Development of innovative functional pet food products

- a compilation of relevant knowledge for industry actors

Authors: Lovisa Bengtsson, Gunnel Bildt & Julia Skäremo
Supervisors: Stein Kleppestø & Malin Sjöö

Department of Food Technology,
Faculty of Engineering, Lund University
Kemicentrum, Box 124,
221 00 Lund,
Sweden

Department of Business Administration,
School of Economics & Management,
Box 7080,
22007 Lund,
Sweden

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Abstract

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Authors: Lovisa Bengtsson, Gunnel Bildt, Julia Skäremo

Supervisors: Stein Kleppestø, Department of Business Administration, Lund University
Malin Sjöö, Food Technology, Lund University Faculty of Engineering
Emma Nordell, Innovation Project Manager, Lantmännen

Background: Recent changes in EU legislation have changed the industry of functional foods by tightening substantiation requirements for claims made to consumers. Parallelly, functional products are growing within the pet food segment. To follow the new legislation requires a new kind of knowledge within both industries, which becomes even more apparent when developing innovative products with less established claims. Research is required to navigate this jungle, and at the same time deliver value to consumers.

Problem description: Upon doing research, it appears that the topics of functional foods, the pet food industry, and strategies for establishing an innovative market niche, have not been researched and documented together. This results in a knowledge gap concerning strategies for developing an innovative functional pet food product.

Purpose: To survey the interconnected area of the existing knowledge within functional foods, the pet food industry and establishing of an innovative niche market. The conclusions are intended for practical guidance regarding development of innovative functional pet food products.

Research question: What knowledge, relevant for development of innovative functional pet food products, emerges at the interconnection of the following subjects: Functional foods, The pet food industry, Establishing an innovative niche market?

Research method: Relevant knowledge has been collected with the help of a framework, resulting in a qualitative analysis with the Business Model Canvas as analytical tool. The knowledge has also been tested on a product development case from a case company.

Conclusion: 1. The value proposition of an innovative functional pet food product should be centred around its functionality.
2. At the time of launch, the targeted initial customer segment should be opinion leaders within the pet food industry.
3. The customer relationship should be built on trust.
4. Specialty retail stores is the most suitable channel.
5. Indirect costs can come from deficient sustainable product development or wrong level of claim.
6. Value-based pricing is the recommended pricing strategy.

Keywords: functional foods, innovation, pet food, product development

Sammanfattning

Titel: Utveckling av innovativ mervärdesmat för husdjur - en sammanställning av relevant kunskap för aktörer i branschen

Författare: Lovisa Bengtsson, Gunnel Bildt, Julia Skäremo

Handledare: Stein Kleppestø, Företagsekonomiska institutionen, Lunds universitet
Malin Sjöö, Livsmedelsteknik, Lunds Tekniska Högskola
Emma Nordell, Innovation Project Manager, Lantmännen

Problemställning: Ändringar i EU:s lagstiftning har på senare tid förändrat mervärdesmatsbranschen genom att skärpa kraven för påståenden till konsumenter. Samtidigt har mervärdesprodukter växer för husdjur ökat. Att på ett korrekt sätt följa den nya lagstiftningen kräver en ny typ av kunskap inom mervärdesbranscherna, vilket blir ännu tydligare för produkter med innovative påståenden som inte är väletablerade. För att navigera i detta krävs forskning för att säkerställa rätt leverans av värde till konsumenterna, och på rätt sätt.

Syfte: Att kartlägga och sammankoppla befintlig kunskap inom mervärdesmat, husdjursmatsbranschen och upprättandet av innovativa nischmarknader. Slutsatserna är avsedda för praktisk vägledning för utveckling av innovativ mervärdesmat för husdjur.

Forskningsfråga: Vilken kunskap, relevant för utveckling av innovativ mervärdesmat för husdjur, framträder vid sammankoppling av följande ämnen: mervärdesmat, husdjursmatsbranschen, etablering av innovativ nischmarknad?

Metod: Relevant kunskap har samlats in med hjälp av ett ramverk, vilket resulterat i en kvalitativ analys med affärsmodellen Business Modell Canvas som analysverktyg. Kunskapen har också testats på en fallstudie (en specifik produkt från ett fallföretag).

Slutsatser: 1. Värdeerbjudandet för innovativ mervärdesmat för husdjur ska vara centrerad kring dess funktionalitet.
2. Vid tidpunkt för lansering bör produkten riktas mot opinionsbildare inom djurmatsbranschen.
3. Kundrelationen bör byggas på förtroende.
4. Fackhandeln är den lämpligaste kanalen
5. Indirekta kostnader kan uppstå genom otillräcklig hållbarhetsanpassning eller en felaktigt vald nivå av påstående om mervärdet.
6. Värdebaserad prissättning är den rekommenderade prissättningsstrategin.

Nyckelord: mervärdesmat, innovation, husdjursmat, produktutveckling

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1. INTRODUCTION

The introduction presents the background of this thesis, which is followed by the problem definition. Thereafter the purpose and research question are presented, followed by delimitations and disposition of this thesis.

1.1 Background

In 2006, the European Commission passed a regulation that changed the food industry (Sjöö, 2015). Regulation 1924/2006, regarding nutrition and health claims on food products, comprises of a whole new framework of guidelines and restrictions for use of claims. The regulation came into force in January 2007 (National Food Agency, 2013). Since then, everything communicated to consumers needs more extensive substantiation, which means increased work for industry actors. Naturally, this specifically affects the industry of functional foods, with functional claims as the foundation of their products.

Parallelly, the functional food trend has spread to the pet food industry, where an increase of functional pet food products can be observed. Also within the pet food industry, there appears to be a big market for functional products, indicating a shift in how we view, and value, our pets (Doggy, 2015a). This is also supported by the expansion of the pet food category and the increasing amount of money spent on this category by consumers (Nielsen, 2014). For animal feed in general, and pet food in particular, the legislation is not quite as narrow as for its humane counterparts; however, similar regulations, which strive for the same transparency, have been imposed after the introduction of 1924/2006.

Pet food industry actors facing the challenge of how to introduce new products to the market are affected both by the development within the industry, and the new legislation. Especially if preparing to launch an innovative product - one that does not have equivalents already on the market - this becomes a central question at issue. Launching a completely new product, bearing a relatively unique functional claim that satisfies a specific need not satisfied by the existing market, means creating a new niche market (Parrish et al., 2006).

There are also other factors to consider due to the innovative nature of these products, such as different consumer behaviour from hesitant consumers.

In 2008, a scientist from University of Gothenburg discovered a connection between intake of the amino acid L-lysine in specific doses and enhanced cognitive performance in mammals. Different effects included, among other things, enhanced learning and concentration abilities (Klamer, 2011). The discovery was patented 2011 under the name eidisine™ (Cognite, 2011). The licensing rights were in 2011 acquired by Lantmännen.

Lantmännen is a Swedish agricultural business association, comprising of a number of subsidiaries within agriculture, food, machinery and energy. Lantmännen's corporate R&D division, Lantmännen R&D, have a long-term ambition of investigating possible application of eidisine™ throughout the group. Their first step is to make this study for pet food subsidiary Lantmännen Doggy AB (henceforth referred to as 'Doggy'). This would mean creating a functional pet food product with eidisine™ as the functional ingredient. This was the starting point of this thesis. No existing pet food products addressing cognitive function, in the same way as proved by Klamer, have been identified on the market. Consequently, the product will, upon launch, create a new market niche. In addition, the product is technologically innovative. Alas, Lantmännen's challenge is to develop, and successfully establish, an innovative functional pet food product. The implications of the challenge described above, as a result of several different aspects and changes to the industry, are embodied in the case of Lantmännen.

