek for solutions to fill their needs that make them extremely valuable for
companies considering the development of new product concepts and the gathering of design data. (Von Hippel 1986, 791)

Lead users can be used in different stages of the NPD, where the most valuable they integration during idea generation, screening and development stages. Lead users usually provide companies with well-thought ideas that based on their interest, experience and involvement. Their significant contribution during the ideation stage is providing a deeper understanding of technical characteristics and consumers’ requirements. Moreover, ideas generated by lead users have found to enhance the marketplace acceptance. The major reasons are deep understanding of market needs and their significant potential influence over others. (Pitta & Fowler 2005).

Lead users are also beneficial for evaluating product ideas. They are involved users that can recognize the problem immediately. A deep understanding of the product results in a set of benefits that the product should include whereas the typical customer can name only a few. Lead users are interested in particular products and are motivated to participate in product testing. As lead users have an influence over others, sometimes companies involve them in product testing and encourage sharing their opinion openly. (Ibid)

Mohr et al. (2009, 199) state that research shows that many products are initially thought of and even prototyped by users rather than manufacturers. About 33% of products in the computer industry and 70% of products in the chemical industry are developed with the help of lead users (Mohr et al. 2009, 199).

Co-creation with consumers

Prahald and Ramaswamy (2004) argue that in all variations of consumer involvement, companies still treat consumers as passive actors. At the same time, empirical studies also show that many users—from 6% to nearly 40%—are engaged in developing or modifying products. There are examples of successful co-creation in the food industry, such as Italian Barilla (Martini et al., 2014) and Molson Coors “talking can” (Martinez 2013b, 139-153). In addition, such
companies as Kraft, Unilever and General Mills have started to co-create with consumers (Martinez 2013a).

Customer co-creation is an approach to innovate via which customers take an active part in designing new products or services (Martini et al. 2014). Mohr et al. (2010, 207) states that at least three factors explain the interest in consumer-driven innovations and co-creation with consumers: (i) technology tools to facilitate it; (ii) the economics of product development costs and high failure rate; (iii) customer's expectations and society's beliefs about the role of customer in business strategy.

Cooper and Dreher (2010) rated several methods of co-creation with customers – the customer or user design, customer advisory board or panel, community of enthusiasts are one of the best sources for opportunity identification.

**Customer managed knowledge factories and online communities**

Moon & Desouza (2010) argued that companies realized that the most valuable source of information is their customers - both current and future ones. At first firms started to manage knowledge about customers, and then companies advanced to manage knowledge from customers. This stage led to knowledge with customers, meaning that companies began to collaborate with customers to get insights about their needs and even recognize customer generated innovations. The value creation is quickly shifting from a firm centric to personalize the user experience. Customers have become informed, networked, empowered and active. They seek ways to co-create value with companies and ready to donate their ideas freely. (Prahalad & Ramaswamy, 2004)

Nowadays, especially the Internet pushes the customer knowledge management trend forward. Social media shorten the distance between supplier and consumer, thereby increasing and strengthening consumer role in the innovation process. Moreover, they create the ecosystems, in which companies and consumers can engage in common and equal creative effort. (Martini et al. 2014)
Moon & Desouza (2010) believe that the next step in the evolution of customer knowledge management is customer managed knowledge factories. They emphasize the importance of shaping an organization’s customer knowledge management strategy. Companies should leverage their customers in order to generate relevant or new material to create additional or new value. Prahalad and Ramaswamy (2004) emphasized that co-creation is about the joint creation of value by the company and the customer, not about the company trying to please its customers.

Online-platforms such as YouTube rely on the community in terms of value delivered. Unlike competing platforms, YouTube focuses on users providing content instead of permanently enhancing technology and service. The individual user experiences brought the platform to life and contributed heavily to its success. Starbucks is another example of using customers as knowledge managers. Starbucks’ CEO Howard Schultz decided to strengthen the company’s bond with its customers and employees after they complained about the service and quality of products. He introduced the webpage www.mystarbucksidea.com to submit improvement ideas. Members can and do actively participate in the company’s development process. (Moon & Desouza 2010)

A recent study done by Martini et al. (2014) show that the food companies can co-create with consumers through online communities. Moreover, eventually consumers can support the breakthrough ideas. Besides, it was found that broadening the community from brand lovers to a greater scope has improved the effectiveness of co-creation.

When creating the on-line community company should take into account different technical and managerial issues. The platform should be easy to use, there should be digital communication and a guide, who can help to submit or vote for ideas. Brand managers and product developers should have a direct access to the platform. (Martini et al. 2014)
3.3.2 Consumer research methods and techniques in product design

*Quality Functional Deployment*

The method of Quality Function Deployment (QFD) is an engineering concept developed for quality planning by Yoji Akao in 1966. It aims in designing a product that is really needed by the customer. Therefore, the customer’s requirements need to be identified, e.g. through customer visits. Subsequently, they should be mapped into the product design process. One can say that QFD captures the voice of the customer to ensure a strong correlation between user needs and product design. (Mohr et al. 2009, 201-202)

The Quality Function Deployment is used in the food industry since 1987 as a tool for structured product planning and development (Benner et al. 2003). Akao (1990, 3) states that the use of QFD can cut about 50% of problems previously encountered in the initial stages of product development. Moreover, it can decrease the development time by 30% to 50% while increasing the customer satisfaction. On the other side of the coin, QFD can lead to an increased workload and lose its benefits if it is applied incorrectly. Therefore, it is important to take the company’s unique condition into consideration and to be imaginative in applying the QFD. (Akao 1990, 3)

The implementation of QFD is a multistage process, including several stages. First, collect the voice of the customer through e.g. emphatic design and customer visit programs. Second, collect customer perceptions of competitive products. The survey on how well existing products satisfied customer needs can be done for this purpose. Usually, such research reveals gaps that can be a base for new product opportunities. Finally, customer insights should be transformed into specific product requirements. (Mohr et al. 2010, 203-204)
The key tool in QFD is Kano concept, which provides a graphical representation of the relationship between three types of product attributes and customer satisfaction or dissatisfaction (Fig. 15). The first attributes are one dimension quality, which is typically known and voiced by the customer. Increasing performance of these attributes leads to a linear increase in satisfaction. The absence of must-be attribute exponentially relates to dissatisfaction, but increase the level of this attribute does not increase customer satisfaction of the product. These attributes are usually known, but unvoiced. Attractive quality attributes are unknown and unspoken. If it lacks, customer is satisfied, but the presence leads to extremely favourable reaction.

**Conjoint analysis**

Conjoint analysis is a quantitative method that could predict, which combination of product attributes across various brands and prices, customer will prefer to buy (Mohr et al. 2010, 193). Moskowitz (2013, 346) proposed to use conjoint analysis for concept testing. The example of concept attributes and attributes level is illustrated in Table 3.
The first step is developing and prioritization of product attributes (Mohr et al. 2010, 193). Usually R&D department in a company performed this task (Moskowitz & Gofman 2007, 12). Then consumers test the number of combinations, e.g. via on-line platforms, and researchers by output analysis select the most prominent one. There are ready-made platforms such as Innovaid™ can be utilized by companies. Through different product attributes combination, they guarantee the research validity. (Moskowitz & Hartmann 2008).

**Focus groups**

Focus group is a group discussion technique, in which moderator focuses attention of the group on a particular theme, in order to discuss and view their opinion about topics. This method is well-known and quite common mean of data and information collection (Hansena & Kraggerud 2011). Urban & Hauser (1993) advice to apply this method on every stage of NPDP. Still, most commonly focus groups are used to test concepts. However, Cooper and Dreher (2010) in their survey found focus groups to be a one of the most prominent sources for idea generation, particularly through problem detection.

Focus groups are usually chosen over personal interview because of the interaction effect as participants in the group are encouraged to trigger others statements and opinions (Van Kleef et al. 2005). In addition, the method can provide a diverse set of opinions and perspectives from the respondents, and there are no limitations in the range of topics to be discussed (Hansena & Kraggerud 2011). The method is cost-efficient and time-consuming, and especially suitable in gaining insights in the consumer goods market (Cooper & Dreher

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**Table 3. The example of concept attributes and attributes level**

<table>
<thead>
<tr>
<th>Brand</th>
<th>Protein</th>
<th>Organic</th>
<th>Flavour</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brand A</td>
<td>0</td>
<td>Organic</td>
<td>Vanilla</td>
<td>2,20</td>
</tr>
<tr>
<td>Brand B</td>
<td>10</td>
<td>Non-organic</td>
<td>Chocolate</td>
<td>2,35</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td></td>
<td>Banana</td>
<td>2,60</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td></td>
<td>Mango</td>
<td>2,80</td>
</tr>
</tbody>
</table>
2010). However, focus group requires special facilities, where video- and audio recording is possible, and consumer researchers have the possibility to observe the process e.g. via one-way mirror.

### 3.3.3 Product testing

There are a number of approaches to conduct a product test: blind or with brands, blank or with packages, multiple products or an individual product, home-test or central location test, with different hedonic scales, with the trained or consumer panel (Meiselman 2013). A review and evaluation of all methods available are out of scope of this thesis, therefore, only several most important methods and techniques are reflected.

