



**LUNDS**  
UNIVERSITET

School of Economics and Management  
Department of Business Administration

Master's Corporate Entrepreneurship and Innovation  
Internship and degree project (Master's thesis 15 ECTS)

Spring 2016

**SOME KNOWLEDGE NEEDS TO BE MORE IMPORTANT  
– THE ROLE OF PRIORITIZATION IN ABSORPTIVE CAPACITY**

Authors: Alfredo Portugal and Wiebke Jasmin Lachmann

Supervisor: Anna Brattström

## Abstract

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Title: Some knowledge needs to be more important – the role of prioritization in absorptive capacity

Date of the Seminar: 18.05.2016

Course: ENTN39 Master's Corporate Entrepreneurship and Innovation  
Internship and degree project (Master's thesis 15 ECTS)

Authors: Alfredo Portugal and Wiebke Jasmin Lachmann

Supervisor: Anna Brattström

Keywords: Absorptive capacity; Knowledge prioritization; Customer knowledge; Prioritization criteria; Idea selection;

Research Question: How does a company prioritize within knowledge absorbed from their customers and what influences how this prioritization takes place?

Methodology: The presented single case study was conducted in a Swedish biotech company in Lund. The qualitative research approach followed an inductive method with small elements of deduction. Semi-structured interviews were used as the main method to collect empirical data.

Theoretical Perspectives: The main theoretical perspective of this paper is absorptive capacity. However, to advance in new theory, a connection of absorptive capacity processes to the fuzzy front end of innovation processes and the selection of ideas in the new product development process is established.

Conclusions: The case company in this paper absorbs great amounts of knowledge from their customers. The abundance of absorbed knowledge creates a need for prioritization, which has not yet been recognized within absorptive capacity literature. In the case company however, knowledge is not strictly prioritized in one or the other way, due to different influencing factors. New product development literature has come much further in the aspect of choosing a selection from many relevant pieces of knowledge and information. In this case study, next to other findings, new product development literature was used to suggest an advanced model of absorptive capacity.

## Acknowledgements

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*“We would like to thank everyone at the case company for their great efforts to provide us with information, data, a space to work, solid advice when needed, and an infinite amount of mango juice and cake that kept us going throughout this work.*

*We also thank Anna Brattström for an amazing job as our academic supervisor.*

*Special thanks as well to all the lecturers, our friends and families, and fellow students at the program for supporting us throughout this thesis, and the corporate entrepreneurship degree program. You made the last year one to remember.”*

*Alfredo and Wiebke*

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## Chapter 1: Introduction

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### 1.1 Background

Increasing the company's ability to identify, absorb and translate external knowledge into profitable offerings has been seen as a way to increase innovative output and stay ahead of the competition (Bröring and Leker, 2007; Cohen and Levinthal, 1990; Murovec and Prodan, 2009; Najafi Tavani et al., 2013). This belief is even found in definitions of innovation, such as Tidd and Bessant's (2014, p. 16), who state: "Innovation is [...] about recognizing opportunities for something new and implementing those ideas to create some kind of value". The theoretic phenomenon related to recognizing and absorbing information is absorptive capacity, which has been accepted as the company's ability "to recognize the value of new, external information, assimilate it, and apply it to commercial ends" (Cohen and Levinthal, 1990, p. 128).

Recent publications seem to make a case supporting that the more absorptive capacity a firm develops, the better the outcome. Najafi Tavani et al. (2013) for example found, that parts of absorptive capacity have a positive effect on parts of new product development performance in the manufacturing sector. Murovec and Prodan (2009) also found a positive relation of absorptive capacity to innovation dimensions, such as an increased product portfolio, or market share.

However, there is evidence for a change of perspectives on absorptive capacity. Brettel et al. (2011) found, that a higher level of absorbed, transformed, and exploited knowledge did not necessarily lead to better financial performance in their sample. Wales et al. (2013) also evaluated financial performance and absorptive capacity. In their findings absorptive capacity had an optimum level. When exceeding the optimum level, a negative effect was found. Interestingly, the authors also discovered that the company's openness to innovation weakened the negative effect of absorptive capacity, as being open to innovation meant a higher implementation rate of innovations and therefore positive financial results.

These two somewhat contradictory discussions show, that research on absorptive capacity is far from complete. Absorptive capacity has important positive effects, but an analysis is incomplete when observing it in isolation. Wales et al.'s (2013) optimum level of absorptive capacity is determined by the company's ability to implement innovation. What other influences are there on absorptive capacity and can a company control them effectively? Are these influences dimensions of absorptive capacity or related concepts? There are far too many unanswered questions to address in one thesis. However, in relation to absorptive capacity we believe it is worth investigating the company's ability to prioritize within the knowledge that has been absorbed. By this we mean the ability to select pieces of information for effective implementation.

Literature on new product development processes has already recognized that there is much relevant information and many relevant ideas, but that a company has to select among them (Cooper et al., 2001; Cooper and Kleinschmidt, 1986; Hakkarainen and Talonen, 2014). Why should it be different in absorptive capacity?

## 1.2 Problem discussion

Within absorptive capacity literature, one direction of discussions is highlighting the positive effect of absorptive capacity (Murovec and Prodan, 2009; Najafi Tavani et al., 2013). Another is arguing, that absorptive capacity alone will not necessarily lead to a better outcome for the company (Brettel et al., 2011; Wales et al., 2013). However, much of the existing research remains concerned with the capability to absorb as much external information as possible (Zahra and George, 2002; Wang and Ahmed, 2007).

Looking at absorptive capacity there are two main sub dimensions: Acquisition and assimilation of information, as well as transformation and exploitation (Zahra and George, 2002). Others define different kinds of knowledge (Najafi Tavani et al., 2013; Tu et al., 2006), or different purposes like gathering market or scientific information (Murovec and Prodan, 2009), as dimensions of absorptive capacity. As our research is more concerned with the concrete activity of prioritization as part of the process of absorptive capacity, we adapt the first definition, provided by Zahra and George (2002).

Our case company, which we will detail in chapter 1.5, faces a challenge in relation to the absorption of great amounts of knowledge. The firm operates in an information-rich environment, where new information and stimuli are provided by the customers and taken in by the company. The great amount of absorbed information stimulates many ideas, for example on how to adapt the offering. However, processing all this knowledge, stimuli, and ideas at the same time, is difficult due to limited resources. Hence, prioritization of information is an increasingly difficult challenge for the case company.

We argue that understanding and prioritizing information provided by the customer are part of absorptive capacity, but we encountered difficulties in gaining theoretical insights on this particular matter through existing literature on absorptive capacity. Bröring and Leker (2007) mentioned that idea generation and selection processes would be a problem, when leaving the area of previous expertise (meaning: operating at a low level of absorptive capacity). One can interpret this as a relation between absorptive capacity and the ability to select ideas. Absorptive capacity is more defined as an enabler for selection processes though. Meanwhile, we searched for a selection dimension within absorptive capacity. Sáenz et al. (2014) argue that the assimilation dimension of absorptive capacity, indeed, requires a selection of information and ideas. However, we could not find distinctive activities or criteria that were applied.

These concepts of selection and prioritization are not addressed in studies finding positive effects of absorptive capacity. Najafi Tavani et al. (2013) find that absorptive capacity is positively related to new product development. However, they define different kinds of knowledge as dimensions of absorptive capacity. Therefore, we know little of their sample companies' absorptive capacity activities and if they prioritized within the knowledge they gathered. Prioritizing innovative ideas, or the knowledge and information that may have stimulated them, could theoretically have affected this positive outcome as well, but we lack the information to confirm this speculation.

As mentioned before, Wales et al. (2013) find that absorptive capacity can have a moderating or even negative impact. Their findings give reasons to question that absorbing more knowledge per se means higher success rates in return.

Literature on new product development processes has already recognized the fact that there is much relevant information and many good ideas, but to effectively implement them a company has to select (Cooper et al., 2001; Cooper and Kleinschmidt, 1986; Hakkarainen and Talonen, 2014). Especially in the timespan before a formal product development process begins, the fuzzy front end, the positive outcomes of selection instead of processing all the ideas that are generated is evident (Martinsuo and Poskela, 2011). Why should it be different with the information that is addressed in absorptive capacity research? We see a clear gap in absorptive capacity literature by not addressing the processes of selection and prioritization, which the researchers in new product development processes have found to be so crucial.

For formal new product development, funneling is an important method of selecting ideas (Cooper and Kleinschmidt, 1986; Hakkarainen and Talonen, 2014; Tidd and Bessant, 2014). In addition, several authors mention different selection criteria for ideas and projects in new product development. Among these are creating value for the end user or generating financial rewards for the company (Hakkarainen and Talonen, 2014; Magnusson et al., 2014). Also some hardships like making decisions with little organizational acceptance, terminating projects that have already been invested in, and having little insight to make market assessments are mentioned (Cooper and Kleinschmidt, 1986; Gutiérrez et al., 2008; Hakkarainen and Talonen, 2014). A special problem is presented by the fuzzy front end, the stage where information is rich, needs to be assimilated and shaped in to more articulate ideas which enter the new product development process (Florén et al., 2012; Hart et al., 2003; Koen et al., 2001; Martinsuo and Poskela, 2011). We see parallels between the decisions that have to be made when selecting ideas in relation to new product development and prioritizing the knowledge absorbed through absorptive capacity processes. However, we were not able to find a relationship of these concepts in literature.

### 1.3 Purpose

The purpose of this thesis is to contribute to absorptive capacity literature. Our case company makes a strong effort to absorb information, but then they face the challenge of prioritizing within the information they have absorbed from the customer. We could not identify this aspect in absorptive capacity literature. Therefore, the purpose of this thesis is to add to it.

By focusing on the difficulties of selecting information and ideas according to customers' needs we restrict our analysis to one aspect of absorptive capacity; the aspect of selecting from and prioritizing the absorbed knowledge, that is provided by customers. By customer needs, we mean the customer's expectation on the benefit that a product or service will provide to them (Griffin and Hauser, 1993). This focus allows us to study the specific details in order to provide explicit managerial implications. Furthermore, as Javalgi et al. (2014) outlined in their research, in a business-to-

business setting directly communicated customer needs are important influences. Nevertheless, we do not restrict our analysis to the needs the customer communicates directly. We also include what our case company perceives as a customer need based on information the customer provides. In this we refer to the fact that a need may not be communicated explicitly, but inexplicitly through a comment or throughout the overall discussion.

We also take a first step in connecting the research areas of absorptive capacity and new product development processes. We do this by applying the findings in product development process literature in selecting ideas, to the knowledge acquisition and assimilation dimension of absorptive capacity. In return, we use the fact that absorptive capacity literature describes the dimension of acquiring knowledge. In product development process literature this relates to the content that enters the selection process to begin with. By this we mean ideas, or information that stimulate more ideas to be selected and prioritized. Within our research, we provide an empirical example of the difficulties within the specific step of selecting ideas based on customer needs. We present this example via a single case study.

#### 1.4 Research question

Absorptive capacity is a wide field of research, just like the aspect of idea selection in new product development, that we aim to connect. After an iterative process, taking into account observations in the case company and initial informal interviews, we selected a specific problem. Based on the purpose outlined in chapter 1.3, we pose the following specific research question:

***How does a company prioritize within knowledge absorbed from their customers and what influences how this prioritization takes place?***

Our initial assumption is that there will be multidimensional findings within corporate culture, innovation processes, or industry expertise. Therefore, we realize the research question will not yield simple answers. By answering this question and analyzing our findings on absorptive capacity, as well as on product development background, we will take a step towards merging the fields of research.

The research question connects to established literature. As we outlined, a lot has been written about the effects of having or not having absorptive capacity. We contribute to the understanding of the concept by focusing on what Zahra and George (2002) call the “potential absorptive capacity” in detail and how it can help a company to select its priorities. We see a clear relationship between absorptive capacity and product development processes. Product development processes use funnels to select knowledge, innovative ideas and projects (Cooper and Kleinschmidt, 1986; Hakkarainen and Talonen, 2014). In the fuzzy front end, a selection is performed more loosely and continuously than in the formal process (Florén et al., 2012). That concept connects to the aspect of prioritization in our research question.

## 1.5 Case company

We conduct our research within a case company and the external environment it operates in. To illustrate the context of our research in more detail we provide a brief introduction of the case company in this section.

The case company was founded in 1991 in Lund, Sweden as a platform to commercialize bacteria strains as finished products (best known as probiotics) in the biotech industry. The bacteria strains were discovered by a group of researchers at the University of Lund during a visionary study to verify if introducing the right sort of intestinal bacteria could help save the lives of critically ill patients (“Our history,” 2014). The company and therefore the research context are characterized by a science-oriented mindset and employees with a high level of education, many of them holding a PhD. This information could be relevant to our research question as several employees describe it as “an R&D company”.

The case company at hand has two business units, Consumer Health Care<sup>1</sup> and Functional Food<sup>2</sup>. Consumer Health Care is most important in regard to revenues, and the company experiences high growth rates, but acts within an established, low risk business. Less so the Functional Food business unit, which will be the focus of our research. This business unit has been performing steadily for a number of years. Currently, extensive efforts to generate growth within this business unit are made. Hence, the case company interacts with business-to-business customers and partners in the food industry, who pose new tasks and questions. Therefore, we specifically mean business-to-business customers, when talking about customers throughout this paper. Increased interaction with customers and partners leads to a situation that creates many new stimuli and challenges for the case company. Besides some constraints due to regulations in Europe that had to be overcome, there have been some product innovations that formally enable our case company to expand the business globally. Therefore, the key issue is to really understand what the customers expect from the case company and its offering. Furthermore, it is crucial to innovate on the product offering, as the current offering does not lead to many successful new business deals in Functional Food. There are many ideas on how to do so, stimulated by the information obtained from the customer, but they seem to fail at prioritization. The company is working towards change and growth, but it experiences a unique situation of simply absorbing too much knowledge and creating too many ideas in this business unit. Hence, we place our research in Functional Food. This provides us with the chance to observe how the company faces an uncertain and new environment and how it manages the great amount of new knowledge that has been absorbed from the customers.