When launching an innovative product, especially one that creates a new market niche, many questions arise. How is a new market niche created? What are the conditions on the existing market? What trends need to be taken into account? What is important to know in order to focus product development on the crucial elements? How will the consumers react? How can these factors be combined and co-optimised in order to maximise the chance of success? To begin to explore these questions, this thesis looks to existing knowledge, theories and experience available.

The Lantmännen group have an accountable and sustainable profile that permeate their businesses and ways of working, and this is an important part of their value proposition to consumers (Lantmännen, 2015a). The group takes pride in being able to take full responsibility "*from field to fork*", by controlling research, development, and activities throughout the whole value chain (Lantmännen, 2015a). Since sustainable business is important for Lantmännen's value creation, a sustainable approach will be applied in this research.

1.2 Problem definition

Looking into the case of Lantmännen described above, it becomes apparent that guidance is needed to focus the product development process on the right things, optimising conditions for success.

Upon doing research, both within functional foods, the pet food industry and strategies for establishing an innovative market niche, it appears that these topics have not been researched and documented together. There appears to be a knowledge gap when attempting to combine them, i.e., concerning strategies for developing an innovative functional pet food product.

This knowledge gap in itself is interesting to explore from an academic perspective, but also an aggravating circumstance for industry actors, like Lantmännen, faced with the challenge.

1.3 Purpose

The purpose with this master thesis is to survey the interconnected area of the existing knowledge within functional foods, the pet food industry and establishing of an innovative niche market (figure 1). From this, relevant knowledge for development of innovative functional pet food products will be presented. The conclusions are intended for practical guidance regarding development of such products, but also implicate a direction for future academic exploration of the subject.

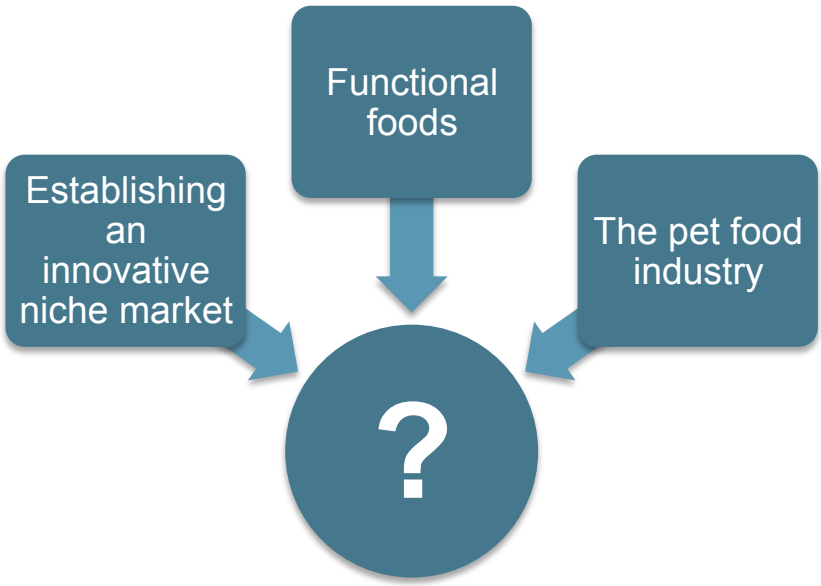


Figure 1. *Illustration of knowledge combination compiled in this thesis. The "?" represents the interconnected knowledge area to be discovered.*

1.4 Research question

The thesis aims to answer the following research question:

- What knowledge, relevant for development of innovative functional pet food products, emerges at the interconnection of the following subjects?
    - Functional foods
    - The pet food industry
    - Establishing an innovative niche market

1.5 Delimitations

This master thesis is delimited to Sweden, and the Swedish market of pet food. This delimitation is partly because the pet food industry may differ from country to country, hence an overall analysis of the world's pet food industry is irrelevant. Also, the case company is Swedish, and Sweden would be the initial market for the case product, which makes this a relevant delimitation for this

thesis. However, some or all of the conclusions may be applicable to other countries' markets as well.

Another applied delimitation concerns trends within the food industry for humans. As a consequence of the profile of the case company, trends concerning sustainability and naturalness of products have been taken into account. However, as a consequence of the scope, research of food for human consumption trends beyond these has not been included.

1.6 Disposition

The method applied throughout the work with this thesis, and the authors' reasoning around the consequences for the outcome, is discussed in chapter 2. This chapter also presents the analytical tool, which will be used to filter theoretical and empirical knowledge and generate conclusions to answer the research question.

Following the method, chapter 3 is a survey of available and relevant general knowledge within the three knowledge areas functional food, the pet food industry and establishing an innovative niche market. Chapter 3 is a combination of theoretical and empirical knowledge (see chapter 2.1.3 for further explanation).

In chapter 4, the case is presented; a presentation of the case company is followed by conditions for the innovation (to become product). Before the analysis begins, limitations regarding the product are discussed, as a result of the case-specific knowledge.

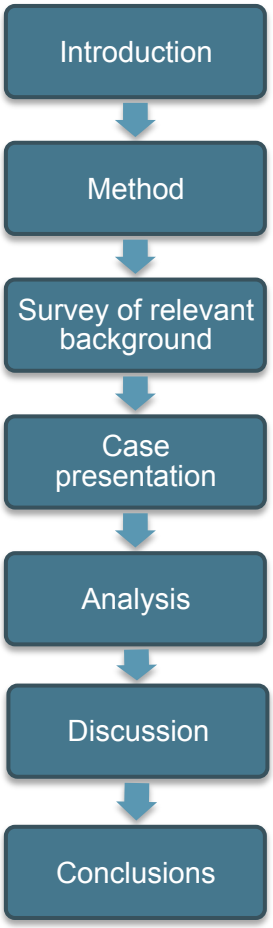


***Figure 2**. Authors' own illustration of thesis disposition.*

The analysis, chapter 5, is divided according to the sections in the analytical tool (described in chapter 2.2). Each section is then further divided into two parts: the new interconnected knowledge area, and application of knowledge on the case.

The preliminary findings from the analysis will be further discussed in chapter 6: 'Discussion'. Here, the authors discuss the analysis, criticise
the analysis, and hold a complementary discussion of the perspectives missing from the analytical tool. Additionally, a discussion based on experts' comments on the analysis, in order to strengthen or reject the analysis findings. Lastly, a discussion of conclusions, as well as their general applicability is conducted. In the final chapter, the final conclusions of the thesis are presented.

A schematic overview of the thesis disposition (excluding the method chapter) is presented in figure 2.

2. METHOD

Chapter 2 aims at explaining the method applied throughout this thesis.

The starting point of the method has always been the purpose (chapter 1.3), to make sure that everything following is in accordance with, and contribute to, fulfilling this purpose. To facilitate, an analytical tool (presented in chapter 2.2) was chosen to help structure the analysis and generate relevant conclusions.

2.1 Research method

2.1.1 Chronological method

The work with this thesis started in January 2015, when the authors took part in Lantmännen's internal innovation program 'Växthuset'[1]. During the six sessions, the authors were coached by innovation experts from STING, Stockholm Innovation & Growth, specialised in business development (STING, 2015), as well as fellow participants from different departments at Lantmännen. The course can be compared to a 'focus group' (Bryman & Bell, 2011), where participants together with coaches discussed specific topics together and gave each other input on the respective projects. As a result of this, the authors became acquainted and comfortable with the tool Business Model Canvas (BMC) (later chosen as the suitable analytical tool for the thesis). From there, the work has been a parallel collection of theoretical and empirical knowledge in an iterative process; an interaction between relevant theoretical areas encountered, paired with an explorative collection of empirical knowledge required to fulfil the purpose.