**Sensory analysing**

The important area of consumer research in the food industry is sensory analysing. Taste tests are known for more than half a century and since that, the methods of evaluation have developed significantly. (Thompson 2010, 221)

All sensory modalities: vision, olfaction, taste, touch and audition, affect the perception of the food, including dairy products (Ross 2009). The success of food product depends greatly on the extent to which its sensory qualities appeal to the consumers. A consumer can buy a product based on rational benefits it to provide, e.g. a brand can be one of the determinants, however, the probability of repurchase correlates with the product taste. In sensory evaluation, the goal is to understand the perceptual features of the product. There are three types of sensory testing: discrimination, descriptive and affective. (Moskowitz 1995)

The discrimination or simple difference test evaluates whether any perceptible difference exists between two types of products. This test can be done with trained or consumer panels. The classic example of this test is triangle test, when respondent is given three product types, two of which are identical, and the third one is a different. The respondents should identify which sample is the most
different. Another example is a duo-trio test, in which respondent is given a sample as a reference, and then two other samples, the task is to choose the product that matches the reference. The paired comparison test is a simple test in which respondent is given two samples, and he should define which of the samples e.g. sweeter. (Lawless & Heymann 2010, 4)

Descriptive tests are other analytic tests that aim to understand how products differ in specific sensory characteristics. These tests require the trained or highly trained panelist, which characterize all of the flavour notes in the product and the intensities of these notes. This method provides a means to characterize the individual attributes of flavour and provide a comprehensive analytical description of the differences among products under development. Descriptive analyses are proven to be the most complete and informative sensory evaluating tool. (Lawless & Heymann 2010, 6)

Affective tests are hedonic test are used to define how well product liked or which products are preferred. Respondents are given one or more products, which they should evaluate. Different procedures can be used to measure affective responses starting from simple paired comparison, where only two samples are measured, to different ranks and scales, category scales, visual analogue, just right scale, to name a few. (Lawless & Heymann 2010, 7)

For optimizing the process and for cost and time reduction, customer on-line panel has been proposed. Custom or proprietary online panel is a sample panel of pre-screened respondents who have expressed their willingness to participate in consumer research, such as surveys. There are four different types of on-line panels: general panel, usually very large including the diversity of the general population, a special panel, e.g. B2B panel, proprietary panel, in which the members participate in research for a particular company, and election panel. (Callegaro et al. 2014, 3)

Overall product testing
The sensory testing is a necessity for the food and beverage industry; however taste liking is not necessarily a predictor of product success. (Thompson 2010, 221-225). Thus, when the case company has analysed the relationship between product taste test and the product turnover for the first 4 months after launch, no correlations between these indexes were found. Thompson (2010) argue that the new product developers and researchers need to look beyond liking, acceptability and purchase intent as a means of judging new products. Because, they are only few of factors that can influence purchase decision. He has proposed a Matrix showed on the Figure 16 that provides a simple template for disaggregating the complexities of the holistic choice process into nine measurable elements.

To determine the purchase decision, product, packaging and branding should be evaluated in terms of functional and emotional conceptualization and hedonic perception. Commonly, marketers use terms perception and conceptualization as interchangeable, in spite the significant difference between them. The perception is the process of assigning a definition to what is being experienced (what it is), whereas conceptualization is the process of assigning meaning to what is perceived. Thus, people perceive the sweetness of sugar, what it perception, but it may be associated with different believes and values, e.g. treat – this is conceptualization.

![Figure 16. Overall product liking (Thompson 2010, 219)](image-url)
Along with undoubtedly developed reliable hedonic testing the functional and emotional conceptualization should be evaluated. The functional conceptualization tackles what product can make for consumer e.g. fattening, energizing, teeth problems. The actual functionality of product and conceptualized functionality is not always the same. To measure the functional conceptualisation the researcher formulates functional benefit statements, and research participants use category scales or continuous line scales to estimate the extent to which they anticipate the product or brand will deliver the functional benefit in question.

Measuring emotions is a challenging task even for professionals. Some techniques could be applied, such as self-reported emotional checklist, faces and figures. Emotions can be described in different ways, for better data analysis, the profile of statements especially for the food products was developed. EsSence™ profile has proved its validity for emotional research for food products (Ng et al. 2013; Jaeger 2013). In addition, facial expression to determine emotions can be used. Thus, a researcher could classify facial expressions as a means of ‘reading’ the emotions of others. Another approach is to show to respondent photographs of faces expressing different emotions and ask them to choose the one that reflects their feeling.

Thompson & Crocker (2014) applied the overall liking method in studying different chocolate brands. In this method, a respondent when testing the product is asked to range his or her level of agreement with several statements, e.g. of statements in this case is "this product is interesting for my child". In addition, the respondent is asked to choose three adjectives from the list. This list is formed from the words that characterize the product from emotional, functional and sensory side, e.g. "natural", "exciting", "sweet". The respondents on purpose are limited in their choices, to understand what the main characteristics and what feelings the product raise. In addition, neuromarketing can be used to determine which emotions rise a particular product, by analysing psychophysical processes in brain (Thompson 2010, 221).
**Package testing**

In retail channels, packaging is saying everything about the product (Moskowitz et al., 2009). The right package can lead to success or destroy the product. With the growing supply and food variety, when buying food, consumers prefer to keep the decision process as simple and quick as possible. Consumers are overloaded with different brands. The average urban consumer is faced with 4000 brand messages every day. At the same time over 70% of purchases are taken at point of sales. In-store eye tracking research shows that the consumer absorbs approximately 1% of visual stimuli. Of this 1%, only 5% proceeds onto the short-term memory, which can stock up to 7 bits of information for a period of 20 seconds. (Bordet 2012)

![Diagram showing shopping scripts](image)

**Figure 17.** Shopping scripts (Bordet 2012)

Bordet distinguishes shopping scripts depending on the product type: robotic, habitual, involving, and indulgent (Fig. 17). The purchase process of needs driven product, such as food, is robotic or habitual including fast purchase decision and low purchase involvement. People want to keep their food purchase simple and routine and only in special occasions are more precise and willing to spend longer time on choosing the food (Earle & Anderson 2001, 200). Food producers should be aware of this practice, and assure that the package stands out and can be instantly recognised.

The food products purchased in robotic or habitual way, what means that consumers will make a decision, which products to buy when just see it on the
shelf from more than five meters. The method for studying package that was adapted by the case company illustrated in the Figure 18.

At first stage, researchers should put a package on the shelf with competitor’s products and evaluate whether it stands out. The evaluation can be done as by researchers, as by consumers. The second stage refers to understanding that attributes make the package right. The goal is that the consumer will pick a product from the shelf. As on previous stage respondents use five-point scale to show whether they agree with seven statements on the product. In addition, a comparison on which package is more appeal is done. The third stage opens up the overall experience of the product. It is based on how easy it was used at home, and pleasantness of taste with brand and package. For the overall evaluation the Total Food Quality model developed by Grunert (Grunert et al. 2008) can be employed.

![Figure 18. Package research method (Adapted from Anonymous 2013a)](image)

This method is very close to Unilever’s varied product goals: I notice it, I like it, I get it, I enjoy it, illustrated in Figure 19. In general, all package tests evaluate the package’s ability to stand out and be recognisable, and its functionality. However, the Unilever’s framework is more extensive and detailed.
3.4 Consumer research with children

The infant comes into the World with a set if predispositions. All humans are known for the neophobic reaction to food, the fear and dislike of novel tastants, and small children tend to reject a new food more often than adults do. Children commonly are not ready to accept new foods, unless it is sweet as they do not need to learn to like sweet food. Evolution theory explains such behaviour in a way that neophobia helps to protect against the injection of potentially dangerous items. Neophobia can be diminished by repeated consumption of a new food. Moreover, it is advised to give new food for children to test at least seven times. However, parents do not tend to give a previously disliked product. (Meiselman & MacFie 1996, 180-181)

When developing a product for children manufacturer should satisfy both parent and child needs and preferences. Children have an increasing impact on food
purchase decision. However, conducting sensory and consumer tests for children the sensory and cognitive abilities of children should be taken into account. Children do not distinguish a smell, taste, texture, but differentiate product attributes and appearance. Moreover, Moskowitz et al. (2009, 78) concluded that to a child, if the product looked attractive than it would be overrated.

Children can be classified into Piaget's stages of cognitive development: infant (birth - 18 month), toddler (18 months - 3 years), Preschool (3-5 years), Early readers (5-8 years), Pre-teen (8-12 years), Teenage (12-15 years). Infant and toddlers are the most limited in their verbal and cognitive abilities. Therefore, it is recommended to use behavioural observations, food diaries and consumption or duration measurements. Between 2 and 7 children are "preoperational", which means they perception bound and limited in their logical thinking abilities. In the context of food sensory testing, children often focus only on one food attribute in making their judges, rather than take all sensory attribute into consideration. Other limitations on the cognitive abilities of children pertinent to sensory testing include limited verbal skills, short attention span, and difficulties in task comprehension. (Guinard 2000)

With early readers it is possible to use personal interviews with special children vocabulary, pictorial or facial liking scales, group discussion and concept testing. Moreover, pre-teen and teenagers have a full ability of verbal, attention span, reasoning, understanding scales abilities. Therefore, consumer testing with them is the closest to testing with adults. To implement tests with children's test protocol using visual stimuli before tasting the product is suggested. To help children to concentrate the balance between relaxing and distraction atmosphere should be found. (Guinard 2000)

Quantitative methods such as hedonic scaling or preference ranking may not always be appropriate for testing with children, qualitative methods such as focus groups or observation-based ethnography can provide reliable and useful information for product developers and marketers. The questionnaire should be designed in a child-friendly form, meaning that the language should be
appropriate, a number of questions are limited, and font is large. For children, it is advised to use special hedonic scales with faces. In addition, there should be a mentor, who can help a child to fill in the questionnaire. (Popper & Kroll 2007, 390-399)

The focus groups are typically limited to pre-teens and older children, because of the need for advanced communication capabilities. However, some researchers were able to reach valuable results with younger children, using child-oriented test. The screening characteristics are common for adults and children: for focus group participation, the respondent should possess characteristics such as sociability, articulateness, creativity, be aware of and interest in new products and trends. For children are also important to interact effectively with adults. Children focus groups can be used for ideation in two ways: with or without adults. Children are also good for concept refinement and pre-prototype visualization, because of their imagination’s ability. (Guinard 2001)

Observation-based methods are also being used with children. Children can be observed in their natural environment, e.g. home, kindergarten, or in usability laboratories. Children of any age can be observed, however, in case with infants and toddlers, quite often observation of parent-children collaboration is more important. (Guinard 2001) Thus, the manufacturer of children’s hygiene products notice that a parent when washing a child usually takes e.g. shampoo and open it with one hand, because with second she holds a child. Because of this observation, the new package design that allows it to open with one hand and easy to handle has been successfully launched. (Bordet 2012)

While conducting research with children, the certain peculiarities should be complied. First, parent or guardian approves child’s participation in the test. Second, testing children may require a specially designed environment so that a child will feel himself comfortably. For the same purposes, experimenter’s tone and body language should be appropriate. For the valid results, it is necessary to avoid a child from a parent’s influence, however, parents can be provided with the
opportunity to observe their child via video translation or one-way mirror. (Guinard 2001)
4 EMPIRICAL ANALYSIS AND FINDINGS

This chapter will give an answer to the research question established in section 1.3 (research objectives and questions) through empirical analysis of the case company NPD with the support of revised in Chapter 2 and 3 literature. The empirical analysis is divided into two parts. At first, the general review of the case company NPD organisation and the consumer research will be done, next, the process and implementation of three NPD projects will be reflected and analysed.