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<sup>1</sup> Consumer Health Care products are basically supplements in the form of tablets or capsules.

<sup>2</sup> Functional Food is a category of food products that contains additives, that provide a certain health benefit for the consumer above the nutritional value of the food product itself (case company definition).

## 1.6 Key concepts

We identify some key concepts in literature that our research question relates to:

Concept	Definition	Author
Absorptive capacity	The company's ability to transform externally obtained information in to commercial offerings. The two basic dimensions are potential and realized absorptive capacity. In our case we relate absorptive capacity specifically to information obtained from the customer.	Zahra and George (2002)
Customer Knowledge	Knowledge about customers and competitors in the market.	De Luca and Atuahene-Gima (2007)
Customer Needs	"A description, in the customer's own words, of the benefits to be fulfilled by the product or service."	Griffin and Hauser (1993, p. 4)
Innovation	"Innovation is [...] about recognizing opportunities for something new and implementing those ideas to create some kind of value."	Tidd and Bessant (2014, p. 16)
Idea selection process (Funneling)	Process, by which innovative ideas are evaluated under defined criteria, (re-) combined and only taken forward, if there is a fit between the idea characteristics and the prior defined criteria.	Cooper and Edgett (2010)
Fuzzy Front End	Stage of new product development, before ideas enter the formal process. Characterized by somewhat unstructured, often creative activities to generate, assimilate, and refine ideas.	Florén et al. (2012)

*Table 1 - Key concepts*

### 2.1 Absorptive capacity

#### 2.1.1 A basic definition of absorptive capacity

Absorptive capacity literature explores the company's ability "[...] to recognize the value of new, external information, assimilate it, and apply it to commercial ends." (Cohen and Levinthal, 1990, p. 128). The authors also highlight a strong relationship of an organization's absorptive capacity, organizational learning and R&D spending. Recognizing this definition, we place our research within the concept of absorptive capacity. In detail, we investigate the stage in the process, where a selection from the acquired external knowledge that the company collects from customers is made. In a case company we observed, that a special aspect within this is to select information from the external knowledge collected and the ideas it stimulates. Hence, within this literature review we make a detailed analysis of absorptive capacity research, emphasizing the specific aspects related to this problem.

A basic definition of the concept itself is provided by Cohen and Levinthal (1990), who portray absorptive capacity as a concept strongly related to organizational learning, communication, and research and development. Organizational learning is a determining factor for absorptive capacity and prior knowledge will encourage recognizing valuable information and learning, if it can be related (Cohen and Levinthal, 1990). However, this path dependency creates the challenge to facilitate learning in areas with little or no prior knowledge as well. Cohen and Levinthal (1990) argue, that here lies a risk of staying behind in significant developments. In their work, research and development is the main facilitator of organizational learning, but it depends on inter-organizational communication. Here, they emphasize the roles of gatekeepers, who can be individuals and groups at the interfaces of business units and the interface of the company and the external environment. According to Cohen and Levinthal (1990), the role of these gatekeepers is to collect relevant knowledge, translate it if necessary and spread it to the appropriate individuals.

An often cited extension of this basic concept is provided by Zahra and George (2002), who place absorptive capacity within the framework of dynamic capabilities. Dynamic capabilities in short, are abilities of changing *how* a company performs certain activities (Teece et al., 1997; Wang and Ahmed, 2007; Zahra et al., 2006). Teece et al. (1997) propose that successful companies react to market changes faster than the competition and that they do so by constantly integrating, redefining and renewing competences that are needed for these fast responses. The latter ability the authors term dynamic capability. Zahra et al. (2006) research the dynamic capability itself. They say that dynamic capabilities are "[...] abilities to reconfigure a firm's resources and routines in the manner envisioned and deemed appropriate by the firm's principal decision-maker(s)." (Zahra et al., 2006, p. 924). In this, they acknowledge that there is a dimension of managerial choice within dynamic capabilities. This is an interesting aspect for our research, since on initial observations in our case company, we noticed that many managerial choices have to be made within the selection process of innovative ideas.

Coming back to absorptive capacity, Zahra and George (2002) argue, that it is part of the organizational abilities that facilitate change. Therefore, absorptive capacity indeed constitutes a dynamic capability. We adapt this definition, as we recognize the importance of developing dynamic capabilities. However, the authors do not indicate how changing the way the company explores, assimilates and exploits knowledge could be facilitated. This is not a gap that our research will fill, but our findings could lead to further research in this area.

## 2.1.2 Dimensions of absorptive capacity

To further explore absorptive capacity, we will now provide a detailed analysis of its features. Figure 1 shows the dimensions of absorptive capacity as proposed by Zahra and George (2002, p. 192).

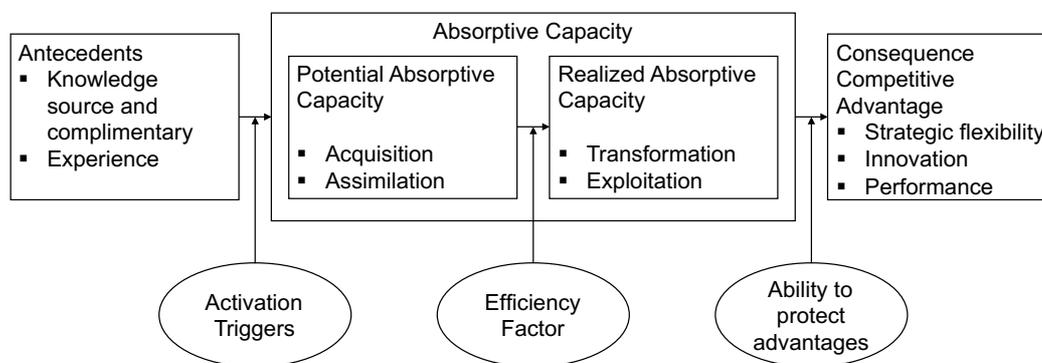


Figure 1 - Dimensions of absorptive capacity according to Zahra and George (2002, p.192)

From initial observations in our case company, we know that collecting higher amounts of knowledge does not necessarily mean a higher or better output, but has literature also addressed this already? Besides categorizing absorptive capacity as a dynamic capability, Zahra and George (2002) generally view absorptive capacity as an ability to facilitate a multidimensional process. Similar to Cohen and Levinthal (1990) they mention collecting, assimilating and utilizing (exploiting) knowledge. However, they explore the framework much further. They build a model of absorptive capacity based on two major phases in the process: “potential absorptive capacity” (related to knowledge collection and understanding), and “realized absorptive capacity” (Zahra and George, 2002, p. 192). Within these two main aspects they identify four sub-dimensions of absorptive capacity: Acquisition and assimilation (potential absorptive capacity), and transformation and exploitation (realized absorptive capacity). The acquisition and assimilation include all capabilities needed to collect and understand external knowledge. Capabilities in transformation and exploitation facilitate the development of concrete innovations based on the collected external and internal knowledge. An interesting part of this framework is presented in the “efficiency factor”, a measurement of how good the company is at creating value from the assimilated knowledge (Zahra and George, 2002, p. 191). The authors argue that not all companies do equally well in this dimension. Therefore, as we mentioned before,

collecting a lot of knowledge does not necessarily lead to a higher output. We argue that selecting the right knowledge and ideas is part of potential absorptive capacity and therefore specifically look for literature establishing this relationship.

Within the special aspect of selecting and prioritizing the absorbed knowledge significantly less research can be found. Sáenz et al. (2014) discuss a funneling capability included in the assimilation dimension of absorptive capacity. They argue that it enables the company to distinguish between valid and invalid knowledge, whereas validity of knowledge depends on the company context. Bröring and Leker (2007) look at a firm's absorptive capacity in converging industries. This means, in situations where the company is less likely to have prior industry knowledge and experience (both part of absorptive capacity according to the authors). In this respect, they argue that companies "[...] generally face problems in idea generation, evaluation and selection which are due to limited familiarity with the relevant (converging) knowledge basis critical for framing and understanding ideas." (Bröring and Leker, 2007, p. 167). The authors concluded that not enough market knowledge hinders the company from selecting ideas effectively. However, we consider this conclusion as not enough. We challenge that simply learning more about the market will solve the problem of not understanding customer needs and not being able to prioritize within gained knowledge. We see that acting within these high levels of uncertainty can be a general problem that is not only applicable when moving into a new industry. Furthermore, we see a research gap in exploring the reasons why companies find it difficult to select and prioritize knowledge and ideas especially in respect to customer needs. Limited knowledge may be one factor, but we feel that in order to make a contribution there should be research on what these limitations are and what other limitations may not have been explored yet.

## 2.2 Customer knowledge

As early as 1990, Prahalad and Hamel (1990, p. 80) wrote:

“The critical task for management is to create an organization capable of infusing products with irresistible functionality or, better yet, creating products that customers need but have not yet imagined.”

An important asset to fulfill this task is to know about one's customers; to have insights in to their needs and wants, their problems and inconveniences. This knowledge about customers, but also about competitors is generally defined as market knowledge (De Luca and Atuahene-Gima, 2007; Li and Calantone, 1998). As this general definition only partly serves to focus of our thesis though, we investigated the term customer knowledge as a dimension of market knowledge.

Javalgi et al. (2014) found, that in a business-to-business context, like the one provided in our research background, customer-orientation is a success factor. Key information, that is important for new product success, is provided from the customer directly to the sales people of the company. This information, absorbed from the customer to specify new products and projects, is what we generally term customer

knowledge in this paper. Customer needs, defined by Griffin and Hauser (1993, p. 4) as “a description, in the customer’s own words, of the benefits to be fulfilled by the product or service” are the most important piece of information in this respect.

Learning about customer needs, understanding, and using them to commercial offerings, is what Li and Calantone (1998, p. 16) term the “Customer knowledge process”, consisting of “customer information acquisition, interpretation, and integration”. Although the authors do not term the customer knowledge process as part of absorptive capacity, there are parallels to the process of knowledge acquisition, assimilation, transformation, and exploitation as described by Zahra and George (2002).

In this paper, we focus on absorbing customer knowledge, and within that on customer needs; knowledge about what benefits customers expect from a new product or project. Absorptive capacity is the capacity of a firm that acquires, prioritizes, assimilates, transforms, and exploits customer knowledge.

## 2.3 Selection of ideas within new product development processes

### 2.3.1 Selection within the formal process

As stated before, we propose a relationship of absorptive capacity and the selection of ideas within new product development processes. In their early approach Cooper and Kleinschmidt (1986, p. 74) arrive at 13 commonly accepted steps in the product development process:

“Initial screening, Preliminary market assessment, Preliminary technical assessment, Detailed market study/ market research, Business/ financial analysis, Product Development, In-house product testing, Customer tests of product, Test market/ trial sell, Trial production, Pre-commercialization business analysis, Production start-up, and market launch”.

Within these steps not all projects make it to the end and managerial decisions have to be made. To facilitate these some companies apply a “Gate-Stage” process (Chao et al., 2014; Tidd and Bessant, 2014, pp. 171–172). Here, ideas are funneled first and then, as the project develops it needs to pass several stages of evaluation. In relation to that, Hakkarainen and Talonen (2014, p. 65) argue: “The outcome is dictated by what is fed into the funnel”. Therefore, in the following paragraphs we will investigate what has been written about idea selection in the new product development process and its difficulties.

Cooper and Edgett (2010) propose that innovation objectives should be clearly defined and placed within a strategic focus area. Hence, innovative ideas that are out of scope should not be taken forward. Other authors mention more explicit selection criteria such as “user value”, “originality”, and “producibility” (Magnusson et al., 2014, p. 316). Options also include financial criteria and the prospect of generating success for the company (Hakkarainen and Talonen, 2014). In their more traditional approach Cooper and Kleinschmidt (1994) write about the importance of speed in the innovation process to attain competitive advantage. In relation to selecting the right

innovative project they state that: “[...] some firms in [their] study had developed a set of screening criteria, against which incoming projects or ideas were evaluated.” (Cooper and Kleinschmidt, 1994, p. 394). However, they do not mention how the companies in their study defined these selection criteria or what difficulties they encountered in doing so. Later, Cooper et al. (2001) again highlight the importance of portfolio management and explore the specific way of how companies carry out the specific activities related to it. They find that while the most common selection criteria for innovation projects are “strategic fit”, “financial reward”, “risk and probability of success”, and “timing”, successful companies are indeed the ones, that employ non-financial measures over financial ones (Cooper et al., 2001, p. 372).

There seems to be a broad scope of predefined criteria in literature, so how can one explain the difficulties we observe in our case company? Gutiérrez et al. (2008) mention the organizational acceptance. They argue that decisions in innovation often have to be made in a dynamic, informal and unplanned manner and this receives little organizational acceptance as it creates a sense of insecurity. Therefore, organizational acceptance represents one of the difficulties we identify in the idea selection process. Cooper and Kleinschmidt (1986) not only investigated the stages in product development in their study, they also asked companies to rate their abilities in the 13 stages mentioned earlier on. Initial screening and the market assessment steps scored among the lowest. Needs for improvements included a requirement for more details and more structured processes. Hakkarainen and Talonen (2014, p. 65) notice that “funneling might have some real-life limitations”. Among them they see the aspect of making sure the right ideas enter the funnel as well as sociological factors that make it difficult to terminate projects. Here, they highlight that, having made emotional and financial investments in to a project already, prevents people from terminating an it. The authors also mentioned, that in many cases companies face an abundance of ideas that block the funneling processes. This means, that there are too many ideas that exceed funneling capabilities.