2.1.2 The case study

The thesis is partially divided into two parts; one is generally applicable, and the second one is a case study at Doggy. The general knowledge (chapter 3) aims at answering the research question. However, the conclusions that can be drawn from such a study, only surveying existing knowledge within diverse

[1] In English: 'greenhouse'
[2] See Appendix A: Technical glossary

fields of expertise, would only begin to suggest an answer to the research question. Because of this, the method also contains the case study. This case study aims at testing the applicability of the new-found knowledge area on a real case, thereby strengthening or rejecting the conclusions. A discussion regarding which specific conclusions from the case can be applicable to the general case will follow to generate the final conclusions. The final conclusions aim at being generally applicable for the Swedish pet food industry (as opposed to specific for the case study).

2.1.3 Theoretical and empirical knowledge

To fulfil the purpose of this thesis, and as a result of the applied approach, the authors have chosen to employ a viewpoint where no distinction has been made between theoretical and empirical knowledge structurally in the text. Instead, all relevant data collected (chapter 3) is labelled 'survey of relevant background'. The purpose of this has been to help the reader by gathering all relevant knowledge for each subject in one place, thereby avoiding repetitions and minimising confusion. Caution has instead been paid to distinguishing general knowledge from knowledge that is specific to the case study, in order to be able to test the emerging knowledge on the case. The combination of theoretical and empirical knowledge is applied throughout chapters 3 and 4.

2.1.4 Data collection

The fact that the work with this thesis started with the case from Lantmännen, and the Business Model Canvas (BMC) as a tool for business planning, has undoubtedly, but not fully consciously, affected the collection of data. This has been particularly prominent when the authors have assessed the relevance of studied articles and literature. This means that the three knowledge areas studied have, in some way, been filtered through relevance for Doggy and the BMC, in addition to being matched to contribute to fulfilling the purpose of the thesis.

In the initial research phase, when the authors attempted to gain a broader perspective of the problematisation by studying a wide variety of research within different fields, some patterns emerged. Firstly, the area of functional foods was discovered to be a fairly cohesive and delimited knowledge area.

Phenomena, such as for example consumer acceptance, were also clearly discussed from a strictly functional foods perspective, which meant the authors did not have to assemble functional foods-specific knowledge behaviour separately. Subsequently, 'functional foods' was defined to be one of the relevant knowledge areas for the framework.

The same pattern emerged after researching pet food in general. Although this knowledge area was not as developed academically, there was not much knowledge about pet food that simultaneously discussed other areas (e.g. food for human consumption). The authors concluded also this area to be highly relevant for the thesis, naturally, and thereby made it the second area of the framework.

After these two were defined, there were still aspects to cover. Legislative aspects was initially discovered to be of great importance for development of functional food products (whether for pets or humans), but was decided to be included rather as guidelines for what would be possible. Additionally, after having read a lot of information on both functional foods and pet food, the authors realised that the product would likely create a niche market even within functional pet food, since the claim was to be unique and innovative. Initially, 'niche market' and 'innovation' knowledge areas were intended to be separated, but by researching the two the authors realised that the knowledge available was coherent, and closely related, between the two. This resulted in the merged knowledge area of 'innovative niche market', which includes consumer behaviour specific for innovative products.

The three knowledge areas, as defined in the purpose (chapter 1.3), have together formed a structure to guide the collection of data. This structure, in the form of a framework (figure 3), has been set up and followed to ensure consistency with fulfilling the thesis' purpose. The authors have consistently tried to evaluate which knowledge from the three fields would contribute to fulfilling the purpose of this thesis, and separate it from the knowledge that would not. The framework illustrates this, where the relevant information fits into the centre triangle of the framework. In some cases, knowledge from areas where two out of three areas meet have been included, where it has contributed to the understanding of the interconnected knowledge area. This framework ensures that the authors' criteria for the relevant background

knowledge - 'necessary' and 'sufficient' - are met. The criteria serve the purpose of assuring that all relevant knowledge is covered, but no more.

Figure 3. *Framework for assessing relevance of information in the data collection phase. Information that contributes to understanding and finding the field within the middle triangle is presented in this thesis.*

As far as possible, data has been collected from published articles and printed literature from reliable sources. Some relevant documents have been gathered online in order to complement these sources, or in some cases due to the lack of published research. Throughout the collection of the documents, published articles and printed literature, the authors have used a critical approach, and reviewed the sources, in order to make sure the data is valid.

Additional data has been gathered through Växthuset, semi-structured interviews, observations and email interviews. During a visit to Doggy in Vårgårda (March 23rd, 2015), the authors conducted a semi-structured interview (Bryman & Bell, 2011) with (then active, now former) CEO Anette Rosengren, Market and Innovation Manager Fredrik Krook (now CEO), and Development Manager Ann-Katrin Haraldsson. With many years of experience within the pet food industry, and first-hand knowledge about running a pet food-producing company, the authors consider Rosengren,

Krook and Haraldsson as reliable sources regarding the pet food industry. A prepared outline of questions was used during the meeting, which resulted in a conversation where notes were carefully taken. Additional questions to Haraldsson have been asked, and answered, via email. During the visit, the authors also got to go through the production site and observe the process flows first-hand. The tour was lead by Dennis Helgesson, Assistant Factory Manager, who later provided process schemes for the production.

Three different knowledge areas are combined in this work. While 'establishment of innovative niche markets' and 'functional foods' have largely been covered by studying reviewed and published articles, the third area, 'pet food industry', has been surveyed from a more empirical point of view. The authors have had access to experienced employees within the industry, valued their knowledge, and in the same time assuring relevance for the case company. Additionally, reports and documents from industry actors have been collected online. Together, this means that the data sources throughout this thesis are different in nature, and should be treated as such when analysed together. For example, the authors have regarded a published article or literature by a renowned expert to be of greater credibility than all other sources. Statements from employees at Doggy have been evaluated according to the experience of that particular employee. However, they have all had a lot of experience within their respective fields, and their answers have been considered credible, but not definite. Online reports and equivalents are treated as less trustworthy sources of data, however to some extent depending on the source. These interpretations and assessments of different references have been present throughout the analysis. The findings of the analysis have largely been evaluated according to the references on which they have been based, to produce valid conclusions.

2.1.5 Analysis process

When the final knowledge areas had been defined, and resulted in the framework, data was collected and screened according to the process described in 2.1.4. In the analysis, the three different knowledge areas, together with legislative aspects, were to be combined to later generate the interconnected knowledge area, and, subsequently, the conclusions.

When information from all the knowledge areas had been collected, screened and structured, the analysis process began. By looking at the knowledge collected with the view of one BMC building block at a time, knowledge that could contribute to a decision within that particular block was defined, and combined with the other knowledge areas, according to the same principle. By doing this, synergies between the knowledge areas emerged, where two or three of them contributed to the same conclusion, which was then selected for the first draft of the analysis. These were then evaluated according to how practically relevant they would be for an industry actor, and screened accordingly, to generate the final analysis chapter.