4.1 New product development in the case company

Figure 20 illustrates that the company’s product development strategy is synchronized with the overall business and other functional strategies, such as product, brand, and sales strategy. The strategic goal of the company is to have the highest milk revenue in Europe, and all functional strategies are aiming for it. Thus, the own brands and products with high added value give a possibility to keep milk prices at a high level. Since the home Finnish market is already saturated, the company by launching new products can maintain its leadership positions, whether the main potential for growth is lying in foreign markets. Therefore, when developing the new products the country-specific factors are taking into account.

Omta & Folstar (2005) argue that NPD projects should fit into the strategic orientation of the company. As it is often happening in practise, the boards between different strategic orientation types are blurred. Thus, the position of the case company varies in different countries. It can be assumed, that in the home market it adapts analyser’s features, whereas internationally possesses itself as a prospector.
Figure 20. Product development strategy generator (Adapted from Earle & Anderson 2001, p. 46)

4.1.1 New product development process

The company has developed and employed its own NPD model, explaining the product and marketing process in the company, to introduce discipline into an ordinarily chaotic process, on the one hand, and helps to develop a big picture, on the other. The goal of this model is to maximize milk return by the means of brand management. Brand management includes, for example, the following tools: defining the consumer benefit and the brand strategy, developing and commercializing the company’s brand product portfolio both in the short and long term, marketing actions. It is essential that the company concentrates not only on the individual project development, but also on product portfolio management. Quite often companies succeed in individual project development, but this effort is targeted at the wrong products. (Anderson, 2008)

The three development projects that are discussed in this study are aiming to support the corporate goals and are synchronized with functional strategies. The kid’s snack renewal should strengthen the market position in Finland and support the growth in the Russian market, by launching new products with high-added
value. The company focuses on the development of products containing protein because they are the most profitable.

In the company, each NPD is managed as a separate project by specially created cross-functional team with the brand manager as a leader. The cross-functionality is found to be a successful factor in NPD (Trott 2011, p 557).

The company has developed own project classification, to optimize the PD process, Projects “A” are further development of an existing product/brand (“line extension”), that last less than 1 year. “B” projects are new product or an essential and demanding modification to an existing product/brand, last for 1-2 years, “C” is a strategic research project in R&D (they are subordinated to R&D unit), and D is a project aiming at improving production processes. The projects are classified when they are added to product game. Depending on the project type, the product development process varies. Thus, B projects start from pre-study phase, while A projects start from the development phase.

The company’s product development process is illustrated in the Figure 21. The model captures the key activities involved in the NPD process from idea to commercialisation of the product. The core factor is Consumer Benefit, which should be taken into consideration at every step of the process with the help of an internal consumer research group, what is highly recommended in the NPD literature (Knox & Mitchell 2003, van Kleef et al. 2005).
The NPD starts with the fuzzy front end, what is messy getting started period. Usually, companies consider it as a pre-development activity, whereas it is more efficient to see it as a part of the NPD process. (Trott 2011, p. 434-435) There is no lack of ideas in the company; instead, there are many sources from where ideas can come, such as scouting, bench marketing, cooperation with universities, technology development, to name a few. A brand manager is responsible for finding and analysing the most promising ideas. Once the best idea is found, the feasibility study, essentially an evaluation process, should be conducted and pre-approved by a category manager.

The aim of the feasibility study is to ensure that the project is worth spending resources. There are particular questions on which brand manager should answer including reasons to buy the product, competitive analysis, technical possibilities to produce a product.

After a positive decision made by the Director of Business Unit in Finland, the project can be added to the Product Game, the project manager should be named and the project should be classified. The Product Game is a long-term plan for coming launches and brand renewals. It is also an important tool to measure the renewal rate at the company. It is made for 2-3 years ahead, and it must be updated frequently according to changes in the market situation.

During the pre-study phase, the project team should define, for example, a consumer benefit, schedule the project, set the investments and preliminary marketing budget, analyse hypothetical marketing potential, and make preliminary estimation.

When the project comes to the development phase there are several tasks should be done by the project team such as product development, package planning, brand positioning and consumer benefit study if applicable, and price calculation, to name a few. The business unit manager should approve the plan. During the finalizing stage the product, net pricing, package design, advertising brief, and production should be ready,
During the development and finalizing stages, the project team has to answer the question about the target of the launch, product, production, competition and the company’s competitive edge, profitability, customer, supply chain, marketing and others. Such a multidimensional review should guarantee that the approved project would be successful. In addition, the company is monitoring the new product sales after the launch. The critical point for a new product is one year, if the product does not reach the sales target within this time it will be withdrawn from the shelves.

At present, it is accepted that a stepwise model of food product development is over simplistic, the stages in NPD process are overlapping and concurrent (Stewart-Knox & Mitchell 2003). Therefore, during the NPD process if the product does not pass the gate, it can be returned to the previous stage. In general, the company’s NPD process is very similar to consumer-led NPD process (Costa & Jongen 2006) (Fig. 22).

**Figure 22.** Similarities between the company’s and consumer-led NPD

Anderson (2008) determines several critical keys to success when developing an NPD framework and the company’s NPD model responds to them. The company’s NPD framework is constantly under development towards the ideal. For a moment was determined, that it should be international, meaning that the procedures and processes should be the same in all countries. The vice-president is responsible for the constantly improving the model in collaboration with personal. Thus, once it became clear that the process should be reviewed, the consumer researches had a task to think about the ideal future of consumer research and the ways to implement it. In addition, the NPD process connects different actors from varying
parts of the organization. The framework is constantly applied in every NPD project.

4.1.2 Consumer research in the company

From its foundation, the company was famous for bringing science into the food development, and became a respective global authority in dairy expertise and innovation. New technologies have enabled innovations in the food industry and supported the company’s domestic and international growth. In order to cope with turbulence appearing on the market, the company became more market-oriented and incorporated the voice of the consumer in NPD. The company aims to launch a product, which will be exciting to try and to buy; the consumer will be satisfied when testing the product and interested in repurchase the product. An internal research group responsible for consumer and taste research was organized, to implement the market and consumer-orientation in practice.

Traditionally consumer research is seen as the territory of marketers (Moskowitz et al. 2013, 344). However, in the company it is a part of R&D department. The group works as an internal consulting company and consists of 15 researchers that specialize in sensory analysing, marketing, psychology, and consumer research.

Any of PD projects cannot be held without the participation of the consumer research group. The results of consumer research have to be included in pre-study and launch review. Each innovation project should have consumer experts on the team from the initial planning stage to ensure that the consumer is represented in the process and, what is imperative – choose the most appropriate tools for integrating the voice of the customer. (Kemp 2013, 115)

The study requests came from different projects and are discussed and assigned on weekly group’s meeting. The assignment of the projects depends on the brand and product category, the consumer researchers are responsible for the specific brands and the sensory researchers for the particular product category. Depending on the project, one or more researchers can be assigned. The
researchers have the freedom to choose the most suitable research method, organize and conducting studies. However, the option when project leader comes with a specific study request is also possible. The main aim of the researcher in this case is to translate managerial questions into research questions.

**Figure 23.** The stages of consumer study in the company (Anonymous 2013a)

To optimize the division of labour inside the group the consumer research is divided into three levels: wide-scope consumer studies, product game consumer research and validation of the project to be launched, illustrated in the Figure 23. At first, the understanding of the needs should be developed, and based on identified needs consumer benefit is built. The certain researches are responsible for first level, and the others for second and third level studies. Once the NPD project is classified and added to the product game, the consumer needs, behaviour, and habits beyond specific target group are identified, and projects A and B require only a second and third level of consumer studies.

The group aims to build consumer understanding and insights inside the company, not obtained fractioned information from research agencies. Such approach can help the company to understand consumers better than they do themselves and faster than competitors. The in-house research group does observational researches, design and analysis of quantitative researches, flavour development, package research and developing of the own research panel. At the same time, the resources of the research group are limited and to maximize the effectiveness,
the group outsource particular non-core activities, such as fieldwork with a significant number of participants, research required special skills, and brand comparison to avoid bias.

The consumer research process is shown in the Figure 24. The five stages of consumer research should guarantee that consumers will be interesting to try and to buy the product, will be satisfied when testing the product and will be interesting in repurchase the product. The different research tools are employed at every stage.

![Diagram of consumer research stages](image)

**Figure 24.** Stages of consumer research in NPD process (Anonymous 2013a)

The number of consumer research stages depends on the project type. Thus, only in case with technology-driven project, the aim is to develop new possibilities that current or future technologies enable, and consumer research starts with sensing and seeking consumer need and passes through all the steps. Whether in the case of need-driven projects, the needs of consumers are already known, and the consumer research starts with defining ideal product, package and brand. Such projects differentiation helps to optimize the number and quality of consumer research.