We see that a lot has been found in this field of research that can start filling the gap we previously identified in absorptive capacity research. However, many studies generalize their findings and apply them to decision making processes in product development processes in general. What we observe in reality, is a company that faces difficulties to reach that stage as it absorbs too much information from its customers. Ideas that generate from this information are difficult to prioritize for the company. From the present research we could not identify detailed reasons of why this process presents difficulties.

### 2.3.2 Selection at the fuzzy front end

There is a dimension, where ideas are created, merged, and adapted, and eventually entered in to formal selection mechanisms. This stage, that takes place before the formal product development process is initiated, is termed the fuzzy front end of innovation (Florén et al., 2012; Koen et al., 2001).

Activities within this stage before the new product development process are often less structured, than in formal product development processes which we outlined in chapter 2.3.1 (Koen et al., 2001). They are characterized by the presence of many ideas and pieces of information, that are assimilated and formed in to product concepts (Florén et al., 2012). The product concept according to Florén et al. (2012) contains a product idea with a basic description of a product and the customer benefits it is going to create, together with some quantitative estimations on the target market, positioning and cost requirements for developing the product. However, the authors also highlight, that these quantitative measures can merely be estimations due to the little refinement they receive before entering the formal process.

Interestingly, many authors suggest to integrate some form of screening, selection, or prioritization mechanism within this stage to enhance new product development (Florén et al., 2012; Hart et al., 2003; Koen et al., 2001; Martinsuo and Poskela, 2011). These can be constituted for example by reviewing feasibility, business potentials, and technology requirements of the idea, which should be done continuously by the employees working with the idea, but sometimes also by an external institution, such as a dedicated committee (Florén et al., 2012). Koen et al. (2001) suggest, that it could also be an individual choice, but that there is a lack of investigation to more formal criteria. However, once formulated, these formal criteria should be enacted less strictly as in the formal new product development process. They should however consider “market and technology risks, investment levels, competitive realities, organizational capabilities, and unique advantages, along with financial returns.” (Koen et al., 2001, p. 51). Other authors state, that there are company-specific market-related and technology oriented criteria (Hart et al., 2003; Martinsuo and Poskela, 2011).

We see some parallels to absorptive capacity in the richness of information that seems to be present in the fuzzy front end on innovation. However, looking at the present literature we also see, that it is difficult to define selection criteria, especially for the stages of idea and product concept generation. Although fuzzy front end literature fails to provide us with a set of criteria that we can test in the light of absorptive capacity, we see some possible integrations which we will outline in chapter 2.4.

## 2.4 Relation of the theoretical concepts

The model in Figure 2 shows an integration of absorptive capacity and the new product development process. In this chapter we want to establish the relationship between absorptive capacity and the idea selection processes.

First of all, absorptive capacity and the capability of selecting ideas are two concepts placed within the same overall category of dynamic capabilities. Furthermore, Killen and Hunt (2010) define project portfolio management as a dynamic capability. The same definition is made for absorptive capacity (Zahra and George, 2002). Therefore, a first connection of the two concepts is found by placing them within the same overall framework.

The capability to select is mentioned in both concepts, but only developed in detail in the research on new product development processes. We have shown in chapter two that some authors see the ability to select as part of absorptive capacity (Bröring and Leker, 2007; Killen and Hunt, 2010). However, they do not explore the way companies prioritize the information they have gained from the customer. In our model (see Figure 2), the beginning stages of the product development process, the fuzzy front end (Florén et al., 2012; Koen et al., 2001), relate to the point in time, when information is acquired through absorptive capacity processes. There are many pieces of information, and they need to be recombined, prioritized, and structured. Ideas are created, filtered and transformed into projects, just as described in the research on product development. Like the authors of established literature we assume that criteria applies (Cooper and Kleinschmidt, 1986; Hakkarainen and Talonen, 2014). Projects then have a life cycle of their own in the company. Some of the findings of prioritization of ideas may apply to the prioritization of projects. Still, we specifically exclude the cycle a project goes through from our analysis, as we are focusing on the point in time before ideas enter this cycle. Important for our research is, that the purpose of entering ideas in to the project, or transformation phase is the the creation of commercial offerings and products.

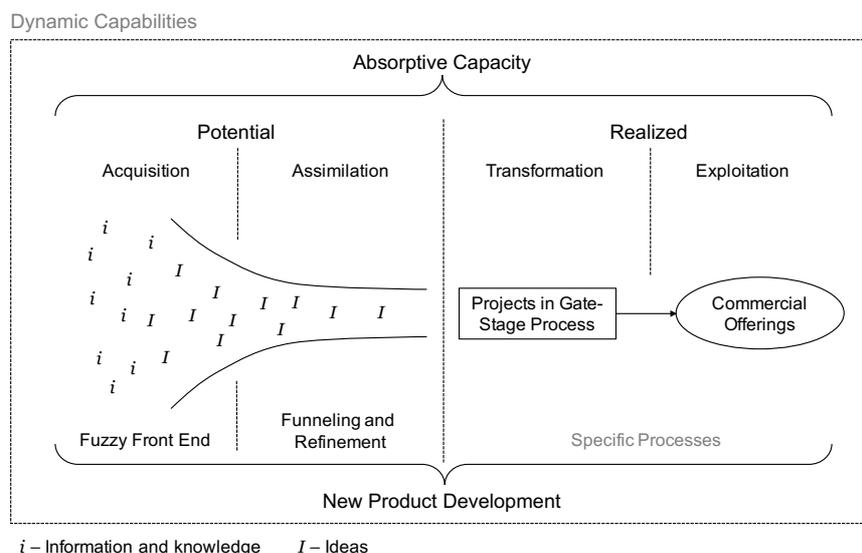


Figure 2 - Framework of absorptive capacity and product development processes

## Chapter 3: Method

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### 3.1 Overview

#### 3.1.1 Summary of our research method

We conducted a single case study in a company that operates in the biotech industry. Here, we focused on one of their business units which has recently undergone a change from serving one big customer towards a more market oriented focus. In this business unit we observe the special problem of prioritizing within the knowledge absorbed from the customer and the ideas this stimulates. To investigate this phenomenon, we used in-depth semi-structured interviews to collect information about different customer encounters and projects that the business unit has been or is involved in. We collected information on how the company gathers customer needs and how they prioritize within the information they have absorbed from the customer to answer two research questions. This also included data on how a selection of ideas that are stimulated by the information obtained from the customer takes place.

In theory, qualitative interviews have a cross-sectional character (Bryman and Bell, 2011). By discussing the interviewee's experiences in past and ongoing projects we add longitudinal aspects to our research. In the following we provide an overview about how we performed our research in form of a table. Its content we will detail in the following sub chapters.

### 3.1.2 Key research method dimensions at a glance

Dimension	Chosen design	Explanation
Research strategy (chapter 3.2)	Qualitative	"[...] concerned with words rather than numbers [...]" (Bryman and Bell, 2011, p. 386).
Epistemology (chapter 3.2)	Interpretivism	Research can not be purely objective and methods need to be adapted when investigating social phenomena (Bryman and Bell, 2011).
Ontology (chapter 3.2)	Constructionism	We believe organizations are social constructions. Constructionism argues, that social constructs are influenced and build by the social actors within them (Bryman and Bell, 2011).
Approach (chapter 3.2)	Inductive	Generation of new theory rather than testing of existent theory (Bryman and Bell, 2011, p. 27). Deductive elements are found in the fact, that we rely on theory as well as initial observations to find the focus of our research. However, the overall approach is inductive.
Overall research design (chapter 3.2)	Single case-study design	Case study in a single company with longitudinal aspects.
Generalization (chapter 3.2)	Analytical	We derive a generalizable theory, not a probability assumption for a population (Yin, 2014).
Methods of data collection (chapter 3.3)	Company documents	We use company documents such as sales presentations and idea presentations. However, like established researchers suggest, semi-structured interviews are our main data source (Gioia et al., 2013).
	Informal interviews and observations	Informal interviews and observations guided us in finding scope and focus of the research.
	Semi-structured interviews (internally)	Our main mean of data collection are semi structured interviews with selected employees. Tools we use for data collection are interview guides, recording and transcribing.
	Semi-structured interviews (externally)	More relevant for the business development project, will be used where applicable.
Methods of data analysis (chapter 3.4)	1 <sup>st</sup> step analysis	Sticking closely to the language of one interviewee in isolation we generate as many codes as needed to capture their experience (Gioia et al., 2013).
	2 <sup>nd</sup> step analysis	We search for similarities and differences between the single interviews and generate overarching concepts (Gioia et al., 2013).
	Aggregation	We categorize the emerging concepts in to overarching dimensions (Gioia et al., 2013).
Theory building		We explain the relationships between the different concepts (Gioia et al., 2013).

Table 2 - Overview research methodology

## 3.2 Research design and process

### 3.2.1 Epistemology and ontology

As researchers, we work under the assumption that companies and organizations are social constructs, and that phenomena that can be observed within them are influenced by their social actors. In our case, this means that the way, the company as a whole absorbs customer needs and prioritizes within what they have absorbed from the customer is affected by the (social) actions of its individuals. Therefore, from an epistemological stance we relate to interpretivism; a philosophy that is built on the notion that research can not be purely objective and that some adaptation of the research methods is needed for researching social constructs (Bryman and Bell, 2011). In line with this our research relates to constructionism; a research ontology that is based on the ground assumption that social constructs are influenced by the social individuals acting within them (Bryman and Bell, 2011). In our case this means, that the way the company absorbs customer needs and how they prioritize within what they have absorbed from the customer is not purely a strategic matter. We believe that the social structure, social behavior patterns of the company's individuals, and company culture for example influence the structures for how customer needs are absorbed. The same applies for how the company, but also the individual prioritizes within what they have absorbed from the customer.

### 3.2.2 Research strategy, approach, and design

Our research strategy is of qualitative nature. We aim to discover new concepts to build theory in relation to how companies absorb customer needs and how they prioritize within what they have absorbed. According to Gioia et al. (2013), this strategy is appropriate as a quantitative strategy would be more or less bound to test an existing construct. Therefore, our ability to find new insights to how companies absorb customer needs and how they prioritize within what they have absorbed is greater when employing a qualitative research strategy. In relation to the generation of new theory, Bryman and Bell (2011) mention, that qualitative research inherently implies an inductive approach. "Inductive" means, that we generate new theory, rather than testing existent theory (Bryman and Bell, 2011, p. 27).

The overall research design of our study is a case study design. As Yin (2014, p. 16) proposes we investigate "a contemporary phenomenon (the "case") in depth and within its real-world context". This part of Yin's definition relates very much to our research, as we aim at generating new theory in relation to prioritization of absorbed knowledge. To do so, taking the context of our case company in to account is a must, as so little is known about the phenomenon we investigate, and before the data collection we find it hard to distinguish between mere context and influences on how the company prioritizes.

We decided to review the efforts our case company makes within the business unit Functional Food as one overall case. We made this decision based on initial observations in the case company. Many different efforts to collect and absorb customer

needs are made in the Functional Food business unit, but prioritization of ideas has proven to be a difficult subject and few projects have been completed. As few projects have actually been completed, reviewing every single customer encounter as a separate case would provide us with an incomplete picture. Furthermore, we can answer our research question by looking at all the customer encounters and ideas. A categorization of the data will be part of the data analysis, but a case-by-case categorization is not appropriate to our findings.

### 3.2.3 Research process

In terms of a typical inductive research process, Bryman and Bell (2011) outline that data collection takes place before theory is developed and tested. Hence, we can not say that our research process has followed an entirely inductive approach. As we work based on our findings within a case study, we agree with the principle of grounded theory to “generate theory out of research data by achieving a close fit between the two” (Bryman and Bell, 2011, p. 715). But we can not say we have followed a strict grounded theory generation process either. In line with Gioia et al. (2013) we agree, that the rules of grounded theory should be respected in terms of not pre-explaining problems. This would limit our ability to generate new concepts and contribute to literature. However, after initial data collection through observations, field notes and reading company documents, a thorough review of literature helped us to find out where our observations matched already existing theoretical concepts. Of course we based our readings on the data we collected, however, the interesting aspects in literature and research gaps we identified, also affected the focus of our research question and consequently the data we collected to answer it.

Our research question was developed in an iterative process. The authors we consulted, suggested that this is a fruitful way to work, as during the process of qualitative research new concepts emerge, that oblige the researcher to re-evaluate findings and pre-defined assumptions (Bryman and Bell, 2011; Gioia et al., 2013).

### 3.2.4 Generalization

We have come across “a great teaching case [...] predicated on finding the specific case that exemplifies a general principle that can be taught as a transferable generality” (Gioia et al., 2013, p. 24). Firstly, the situation of our case company as such may be unique in terms of their market position. However, the structural change of placing more market focus on a business unit is transferrable to other companies and industries. Secondly, the special aspect of working based on information provided by customers may also be transferrable to other business-to-business companies.

This is a valid form of generalization, as case studies “are generalizable to theoretical propositions and not to population or universes” (Yin, 2014, p. 21). With this research we aimed to generate theories, that can be transferred to other contexts or companies, and studied in that specific environment. Therefore, like Yin (2014, p. 21) proposes, we refer to the generalizability of our study as “analytic generalization”.

### 3.3 Data collection

In our business unit of focus, few new projects have been completed. Business revenues have mostly been created from ongoing business, that emerged at the point of foundation of the case company. This makes a case-by-case analysis difficult as we can neither compare successes and failures, nor completed projects in the different business units. Another way of comparison would be to analyze internal and external views on the ongoing projects, but access to external data through interviews with (potential) customers was too restricted to collect substantial data. Therefore, we used an in-depth analysis of internal data to answer our research questions.