To investigate the credibility of the findings, i.e. whether they seem to describe the reality as it is perceived by those faced with similar challenges as described, the authors have invited two subject experts to survey and comment the analysis. The consulted experts are Håkan Nordholm and Peter Wennström. Nordholm is currently Product Manager Premixes and Mineral Feed at Lantmännen Lantbruk, and former R&D Manager at Doggy. Wennström is an expert in marketing of functional and healthy foods. They received chapter 1 through 5, and were instructed to, according to their expert opinion, respond to the analysis and share their thoughts. Their comments are presented in chapter 6 ('Discussion').

2.1.6 Assumptions

When performing analyses in this thesis, the authors have sometimes made assumptions to be able to draw conclusions when necessary information has been lacking. This applies to the market analysis (chapter 3.5.3), as well as the analysis (chapter 5). The authors have spent five months studying the subjects extensively, learning about a broader spectrum of theoretical and empirical knowledge than finally presented in this thesis. This has helped greatly with achieving a basic understanding for adjacent subjects. The authors collectively have fifteen years of studies within, e.g., biotechnology, environmental engineering, technology management and service management to support basic assumptions and help form an understanding for both science and social sciences. Additionally, the work with this thesis has been supported by associate professors within management as well as food technology, together with very helpful and professional employees at Lantmännen and Doggy. Also,

the authors have worked with minimising assumptions to only occur where necessary.

2.2 Analytical tool

2.2.1 Selection of analytical tool

When the authors of this thesis had become acquainted with the case company and their challenge, as well as understood the challenge from a broader perspective (resulting in the research question), the need for structure became apparent. The framework (figure 3 above) helped the authors keep the data collection relevant. However, a lack of a structure to combine gathered knowledge and generate relevant conclusions was still apparent. Due to the many different aspects to consider when developing a new product, combined with the complex task to combine three different areas of research, an analytical tool was determined to be required to assure the quality of the conclusions.

Throughout the Lantmännen Växthus course, the tool used to create the business models was Business Model Canvas (BMC), created by Alexander Osterwalder. The canvas was a useful tool for the project group during the course, and is the analytical tool for this thesis. The authors consider the BMC to live up to the requirements for analysis structure as it addresses both challenges described above; it provides guidance for what aspects needs to be considered prior to launch, and it provides a breakdown of different subjects in which to combine the three knowledge areas. Additionally, the authors have developed a deeper understanding for the BMC as a tool during the Växthuset course. Alexander Osterwalder and Yves Pigneur, the authors of the book *Business Model Generation* (2010), define a 'business model' as: *"A business model describes the rationale of how an organization creates, delivers, and captures value"* (Osterwalder & Pigneur, 2010:14). Since the purpose of this thesis is to withdraw relevant factors to consider for companies looking to develop a functional pet food product, the authors believe the BMC will provide the right guidelines.

2.2.2 The Business Model Canvas (BMC)

The BMC is a widely used tool for creating or reshaping business models (Strategyzer, 2015), and originates from Osterwalder's research on business model ontology in 2004 (Osterwalder, 2004). The purpose of his research was to investigate how business models can be described and represented in order to build a foundation for subsequent concepts or tools, and it resulted in a generic business model ontology representable for management tools within strategy and information systems. The result is a business model ontology consisting of nine building blocks focusing on the four areas: product, customer interface, infrastructure management and financial aspects (Osterwalder, 2004). Osterwalder's results from 2004 later resulted in the Business Model Canvas, consisting of 9 building blocks (see figure 4 below), originally from the business model ontology. (Osterwalder & Pigneur, 2010)

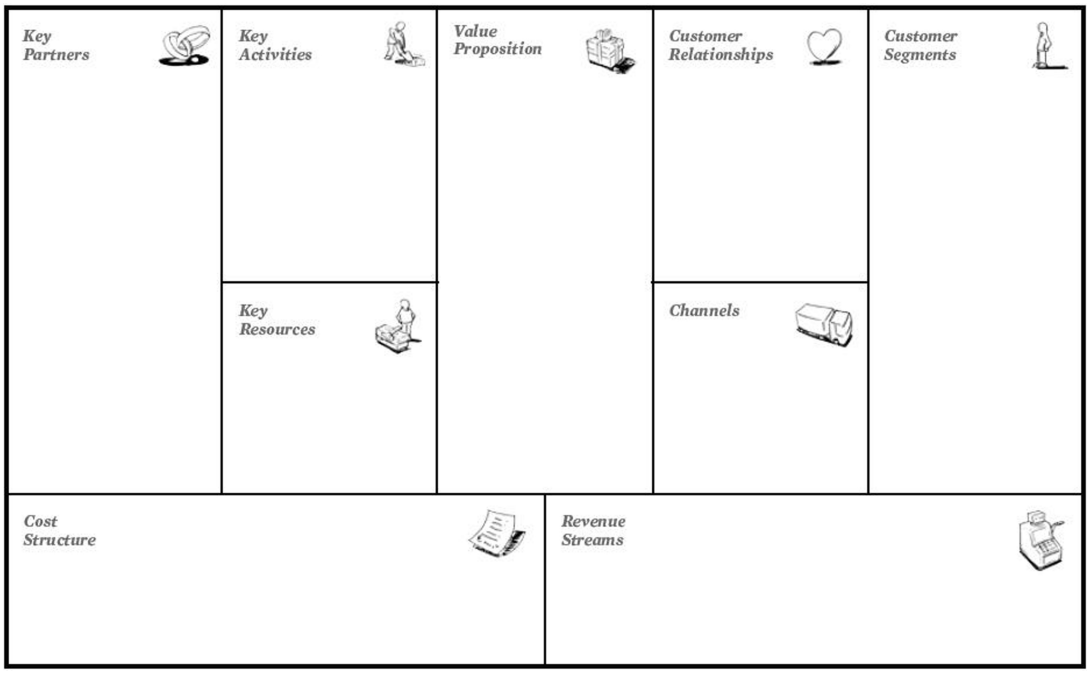


Figure 4. *The Business Model Canvas. (Osterwalder & Pigneur, 2010).*

The structure of the BMC, and descriptions of each building block is summarised in table 1 below:

Table 1. *Description of the BMC. Authors' own, based on Osterwalder & Pigneur (2010).*

Pillar	Building block of business model	Description
Product	Value proposition	An overview of the value delivered to the customer, what problems the product solves, and what needs are being satisfied.
Customer Interface	Customer segments	The segment of customers the company see fit for the product.
	Customer relationship	Describes the kind of relationship a company wishes to establish with the customer segment.
	Channels	Means of getting in touch with the selected customer segment.
Infrastructure Management	Key activities	Involves which key activities the value proposition, distribution channels, customer relationships and revenue streams require.
	Key resources	Involves what key resources the value proposition, distribution channels, customer relationships and revenue streams require.
	Key partners	Involve key partners, key suppliers, and which key resources that are acquired from partners, as well as which key activities partners perform.
Financial Aspects	Cost structure	Represent all the costs involved in the business model.
	Revenue streams	Represent the revenue streams involved in the business model.

2.2.3 Adapting the canvas

In this thesis the canvas acts merely as a tool for which the structure and the building blocks are of great help for fulfilling the purpose, not as a business model generator. Therefore, not all nine building blocks are relevant. The pillar for infrastructure management, with the building blocks key activities, key resources and key partners, will not be used in the analysis, as these blocks are very company specific; thus, general conclusions will not be useful. Therefore, the blocks that will act as guidelines in the analysis are: value proposition, customer segment, customer relationship, channels, cost structure and revenue streams.