Besides the consumer-research group in Finland, which is responsible for both home-market and international research, there is own research groups in other countries. It can be assumed that the company is holding a polycentric orientation - each country is managed as its own subsidiary and adapted marketing mix. The
research groups follow the same NPD model, however, work independently and are subordinated to local subsidiaries.

*The challenges of consumer research group*

The company has succeeded in incorporating consumer mindset into NPD on a continuous basis. It is a rule that every PD, regardless whether it is a technology-driven innovation or a simple new flavour development has to include consumer research. Ideally, the consumer is integrated at the earliest stages of development. However, in the majority of cases the consumer research group is involved in the project when it is already classified, and product is already exists. In terms of project classifications, the consumer research in A and B projects should start from the second level, meaning that consumer needs are already defined, what is not always done.

Every new product should be studying to satisfy consumer needs before it will be launched. Such approach guarantees that resources will not be devoted to the product that do not have the potential to be successful. However, such approach creates a particular challenge - a huge number of study requests, thus in 2013 there were more than 150 projects. Even if the managers of business units make prioritization of the projects, there is no possibility to refuse any study request. The time and resources for each research are limited, and they become routine, and cover only project-specific questions, not the broad studies.

This problem was recognized inside the research group and by top-management. In order to decrease the number of unnecessary researches the new procedures should be incorporated in 2014. The top-management is seeking the ways to align the approaches with international teams and make NPDP international. The tensions between the headquarter and subsidiaries appear, when a new product is going to be launched in the home and international markets. In this case, the consumer study is often conducted by the Finnish group, whether local specialists believe that they have more competences and knowledge in their market.
4.2 New product development projects

The case company constantly develops and launches new products. Because of the huge variety of NPD projects, the company has developed own projects’ classification and the NPD process, phases of which vary depending on the project type. In addition, business units evaluate each NPD project and appoint the level of priority. The amount of resources dedicated to one project depends on the priority level of the project.

Figure 25. Illustration of NPD projects

In order to analyse the NPD process from the consumer-led perspective, the three different NPD projects will be discussed in this chapter. As shown in the Figure 25, the projects are different in terms of 1) stage of NPD; 2) target audience (children and adults); 3) level of prioritization; 4) need- or product-driven; 5) product newness. According to the company’s own classification, the first project is a wide-scope consumer pre-study for the company’s strategy driven case, the second is a prioritized by the business unit need-driven “B” project came to finalizing stage, and the third one is a product-driven “B” project for the moment of the research reached the development phase.

Every project was supported by consumer research studies in order to identify rational consumer benefit, best taste and emotional consumer benefit, which should guarantee purchase and re-purchase of the product. The projects are analysed in terms of techniques being used and the level of consumer integration. The level of consumer integration determines to which degree the results of consumer research have been embedded in product development. The research
methods will be analysed in terms of actionability and newness of a product considered, based on the categorization scheme reflected in the section 3.1.1 (categorization scheme for the research methods).

4.2.1 Wide-scope product category study

The company aims to launch a new product range in Finland, Sweden and Russia. The consumer research team that specialized in wide-scope studies was assigned to the project group. The consumer research team consisted of consumer, product, package researchers and product developer. Considering the NPD process, this study refers to the very first stage – opportunity identification. Different consumer research methods were used to make a holistic study of particular food category in three different countries. The techniques used are illustrated in the Figure 26.

![Figure 26: Consumer research methods used in the product category study](image)

**1) Food diaries**
- Consumption practice
- Product types used
- Tastes used

**2) Home in-depth and observation (4 hours) and focus groups**
- Practices
- Expectations for the food and its different product types
- Using motivations
- Perception of competitive field

**3) Home test of proto products**
- Consumers’ evaluation of proto products

**4) Mini Focus groups**
- Consumers’ perceptions of proto ideas
- Deeper understanding of different product types’ possibilities

The questionnaires, food diary and focus group structure were the same for all countries, to conduct a compatible research so that it will be easy to compare acquired data. The same group of respondents was involved through the whole research.

First, the respondents were asked to fill in food diaries for four days, including week and weekend days to understand eating practices, and which product types
and tastes are used. Food diaries included not only all food consumed products, but also the timing and place of eating, whether it was home-made or convenience food, how consumers perceive the food, what brands and in which package it was. Such a quantitative study revealed certain trends, differences and similarities within countries. The respondents were not told, for which company the research is done, to prevent them from emphasizing the use of the company’s products.

For the deeper understanding of consumer behaviour of people in their social and cultural context, the home in-depth interview and observation were chosen. People feel themselves more comfortable in their homes, and easily share the information. Depth interview is a research method in a format of personal conversation. The main feature of depth interview is the absence of question’s structure. Instead of it respondent gets an opportunity to say his ideas in free form. The main advantage of this research method is gathering full and reliable data that can be a valuable source of new product ideas. (Proctor 2005, 234-236)

The observation gives possibilities to spot the meal preparation process, which products people have, and where they store it. It is possible to reveal the reasons why certain products and ingredients are used, how meals are served, and what input has a social context on it (Moskowitz & Hartmann 2008).

The observation technique has come from ethnography, and its implementation requires trained professionals in non-bias interpretation of collecting information and for the ability to interview respondents (Mohr et al. 2010; Van Kleef et al. 2005). The consumer research group in the company had attended a practical consumer ethnography seminar before the research was started. The experts in consumer ethnography explained when, and how ethnography can be used as a consumer research method, and what the practical issues should be implemented to gain the most prominent results. The practical advices covered different topics such as how to engage a respondent in dialogue, in which format questions should be asked, and what the optimal number of researchers should conduct the home interviews. The research was planned with these recommendations in mind. In addition, the one of the researchers had an experience in home-groups interviews
and observations, so she was interviewing the people, while two others record a video and made notes.

Despite the benefits of the observation method, the timing for conducting the research was limited and did not allow implementing home interviews in Russia and Sweden. Because of that, it was decided to use focus group interviews instead in these countries. A focus group is a cost- and time-efficient method, especially suitable in gaining a diverse set of opinions and perspectives. In total home in-depth interviews and observations together with focus groups provided a solid basis for making conclusions on what are the expectations for the food category and its different product types, what are using motivations, and perception of current competitive field and the company’s position.

Because of the customs regulations, it was hard to deliver prototypes to Russia. To solve this problem, the several steps were taken. First during the focus groups interviews the respondents among other themes discussed the new product ideas proposed by the research group. These ideas were partially based on the food diary results and the overall trends in the food category. Second, along with Finnish consumers from Helsinki and Kuopio, Russians living in Finland were tested the prototypes.

The third step was a home test of prototypes. The tested prototypes were developed based on food diaries, home interviews and observations, and on focus groups results. The aim of the research was to define consumers’ attitude towards proto products. The respondent who tested the prototypes filled in the questionnaire with the adopting for the target audience hedonic scale. Some scholars argue that an early use of concrete products as a stimulus can kill the creativity (Van Kleef et al. 2005).

After the home test of proto products, the mini focus groups were interviewed to develop deeper understanding of consumers’ perception of proto ideas and different product types’ possibilities. The focus group interviews took place in
Helsinki and Kuopio, the researchers from the project team moderated the both Finnish and Russian groups.

The combination of different consumer research methods provided a solid base for the future product development. Especially, the general study revealed: (i) commonalities and differences in the product category attitudes within different countries; (ii) commonalities and differences in perception of certain food product types; (iii) category attributes that raise interest in all countries; (iv) the pros and cons of warm and cold shelf; (v) the important package issues in different countries; (vi) future trends.

The literature on consumer-led product development suggests using means-of-end chain theory to translate abstract consumer needs to more actionable product attributes. The researchers did not use the laddering method proposed to implement means-end-chain theory to practice. However, during the analysis of acquired data they constructed the associations between attributes benefits and values. Such a method called soft laddering and usually is applied for more exploratory research like this study is. (Costa et al. 2004) In addition, the reverse value chains were built during the study, explaining what such an abstract terms as naturalness mean for consumers.

**Analysis of strategic-driven case**

The consumer researchers planned the whole study and chose the most appropriate methods and techniques to be applied. The versatility of techniques helped to develop an extensive and holistic overview of the product category.
Table 4. The analysis of applied research methods in wide-scope study

<table>
<thead>
<tr>
<th>Stimulus</th>
<th>Interaction</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td><strong>Familiarity</strong></td>
<td><strong>Type</strong></td>
</tr>
<tr>
<td>Need and product-driven</td>
<td>Familiar</td>
<td>Structured and Unstructured</td>
</tr>
</tbody>
</table>

Based on the classification scheme presented in the section 3.1.1 the combination of methods being used has provided both marketers and product developers as with general, as with particular insights on the new product development. Moreover, as it is shown in the Table 4 the applied methods are appropriate for both incremental and really new product development. It is not possible to identify the level of consumer empowerment, for the moment of the research it was not known yet which products are going to be produced.

In general, the research went successfully: the needed insights were gained. There was no need to implement ad hoc researches and change the initial plan. Some areas as the competitive field could be opened up additionally, but, the amount of gathering data was huge. An important feature is that the team consisted of researchers, but in different areas: consumer, taste, product, and package. Such cross-functionality enabled group to cover various aspects of NPD.
4.2.2 Need-driven NPD project

Currently, the company has three different brands of children’s snack products in Finland, and in Russia very limited number of products sold under two brands with not adapted to Russia packages. The goal of the project is to create one brand, concept and product range for Finland and Russia. The new concept would replace existing children’s brands and product ranges and should ensure the company’s growth in the children’s snack category. The project group consisted of managers of snacks and drinks in Finland and Russia, product developers, consumer researchers, nutrition expert, and marketing communication specialist. Because of changes in the company’s product strategy, this project was put on hold. Therefore, its overall evaluation is limited.