Our first method of data collection were informal interviews and observations. These we used especially in the first time of the research project, but also throughout the later stages. Together with information obtained from company documents, such as sales presentations, the gathered information was mostly used to define scope and focus of this thesis. Observation and interview notes served the purpose of preserving the information we gathered from informal conversations.

#### 3.3.1 Interviewee selection

As suggested by Gioia et al. (2013) semi-structured interviews were our main source of data. We interviewed employees that we selected based on certain criteria. Our business unit of focus, Functional Food, represents our first criteria. We want to find out how customer needs are absorbed and how information provided by the customer and ideas that this triggers, are prioritized. Therefore, interviewees must be involved in acquisition of information or selecting information and ideas. Hence, the first criterion is the contact to (potential) customers in Functional Food. We choose to stay within the focus business unit Functional Food. However, due to the small number of employees in the case company, some of our interviewees had responsibilities in both business units of the company. Therefore, we must recognize the fact, that some of the answers to our questions may not solely apply to the way business is conducted in our business unit of focus. We acknowledged this fact in our interview guide, but decided to view it as a manageable trade off, as the exclusion of interviewees with responsibilities would have decimated the number of interviews.

The second criterion is involvement in the decision to implement or discard ideas in Functional Food. The table below shows a list of selected interviewees and the selection criteria they meet.

Interviewee	Position	Criteria 1	Criteria 2	Date
Interviewee 0 (Test)	Former Director Functional Food	X		21.03.16
Interviewee I	CEO	X	X	21.03.16
Interviewee II <i>Commercial</i>	Business Developer Functional Food	X	X	04.04.16
Interviewee III <i>Technology</i>	Specialist product- and application development Functional Food	X	X	05.04.16
Interviewee IV <i>Commercial</i>	Director Functional Food	X	X	07.04.16
Interviewee V <i>Technology</i>	Director Operations	X	X	08.04.16
Interviewee VI <i>Technology</i>	Head of applications & production	X	X	13.04.16
Interviewee VII <i>R&amp;D</i>	VP R&D	X	X	13.04.16
Interviewee VIII <i>Commercial</i>	VP Marketing and Sales	X	X	14.04.16

Criteria 1: Contact to (potential) customers in Functional Food

Criteria 2: Involvement in idea implantation in Functional Food

*Table 3 - Selected interviewees*

### 3.3.2 Interview preparations

As we conducted semi-structured interviews we prepared an interview guide. The interview guide contained questions related to the current thesis and to a business development project we conducted in the company at the same time. To answer our research question, one set of questions dealt with the way how the company absorbs customer needs. We asked the employees that have direct contact to customers in Functional Food or that are working on customer projects, what the most important customer needs are in their opinion and how they find out about them. Centering the questions on Functional Food customers was a decision we made based on the observation, that customer needs in this area of business differ substantially from customer needs in the other business unit of the case company.

Provided with some examples of where customer knowledge comes from, and how it is absorbed, we proceeded to finding out what happens with it. We posed questions about the formal selection of ideas but also about the interviewee's personal selection. Here we asked for example, what kind of information she or he reacts to immediately after absorbing it from the customer, and how. Interviews were recorded and transcribed for analysis. From initial informal interviews we knew, that "not having enough time" or "lack of focus" are issues for many employees in the company. We

anticipated this answer in the interview guide and prepared it in a way that allows us to follow up on these issues. By doing this we want to avoid overlooking the fact that “lack of focus” or “no time” might stand for a cultural/ strategy/ motivational issue that will provide more insights on how companies absorb customer needs and how they prioritize within what they have absorbed. When setting the interview, we tried to make the interviewee as comfortable as possible. Meetings were held at a location of their choice, where all interviewees chose one of the meeting rooms at the case company. Like Gioia et al. (2013) suggest, we also offered anonymity to the interviewees. However, just like the authors advise, we did not offer the interviewees a veto right to the information and publication.

### 3.4 Data analysis

We apply a multi-step analysis that begins with analyzing the individual experience of each interviewee and ends with aggregating the individual experiences of all interviewees in to a generalizable model (Gioia et al., 2013). We find this method of analysis especially applicable because of this multi-step approach. We will analyze the findings of each interview in isolation first and then combine the different findings to find general trends across the different interviews. This helps us to cover individual experiences, opinions and beliefs of our interviewees in detail and provides the safety to not overlook something. The challenge then is to decide if and how these individual findings can be generalized in to overall themes. The last step is to illustrate how these themes interact. This again, we could not find out without talking to the individuals. We believe, finding out why they absorb customer needs in the way they do and why they prioritize what they have absorbed from the customer in a certain way, could hardly be done in any other way.

For the first step of analysis we focus on the interviews in isolation. Using transcripts of the recorded interviews we developed codes for the information the interviewees provided. Like Gioia et al. (2013) suggested, we did not limit ourselves in this step and used the interviewee’s language to generate as many codes as needed to capture their experience. From initial observations we knew, that the business unit has not been the area of focus for the company until recently. Hence, we expected to be confronted with answers of “not allocating enough time” when trying to find out how the company gathers customer needs and why it is so difficult to prioritize within what they have gathered. We anticipated this and followed up on these answers during the interview, when necessary.

In the second step of analysis we tried and reduced the number of codes by aggregating the similarities and differences in the different experiences we are able to capture (Gioia et al., 2013). Like the authors suggest, we are aware that due to sticking to the interviewees’ terms and explanations in step one, we are in risk of simply adapting their views. Hence we apply what Gioia et al. (2013, p. 19) term the “devil’s advocate” method. As we are two researchers, we assigned an outsider role to each interview transcription. As the outsider, one of us is going to try and question all the findings

from this particular interview before they enter the more general categories we intend to build.

Having evolved from capturing individual experiences and aggregating them in to more generalizable concepts we categorize these concepts in to “aggregate dimensions” to complete our data structure (Gioia et al., 2013, p. 21). Based on the research method outlined by Gioia et al. (2013) by creating aggregate dimensions we mean sorting the emerging concepts in to overall dimensions. The data structure then portrays the most important findings from individual code to transferable concept and their belonging in to different dimensions. We believe this is an important step to help us fulfil the “transparency” criterion as suggested by Bryman and Bell (2011, pp. 399–400). The data structure shows the reader how we related different individual experiences of our interviewees and where we saw transferable concepts that apply for the organization. It shows them what dimensions we chose to apply and provides evidence for our assumptions. As Gioia et al. (2013) we will strengthen this kind of evidence by using illustrative quotes, again showing the reader what the interviewee said and how we interpreted it. Figure 3 below shows a schematic picture of our data structure, adapted from Gioia et al. (2013, p. 21).

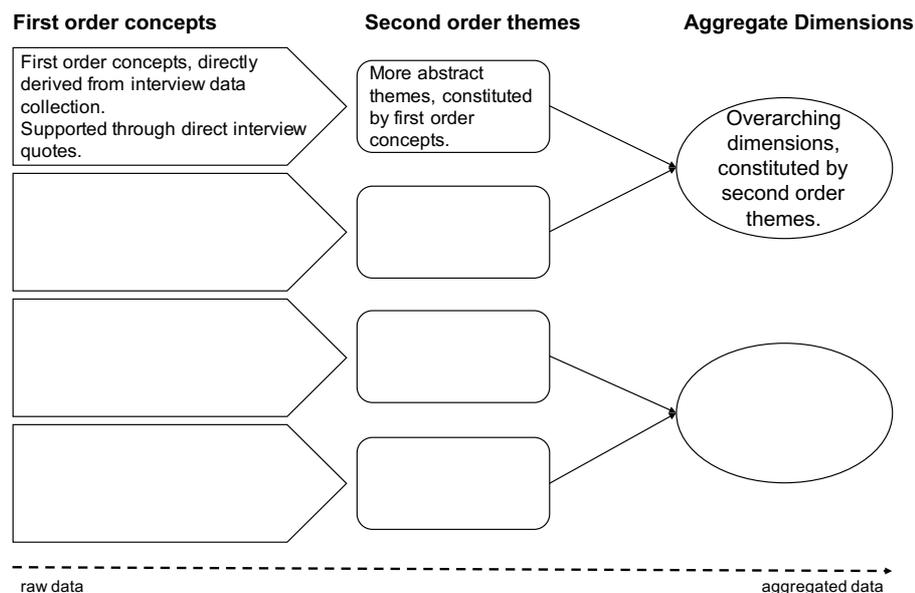


Figure 3 – Schema for the data structure

Importantly, we want to show how we develop our findings from raw interview data to more aggregated, abstract dimensions. To do so, we group similar data. However, in this step we do not show the relationship among the dimensions we find.

Process-wise we went back and forth between the data we collected, emerging themes and concepts, and relevant literature (Gioia et al., 2013). As suggested in Gioia et al. (2013, p. 21) this helps us to “[...] not only to see whether what we are finding has precedents, but also whether we have discovered new concepts.”. Furthermore, we also followed the mentioned authors in terms of being flexible in adjusting the research question and interviews according to emerging findings from the analysis. We

believe that the aim of our research, to discover something new, inherently prevents us from knowing all the right questions to ask from the start.

### 3.5 Theory building

The data structure should not be the end of our findings. Like Gioia et al. (2013) suggest, we aimed to build a framework based on the data that aims to explain the relationships between the concepts we identified but also build a bridge back to existing theory.

Firstly, we try to explain the relationship between the themes we identified in relation to how a company prioritizes knowledge that they absorbed from the customer. As this is new theory, and our literature review has shown the lack of relevant publications, this part of our data analysis is mostly detached from existent literature.

Secondly, we found that there seem to be many criteria in existent theory on idea selection that should help a company prioritize the information and ideas they absorbed from the customer. These we can relate to the findings of how a company in reality prioritizes.

## Chapter 4: Findings

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In this chapter we will present our findings. Throughout the data collection we saw, that the way the company absorbs knowledge, actually has an influence on the way they prioritize within what they have absorbed.

We are aware, that according to Cohen and Levinthal (1990, p. 4) absorptive capacity “depends on transfers of knowledge across and within subunits” as well as on absorbing knowledge. However, this dimension of absorptive capacity is not the focus of our thesis and we will only provide one representative quote that illustrates our observations:

“I don’t see it as a big problem in knowledge transfer between people because we only have a few people and they’re normally involved with all the projects.”  
(Interviewee I)

Right now with the structure of the company knowledge sharing does not appeal as an area of conflict to us. Therefore, we continue our analysis under the assumption, that in the context of the current situation, sufficient knowledge sharing takes place. Hence, the structure of this chapter presents findings in relation to how the company absorbs knowledge in chapter 4.1. In chapter 4.2 we present the findings on how the company prioritizes within this absorbed knowledge once it has entered the company.

### 4.1 Different sources of knowledge determine absorbing mechanisms and influence prioritization of the absorbed knowledge

We find that in our case company there are different ways of absorbing knowledge from different sources. Customer knowledge is primarily absorbed through direct contact between the sales department of our case company and the customer company. The content of these direct discussions is mostly the customer’s specific need in relation to a future product application, or a new business opportunity. This leads to a joint project with the aim to realize the customer’s want and needs. Furthermore, internally the absorbed knowledge stimulates ideas not only to solve the specific customer’s problem, but also to ideas on how to innovate on products and processes in general. As shown in the data structure below, there also are other sources of knowledge, such as research data and previous experience.

In relation to our research question, we find, that different knowledge sources seem to be more important than others to our case company. Hence, the knowledge source influences how knowledge that is absorbed from it, is prioritized. Figure 4 shows the data structure in relation to knowledge absorption is. Empirical evidence for this data structure is given in Table 4.