For criticism of the analytical tool, see chapter 2.5.2.

2.3 Points of view

Throughout the work with this thesis, a scientific awareness has been present. This means that a critical and systematic approach has always been applied when collecting and analysing data. The authors have been careful to always take notes of, and follow up on, information gathered and received.

A consequence of the thesis' different areas of knowledge, and the broad spectrum of science they cover together, the nature of these areas has been diverse; ranging from very substantial, where it can with relative certainty be concluded that things are as they seem, to more abstract phenomena when for example exploring behaviour of consumers. In this respect, the reality that the authors have been relating to throughout the thesis has been different depending on subject. Comments from experts and supervisors along the way (from industry as well as academia), combined with structures described throughout this chapter, e.g. assessing the references by their level of credibility, gives the conclusions of this thesis validity to apply in the defined context.

It is important to have in mind that sorting and exclusion of knowledge, and interpretations, have been made by the authors. This means that objectivity

can never fully be reached. However, the authors have constantly tried to be aware of this when conducting the work with this thesis, especially when studying the more hypothetical areas, thereby attempting to minimise the level of subjectivity that arises. Still, the subjectivity involved in references used remains.

2.4 Criticism

2.4.1 Research method

There is a possibility that the authors' decision to merge theoretical and empirical knowledge into one chapter becomes confusing to the reader, and limits the academic applicability of the study. However, the authors have been careful to maintain awareness of the difference between the two throughout the thesis, and thereby minimise this risk. The assessment of credibility of different sources (see chapter 2.1.4) also contributes by separating, for example, published articles from online documents and interviews.

The references used throughout this thesis have, in some places, been relatively out-dated. However, when concerning a subject that has been known to have changed dramatically since the publication date, the authors have tried to complement them with additional, more recent, references. Additionally, several of these older references have recently been recommended to the authors by experts of pet food and marketing of functional foods, which makes the assumption of their contemporariness more valid.

Another important aspect to note is that employees from the case company, Doggy, have been cited as sources. In chapter 4, the case presentation, this is natural, as the chapter presents the company and its business. However, they have also contributed to the knowledge in chapter 3, or more specifically, the pet food industry chapter. In this case, they have been consulted as pet food industry experts, and not as representatives of Doggy.

The review of knowledge available and relevant to combine for the purpose has been selected by the authors themselves, meaning subjectivity has been present. Subsequently, this knowledge has been applied to one case company, and one only. The research and thesis have together been produced during five months. Needless to say, there is more research, both theoretical and empirical, to be done before accepting these conclusions as truths. However, the authors still believe the conclusions to be generally applicable to a large extent. The combination of analysis of knowledge, the application of this knowledge on a real-life case, as well as expert comments on the analyses, provides depth and strengthens the conclusions.

2.4.2 Analytical tool

In choosing an tool to use for the analysis, the authors are aware that the analysis is subjective from the viewpoint of the BMC. If another tool would have been used, a different outcome might have been. However, the complexity of this thesis, as well as the global acceptance of Osterwalder's BMC, are reasons for why the authors believe the chosen analytical tool to be the most suitable. Since the BMC is created to help companies with the first steps of making a business idea into a viable product, and the research question of this thesis is to identify significant aspects to consider prior to launch of innovative functional pet food products, the authors consider the tool to be valid for fulfilling the purpose of this thesis.

The authors identify three relevant factors missing in the BMC, which are discussed separately in the discussion (chapter 6.3). Firstly, a future perspective is not included in the canvas. The canvas is only a snapshot of the initial steps when developing a product. It does not address the future and what happens if the product becomes accepted. Additionally, the BMC does not take competition into consideration, i.e. whether there are any potential substitute products and how to encounter industry rivalry. Lastly, the canvas does not consider risks and opportunities involved in developing or launching the intended innovation. However, due to the nature of innovative products, the future perspective and competition has been touched upon briefly within the blocks for customer segment and channels.

3. SURVEY OF RELEVANT BACKGROUND KNOWLEDGE

When commencing research on the knowledge areas to be combined in this thesis, it became clear that some expressions needed to be defined, both for the authors, but also for the future readers. Expressions included wordings where the same word meant different things in different sources, but also expressions where no uniform definition seems to exist. As a result of this, the first part of this chapter (3.1) defines these four terms and expressions.

The subsequent parts of the chapter (3.2-3.5) contain theoretical and empirical knowledge. Chapter 3.2, concerning legislative aspects, forms the groundwork for what can later be applied within chapters 3.3-3.5, which concern the three main knowledge areas to be combined. Throughout the thesis, the definitions stated in chapter 3.1 are applied. Chapters 3.2-3.5 present all the knowledge that is analysed together with the case in order to form a foundation for the discussion and conclusions (chapters 6 and 7).

3.1 Definitions

The following sections define the terms 'functional foods', 'sustainability', 'consumer' and 'pet'.

3.1.1 Functional foods

Throughout this thesis, *functional foods* will be defined as: *A conventional (or similar to conventional) food that has a demonstrated physiological or medical benefit beyond basic nutrition. The food should be effective when consumed in, for dietary purposes, normal amounts, and bear a functional claim.*

There are many different definitions of the concept of functional foods, where no consensus can be identified among experts, researchers and industry actors.

Considering that functional foods is a key concept in this thesis, it is important that its implications are defined. To clarify the meaning of the term, a short exposé of existing criteria and definitions are presented below, resulting in the interpretation applied throughout this thesis.

Doyon and Labrecque (2008) reviews over a hundred different definitions of functional foods, and identifies four key concepts present in these definitions (Doyon & Labrecque, 2008):

- Health benefit
- The nature of the food
- Consumption pattern
- Level of function

Other definitions also include another element, which is included as a fifth concept: marketing. These five key concepts will be treated separately below, and then be unified into a definition applied by the authors throughout this thesis.

3.1.1.1 Health benefit

Health benefit describes what types of physiological effects can be classified as functional for a food product. While some authors also include medical benefits in the definition, others do not distinguish between these, or treat the medical aspect at all. However, consensus seems to be achieved regarding that medical aspects, if relevant, only include preventing and/or relieving a condition, rather than curing or healing (which is reserved for pharmaceuticals). Wordings include:

"[...] *provide a physiological or medical benefit* [...]" (CSIRO Human Nutrition, 2004, cited in Doyon & Labrecque, 2008)

"[...] *have physiological benefits and/or to reduce the risk of chronic disease beyond basic nutritional functions.*" (Canadian National Institute of Nutrition, cited in Wilson, 2001)

"[...] *have properties that provide an additional health benefit.*" (Agriculture, Food and Rural Development, 2003, cited in Doyon & Labrecque, 2008)

"[...] *is satisfactorily demonstrated to affect beneficially one or more target functions in the body, beyond adequate nutritional effects, in a way that is relevant to either an improved state of health and well-being and/or reduction of risk of disease.*" (Diplock, et al., 1999)

"*Foods that with their specific health effects could, in the future, indicate a new mode of thinking about the relationships between food and health in everyday life.*" (Ballali & Lanciai, 2012)

The definitions vary from vague to more specific, but most of them give room for wide interpretations of the mentioned health benefits and/or physiological effects.