The project process reflected in the Figure 27. The project started with a general study of the target business field. The study included the market situation in children’s snack and drink market in Finland and Russia, innovative product examples from around the world, learnings from previous consumer studies, and nutritional issues in children’s products. In addition, two different prototypes were proposed.

Qualitative study
The next step was to conduct a study to support the development of a new snack brand concept and define the target audience in Finland and Russia. The research was aiming to define which products should be produced and under which brands.

Feeding especially young children is a polarized and emotional subject, that is why it is difficult to get good quality discussion around this issue with strangers. In order to lessen parent's stress to talk only in a socially acceptable manner about parenthood and feeding their children, friend group interviews were used. To find respondents snowball recruiting was applied: a central person for each group was recruited and given the task to recruit friends that match the same criteria with her/him. The focus groups are recommended to use at different stages of consumer development, especially in cases when a company is looking for the incremental innovations.

As a target audience, people that are able to afford to buy the brand products having one or more children of different age were chosen. In Finland, the study was done in-house, and in Russia, the study was outsourced to a local research agency. In total, eleven interviews were conducted in Finland and eight in Russia. To receive compatible results, consumer researchers in Finland developed the base for the interviews.

The focus group provided insights on consumer’s viewpoint to kids snack product competitive field and the company’s brands' current positioning, possible unsatisfied needs, and product, package and name features that are perceived interesting in the eyes of parents and kids. The both studies showed that parents are interested in a product that would be more natural, simple, healthy, but still interesting for a child. The good taste acceptable by child and adult is also one of consumer benefits. Fulfilling this gap in product category creates great possibilities for the company to grow within the segment.

The study has shown that the main differences between the markets is the competitive field and the case company’s position. Thus, in Finland, the case
company is among the market leaders, and in total few brands and private labels exists, in Russia the market is more diverse, and the case company is seen as a niche player.

**Quantitative study**

The qualitative study has opened up relevant issues that needed further investigation on the purchase and usage of the category to be done. This study conducted only in Finland by local research agency, as it required a large sample. In total 945 respondents participated.

The study showed which product types are the most popular among children of different ages and parents and why, who makes purchasing decision in family, for what purposes and situation different children snack products and brands are purchased, the usage situations, and the drivers in choosing products. The research has supported the previously conducted qualitative study. The research confirmed that the main criteria in choosing the products. The product should be tasty for children, proven in the parent’s eyes and child’s favourite. Children are conservatives in terms of food and commonly once they found their favourite, they will be loyal to it.

**Prototype testing**

The next step was prototypes development and tested among children in Finland, Helsinki in June 2013. The aim of the research was to find information about the children’s preferences and liking towards four tested prototypes. Altogether four different prototypes were tested among three different age groups: 10 kids under school age, 10 kids 7-10 years old and 9 kids 11-15 years old. Proto testing was done in four group interviews. Kids tested four products as individual liking and preference testing.

At the end of the testing, there were discussions about the prototypes. Pre-Teens are assumed to be able to voice and discuss their opinion in groups (Guinard
2001). However, children are taught not to criticize food. Because of this, when a consumer researcher was in the room and moderated the discussion, children commented food in a positive way. However, once the researcher went, they started to discuss how bad some of the samples were. Therefore, observations and video recording of interviews and testing are important in conducting the research especially with children.

The prototypes were developed based on previously conducted studies. Two of tested prototypes had been proposed in the ever beginning of the study. The tested products aimed to delight a child by providing interesting texture or structure with recognizable basic flavours and to beat the current market leader. In this way, the consumers wish to keep products maximally natural was neglected. This decision was based on current market trends, which show dominance of interesting products, whereas purely natural and organic are seen as niche products.

*Consumer test in Finland and Russia*

Based on the two previous studies four products were developed, and two design lines were created to be tested in Finland and Russia in order to get parents and kids voice for product and design development. The two prototypes were the improved versions of products tested previously among children in Helsinki; they also were the two prototypes that were proposed by product developers in the ever beginning of the study. The design lines were created by an advertising agency based on the results of the qualitative study. The research aimed at defining what test products and product lines are the most interesting in children’s and parent’s eyes, and to what direction they still need to be developed in order to attract kids and their parents even more.

As a stimulus material, two design lines and four products were tested. The target respondents were 100 kids 7-12 years old in Finland, and 121 kids 6-11 years old in Russia, that are regular consumers of milk based snack with their parents have tested the products. Hall-test (CLT) was chosen as research method.
Child and parent tested all four products independently, so that parents could not affect the child’s decision. Parent and child evaluated the same design line to understand how different package design lines affect perceived taste and interest towards them. The process in which respondent is asked to evaluate multiple products is believed to stimulate the purchase situation and identify the key product attributes, which affect the product liking (Van Kleef et al., 2005).

People are known to be irrational in their behaviour and choice making, to avoid bias several questions to understand product preference and liking rate should be used (Moskowitz & Hartmann 2008). Along with the standard hedonic scale, the questions about buying interest before and after tasting the product, would they eat a product themselves, the questions about the possibility to substitute the current products with the tested once, were included. Children also were forced to express their opinion on the products in different ways, by facial hedonic scale, by comparing the tested product with their current favourite one, by asking their general opinion on the product, and what they like and dislike in product, in open questions. In addition, children were asked to name the winner among the prototypes and the one that they do not want to taste again.

In addition, the case company has developed own system to assess the overall product liking by the means of the hedonic liking, and emotional and functional conceptualisation. This method is very close to the one that Thompson and Crocker (2014) applied in studying different chocolate brands, discussed in Section 3.3.3 (Product testing).

The company's package test method was applied with parents. Whereas children’s attitude towards packages was captured through open questions and comparison of overall product liking within different design lines. The package play especially crucial role in the overall perception of the product. When children were asked about what they like or dislike about the product, they commonly pointed out the package features, e.g. "I like this product, because of the animal (on the package)," or "I dislike this product because of the big eyes (on the package)."
Even if the results of the research showed that Russian and Finnish respondents ranked highly both products and product lines, the Russian office refused to accept the results of the study as they perceived both tested design lines as not appropriate for Russian market. To avoid tensions, the both Finnish and Russian brand managers briefed the advertising agency on concept and design development. In this way, the final design line was developed from the Russian side based not on consumer research, but on the brand manager’s preferences, what has limited consumer integration into this particular NPD process. In addition, it raised a question on how to make the NPD process in company international.

**Project analysis**

In general, the project process reminds a consumer-led NPD process proposed by Urban & Hauser (1993). The project began with the identification of market in which NPD efforts are expected to be profitable and generating product ideas that can successfully compete on this market. The next step was a product design that started, as it proposed in the literature, with consumer research. First, consumer researchers conducted the qualitative study with focus group as a method to identify issues, and then to analyse them further the qualitative method was used. On the base of acquired data the prototypes were developed and tested with children, what refers to opportunity refinement and opportunity evaluation stages, in which product started to take shape. The next step is product and marketing testing. The product and concept test was conducted in Finland and Russia. The next step would be a launch planning, however, due to new product strategy this project was put on hold.

Table 5 illustrates that applied methods suit to the incremental product development and more applicable to the marketing department, what suits to the project characteristics. In addition, the consumer research was done with the children’s abilities in mind, and they were approached with the specially designed questionnaires and discussions.
The evaluation of consumer integration is rather challenging in this case. On the one hand, the product and designs were developed based on the results of the consumer. But, on the other, which products are going to be launched was known before the product test was conducted, and the actual product design was not going to be developed on the base of consumer test results, but on managers’ perceptions instead.

**Table 5.** The analysis of applied research methods in need-driven NPD

<table>
<thead>
<tr>
<th>NPD stage</th>
<th>Stimulus</th>
<th>Interaction</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opportunity definition</td>
<td>Need and product-driven</td>
<td>Familiarity</td>
<td>Type</td>
</tr>
<tr>
<td>Product-driven</td>
<td>Unstructured and structured</td>
<td>With</td>
<td>Directly</td>
</tr>
<tr>
<td>Opportunity definition</td>
<td>Product-driven</td>
<td>Familiarity</td>
<td>Structured</td>
</tr>
<tr>
<td>Testing</td>
<td>Product-driven</td>
<td>Familiarity</td>
<td>Structured</td>
</tr>
</tbody>
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### 4.2.3 Product-driven NPD

The third case is a product-driven NPD on the pre-study phase. The aim of the project is to launch a new high protein product in autumn 2014. The new product can be listed as a new for the company and the market. The NPD started with opportunity identification. The development of protein products is the company’s production strategy, as for the moment these types of products bring the highest profits. In addition, the new product can be produced with existing technology and facilities. The two variations of the product containing different types of protein were proposed at the very beginning. The NPD is illustrated in the Figure 28.
The new product can be classified as a new for the company and the market. The NPD started with opportunity identification for the new product. The development of protein products is the company’s production strategy, as for the moment these types of products produce the highest profits. In addition, the new product can be produced with existing technology and facilities. The two variations of the product containing different types of protein were proposed at the very beginning. The NPDP is illustrated in the Figure 28.

**Figure 28.** Product-driven NPDP

*Secondary data analysing*

At the preliminary stage, it was necessary to define if there is a need for the product, what the possible concept and the target audience would be. First, the previous studies were reviewed. The company has conducted a wide study on protein-containing products in 2010-2012. These studies helped to identify the target audience and the consumption motives.

The next step was screening blogs and social communities that are dedicated to sports and nutrition with the target audience as participants. This screening confirmed the assumption that consumers were already making themselves the product that was planned to be launched. Netnography is a new qualitative method devised specifically to investigate the consumer behaviour of cultures and communities present on the Internet. (Kozinets 2010, 58)
**Lead users interviews**

The pre-study review, the one of the gate point, requires the preliminary concept, branding, package solution and finding a consumer benefit. Because of that, the consumer test was planned and conducted. As it was mentioned before, the company has moved away from traditional step-wise approach in product design and adopted a new method in which the whole concept is studied from the earliest stages. The lead user technique was employed to screen the product idea, develop a concept and develop a better understanding of consumer needs.