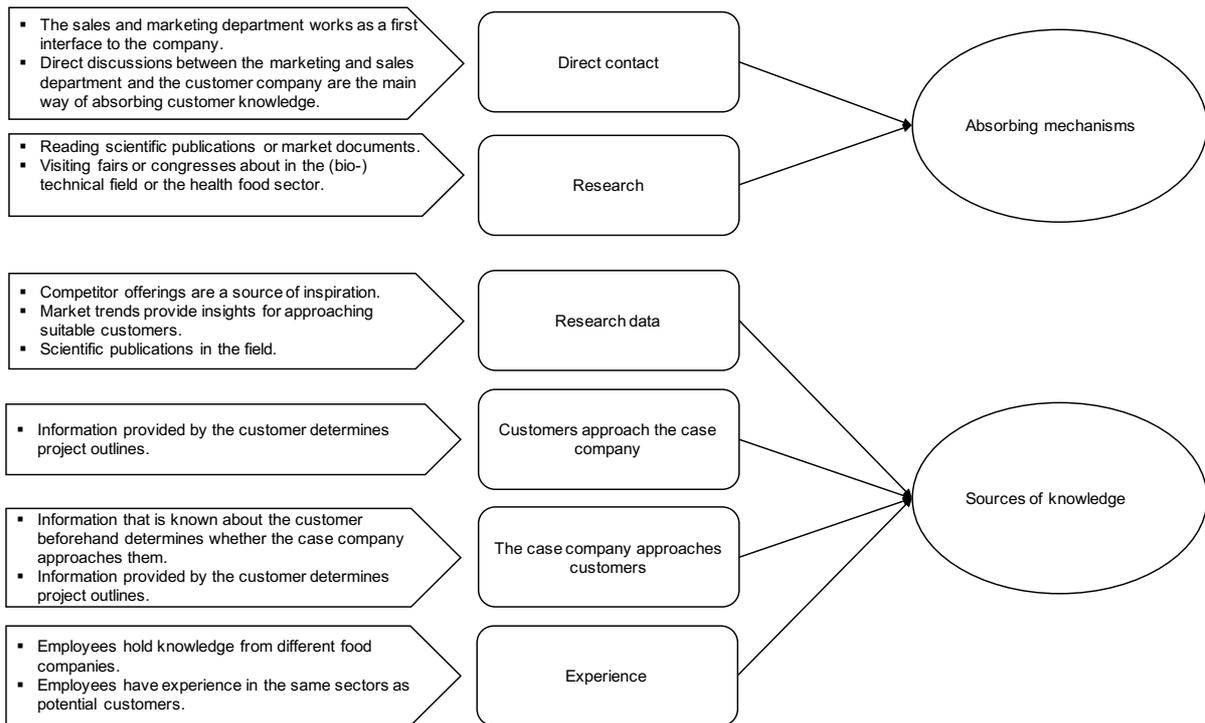


Figure 4 - Data structure knowledge absorption

#### 4.1.1 Empirical evidence in relation to knowledge absorption

Second order theme	Representative Quotes from Data Collection
Direct Contact	“When I said in the beginning I need to go out and see as many prospects as possible to talk to them and learn from them. That’s what I think would be the easiest way actually instead of reading or desk researching, I don’t believe in that, I need to see them.” (Interviewee IV)
	“Talking to the customer I would say is key. Having an open dialogue with the customer, trying to get to know their company culture, trying to get to know their market climate is I think key to understand what they actually need.” (Interviewee V)
	“Through direct contact with customers or through marketing and sales. Discussions.” (Interviewee V)
Research	“I need to have some kind of desk research around the market and the competition about the probiotic category in itself.” (Interviewee IV)
	“We go to some, quite big expos actually, to see what’s happening in the world. [...] that’s one where you go out by yourself to see what’s happening there. [...] You have the [partner] for example providing us with the latest news of what’s happening out there in the world. And thirdly, you have the internet, that gives you a lot of information of what’s happening out there.” (Interviewee IV)
	“Fairs. Visiting fairs is very important for my group. We often go, now there is a food fair in May and three from my group will go. So there we get a lot of ideas, then of of course from the internet, the customers and reading.” (Interviewee VI)
Research Data	“This company [...] who sell al lot of new customers coming into the market, because their [product] is very good for muesli for instance.” (Interviewee IV)
	“We follow the area of course and see what is coming, what seems to be interesting. Through conferences.” (Interviewee VII)
Customers Approach Case Company	“There’s some reason that [the customers] contacted us in the first place.” (Interviewee I)
	“I think we have both, we have customers contacting us because they have found out about [case company].” (Interviewee II)
Experience	“I can make usage of what I did in other industries, where we had different approaches on how to go to market and what messages to push to the customer.” (Interviewee II)
	“So, again many of us here at [case company] have been out selling food or in international climate and of course we can never be sure, but judging from experience I think [...] you need to penetrate marketing as soon as possible.” (Interviewee I)
	“Since I’ve been the customer I, well I haven’t actually been in supply or anything like that but I’ve been in production and I’ve seen – I can put myself back in to those shoes.” (Interviewee III)
Case Company Approaches Customers	“It’s not so much the other way around, that the customer comes to us and says I would wanna do this, can you do it for me? Actually, it’s not at all like that.” (Interviewee I)
	“And in that context we also approach a certain, some certain prospects in the industry.” (Interviewee II)

Table 4 – Representative quotes: knowledge absorption

#### 4.1.2 Explanation of the second order themes in relation to knowledge absorption

Direct contact and research are the two major absorbing mechanisms that are applied by our case company. In the following we provide a brief description of the two themes.

*Direct contact:* Customer knowledge is mainly absorbed through direct contact, meaning meetings, discussions, phone conversations and emails between the sales department and the customer company. Within the business unit of focus, the application development department is sometimes involved in this direct contact. The involvement of this department increases as the customer project moves forward and the amount of technical knowledge that is absorbed from the customer increases.

*Research:* This is the absorption mechanism for all external knowledge that is not provided by the customer. This mechanism is important for market research, as well as scientific research within the special field of biotechnology that our case company operates in. In particular, this absorbing mechanism include activities like reading scientific publications, surfing the internet or visiting fairs and congresses in the related field of science.

The absorption mechanisms we described are applied to different sources of knowledge. While the original focus of this thesis is the information that is absorbed from the customer, we identified two more sources of information that are very important for our case company. Research data and experience were mentioned in many of the interviews that we conducted and therefore we include them in our analysis.

*Research data:* Refers to the external knowledge that has not been provided by the customer. Very important data comes from scientific research and clinical studies that our case company performs to prove and test the health benefits of their products.

*Customers that approach our case company:* These customers are an important source of knowledge as it is the customer who approaches the case company out of their own motivation. The perspective value of the information that these customers provide is very high, because if taking the initiative on their own, the customers are also more likely to be a driving force in the joint project.

*Customers that were approached by the case company:* These customers are also an important source of information. The difference to customers that approach our case company is, that the case company applies some filters before approaching customers themselves. Hence, we perceive the information provided by these customers as more filtered in the sense that only certain types of companies are approached to begin with.

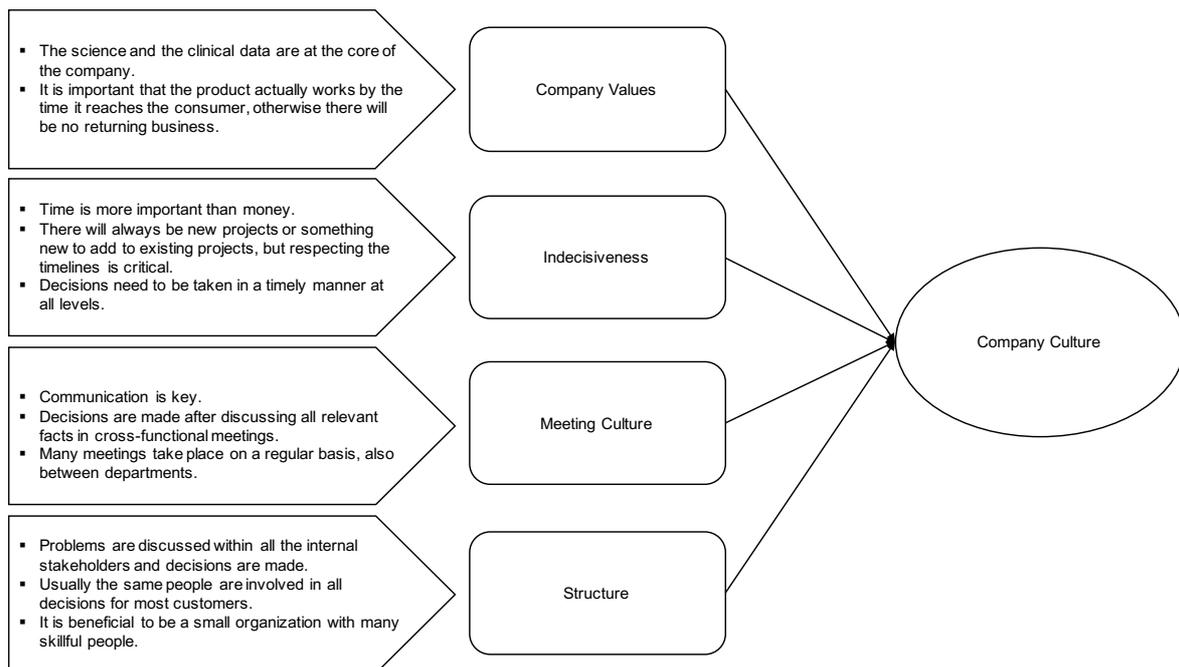
*Experience:* Experience from previous work within the case company but also from other companies is a great source of information. Employees often get recruited from related fields and have worked in the kind of company that our case company could imagine as a potential customer or partner.

## 4.2 Prioritization of knowledge after absorption

We find that in our case company some formal and some informal criteria come into play when it comes to prioritizing, and though we believed the formal criteria would be the most important, sometimes the informal criteria have more weight in the decision making process when it comes to prioritizing.

In relation to our research question, we find that there is not a defined path to follow when prioritizing and decisions are made on a case-by-case basis taking into consideration the business opportunity, the context, and the company culture. However, as shown in the data structure below, other different criteria and objectives for prioritization of information exist. This makes it difficult for the whole organization to have a clear view on which should be the most important project at a given time.

Figure 5 on this and the next page shows the data structure in relation to prioritization of knowledge after absorption. Empirical evidence for this data structure is given in Table 5.



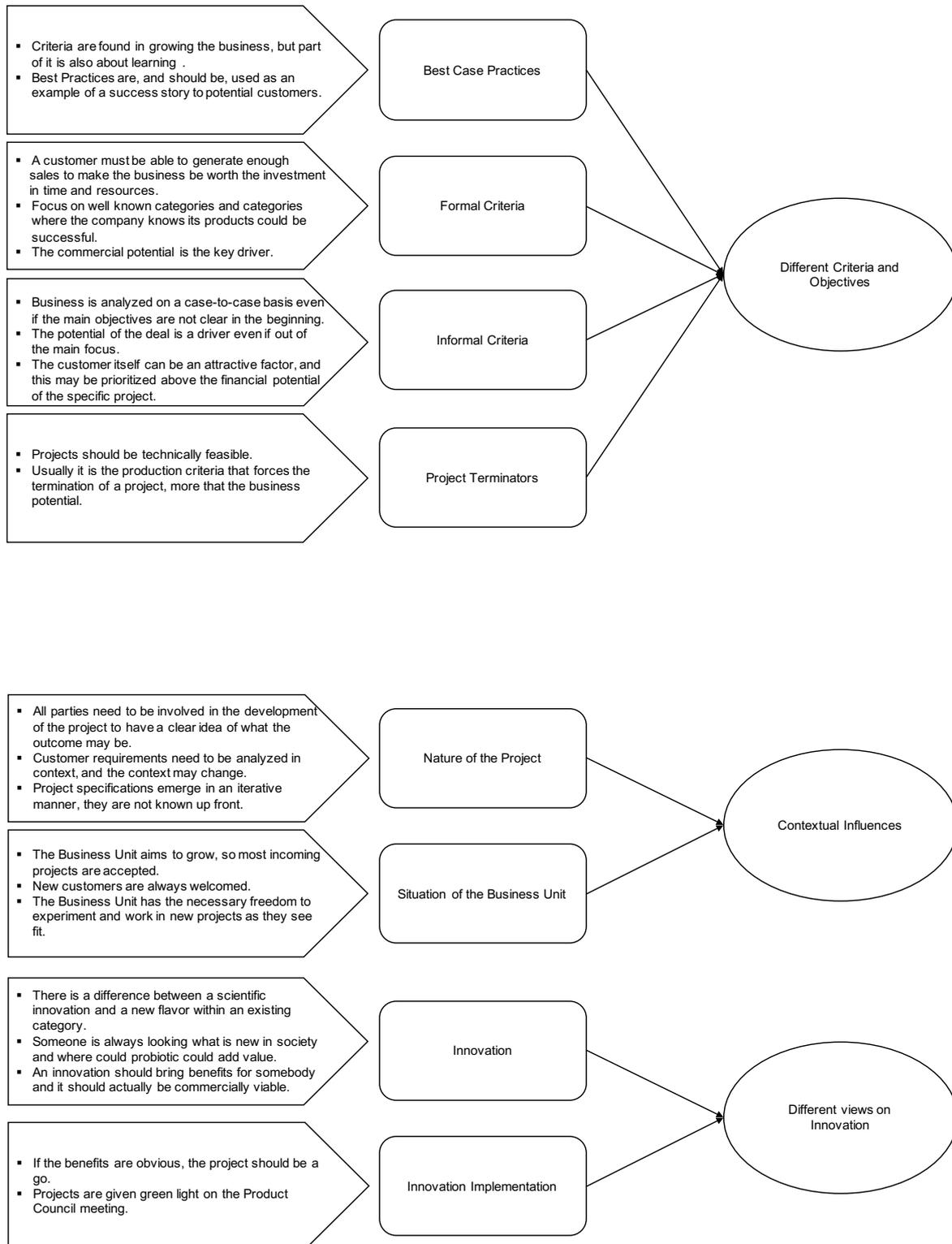


Figure 5 - Data structure prioritization of knowledge after absorption

#### 4.2.1 Empirical evidence in relation to prioritization of knowledge after absorption

Second order theme	Representative Quotes from Data Collection
Company Values	<p>“That means that people here, the company has raised from the science part of the university in Lund actually so it has always been driven by people who think that the product could make the difference based on scientific story. That is the good thing about this company.” (Interviewee IV)</p>
	<p>“Oh I’m very interested in the fact that when a product is on the market, it should work for the consumer. Cause I don’t think, you will continue to buy it otherwise.” (Interviewee VII)</p>
Indecisiveness	<p>“There's always room to do a little more in a project or to start a new project and so on. But for me the time line is the most critical one [...] So I would like to develop in others more sense of urgency and that time is more precious than money.” (Interviewee I)</p>
	<p>“I think there’s a reluctance to take decisions in this company. Maybe not at senior level, but at the next level down. [...] I get the impression that nobody really wants to make a decision, sort of.” (Interviewee III)</p>
Meeting Culture	<p>“Oh, we love to talk. We try to inform each other as much as we can. We’ve got team meetings, I meet with key people in the operational department every second week, where we exchange information high and low. To try and get everyone in the same boat. But communication, again, key.” (Interviewee V)</p>
	<p>“We could probably be better at that. I think we are running all over the place in different small meetings and sub-meetings.” (Interviewee IV)</p>
Nature of the Project	<p>“So once you’ve started the project and you’ve started to work together then it becomes clear what each party can bring to the table and what the final idea will look like. And you cannot assess your collaboration partner only with external eyes and in like a review first.” (Interviewee I)</p>
	<p>“It [customer requirement] doesn’t mean anything unless you put them in a context, and that context changes all the time, so it is relevant only when you combined them with other things.” (Interviewee VIII)</p>
Situation of the Business Unit	<p>“I don't think we have said no to any customer to be totally honest. I think if you look at that prospect list it's probably everybody that asked us something that we're taking forward.” (Interviewee I)</p>
	<p>“Then specifically in the Functional Food field, the Functional Food team has got some freedom of their own, to do some development work together with the product development team [...]. They are reporting the projects to the product council but it’s not that they need approval for every product they start. So, last year, where we hired and made the decision to focus on Functional Food. We said “We’ll give it a go. Let them try, let them build up a pipeline of different applications, that we can use when we go out and talk to partners.” (Interviewee V)</p>
	<p>“We are happy to get [customers], because it’s not that easy to get them. We haven’t been that successful.”</p>