3.1.1.2 The nature of the food

This concept refers to the physical properties of the food, i.e. whether it is accepted or not that the product appears in another form than 'traditional food'. Examples of non-traditional food are pills and supplements. This criterion also covers whether the product needs to have been enriched in some way, or in some cases have had ingredients removed. Examples of definitions, where the nature is not only named 'food' or 'foods', include:

"[...] *food similar in appearance to, or may be a conventional food* [...]" (Health Canada, 2005, cited in Agriculture and Agri-Food Canada, 2009)

"*A whole food (as opposed to pills, powders or supplements)* [...]" (Kleinschmidt, 2003, cited in Doyon & Labrecque, 2008)

"[...] *a food or part of a food* [...]" (DeFelice, 2007)

Most experts agree that the product should in some way mimic a natural food product, intended to be consumed like one. However, some definitions adopt a definition leaving more room for individual interpretations (e.g. DeFelice, 2007).

3.1.1.3 Consumption pattern

Since definitions of 'food' and 'regular diet' vary across national borders, this concept aims to clarify that a product may not be applicable as a functional food worldwide, even if it fits the definition in some markets. In the example definitions, it is not a question of words chosen, but rather of whether the concept appears in the definition or not. An example definition that include consumption pattern read:

"*The amount of intake and form of the functional food should be as it is normally expected for dietary purposes.*" (Diplock, et al., 1999)

In this case, but not all, the consumption pattern is linked to the nature of the food (and vice versa).

3.1.1.4 Level of function

All foods carry nutritional functions in some way or other. The question posed by this criterion is where the basic nutritional functions end and the frontier of the functionality in functional foods begins. Many definitions use a variant of "beyond basic nutrition" to describe the functions (e.g. IFIC Foundation, 2006; Health Canada, 1997; Adelaja & Schilling, 1999; all cited in Doyon & Labrecque, 2008).

3.1.1.5 Marketing

This parameter concerns whether or not the product is marketed as a functional food. Example definitions of the two cases are:

"*Food in which ingredients with an additional health value have been added and this is announced to the consumers."* (Hilliam, 2000, cited in Bigliardi & Galati, 2013)

"*Any food for which a health claim can be made is a functional food*." (Weststrate, van Poppel & Verschuren, 2002, cited in Doyon & Labrecque, 2008) Clearly, there is a difference between functionality when a health claim *can* be

made, and the case where the communication of the functionality is central to the classification.

3.1.1.6 Thesis definition

The following interpretations of the five concepts of functional foods definitions have been made by the authors:

- Health benefit: *has demonstrated physiological or medical benefit*
- Nature of the food: *conventional food, or food similar to conventional food*
- Consumption pattern: *a, for dietary purposes, normal amount*
- Level of function: *beyond basic nutrition*
- Marketing: *bear a functional claim*

Thus, a functional food is, throughout this thesis: *A conventional (or similar to conventional) food that has a demonstrated physiological or medical benefit beyond basic nutrition. The food should be effective when consumed in, for dietary purposes, normal amounts, and bear a functional claim.*

3.1.2 Sustainability

Sustainability is throughout this thesis defined as ecological sustainability.

"*It is* extremely *likely that human influence has been the dominant cause of the observed warming since the mid-20th century*" (IPCC, 2013:17). This is one of the headlines of the latest report from IPPC, the Intergovernmental Panel on Climate Change, which is a group of the world's leading experts on environmental issues. It also claims that measures need to be taken to decrease the impacts of climate change. This means that it should no longer be possible not to take responsibility for the negative environmental impacts of running a business. As further described in chapter 4.2.2, sustainability is a key word for Lantmännen, who have "Responsibility from field to fork" as their slogan (Lantmännen, 2015a). As a consequence, sustainable development will be a consistent theme throughout this thesis. The definition of sustainable

development used in this report will be the same as the definition used by United Nations, as first described in the Brundtland Commission.

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." (World Commission On Environment and Development, 1987:1)

The Triple Bottom Line (TBL) is defined in 'Agenda 21', which is the resulting document and action-plan of the Earth Summit 1992. The summit was held in Rio de Janeiro as one of the actions taken after the Brundtland Commission. The three dimensions - ecological, social and economical sustainability - should be coherent and mutually supportive (Ministry of the Environment and Energy, 2015).

This report will solely focus on the ecological sustainability. This means that whenever sustainability/sustainable is mentioned, the environmental factors are the only ones concerned, unless otherwise mentioned, as a result of the limitations of the scope. The possibility to draw general conclusions about companies' economical or social factors will be left out in this thesis.

3.1.3 Consumer

Consumer is defined as the final buyer of the product, i.e. the pet owner.

When exploring theory in the different fields of knowledge required to answer the research questions, it was concluded that different terms are used to express 'the end customer'. Additionally, this thesis addresses development of products where the *buyer* is not the physical *consumer* of the product (which is the pet). Also, the case company Doggy, despite being a business to consumer (B2C) company, sell their products primarily to, for example, grocery stores (Doggy, 2015a). This means that their customer is neither the consumer nor the buyer of the products. These aspects could lead to confusion when combining different fields of knowledge, especially when they are not specific for the pet food industry. The authors have therefore chosen to apply the following definitions throughout the thesis:

Consumer: The final buyer of the product (i.e., in the case of the pet food industry, the pet owner).

Customer: The customer when applying a business to business (B2B) outlook, e.g. the company buying the product from the manufacturer with the intent to sell to the consumer (which means, for the case company, grocery stores and specialty retail stores).

In some of the literature studied, one or two of the definitions, or even a third (e.g. 'buyer'), are applied throughout without clear definition. Where the intended meaning of the word has been self-explanatory in the context of the article or book, the authors of this thesis has interpreted into our own defined terms above. This has been done in order to make sure that the same term is used to describe the same customer or consumer throughout the thesis and avoid confusion.

An exception is made when talking about 'customer segment' and 'customer relationship', as defined in the Business Model Canvas. These are an established names for these parts of the tool, wherefore the authors have chosen to keep the original terminology in this exception. In these cases, 'customer' means the final buyer.

3.1.4 Pet

For the most part of this thesis, *pet* refers to dogs and cats.

For the purpose of this thesis, the authors deem it necessary to define what is included in the definition of 'pet'. The Merriam-Webster dictionary (2015) defines a pet as "*a domesticated animal kept for pleasure rather than utility*".

Throughout this thesis, dogs and, to some extent, cats, are emphasised. However, some of the knowledge gathered, and thereby some of the conclusions, will be applicable to a broader spectrum of pets.

There is also an important difference between 'pet food' and 'feed'. Whereas 'pet food' refers to food for animals fitting in the 'pet' definition above, 'feed' may also include food for, e.g., farm animals. When talking about animals in the context of feed it is especially important to distinguish pets from animals held for production of food. When discussing EU legislation, for example, 'feed' refers to feed both for livestock and for pets, which is why it is included in the Legislative aspects (chapter 3.2). (Only 'food' always refers to food for human consumption.)

3.2 Legislative aspects

To develop an understanding for the legal aspects surrounding the development of functional products, an overview of legislation for both food for human consumption and feed are presented. By looking at recent EU regulations, it can be concluded that a similar development can be observed for food and feed concerning tightened marketing regulations in the European Union.

Legislation regarding feed additives and claims differs between animals held as pets and for production of food. In parts, legislation also differs between different pets. When it treats different types of pet animals differently, cats and dogs are regulated most tightly. Because of this, this legal overview will, in these cases, focus on cats and dogs to cover 'worst case'.