Lead users are believed to predict new and successful products because they have advanced knowledge about the product and the usage and create solutions to their own problems (van Kleef et al. 2005). High-protein diets were the weight management method since 1860s, at that time the benefits of protein were known only by specialists in the nutrition and sportsmen, now high-protein sports nutrition has transitioned from bodybuilders to early adopters. Still, nutrition specialists and bodybuilders hold the best knowledge about high-protein products. To screen the idea, find the possible weakness and potential understand what the new high-protein product should be like and what is a possible concept for it, two interviews with lead users were conducted before proto test.

The both respondents, being specialists in nutrition and bodybuilding, have consulted food designers about protein products. They both train and coach people in terms of their nutrition and sport, therefore, they know the target audience for the new product. The deep interview was used as a method, first they were asked about high-protein products, and then about two versions of the new product. Because of production timing, it was not possible to produce the prototypes before interviews, and the respondents saw only description and the list of ingredients.

The lead users provided the essential information on the new product perception and potential, and clues for the further development. Interesting revealed fact was
that high-protein users evaluate the price of the product based on price per one gram of protein gave a clue to price development.

Considering existing prototypes two concepts were developed. The first one required further product development and targeted the early adopters. The second one was more suitable for the project, as it targets the mass-market and does not require changes in the product’s composition. Therefore, the second concept was used to present a product for respondents in home-used test.

Home-use test

The aim of the home use test was to find out the level of interest among consumers towards the new product does the new product suites for the existing quark brand, which of the two versions are more prominent in terms of sensory characteristics, what is the optimal package size, the substitution possibility, shelf positioning, and the consumption practices.

There are few benefits of using a home product test: first, it helps to find out the consumption situations, such as in what time, how much and in which combination with other products the prototype was consumed. Second, provides the possibility for people to try the product several times, what is essential, as people tend to dislike a new food at first. As one of the key questions was to define which version of the product is better, the respondents tested two products and one design line. The prototypes were very similar in terms of ingredients and food value.

The respondents were recruited from the companies own register. They were heavy users of the existing quark product, already participated in the company’s consumer research and agreed to be involved in following researches. The number of prototypes was limited to 30 respondents. In total, 26 respondents confirmed their willingness to participate in the product test, but only four of them picked up the prototypes on time. Because of the prototypes’ short shelf-time the left products were given to test for users of quark inside the company, what limited
the possibility to assess the brand issues. The availability of own on-line panel could help to avoid the recruiting problems.

The test showed that in general the respondents were interested in the product, because of its composition, protein level and price. However, the testing showed that consumers did not like at all one of the prototypes, and the second was liked on an average level. Because of disliking, the majority of respondents did not continue trying the product. In addition, when results are such polarized it is hard to assess their validity, especially it concerns the level of liking and buying interest towards the second product. Thus, there is a possibility that the second product would get lower grades if it was tested separately.

The standard practice before every consumer trial is the product testing in-house, at least within the project team. The product developer makes several versions of prototypes the best out of which, according to the team, proceeds to consumer test. The same procedure was employed also before this consumer test. This means that prototypes should be selected more carefully.

Prototype test

Because the previous research showed the low preference rate among consumers, the affective test with new prototypes was done among the company’s employees. The goals were to define the taste expectations, the taste liking, and the reasons to like and dislike the products. Three different versions of the product were tested.

The results showed that respondents expected better taste of the products. However, it is advisable to proceed with one of the prototypes, and the concrete guidelines for further improvement were given. All prototypes were unflavoured, and this can be one reason for the low product ratings. Therefore, the possibility to add flavour should be discovered from the production and consumer side. This question will be added to the next home test. In addition, this home test will cover the questions that were not answered in the first consumer test.
Project analysis

This project was not prioritized, and consumer researcher has not been involved from the beginning, as it was with the need-driven project. In addition, the consumer research studies were not planned before and were applied in an ad hoc manner. However, the project shows that even if the new product idea is not based on consumer needs, it is possible to integrate voice of the consumer. The project can be characterised by the “select” consumer empowerment (Fuchs & Schreier 2011).

Table 6. The analysis of applied research methods in product-driven NPD

<table>
<thead>
<tr>
<th>NPD stage</th>
<th>Stimulus</th>
<th>Interaction</th>
<th>Outcome</th>
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<tbody>
<tr>
<td></td>
<td>Type</td>
<td>Familiarity</td>
<td>Type</td>
</tr>
<tr>
<td>Opportunity</td>
<td>Product-driven</td>
<td>Unfamiliar</td>
<td>Unstructured and structured</td>
</tr>
<tr>
<td>Definition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunity</td>
<td>Product-driven</td>
<td>Unfamiliar</td>
<td>Structured</td>
</tr>
<tr>
<td>Refinement</td>
<td></td>
<td></td>
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</tbody>
</table>

The product-driven case followed the stages of consumer led NPDP. At first the market and the initial product ideas were developed, then during the opportunity definition stage these ideas were screened by consumers. Once, it was found that there is an interest towards the new product, the project came to the opportunity refinement stage, at which the development of the product towards ideal starts.

Different methods have been applied to support the project: previous study reviews, netnography, lead users, home-used and central location test. The new product can be characterized as new to the market, and according to the Van
Kleef et al. (2004) classifications the applied methods are suitable for really new product development (Table 6). They also provide cues on marketing and technical product development. Thus, lead users technique and central location test are able to give technical insights on new product development, whereas netnography and home-use test are more applicable for marketing use.

4.3 The analysis of NPD projects

Each stage of NPD projects was supported by consumer research. The consumer research methods that have been used in all three projects were appropriate for the specific managerial tasks. The summary of the NPD projects in terms of actionability and newness (van Kleef et al. 2005) of product considered and the consumer empowerment strategy (Fuchs & Schreier, 2011) is reflected in Table 7.

Table 7. The analysis of NPD projects

<table>
<thead>
<tr>
<th></th>
<th>Actionability</th>
<th>Newness</th>
<th>Consumer empowerment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wide-scope category study</strong></td>
<td>Marketing Technical development &amp; Both: incremental and really new</td>
<td>“Select empowerment”</td>
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<tr>
<td><strong>Need-driven</strong></td>
<td>Marketing Technical development &amp; Incremental</td>
<td>n/a</td>
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<tr>
<td><strong>Product-driven</strong></td>
<td>Marketing Technical development &amp; Really new</td>
<td>“Select empowerment”</td>
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The company’s approach to test the whole concept from the earliest stages supports the integrated development of different product’s dimensions. In addition, the methods being used corresponds to the new product’s novelty, e.g. lead users for the really new and focus groups for the incremental products.
The need-driven and product-driven NPD project showed that the level of consumer integration more depends on the project management, rather than on the source of the idea. Thus, in need-driven case was a situation, when not the consumer test results, but the brand manager determined, what the product attributes should be like. Therefore, two cases showed the “select” consumer empowerment, where the need-driven case is hard to categorise. Moreover, in any of cases the consumers were not empowered to create a product.

In addition, all three projects follow the consumer-led NPDP process (Costa & Jongen, 2006). The only difference between the need- and product driven NPDP was at the opportunity definition stage. In need-driven case, the aim was to get product ideas from users, whereas, in product-driven case, consumers screened the proposed products.

4.4 The level of consumer-orientation NPD in the company

The case company has succeeded in integrating the consumer-voice in the NPD process. Moreover, the consumer benefit is one of the key strategic points. Therefore, the consumer-orientation has been adopted on both strategy and process levels. In addition, the consumer benefit links the different parts of the organization, what it illustrated in the Figure 29.

![Figure 29. Consumer-oriented NPD in the company](image-url)
The tasks of R&D department are to define consumer needs and build consumer benefit based on them, the marketing department should communicate this consumer benefit to the customer. The business units coordinate the product portfolio renewal and decide which products should be launched. This scheme reminds the consumer-centric and consumer-oriented product development (Currie 2008; Costa & Jongen 2006). In this way, the company developed products with features and properties with optimal consumer liking, cued benefits and coherent communications.

There are three main pillars of consumer-led product development, identified by Costa & Jongen (2006). The company NPD should fulfil them in order to be recognized as consumer-oriented. The case company mostly meets these requirements. Thus even if it launches products with a different source of ideas, not necessarily only need-driven one. Such an approach ensures that the company’s ability to find a balance between incremental improvements and radical new products. However, regardless the source of an idea the consumer’s voice is integrated from the earliest stages. Thus, theoretically the consumer needs should be a starting point in the NPD process in the company.

The company deems the customer as a resource during the ideation stage, as a co-creator during the design and development stage and as a user when the product is launched (Nambisan 2002). The consumer-orientation approach emphasizes that the market information and technical knowledge are equally important. The case company sees its science and technology competences as means to satisfy consumer’s needs. Without identifying consumer benefit, preference and taste test, any of the products cannot be launched. All functional units aim at defining, producing and communicating the consumer benefit.

The key success element is to have a consumer centric culture in which consumer-led innovations are foremost (Martinez 2013a). The case company is constantly looking for new ideas generated from a variety of sources: marketing assessment for identifying gaps, reviewing trends, benchmarking. Along with in-house consumer research, the company utilizes secondary data: desk research,
syndicate research, such as product sales, the general study on food category. In addition, for identifying influential thinking consumer advisory board was organized. Moreover, consumer research is done at every stage of the NPD development. To sum up, the company implements all needed activities for incorporating consumer-mind set into the company culture. (Moskowitz et al. 2006)

According to the consumer empowerment strategies proposed by Fuchs and Schreier (2010) (Fig 32), the company’s consumer empowerment strategy depends on the project. Thus, in the need-driven case the products were mostly developed based on consumer needs and wants. The consumers also were given the possibility to choose which products to produce. However, the company’s management made the final decision. Because of that, it is hard to define the consumer empowerment strategy. In product driven case, the products were developed by the company, but the consumer was given the possibility to choose, which products to produce, what refers to “Select” consumer empowerment.