-Table continued on page 35-

Second order theme	Representative Quotes from Data Collection
Best Case Practices	<p>“I didn’t pick one because is big or it’s growing, I think we go all over the places just to learn about how does our probiotic behave in different material. So it’s a combination of driving business forward and learning more about our product applications actually.” (Interviewee IV)</p>
	<p>“I mean, I think the [Customer products] are successful and good. And good to use as a model of good way of collaborating and what you can do. You can show this to others.” (Interviewee VII)</p>
Formal Criteria	<p>“Some are product related, production related but there is also volume and business aspects to it all. We want to make sure that the customer can arrange sufficient business for us.” (Interviewee II)</p>
	<p>“I mean we try to see as many companies that are in the fruit beverage category, that’s the number one priority because we know our product works very well in that area. Secondly, we also go for companies that don’t have this unique category but we tell them this would be a good category to be in, because, for instance, your diary category is having a decreasing trend.” (Interviewee IV)</p>
	<p>“We say “no” to customers who want to have probiotics in coffee or in candies or mueslis, because that would not work.” (Interviewee VI)</p>
	<p>“[...] if we are talking about the central project, then it’s mainly the commercial potential. That is the key driver from pretty much everything.” (Interviewee VIII)</p>
Informal Criteria	<p>“Because it it’s the customer’s idea, it’s a relatively big motivation and driving force from them.” (Interviewee I)</p>
	<p>“At the moment we go okay, let’s evaluate, okay they don’t wanna do clinical dose, okay but there might still be some money in to it so if we can brand it slightly different or if we can sell them this but not that and then you go there case-by-case basis.” (Interviewee III)</p>
	<p>“If a really big customer comes to us and they say “We wanna have a unique product. We wanna have your ingredients as the basis, we wanna launch it across the globe.” Of course that is too big to just turn down. Then we would work with them in a joint project development. So it’s based on the potential in the deal. There needs to, you need to be able to count it back. To get return on investment.” (Interviewee V)</p>
	<p>“At the moment it feels like we’re targeting everything. Yes, we’ll fix it!” (Interviewee III)</p>
Innovation	<p>“So developing a new orange juice is not an innovation. That’s just a new product in an existing category.” (Interviewee III)</p>
	<p>“We have one person linked to science that only works in discovery, to see what’s happening out there in society where probiotic could be a good solution, so discovery and looking far ahead into the future is, of course, very important.” (Interviewee IV)</p>
	<p>“An innovation for me is to use knowledge in a new way, that will benefit someone or be a benefit for someone. It can be a new product, it can be a new health effect in a product [...] That’s not enough. The product has to be sold and consumed by someone. It’s an innovation, when the product is used.” (Interviewee VII)</p>

-Table continued on page 36-

Second order theme	Representative Quotes from Data Collection
Innovation Implementation	“I think [new product idea] I think it it was a conversation in the car back from a customer meeting. [...] And they tried and then they had a concept [...] and I think we discussed it in our product council meeting. We said we have this idea we think it would work. And we decided to go for it.” (Interviewee I)
	“Because with [certain type of ideas] [...] why should I tell some of the guys to spend two months trying to figure out how much we can make on it? It's better just to do it. Because the benefit for the client is so obvious.” (Interviewee I)
	“But historically at least, most of the ideas for a new product has come R&D setting, which is probably different for most other products that are not research-based at least.” (Interviewee VII)
Project Terminators	“Then we started a project and technically it was not feasible. It seemed like it would take you know twenty years to get to the end point so no point in carrying on.” (Interviewee I)
	“We turn down business, but eight out of ten are because of the production criteria, more than the business criteria.” (Interviewee II)
Structure	“It tends to be the same people involved with all the same, all the customers.” (Interviewee I)
	“So, processes like this are normally manage, I mean there is normally defined processes in big companies. [Case company] is not a big company, so we don't have a defined process for this type of changes. We normally just discuss within the small group of people that we are.” (Interviewee II)
	“And I think [case company] benefit from being very small organization, we are a bunch of very skilful people.” (Interviewee V)

Table 5 - Representative quotes: prioritization of knowledge after absorption

#### 4.2.2 Explanation of the second order themes in relation to prioritization of knowledge after absorption

When prioritizing the company culture plays a major role in the decision making process and the speed and method of implementation. The following describes the main company culture roles influencing prioritizing.

*Company Values:* Company values are what the company stands for, and they guide how employees behave and make decisions. In our case company, operating in the biotech industry, making sure that the products actually work and looking for a greater good other than money, play a crucial role in the company's values.

*Indecisiveness:* In our data we find some comments that seem to point towards a need to make decisions a little faster and with less people involved. We do not perceive inertia as a major problem in the case company, but we mention it at this point to present a complete set of findings.

*Meeting Culture:* Our case company uses formal and informal meetings, sub-meetings, and follow-up meetings as their main tool for communication and gathering information for decision making.

*Structure:* With 38 people our case company is small enough to involve nearly everyone affected by a decision in the decision making process as well. In relation to prioritizing within knowledge absorbed from the customer we find that most employees working on a customer project also take part in the discussions around it.

The nature of the project and the current situation of the business unit are also two important topics when talking about how the context influences prioritization. The following lines briefly explain both topics.

*Nature of the Project:* This theme refers to the type of projects the business unit manages. In most cases, a customer company is involved, and our case company depends on the project implementation to achieve revenues. At the same time, information provided by the customer specifies the project outlines, but it is not completely supplied up front. Our interviewees describe a rather iterative process, where the capabilities and objectives of each involved party are revealed step by step but also change over time. It is notable, that most work in the business unit of focus seems to be done on a project-by-project basis.

*Situation of the Business Unit:* It refers to the current stage in which the business unit is operating. In this case, there is a company focus on achieving growth in this business, but currently not many projects have been completed. Hence, some formal criteria at the time of decision making may be overruled by a desire to create revenues, and customers that differ from the formal criteria may be accepted.

To be able to prioritize in a structured way, different criteria and objectives are taken into account. There are formal criteria to be followed, and past projects serve as best practices. There also are some circumstances that could terminate a project immediately. On the other hand, we also discovered that informal criteria sometimes have quite an important role in the decision making.

*Best Case Practices:* Some of the prioritizing is done knowing the answer to a potential issue due to prior experiences. At the same time, some financially rather unattractive projects are still taken on in the light of creating new experiences, that our case company can use as a proof of concept for future customers.

*Formal Criteria:* Formal criteria for selecting customer projects mostly relate to the business potential of the project. Another evaluation is made in terms of feasibility. Prior experience guides the search for potential customers, as the active search is focusing on customers with similar product categories as the one our case company has already gained much experience in.

*Informal Criteria:* Sometimes, the ambition to generate business, or the customer's determination are what leads to a project start, rather than the fulfilling of the formal criteria. The business potential represented by the customer as such, and not the business potential of the specific project can also be an influencing factor. In relation to product innovation, the perceived benefit of an innovation can be so great, that

formal steps are overlooked, as the finding of an evaluation would be stating the obvious.

*Project Terminators:* In this case, the main project terminators are unsolvable technical difficulties, production problems, and requirements for applications that the company is aware will not work with its current offering.

Finally, the different views on innovation within the company and the way the innovations are influencing the prioritization.

*Innovation:* As there is a significant scientific aspect to our case company's product, part of the company deals with innovation in a very scientific manner. Here, innovation is seen as the discovery of something new in relation to science. Another part of the company deals with what is internally defined as application development. Activities in this aspect relate to integrating the scientific product, the bacteria, in to new customer applications.

*Innovation Implementation:* For scientific product innovations, there is a structured stage-gate process. At times, the benefits are so obvious, that the formal process is skipped and decisions are taken in informal conversation between the stakeholders. However, innovations in application development in our business unit of focus are monitored by this implementation process, but not all of them are evaluated through it, as they are of smaller scope and related to a specific customer.

## Chapter 5: Analysis and Discussion

### 5.1 Relation of the themes and their influence on absorption and prioritization of customer knowledge

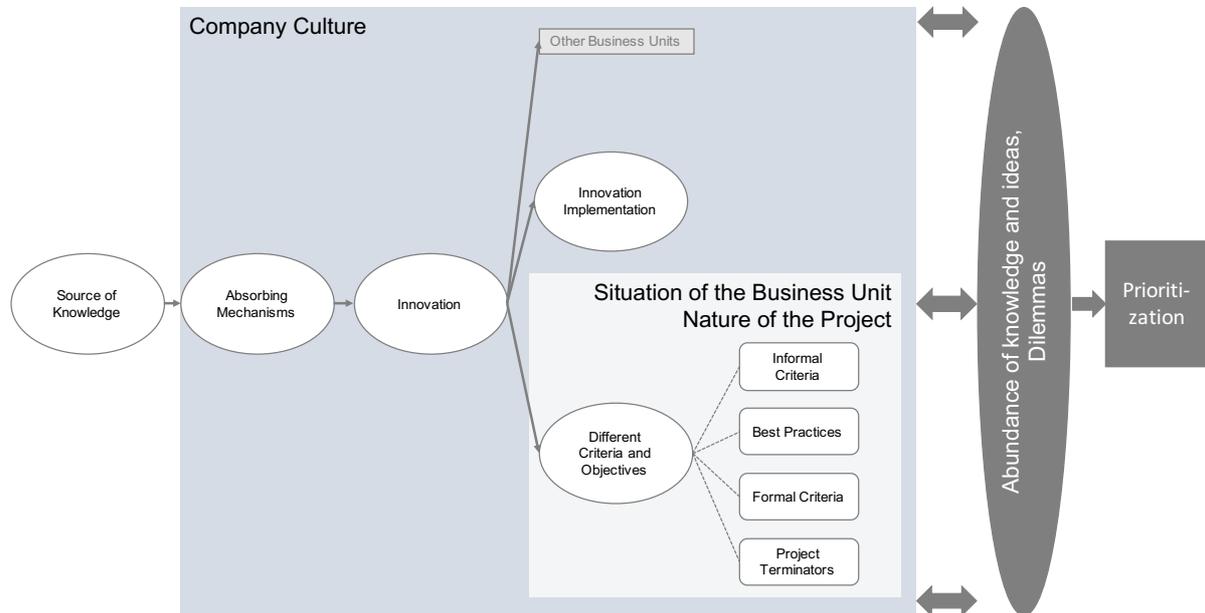


Figure 6 - Relation of the different concepts and themes

Figure 6 explains the process of knowledge absorption and prioritization, which is determined by interrelated themes and concepts. The *source of knowledge* is inherently related to the *absorbing mechanism*. Customer knowledge, which is at the center of this research, is absorbed through direct contact between the sales department and the customer, rather than desk research. In relation to this, Fosfuri and Tribó (2008, p. 176) say: “The efficient absorption of external knowledge requires similar cognitive structures, common skills and shared languages.” Therefore, employees’ experience from similar companies to our case company’s customers fulfils several purposes. Firstly, it provides insights to customer processes, objectives and company culture. Secondly, through their employees our case company has many skills in common with their customers and they seem to speak the same language.

Prioritization also starts with the absorption of customer knowledge through direct contact. For the case company, as well as the customer, direct contact means an investment in resources and engagement in further discussions on a project which could lead to the development of a new product or application. This situation poses a positive situation for the company, because they can feel assured that the customer is serious about doing business with them. On the other hand, it may cause a bad impression for the customer if, for some reason, after all the investment, the case company can not deliver what was initially promised or terminates the project after evaluating *formal criteria*.

Once knowledge has been absorbed it is prone to lead to an *innovation*. This innovation can take different paths due to the existence of very different concepts of innova-

tion in the case company. The absorbed knowledge could be a source of scientific innovation that needs to be further studied. In these situations, the knowledge is either passed along to the involved business unit, or analyzed by the research and development department for further development before commercialization. These innovations are not the focus of our study, but it is notable that for scientific innovations a gate-stage process exists. Usually, the process is followed more or less strictly, but there are instances where the absorbed knowledge leads to an innovation with obvious benefits. In the past, those have been implemented immediately.

If the absorbed knowledge relates to the business unit of focus, prioritization is affected not only by the *company culture* as such, but also by the overall *situation of the business unit* and the *nature of the project*. For these types of innovation, we found four very different, and somewhat controversial criteria sets that are applied in prioritization; formal criteria, the informal criteria, the best practices, and the project terminators. In the current situation of the business unit, no formal rules seem to apply strictly as the business unit has been given a certain degree of freedom to learn, and to take advantage of the opportunities to grow as fast as possible. The preference for what is known is apparent in the fact that when searching for potential customers the case company often focuses on firms that offer similar products to what the case company has worked with before. And finally, the motives that could end a project have been established, but due to the willingness to learn and to grow, many times further examination is given in search for new answers for old problems.