3.2.1 Feed additives

When including an additive in animal feed, the European Food Safety Authority (EFSA) distinguishes between five categories of additives (EFSA, 2015):

- Technological additives (e.g. antioxidants, preservatives)
- Sensory additives (e.g. additives for colour or flavour)
- Nutritional additives (e.g. vitamins and amino acids)

- Zootechnical additives (e.g. additives to enhance digestibility or stabilise gut flora)
- Coccidiostats and histomonostats (antibiotics)

Generally for additives, two different types of studies are required: safety (including tolerance) and efficacy studies. If not explicitly stated, tolerance studies (i.e. studies showing that the substance is safe for the animal in relevant doses) are always required for cats and dogs. However, additional safety studies are not required if three major target species have previously shown sufficient results that are comparable and with a wide safety margin. (EFSA, 2011)

3.2.2 Product claims

To succeed when developing an added-value product, marketing of functional claims is crucial. Member countries of the European Union, thereby Sweden included, need to follow EU legislation regarding marketing and communication.

Directives 2006/114/EC and 89/552/EEC, regarding misleading and comparative advertising and television broadcasting activities, respectively, lay the foundation for advertising legislation within the European Union (FEDIAF, 2011). These apply to a broad range of consumer goods, including pet food and animal feed in general. It is forbidden to, in any way, provide misleading information in product-related communication (EU Directive 2006/114/EC).

Regulation 1924/2006, also known as NHCR (Nutrition and Health Claims Regulation), specifically aimed at foods, concerns claims made on food products. The regulation aims to protect consumers by preventing misleading communication. The regulation implies that all claims must be supported by valid scientific evidence approved by the European Food Safety Authority (EFSA). It also states that all food products with health and/or nutrition claims have to include a nutrition declaration (EU Regulation 1924/2006). As of December 2016, the nutrition declaration will, in accordance with Regulation 1169/2011, be mandatory for all food products regardless of claims (EU Regulation 1169/2011).

Moving from food to feed, Regulation 767/2009/EC regulates the use and market placing of feed throughout the European Union. This legislation also provides industry actors with useful common definitions for terms and claims, such as:

Claim: "*Any labelling or presentation which draws particular attention to the presence or absence of a substance in the feed, to a specific nutritional characteristic or process or to a specific function related to any of these.*" (EU Regulation 767/2009)

When marketing functional foods for human consumption, only claims pre-approved by the EFSA are allowed to be communicated (National Food Agency, 2015; EU Regulation 1924/2006). For animal feed, the legislation is limited to providing general guidelines, as well as examples of unlawful claims (Swedish Board of Agriculture, 2015).

FEDIAF, The European Pet Food Industry Federation, provide a voluntary industry code with interpretations of Regulation 767/2009. The code provides examples to help industry actors decipher the legislation. According to this code, there are three main categories of feed claims. 'Content claims' refers to content level of a particular component. 'Product descriptors' concern the use of terms such as 'natural', 'genuine' and 'organic'. The last category, 'functional claims', relates to claims associated with functional foods as defined also for human consumption. Functional claims can be further divided into claims for nutrient function, enhanced function and health maintenance, and decreased disease risk claims. All claims must be verifiable and understandable to the consumer. (FEDIAF, 2011)

Different claims categories comply with different sets of regulations concerning substantiation requirements, but there are also generally applicable codes to follow. It is always the responsibility of the feed business operator to be able to provide relevant substantiation of claims upon request from competent authority. (FEDIAF, 2011) The evidence has to be available at the time of product launch, and consist of scientific publications, company research, or both (EU Regulation 767/2009).

When substantiating a functional claim, 'generic' and 'innovative' claims are separated. Generic claims are those "*for which well-established knowledge exists*" (FEDIAF, 2011:36), whereas innovative claims need to produce more evidence. FEDIAF (2011) states that, firstly, the claimed beneficial effect of the constituent needs to be substantiated. In addition to this, they say, there needs to be proof that the same constituent is present in the product, and in the correct amounts, to produce stated beneficial effect. Further, this is applicable both for complete pet food, as well as complementary products (FEDIAF, 2011). Complete feed is defined as being sufficient for a daily ration in itself, whereas complementary feed is not (EU Regulation 767/2009) (e.g. snacks containing a high content of certain substances).

3.2.3 Patenting

It is profitable to decrease the competition in a market. One way of doing this is by patenting the product or the use of an effect. This way, competitive advantage can be achieved by forcing rivals to develop their own solution to the consumers' needs, which also prevents plagiarism. (The Swedish Patent and Registration Office, 2015a)

To apply for a patent, the following criteria must be met by the innovation (The Swedish Patent and Registration Office, 2015b):

- It must be new, and not previously made public anywhere or anytime.
- It must have innovative height.
- It must be of industrial use.

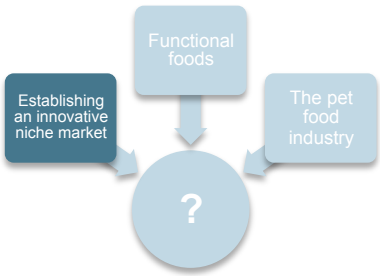
Even though this seems straightforward, the process to get protection by patents can be a strenuous task, and it can cost a lot of time and money to get patents for relevant geographical markets. When the patent is acquired, the right to use it can be licensed to other partners, and thus become a source of income for the patent holder. (The Swedish Patent and Registration Office, 2015b)

Key takeaways – Legislative aspects

- When adding substances to animal feed, safety and efficacy studies normally need to be conducted.
- When making a product claim, EU marketing legislation needs to be considered. There are three different feed product claims defined by the EU, whereof 'functional claims' is one. Functional claims are further divided into 'generic' and 'innovative' claims. All product claims need scientific proof that should be provided by the manufacturer when requested by competent authorities.
- Patenting can be strenuous, but gives competitive advantage.

3.3 Niche market of innovative products

This chapter opens with explaining niche market strategy, followed by consumer behaviour concerning innovative and sustainable products respectively.



3.3.1 Niche market strategy

In mature industries, companies need to work hard to stay successful and competitive. A good way to stand out from the competition is to somehow differentiate from others. This is called 'niche marketing'. (Parrish, et al., 2006)

Niche marketing is a well-known concept within marketing, and many reports on how to practically work with niche marketing exist. However, as Dalgic and Leeuw state in their report *Niche Marketing Revisited* (1994), academic research within the field is limited. Toften and Hamervoll, authors of *Niche Market Research* (2012), point out that this seems to be the case still after 20 years. In this chapter, the authors of this thesis strive towards explaining only the fundamentals of niche marketing. Therefore, the authors have chosen to use Parrish, Cassill & Oxenham's (2006) research *Niche market strategy for a mature marketplace,* which provides a literature review of the concept of niche

marketing, and present useful success factors by interviewing executives within an industry. In Parrish et al.'s (2006) research, Philip Kotler, professor in marketing widely referred to in the field of business administration, is cited and referred to several times. Parrish et al.'s (2006) research is a literature review, presenting a coherent picture of the field. Further Kotler is a widely used reference within marketing. Therefore the authors find Parrish et al.'s (2006) research, and the referred citations to Kotler, to be valid in order to present an overview of niche marketing.

Kotler (2003) defines a niche market as:

"A more narrowly defined group seeking a distinctive mix of benefits" (Kotler, 2003, cited in Parrish, et al., 2006:697).