In general, the case company carries out a systematic program of research with consumers guide and lead NPD process at every stage, that new food and beverages are initially designed with the consumer in mind. Therefore, the company has implemented consumer-driven innovation process. The next level is co-creation with consumers.
5 DISCUSSIONS AND CONCLUSIONS

This chapter summarises all findings and conclusions of the study. It provides appropriate answers justified with theory for the thesis's research questions and objectives. For that reason, the conclusion part is divided into subsections dedicated to each of research questions.

5.1 Main findings

This thesis was dedicated to finding concrete guidelines on integrating the voice of the customer into NPD. The main attention was paid to consumer-led product development in the food industry. The presented findings arise from the literature reviewed, qualitative study of the case company NPD, including three NPD projects.

Consumer-led product development is important phenomena in the food industry. Both academy and business world focus on consumer's integration into the NPD process in the most beneficial way. The literature review has showed that, in the past 30 years, the food industry has changed significantly, from the supplier-market, where the consumer was neglected, to buyer-market with consumer is foremost. Even if fork-to-arm approach, meaning that the whole supply chain aiming at the satisfying consumers' needs has existed for a long time. Only recently, companies recognized that focusing mainly on awareness identification and acceptance tests is only the basic level of consumer integration. The getting knowledge from customers, and on more sophisticated level co-create with consumers allows companies to improve their performance significantly.

The case company historically has been famous for its scientific achievements. However, the company has adapted to the new circumstances and be able to develop new consumer-led NPD. Because of that, the case company NPD can be used in developing concrete guidelines on how to implement consumer-led NPD.
5.1.1 Strategy, culture and management

The NPD should be synchronised with the company’s corporate and business strategies. To implement consumer-led NPD the top-management support is needed. Moskowitz et al. (2006) claim that strategies should connect technologies to product features, marketing and consumer. In the case company consumer benefit is one of the key strategic points. The NPD is built around consumer benefit, and all functional groups aim on its delivering. In this way, consumer orientation links the different parts of the organization.

The consumer-centric company culture should be developed on two levels: corporation and individual employee level (Kemp 2013, p. 141). Several activities could enhance such a culture. Thus, employees should be aware of influential thinking and current cultural interest. For discontinuous development of consumer research in the company the Consumer Research Advisory Board consisting of the company’s top management and the consumer research professionals was formed.

For building consumer understanding and insights in the company the consumer research group was developed. The consumer research group consists of consumer and taste researchers. Traditionally, the consumer testing was performed in marketing and sensory testing in R&D, however, it created misunderstanding within groups and was found as not efficient. (Moskowitz et al. 2013, 344)

The company constantly develops new products, and because of the NPD diversity, the NPD project classification on the corporate and research level have been developed. Depending on the type, the project will pass different number of stages. For the every NPD project, the cross-functional team is created, and one of its members should be a consumer researcher.
5.1.2 NPD process

There is a number of consumer-centred NPDP have been proposed (Urban & Hauser 1993; Grunert & Valli 2001; Søndergaard 2003; Currie 2008). They are often accused of being sequential, what does not correspond the reality experienced by product designers. For that reason, companies usually develop their own models to depict the main stages of NPDP. However, the stages of the case company NPDP duplicate the consumer-led one (Urban & Hauser 1993).

The NPD project analysis showed that regardless the source of the idea (need- or product-driven) the voice of the customer can be integrated. Therefore, even if literature on consumer-led development emphasises that the consumer needs should be a starting point, it is possible to incorporate consumer and develop a consumer benefit in the product-driven cases by applying different consumer research methods. The only difference happens on the opportunity definition stage, where in case of need-driven NPD the task is to define consumer needs, against which the product should be produced. Whereas, in product-driven case the researchers have to submit a product or product ideas to consumer evaluation. Therefore, the one NPD model can be used for all NPD projects. In brief, the NPD process consists of defining consumer benefit, developing new product towards the ideal and verification.

An important issue in the NPDP is application of stage-gate principles. Thus, particular the case company employs three gates in the NPDP: a feasibility study in which ideas is evaluated, a pre-study and a launch review. Any product cannot be launched without proving consumer benefit, a certain level of liking and comparison with competitors. Furthermore, the company is concentrating not only on the individual projects, but also on product portfolio management, so that effort is targeted to the right products (Anderson 2008).
5.1.3 Consumer research methods

Consumer research is an indispensable at every stage of NPD (Grunert & Valli 2001, Moskowitz & Hartmann 2008). The literature analysis in Chapter 3 (Consumer research methods and techniques in NPD) has shown that there is definitely no lack of consumer research techniques and methods. They allow studying behaviour and attitudes, developing product concepts and attributes, test prototypes, and even anticipate consumers’ needs and wants. (Earle 1997; Costa & Jongen 2006)

Companies are encouraged to use consumer research methods and techniques from the earliest stages of NPD. Such an early consumer integration guarantees that the resources are not devoted to the wrong case (Costa & Jongen, 2006). The fact that consumer is not able to articulate their needs should not prevent companies from the early consumer involvement. Such methods, as consumer ethnography, lead users technique, could help to anticipate and uncover consumer future and latent needs (van Kleef et al., 2005, Cooper & Dreher, 2010). Moreover, there is a practical evidence that co-creation with consumers can result in breakthrough ideas development (Martini et al. 2014).

To help companies to define which methods to apply, the different categorisation schemes have been proposed (van Kleef et al. 2004; Kemp 2013; Janssen & Dankbaar 2010, 137-141). Thus, the methods can be differentiated in terms of newness of product and actionability of output. Methods with familiar and product-driven stimulus, structured and directly articulated output are more applicable for incremental product development. On the contrary, unfamiliar and need-driven stimulus, unstructured and indirectly gathered output are characteristics of methods applied for really new products. However, such differences in methods are common only during the earliest stages of NPD.

In order to integrate the voice of the consumer into NPD, a company should be aware of consumer knowledge and preference formation. The product is perceived as a sum of its intrinsic and extrinsic attributes. In addition, individual, contextual,
and environmental factors affect the product choice and the overall satisfaction (Linnemann et al. 2006). Because of that, the whole product concept is studied from the earliest stages in the company.

The case company also shows that the product testing should go beyond product liking. Thus, there was no correlation found between product likings during product testing and the volume of sales after the launch. Therefore, the company evaluates along with the hedonic liking, the emotional and functional conceptualization (Thompson 2010).

Another important aspect is development product for children. The children's opinion towards new food became more powerful, the product is developed to satisfy their preferences. At the same time, the product should be liked and accepted by parents as they make purchase decisions. Therefore, to develop a successful product for children, the parents' and children's opinion should be taken into account.

The children have limited abilities to evaluate the product or uncover their needs. However, with the support of special methods and techniques or adopted versions of general consumer research methods the children’s voice can be incorporated into NPD. The choice of method depends on the child's age. With infants and toddlers mainly observations and food diaries can be used, with pre-school and early readers is also possible to conduct face-to-face interviews, using the child's vocabulary, hedonic testing with facial scales, pre-teens and teenagers' abilities are comparable to adults. The empirical analysis showed that observations should be used with children to generate results that are more valid.

Children commonly dislike new food. Therefore, especially in home testing it is necessary to encourage parents to give new food several times. The visual world of the product affects the overall product liking. For that reason, not only sensory characteristics, but also the whole concept, including package should be evaluated as by parents, as by children.
5.2 Managerial implications

The managerial implications are divided into two subsections. At first, the general recommendations on integration voice of the customer into NPD will be given. Second, the case company will be provided with the specific recommendations for further development of consumer-led NPD will be given.

5.2.1 General recommendations for the integration the voice of consumer

In order to implement consumer-led NPD a company should integrate consumer mind set into corporate culture and strategy (Earle & Anderson, 2001). The top management support is needed, and it is highly recommended that a specific top-manager will be responsible for the consumer-led NPD (Anderson, 2008).

It is essential to organize consumer research group in-house to build consumer understanding and insights inside the company. Such approach can help the company to understand consumers better than they do themselves and faster than competitors, by tacit knowledge accumulation. This group should consist of consumer and sensory researchers (Moskowitz et al. 2013, 344). For optimizing work within consumer insight group, it is important to categorize NPD projects in different levels. For enhancing consumer-centric corporate culture, along with in-house research a company should acquire secondary data such as desk research, syndicate research, study on the product category, trend spotting (Kemp 2013).

Each NPD should be considered as an independent project, for which cross-cultural team. The consumer experts should be involved in the team from the initial planning stage to ensure that the consumer is represented in the process and, what is extremely important, choose the most appropriate tools for integrating the voice of the customer. (Lundahl 2011)

Conducting consumer research at every stage of the NPD process, regardless whether a new product is need or product-driven. The empirical analysis show that the product can be developed in consumer-led way, regardless the source of ideas
(whether it is a product or need-driven), the target audience, and the resources assigned. The different research methods availability serves companies with the possibility to get valuable consumer insights on consumer’s current and future needs. It is also important to go beyond the hedonic testing to evaluate the emotional and functional conceptualisation (Thompson, 2010). In addition, the most validation results are gained through a combination of different research methods. Moreover, the case company’s practice shows that it is more valuable to test the whole concept from the earliest stages as all product dimensions are interconnected.

A consumer research advisory board can support the consumer-orientation in a company, by identifying influential thinking and ensuring that the most appropriate and effective consumer research methods and techniques are used. This group could consist of consumer research professionals and several times per year meet researchers to introduce them with new consumer research methods.