We know that the abundance of absorbed knowledge leads to distinct dilemmas which are further analyzed in chapter 5.2, but after our study, it has also become apparent that the dilemmas also lead to absorbing more knowledge in search for the best answers. Thus, a situation leading to a “hen and egg” problem arises – that is, is it really possible to solve the dilemmas created by the absorbed knowledge directly? Or, is it necessary to continue absorbing more and more knowledge to be able to solve the dilemmas created by the knowledge initially absorbed? When should it stop?

## 5.2 The different influences create dilemmas

In chapter 5.1 we have shown, that prioritizing within the knowledge that has been absorbed from the customer, is influenced by many different themes and dimensions. In some cases, these themes and dimensions align, and goals can be fulfilled, while the structural way of working in the company is respected. However, there are also some contradictions in the themes we identified. As one theme does not have inherently good or bad characteristics, it is difficult for our case company to find a middle path.

### 5.2.1 Dilemma 1

*Operating formal criteria for selecting customer projects while facing pressure to create more business in a best case practice oriented business environment*

Our case company has formal criteria for customer projects, but due to the situation of the business unit at present, they can not always apply them. Interviewee VIII says: “if we are talking about the central project, then it’s mainly the commercial potential. That is the key driver from pretty much everything.” This, and more quotes from the complete data collection, state the financial and volume aspect as the most important formal criteria for selecting customer projects. Especially, when selecting possible customers to approach, the potential business volume is a key assessment our case company makes before taking action.

Firstly, in the case that the customer approaches our case company, there is little chance for such a beforehand assessment. Here, a minimal filter, basically making sure, that the customer is a legitimate and serious company is applied, before taking up the discussion. Discussing with a customer inherently implies absorbing knowledge about that customer’s specific needs, wants, and problems. Not having selected that customer themselves gives our case company the chance, to absorb knowledge in a new, interesting field, that they had not thought about before. On the other hand, it may lead to absorption of knowledge that can not be applied elsewhere, or does not fit the general direction. However, business opportunities that arise from a customer contacting our case company are rarely turned down, even if they do not completely fit the formal criteria. “Because if it’s the customer’s idea, it’s a relatively big motivation and driving force from them.” (Interviewee I). To generate ongoing business, our case company is always dependent on the customer company to actually implement the joint project in their product portfolio. Therefore, the driving force from the customer is an important factor within prioritizing for them.

Secondly, the situation of the business unit, that we conducted our research in, is characterized by a high ambition to create growth. Interviewee VII described this as: “We are happy to get [customers], because it’s not that easy to get them. We haven’t been that successful.” This shows the ambition to get more customers and explains why even if the financial aspect does not clearly fit the original ambitions, some customer projects are started anyway. However, this again means, that every new customer project leads to an absorption of customer-specific knowledge, or may require

learning from other sources about that specific application, to solve a specific task, that this customer poses on our case company.

Thirdly, our case company operates in an industry, where showing a potential customer successful previous projects is an important step in the sales process. Absorbing knowledge and building experience in projects, that can be used as a good example case, is therefore a great motivation for our case company. Here, absorbing all the different pieces of information from before mentioned projects may lead to creating a general advantage.

“I didn’t pick one [customer project] because is big or it’s growing, I think we go all over the places just to learn about how does our probiotic behave in different material. So it’s a combination of driving business forward and learning more about our product applications actually.”  
(Interviewee IV)

Hence, some customer projects are not selected for their business value but rather for the educational value they provide for our case company. This is enhanced by the fact, that best practice examples are described by our interviewees as a valid way of convincing new customers. Therefore, the motivation for these projects is not necessarily a financial one, but rather a strategic fit of the project to the learning and best case practice objectives.

In general, this dilemma leads to a situation, where our case company conducts many different projects and absorbs knowledge from very different customer projects. At times, it seems like our case company is trying to build their expertise in all possible food applications, including “Ice cream, beverages, high fruit content, low fruit content, chocolate, muesli bars, dairy, milk, yoghurt. All kinds.” (Interviewee II) at once. While the need to create best case practices, as well as an ambition for growth provide a rationale to conduct many different projects instead of few similar projects, doing so also creates quite dispersed knowledge in a broad field of applications. In their extended definition, De Luca and Atuahene-Gima (2007, p.97) include “breadth, depth, tacitness, and specificity” as dimensions of market knowledge. While it is not the purpose of this thesis to judge what dimension is more important, we notice at this point, that absorbing more knowledge from very different fields, instead of prioritizing absorption about one or two selected fields, seems to build the breadth dimension of our case company’s market knowledge, rather than the depth dimension. Furthermore, on a more basic level, it also requires the employees of our case company to handle very different tasks at the same time. This requires multitasking, whereas concentrating on one thing may sometimes be easier.

### 5.2.2 Dilemma 2

*Having to attend to more and more projects, and trying to select them effectively by applying formal criteria while acting in a collaborative culture*

Our case company also faces a growth dilemma. Our case company is at a point where they are growing faster than they ever did, while at the same time they are trying to maintain their small company practices and values. A growing amount of projects leads to an absorption of more and more knowledge, both, through the customers' specific requests and then through research, to follow them. Constraints in resources emphasize the need to prioritize; an activity that requires decision making, which is affected by the company culture strongly.

It is obvious that the financial objectives and the production capabilities are a central part of the formal criteria to select a project. Clearly the production capacity and the business scalability are aspects analyzed at the beginning of the project to decide if the project will continue to be developed or not.

The importance of communication through meetings and the importance of the meeting culture for our case company was emphasized by one of the interviewees in the following quote

“Oh, we love to talk. We try to inform each other as much as we can. We've got team meetings, I meet with key people in the operational department every second week, where we exchange information high and low. To try and get everyone in the same boat. But communication, again, key.” (Interviewee V)

On the other hand, this meeting culture issue is apparent for some of the team members in our case company, as we could hear it in the following quote, “We could probably be better at that. I think we are running all over the place in different small meetings and sub-meetings.”

At the current stage of development, our case company receives more and more projects and requests for work collaborations. Though there are formal criteria to select which projects could be interesting, and which ones are not, the employees are used to discuss most situations openly in different recurring meetings, and listening to all the internal stakeholders' opinions before a final decision is taken by management. This could be favorable and interesting learning could appear from these types of open discussions, but at the current growth rate the case company is experiencing, soon there will not be enough time for the colleagues at the case company to attend all the meetings and also perform the day to day activities of their jobs. However, changing this way of working could lower the organizational acceptance for decisions that have been taken, like Gutiérrez et al. (2008) described. They saw, that in relation to new product development, decisions sometimes have to be made in a less structured manner, than organizationally accepted. In our case company, formalizing the process more, moving away from what we termed meeting culture, could have the same effect.

This dilemma also highlights, that as we outlined before, customer projects are approached very thoroughly on a project-by-project basis. In our data we see little evidence for an attempt to abstract all the absorbed customer knowledge to a higher level. To do so could enable an overall change to the offering to lower the work load in each individual project. However, we see that employees are busy attending the meetings they need to respond to customer requests and that there seems to be little time for any other evaluation of absorbed knowledge than needed to take immediate action within the specific project.

### 5.2.3 Dilemma 3

*The nature of the projects the business unit works with does not actually suit the application of formal criteria*

The nature of the project requires our case company to absorb some knowledge, before they can apply any prioritization criteria. On the other hand, prioritization of a project after knowledge has been absorbed is more difficult, than prioritizing before project start. Though there are formal criteria to select which projects could be interesting and which ones are not, the nature of the project itself and the context in which it is taking place also have a very high weight in the decision making process. The formal criteria would indicate what type of projects are rejected as indicated by Interviewee VI in the following quote: “We say “no” to customers who want to have probiotics in coffee or in candies or mueslis, because that would not work.” But, we also noticed the importance of initiating the collaboration with a potential customer, to unmask the details that are not apparent at first glance and the need for that initial effort becomes evident in the following quote,

“So once you’ve started the project and you’ve started to work together then it becomes clear what each party can bring to the table and what the final idea will look like. And you cannot assess your collaboration partner only with external eyes and in like a review first.” (Interviewee I)

Once the nature of the project is evident to the case company, the formal criteria can be either overwritten, if the gains are evident. Or it may be the case that after further analysis, the case company may actually discover that the project actually matches the formal criteria. This has been the case for new applications discovered by trial and error after engaging in projects with the customer. The context, taking into consideration the product, time, size of the business and even the people participating in the project and the effort they put on it is of critical importance.

At the current stage, most decisions in the business unit being studied are taken in a case-by-case basis. That is, because the nature of the project reveals information as it develops over time, and formal criteria can only be applied too late. Hakkarainen and Talonen (2014) talk about the difficulty to terminate innovative projects once they have started, due to the emotional and financial investments that were already made. This effect is even stronger in our case company, as there is a third party, the custom-

er, involved. Not serving the needs of the customer could endanger further collaboration and the company's reputation in the business environment.

#### 5.2.4 Dilemma 4

##### *Operating two very different types of innovation*

Within our case company there are two types of innovation. One, which refers more to what the literature calls radical innovation. This is the type of innovation, that leads to new products in terms of probiotic bacteria. So a new product could be a new type of bacteria or a new health benefit that our case company can achieve with their bacteria. These innovations are mostly driven by the research and development department of the company:

“An innovation for me is to use knowledge in a new way, that will benefit someone or be a benefit for someone. It can be a new product; it can be a new health effect in a product [...] That's not enough. The product has to be sold and consumed by someone. It's an innovation, when the product is used.” – Interviewee VII

This quote from someone working in research and development at our case company illustrates quite well that innovation as a term refers to new probiotic products in this company. These projects are characterized by a high resource consumption as the scientific testing to implement them can consume anything between two and five years. They also inherently require absorbing great amounts of new knowledge through scientific publications, clinical studies, and participation in research related events. Here, the notion that absorbing more knowledge enhances the outcome may apply without question. The outcome in this case is a new patent, for a product, that does not exist on the market. While this does not mean, that these innovations do not have a commercial focus, it relates to scientific product innovations. Furthermore, this type of projects relates to the definition, that Tidd and Bessant (2014) provide for radical innovation as being something completely new.

However, we see the numerous new applications in our business unit of focus as a form of incremental innovation. Tidd and Bessant (2014) describe these as improvements or smaller changes on existing innovations. We see, that the knowledge collected from the customer often triggers these kinds of adaptations. The probiotic product itself may be combined with a new food type for example. However, as one of the interviewees dealing with this type of innovation put it, for the case company “[...] developing a new orange juice is not an innovation. That's just a new product in an existing category.” It seems like what we with an outside view would identify as incremental innovation is not categorized as innovation at all in the case company. This also implies that, while the case company applies quite strict criteria for what they identify as innovation, there is some more freedom in what they call application development (and we call incremental innovation).

Another aspect of this dilemma is, that once application development is defined as incremental innovation, the scope of incremental and radical innovation in our case

company is very different. While applications are developed specifically for a customer, based on the information provided by them, new products are often based on science, and then evaluated for their market potential. This requires two very different mindsets; a scientific orientation that deals with research thoroughly, and can make use of an abundance of knowledge, and a customer-oriented mindset, that sometimes needs to prioritize the customers' wishes as well. These two orientations are equally important. However, as the core of our case company's product lies in scientific research, it seems obvious, that the scientific approach is more natural to our case company. Therefore, increasing the knowledge base and learning more may unconsciously be prioritized over speed and delivering an imperfect solution.

### 5.3 Discussion of our findings in relationship to absorptive capacity as a concept

#### 5.3.1 Applicability of selection criteria in new product development processes in the light of our findings and analysis

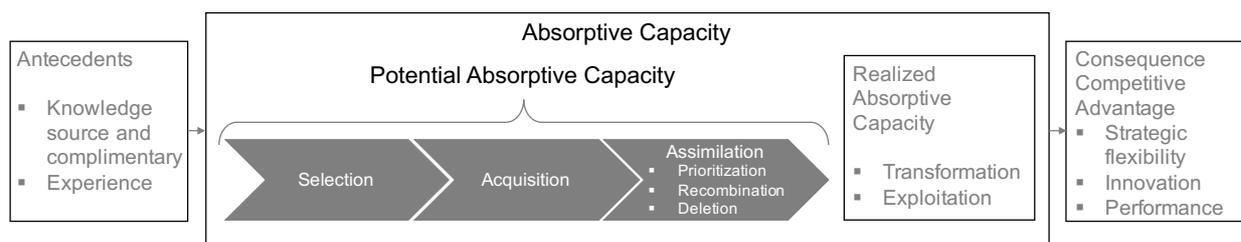
In our literature review, we showed that some evaluation criteria in relation to new product development are rather broad. They can be strategic objectives (Cooper and Edgett, 2010), the probability of success (Hakkarainen and Talonen, 2014), or market-related, and technology oriented criteria (Hart et al., 2003; Martinsuo and Poskela, 2011). In the light of our findings and analysis of how a company prioritizes within absorbed customer knowledge, having market-relevance, or possible strategic fit in mind when judging the priority of a piece of information does not seem irrational. In fact, we have seen that formal criteria our case company applies relate to the strategic fit of the project to company objectives, and expected financial returns.

It is more difficult to find synergies between selection of ideas in new product development processes and knowledge absorption, when literature calls for specific, metric evaluations. As authors note, to actually calculate "financial reward", or "risk and probability of success" (Cooper et al., 2001, p. 372) is already difficult in new product development projects. It seems even more difficult to do so in the light of information that has been given by the customer. This manifests also in the third dilemma we observe in our case company that illustrates how customer projects develop over time, making an application of defined criteria prior to project start difficult.

In this sense, the findings on the fuzzy front end dimension of innovation seem more applicable to the present findings from our case study. Florén et al. (2012) suggest to review feasibility, business potentials and technology requirements before entering ideas in to the formal product development process. We see that, especially information about general feasibility can be obtained quite early from the customer. Therefore, this criterion is applicable in both knowledge absorption, and in the fuzzy front end idea selection. However, the body who performs these evaluations, will be a different one. Florén et al. (2012) suggest selection by the people working with the idea, but also from an independent body, an innovation committee for example. This could be applicable to some information absorbed from the customer, but not to all.

The most important difference we see between the selection of innovative ideas and prioritization of knowledge absorbed from the customer lies within the scope of the decision to be made. New product development processes seem to deal with internal decisions, where the company decides on going or not going for a project. However, if a customer is involved our findings suggest, that business potentials are in fact evaluated. The evaluation as such however, deals with how to solve a specific customer problem, rather than the question of solving it at all.

### 5.3.2 An adapted model of absorptive capacity



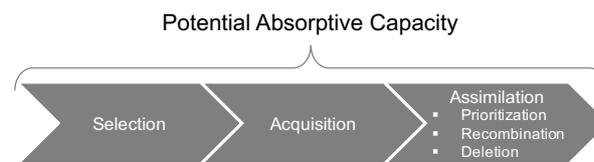
*Figure 7 - Adapted model of absorptive capacity*

Based on our findings and discussion, we propose an addition to the model of absorptive capacity, proposed by Zahra and George (2002). Throughout our research we saw, that the high amount of knowledge a company absorbs, challenges them to handle all the absorbed information. Prioritization in turn, is affected by dilemmas, which in their specific description may be unique to our case company, but in essence could be replicated in other company contexts as well. We also saw, that, where possible, our case company tries to selectively absorb knowledge, by only approaching certain customers for example. Therefore, in what Zahra and George (2002) term potential absorptive capacity, we propose to add a selection activity, before knowledge is acquired. The problem of having to delete previously absorbed knowledge can be eased, if there's a more careful selection of what knowledge is absorbed in the first place. This sub-dimension also refers back to what Cohen and Levinthal (1990, p.13) describe as to “recognize the value of knowledge, assimilate, and exploit it”. We expand this concept of knowledge recognition in the sense, that it should not only be evaluated if knowledge is potentially valuable for the company. Rather, it should also be examined, if for example the timing is right for absorption, if the knowledge can be applied immediately, or it maybe should not be absorbed at that point in time overall. Practically, this could be done through a selective exposure to different knowledge sources.

However, our case study also showed, that, especially when working on a project basis, it is difficult to judge the importance of information in advance. Furthermore, it seems difficult to consciously decide to not absorb knowledge at a certain point in time. A mere selection before absorption alone will hence not be sufficient for many cases. Consequently, we propose an addition to the assimilation dimension of the absorptive capacity model.

Where Zahra and George (2002) describe assimilation as the company's function, that analyses and understands absorbed knowledge and sorts relevant from irrelevant information, we propose a more specific process. Our case study revealed, that sorting the relevant from irrelevant knowledge is not a sufficient mean to prioritize within great amounts of absorbed knowledge. Rather, a company needs to develop a capability to identify the most relevant pieces of information from the knowledge that has been absorbed. These could be common aspects in many different pieces of absorbed knowledge, or pieces of information that are especially interesting for implementation.

As outlined before, in our case study this is an activity that already takes place in many companies, when developing new products. Here, researchers, as well as companies have realized, that much information is relevant, but that a company can only act upon a selection of ideas and stimuli effectively. We propose that this relates to the absorption of customer knowledge and may be transferable to all types of knowledge. In our model we suggest that within knowledge which was selected for absorption and absorbed, companies should prioritize, recombine, and delete pieces of information. The process of potential absorptive capacity should therefore follow the model displayed below.



*Figure 8 - Process of potential absorptive capacity*

As shown in 5.3.1, selection and prioritization can follow some of the same criteria as applied in new product development literature, especially in the fuzzy front end. However, measuring the value of knowledge seems more difficult than examining the specifics of a product idea. Furthermore, the example studied in this case study gives some reason to question the applicability of strict formal criteria. In our data we saw for example that although formal criteria exist, they are not always the most important evaluation criteria. Hence, especially customer knowledge, which was the focus of this case study, could be selected and prioritized by the alignment with strategic objectives of the company, general feasibility, and ease of transformation and exploitation. However, at this point we can not avoid to notice that by establishing a prioritization dimension within the absorptive capacity framework, we have merely started to explore this interesting phenomenon. More sophisticated research on the specific criteria may be done in the future to enhance our model.

## Chapter 6: Conclusions and Implications

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### 6.1 Conclusions

This thesis had the objective to contribute to absorptive capacity literature. To do so, we based this work on a single case study. In the case company, we observed some difficulties in prioritizing the great amounts of knowledge absorbed from customers. In our literature review, we established a possible theoretical connection of absorptive capacity and idea selection processes in the new product development process. Theoretical fit is especially visible in the fuzzy front end dimension of the new product development process and absorptive capacity.

To refer back to our research question, we can say that the company we observed absorbs great amounts of knowledge from their customers but does not strictly prioritize this knowledge in one or the other way. We revealed, that prioritization is influenced by certain dilemmas. These dilemmas are partly rooted in an absorption of too much knowledge, but at the same time lead to an even greater absorption of knowledge, which seems to create a cycle of absorbing more and more knowledge.

Based on these dilemmas and their antecedents we proposed a model of absorptive capacity, that includes selection and prioritization of knowledge. We believe that these dimensions were missing from existing models of absorptive capacity and that they could provide solutions to the specific dilemmas of our case company, but also to firms experiencing similar knowledge absorption related dilemmas.

### 6.2 Managerial implications

The first managerial implication of this thesis is the recognition, that an absorption of great amounts of knowledge, which in most literature is deemed beneficial, can also foster dilemmas, similar to the ones we observe in this case study. If already experiencing dilemmas, managers may find one cause in the fact that their company absorbs great amounts of knowledge, but fails to select and prioritize it.

Secondly, managers need to recognize, that prioritization is influenced by many somewhat contradictory, but equally important influences. Therefore, knowledge prioritization is more complex than defining a list of criteria. Managers need to create a clear, but flexible path to follow in prioritizing knowledge absorbed from the customer. They need to be equally aware of what influences the way how customer information is prioritized within their company. And then they need to check if these influences create dilemmas, that their co-workers need to act within.

### 6.3 Limitations

Our study shows how a company prioritizes within the knowledge they have absorbed from their customers. We find influential factors and relations that provide a rational to how the company we examined prioritizes the absorbed knowledge. A limitation of this cross-sectional case study is that we can not evaluate or recommend a more beneficial way of prioritizing, as we can not distinct different approaches to prioritization at given points in time in our data.

Furthermore, we restrict the analysis to the prioritization of customer knowledge. In our view, this is a valid restriction, as our observation and also literature have shown the importance of this type of knowledge. However, this type of information may be valid for many companies operating in the business-to-business sector, but, as our findings show as well, there are many more sources of knowledge, that influence the actions of a company.

Thirdly, we excluded the topic of knowledge sharing from our findings, as we did not perceive it as a problematic issue in our case company. When transferring our results to another context, this exclusion should be carefully re-evaluated.

### 6.4 Implications for further research

As we outlined before, the view, that more absorptive capacity inherently leads to a better firm outcome, is changing. Within this stream of research, we think we have contributed to an interesting new chapter. Our work sets the path for much interesting research to come. Firstly, it would be interesting to compare the different criteria that companies use to prioritize within absorbed customer knowledge. A further study could operate in the area of customer knowledge, like our case study, or in other areas of knowledge. Secondly, a further integration of fuzzy front end research and absorptive capacity literature would be interesting. We identified some common aspects within our case study, but as more cases emerge there may be even greater fit. Lastly, although our analysis is theoretically compatible and applicable to our case, future research may find that other phenomena are much better equipped to contribute to the prioritization dimension of absorptive capacity.

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## Appendix

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### Appendix I: Interview guide

Ideas for follow-up questions are written in *italic*.

Topic 0: Interviewee's role and position at [Case company]

Thank you for taking the time to interview with us. In this interview we are looking for your opinion and there are no right or wrong answers. Please let us know if any of the questions are not clear. We would like to record this interview, is that okay for you?

1. Name:
2. What is your current position at [Case company]?
3. How long have you worked at [Case company]?
4. What are your previous (work) experiences?

Topic 1: Capabilities – Analysis for BDP

So as you know, we're working on two separate things here at [Case company]: A business development project and our master thesis. For the project we need to make an analysis of what [Case company] is really good at and where they could go from there.

5. If you were to describe what [Case company] is really good at in three words, what would they be? *Then follow up on the things they name. What does that mean to you? Which part of it is really well developed at [Case company]? Is that enough to continue gaining market share?*
6. What special competences are needed to work in your position?
7. Do you gain those competences by education or experience? Would you say the right support and money to invest are necessary in your function?
8. What competence would you like to develop even further? *Why do you think this has not happened yet? Why did you not take the time?*
9. Which of your skills, knowledge and resources do you think help you to gather and understand customer needs? *Which one do you find most important? Which one is the most difficult part for you and why?*

Topic 2: Deeper understanding of how [Case company] sees customer needs

10. Do you have direct contact with [Case company]'s customers? *In Functional Food or in Consumer Health Care? What's the contact about? Which department of the customer company do you work with? How do you communicate with them?*

11. What are your customers like? What are their specific ‘jobs’?
12. How do you find out what your customer’s needs are?
13. If you were to identify customer needs – what are the three most important things that [Case company] delivers to attend those needs?
14. What kind of customer needs [Case company] chooses not to target? *Why do you decide not to do so?*
15. If you have contact to the customer and gather their needs and wants, how does [Case company] prioritize which ones to target, and which ones to leave for later? *Is it a matter of missing out on important things or prioritizing?*
16. What’s your personal priority to take action? *What kind of needs do you try and address immediately? Why? What kind of needs do you not address immediately? Why not?*
17. How do you ‘store’ this information? *CRM? Personal notes? Do you discuss what you have learned internally? How? What’s the outcome of these discussions?*
18. In your opinion, what is the customer expecting from [Case company]? These are the non-negotiable results they expect from a collaboration with [Case company]. *What do you find difficult about understanding these expectations?*
19. And if you gave them [the customers] to write a wish list for [Case company], what do you think they would write down?
20. Do you think that the customers have needs they do not communicate to [Case company]? *What kind of needs would that be? Why do you think they don’t communicate them to [Case company]? How do you find out about these?*
21. Do you think the customer has needs that they aren’t even aware of? *How can [Case company] help them to satisfy these hidden needs? How can [Case company] provide unexpected gains for them? (Osterwalder et al., 2014)*
22. [Customer pains (Osterwalder et al., 2014)]: In your opinion, what are undesired outcomes, problems or dislikes of [Case company]’s customers? *Which one do you think is most important? Why do you think so? How do you find out about these?*
23. [Customer pains (Osterwalder et al., 2014)]: In your opinion, what are obstacles that [Case company]’s customers encounter in doing business and how can [Case company] make these obstacles smaller? *Which one do you think is most important? Why do you think so? How do you find out about these?*
24. [Customer pains (Osterwalder et al., 2014)]: In your opinion, what are risks for your customer? *Which one do you think is most important? Why do you think so? How do you find out about these?*

25. What do you think are influences on the buying decision? *Supply formats? Payment models? Which one do you think is most important? Why do you think so? How do you find out about these?*

### Topic 3: Absorbing customer knowledge, creating ideas, and prioritizing them

Now, we have talked a lot about what the customers want, but we also want to look at what happens with this knowledge inside [Case company]. Please remember, that our focus area is Functional Food. If your answer is not specific for Functional Food, that is ok though. We can also draw conclusions from how [Case company] handles ideas in general.

26. Do you think it's absolutely necessary to innovate in Functional Food, or are there other things that [Case company] should take care of first? *Which ones? Why are they more important? Has this always been the case?*
27. Where do product ideas come from and how are they evaluated?
28. Once ideas are selected, how does the journey from idea to finished product look like?
29. Can you name some specific projects or ideas within Functional Food that have travelled through this cycle? *[If yes] Please expand on the details. Why was this idea selected? Why was it more important than other issues? How was it implemented? [If no] We've heard a lot of ideas from several people, why do you think none of them have been implemented yet?*
30. What are your ideas about what [Case company] could do in Functional Food?
31. What are the two most important of these ideas? *Which ones are urgent and which ones would be nice to have?*
32. Why is the idea you named more important than others?
33. What do you usually do when you have an idea like this? *Do you tell your colleagues? Do you push for its implementation? Please give us an example, if you can, and tell us why this idea was important for you? Have your ideas been implemented? How? / Why not?*
34. How do you decide if you should propose an idea to your colleagues or not?
35. How does [Case company] in general then decide if this idea should be pursued, or not?
36. Let's say an idea manifests in to a solid product concept. In your opinion, what are the main considerations when developing a new product at [Case company]? *Meaning: What criteria are there for selection? How do you assess these?*

37. Do these considerations always fit or are there sometimes evaluations made on a project-by project basis? *Please expand on the details, please provide explicit examples.*
38. How do you think [Case company]'s products add value to the customer's end product?
39. How do you think [Case company] could create more or better value for the customer?
40. What do you find hard when defining what's valuable for the customer? *Why is it so hard to define this?*
41. What kind of (prospective) projects is [Case company] currently working on in Functional Food?
42. How were these (prospective) projects selected? *Why were these projects more important than others? [If they just do everything that comes up]: How would you prioritize between projects in the future?*
43. What are projects or ideas that [Case company] decide not to continue? *Why were these killed?*
44. Are you storing these ideas and projects? *How? Have bits and pieces been recycled in new projects?*