5.2.2 Recommendation for the company

The empirical analysis has shown that company has implemented the consumer-led NPD. It has developed a consumer-driven innovation process that implies carrying out a systematic program of research with consumers guide and lead innovation process at every stage, so that new food and beverages are initially designed with the consumer in mind. The next level of consumer integration would be a co-creation with consumers.

In addition, there is a room for further improvements. Thus, it is necessary to ensure that consumer researcher is a part of the NPD project group from the earliest stages, not when the product is already developed, and validation testing is needed. Another important aspect is a need of company’s own consumer research panel. It should save the costs of recruiting, on the one hand, and ensure consumers’ participation in tests, on the other (Callegaro et al. 2014, 3).
Moskowitz et al. (2006) encourage companies to create a common research database as a tool to develop consumer-centred corporate culture. The common database of findings from different studies might improve the knowledge movement within the company. The database should be easy and useful in terms of navigation. Currently, there are study reports available. However, it is hard to find them. It would be much more convenient if it will possible to search, e.g. “quarks” and all studies connected with quarks can be seen. In addition, submit and store idea option can be available for both external and internal users. Thus, the consumer researches show that consumers often share interesting ideas that were not applicable to a particular project, but might be highly valuable for other one.

Companies that have a long-term relationship with their target customers build up knowledge of their current and future behaviour, what is invaluable in product development (Earle & Anderson 2001, 197). The interviews with lead users showed that these consumers are highly interested in co-operation with companies and are ready to donate their knowledge freely. Therefore, building a long-lasting relationship with lead users, through e.g. consumer advisory board, can provide an opportunity to get the newest insights on the topic, screen the current and future product and cooperate in product development, possibly via online communities. In addition, such collaboration can support the life-cycle management.

The chance of successful NPD can be improved by making consumers part of the innovation process (Martinez 2013a; Martini et al. 2014). Consumer-driven food and beverage innovation, which designs products to meet consumer needs, can be achieved through a company culture focused on the consumer and by applying appropriate consumer input throughout the NPD process. Co-creation offers a new way to innovate, in which prosumers and companies work in a mutually beneficial collaboration to develop products, often through social networking (Martinez 2013b; Kemp 2013). There are possibilities to co-create via customers’ knowledge factories (Moon and Desouza 2010) or on-line communities (Martini et al. 2014;
Cooper & Dreher 2010). In co-creation practice, companies should treat consumer as an equal partner, and diminish attitude "the customer is a king".

5.3 Limitations and future research

The one major limitation of the study is related to the method of study as the results of the analysis of only one company do not allow the generalisation of the findings (Saunders et al. 2009). Future research should cover the NPD process of a number of companies in the industry. In addition, it will be valuable to make an empirical study of the correlation between a company’s degree of consumer integration and the actual performance.

Furthermore, even if there is a number of consumer research methods proposed, there are no metrics to measure the fit between the new product and the needs of targeted consumers established. The appearance of such metrics can help companies to evaluate the product potential.
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APPENDIX 2 CONSUMER-ORIENTED NPDP

1 Consumer-centric product development

Currie (2008, 317-330) employed consumer-centric product development model in research of supermarket private label brands in Australia. She emphasized that truly successful products are those that customer really want to buy, even if they were unaware that they wanted it. The product development begins and ends with customer and consists of four steps, illustrated at Figure 1. The first stage is to develop knowledge and understand of customers. For this purpose, different methods can be used, including secondary, such as retailing information, benchmarking, and primary data research. During this stage, company should become aware of its primary and secondary customers, their wants and needs, what intrinsic and extrinsic characteristics should product have to satisfy their needs. Based on acquired at first stage data, a company should design and make what consumers want. Third step is proper product communication, a company should inform consumer about the product availability. For communication development the information gathered at first step should be utilised. Finally, after launching company should assure that it is still making what customers want.

Figure 1. Consumer-centric NPD (Currie 2008, 319).
Appendix 2 continued

2 Consumer-led product development depending on existing degree of branding and differentiation

![Diagram of consumer-led product development process]

**Figure 2.** Consumer-led product development depending on the existing degree of branding and differentiation

Grunert and Valli (2001) noted that food products differ considerably in terms of their current level of branding and differentiation. Thus, they found that beef is an extreme case of unbranded product with low level of differentiation, where yoghurt is another extreme of branded products with a high level of differentiation. In addition, there is also a third case, when the product is branded, but has a low level of differentiation.

In all cases, the PDP starts with mapping the market: finding out the main actors, analysing the food supply chain, and defining the main competitors. The next step is to understand the consumer segments, where means-end chain theory can be applied to help to identify links between product attributes, benefits and values. The third step differs depending on the level of differentiation. In a case with a product with the low degree of differentiation the essential step will be to define how physical products can be differentiated in consumer-led way, e.g. how consumer demand can be translated in intrinsic product characteristics. If a food product is unbranded the fourth step is to increase co-operation.
with different actors in the food chain, this could help to develop a product under a brand that consumer will be able to recognize. In case with branded products the proper position of brand should be found, and the company should communicate positioning of the product.

In case of product with a high differentiation degree, the situation may be quite different. First, consumers might be overwhelmed with the huge amount of product available, and in this case, it is necessary to group products with the regard to their match with different consumer segments. This step can lead to uncovering market niches that are not served yet, and can be seen as a possibility for new product.
APPENDIX 3 CATEGORIZATION SCHEME FOR CONSUMER RESEARCH METHODS

Van Kleef et al. (2005) proposed a categorization scheme in which methods are grouped according to the most significant determinants of results. This scheme makes the differences and similarities between methods more appeal and guide companies on which method is the most appropriate for a certain task. Thus, the identification of consumer’s need can proceed in different ways: consumers may pay attention on different aspects depending on the research task. The methods vary in terms of the information source for need elicitation, task format and response or output.

Information source for need elicitation

First determinant is an information source for needs elicitation. An important distinction can be made between the types of stimulus that guide participants in revealing their opinion. There are two types: product- or need-driven, and the familiarity of the stimulus.

Product- versus need-driven methods

The needs may be generated from either internal or external stimuli, thus a person may purchase a product, because of the internal need, such as hunger, or an external stimulus, such as smell of fresh bread may arouse the recognition of the need. The same principle is applicable for consumer
research methods to reveal consumers’ need that can be either need-driven or product-driven. In need-driven method, the respondents are asked to reveal their needs without any references to a concrete product. The aim of these methods is to define consumers’ problems and needs. In product-driven methods the product is used as a cue to identify needs and wants.

Generally accepted that need-driven methods are more useful in revealing unsaid needs, however, it is usually hard to translate abstract needs into subjective product attributes. On the contrary, the product-driven methods are usually limited to available on the market products and reactions to them, but rather predictable and can be easily translated into corresponding product requirements. However, using concrete products as cues during the early stages of NPD can kill creativity and result in me-too product, instead of really new one.

**Familiarity**

The familiarity of the product affects the results of the consumer research to a great extent. The more familiar product or its attributes the easier for respondents to evaluate them. In the valid result, respondents have to have at least some experience with product or particular attribute of the product. The difficulty in evaluation absolutely new products can easily appear, and most commonly people due to limited cognitive capacity make heuristic decisions when face the complex stimuli. Subsequently, consumers’ opinion in such situation may not have high predictive validity.

**Task for format of method /technique**

*Evaluating multiple products versus a single product*

The method in which respondent is asked to choose a product among alternative once is believed to simulate the purchase situation. It is most
applicable in a case with a comparison of rather similar products, when the importance of certain concrete attributes, such as price, is important. However, consumers may not be able to properly evaluate and compare dissimilar products, such as milkshakes and bread. In contrast, when the individual product tested, each attribute of a product is better evaluated.

Response type

There are few categories of respond types: association, preference and perceptual judgments. In association, respondents are given a task to continue e.g. the list of words or images. The association theory claims that the words or images can be joined to each other in a way that one tends to evoke another.

There is a common mistake in considering similarly perceived products as similarly preferred. The similarity questions about product perception are useful for technical product development to understand how product should look. Whereas preferred responses can result in what benefits the products can bring. The preference judgments are deemed to have a higher predictive validity.

Self-articulated or indirectly derived consumer needs

In direct approaches, respondents are often asked to give reasons for their choice, liking, preferences, in indirect approach this is achieved by the means of observation or statistically.

There are several reasons imply that direct approaches may not provide researchers with valid information. The decision-making process is usually an illogical process; research showed that participants are frequently unaware of their underlying choice criteria. Quite often respondent can choose one product during the test, but buy another one in the shop. (Steenkamp & Van Trijp, 1997) Second, it is assumed that participants are
able to express their needs and wants during interviews and focus groups. However, research showed that usually people start to think about their needs or products in a more extreme way. Thirdly, respondents do not usually share their innermost feeling with the researcher or moderator. Therefore, the indirect methods such as observations, decomposition conjoint analysis, or statistical techniques such as multiple regression analysis and multidimensional scaling technique can be applied.

**Structure of data collection**

In highly structured data collection the questions and the responses are completely predetermined; the obtained responses are directly in quantitative form and require no further subjective interpretation. This result in faster, cheaper and more convenient for respondents research. By unstructured research it is possible to obtain detailed and in-depth data that may bring new insights into NPD. However, the collection of such data takes longer time is more expensive and required non-bias interpretation of data by researchers.

**Response and output**

**Actionability of output**

Information obtained in consumer research will be used only if it perceived to be relevant for the task. Actionability refers to the ability of output information to identify specific actions to be taken to achieve the desired outcome. The obtained information can be evaluated in two dimensions, whether it refers to concrete attributes or to more abstract consumer values. Figure 2 shows that the more abstract information is, the less actionable a method for technical development.
The researcher task is to link abstractness information, e.g. on consumer values with more concrete product characteristics. However, when consumer values are synchronized with product characteristics too early it can kill creativity. The more useful to proceed from the consumer benefits in new product development, meaning that do not limit creativity to concrete attributes.