Parrish, Cassill & Oxenham (2006), authors of *Niche market strategy for a mature marketplace*, present five key characteristics of a niche market, concluded from Kotler (2003):

- Consumers have a distinct set of needs
- Consumers will pay a premium price for the product that best satisfy their needs
- The niche is not likely to attract competitors
- The niche marketer gains certain economies through specialisation
- The niche has potential for size, growth and profit

Therefore, when working with a niche market strategy, the key is to have a product that meets the demands and needs of the market better than the competition. However, Parrish et al.s' (2006) study indicates that 'niche' is a complex concept without a universal definition. Most literature on the subject portray niche marketing as a pull approach, meaning the market and its need is identified initially. However, Kotler's (2003) way of characterising a niche market, as cited above, indicate an opportunity to use a push approach, where the product is developed initially, before the market and its need is identified (Parrish, et al., 2006). The need is possible to create later by communicating with the consumers through marketing strategies. Another important factor when working with a niche product approach is to have strong brand

recognition. However, knowing if the specific market segment is brand loyal is vital for a company working with this approach. (Parrish, et al., 2006)

Some of the success factors of niche marketing, discussed in Parrish et al.s' (2006) research, are:

Specialised product: The product must be uniquely different from the other products and appeal to the selected segment. The specialised product must match the consumer's needs in order to succeed.

Marketing: In order to make the consumer understand their need for the product, a marketing campaign is necessary. The message of the niche product has to be clearly portrayed to the consumer.

Brand image: A strong brand within one area can be spread to other areas. A loyal consumer base can be created by having a strong brand name. However, not all consumers are conscious about brands. Therefore, it is very important to have an understanding about the market and the distribution channels.

Parrish et al. (2006) also conclude that companies that succeed with niche strategies have support from the entire company, a good understanding of the market, and a loyal consumer base.

3.3.2 Consumer behaviour

Consumer behaviour is strongly influenced by cultural, social, personal, and psychological characteristics. It is important to be aware of these characteristics when creating a marketing strategy, since they influence consumers' behaviour. (Armstrong, et al., 2012)

3.3.2.1 Innovative products

Everett M. Rogers (1995) is the author of the widely used book *Diffusion of Innovations* (first published in 1962), which concerns how an innovation becomes adopted by the society and what factors affect the adoption. From

researching innovation theories, the authors believe Rogers' (1995) theories are applicable for describing consumers' behaviour for innovative products, as they are well known and accepted as innovation theories. Since 2011, Rogers' (1995) book have been cited 18 000 times in published articles, which strengthens the reason to use Rogers' (1995) theories as a foundation for this section, and confirm that they are still applicable 20 years after the book was published. However, the authors are aware of that there can be faults within the theories and that they must be used with flexibility towards a specific innovation, as all innovations are different.

According to Everett M. Rogers (1995) the decision process, when it concerns an innovation, consists of five stages:

1. **Knowledge** is the first stage of the decision process and occurs when a person is first exposed to the existence of the innovation.
2. **Persuasion** is the second stage and results in either a positive or negative attitude towards the innovation.
3. **Decision,** which is the third stage of the decision process, occurs when activities result in a choice to either adopt or reject the innovation. If the choice becomes to adopt, two additional stages follow:
4. **Implementation** is the fourth stage and concerns when an innovation is put into use.
5. **Confirmation**, the last stage, occurs when an individual seeks reinforcement for an adoption decision, or change their decision if exposed to conflicting information.

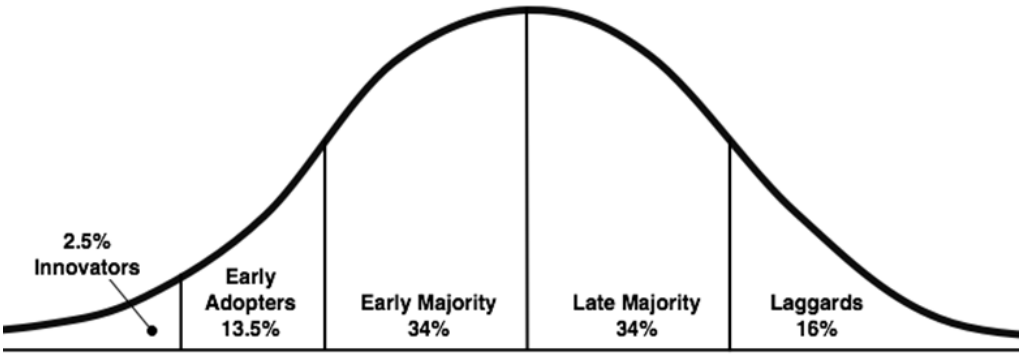


Figure 5. *Adopter Categorization on the Basis of Innovativeness (Rogers, 1995), where the x axis represents time. Image from [Diffusion of Innovations, n.d.].*

When adopting to innovations, people differ in their readiness (Armstrong, et al., 2012). Rogers' (1995) *Adopter Categorization on the Basis of Innovativeness* (figure 5) divides adopters into five categories. Rogers (1995) means that the first people to adopt a new innovation are called 'innovators', and they are the first 2.5 per cent of the individuals in a system. Innovators are willing to try new things despite the risk. The next adopter group is 'early adopters', which includes the next 13.5 per cent. They are opinion leaders who adopt early to innovations in a careful way. 'Early majority' consists of the next 34 per cent, and they adopt to new innovations before the average, but in a deliberate way. The group 'late majority' is just as big as the previous, at 34 per cent, but they are characterised by scepticism; they adopt to an innovation after the majority. Last, the 'laggards' are the remaining 16 per cent, who adopt to an innovation only when it has become a tradition. (Rogers, 1995)

According to Rogers (1995), different factors explain the rate of adoption for a new innovation:

- 'Relative advantage' is the factor concerning the degree of how superior the innovation is to existing products.
- 'Compatibility' is the degree to which the potential consumers' values and experiences fit the innovation.
- 'Complexity' concerns how difficult the innovation is to use or understand.

- 'Trialability' is the degree to which it is possible to try the innovation on a limited time basis. The trial is a way to get rid of uncertainty and find out how the innovation fits into a person's life. This factor is more important for early adopters.
- 'Observability' is how easily the result, i.e. how well the innovation lives up to the consumers' expectations, can be observed by, or described to, others.

As Rogers' (1995) factors affecting the rate of adoption were created before the internet and online shopping became widely established and used, questions of how the internet might affect the rate of adoption arises. Jeffrey T. Prince and Daniel H. Simon (2009), from the Department of Applied Economics and Management at Cornell University, conducted research about the internet's effect on the diffusion of new products. What they could conclude from their research was that the internet accelerates the diffusion of new products, by facilitating product research and being convenient for shopping, as well as a channel for purchase. (Prince & Simon, 2009)

When purchasing a product that has shifted from innovative to accepted, the consumer decision process differs from the one described earlier. Here, a consumer goes through a decision process consisting of five steps: need recognition, information search, evaluation of alternatives, purchase decision and post-purchase behaviour. (Armstrong, et al., 2012; Kotler & Keller, 2012)

3.3.2.2 Sustainability

The sustainability trend within foods is a part of the niche because it is a relevant aspect when looking at functional foods. Also, the authors assume that consumers who are conscious enough to buy functional products for their pet are also conscious about sustainable aspects of the product. An, for this report, important example of this, is the quickly growing trend of ecological foods for humans. As this is one of the leading trends among several other resembling trends, it is relevant to explore the changing attitude in consumer behaviour concerning this. Sales of ecological foods are increasing, according to Statistics Sweden, where one of the main consumer groups are parents. Canned kids

food was one of the biggest ecological categories in 2013; 40 per cent of the units sold were ecological. (Statistics Sweden, 2014)

During the first half of 2014, sales of ecological foods increased by 30 per cent. Since Ekoweb (an independent, non-political market analyst with expertise within ecological farming, production, sales and market) first started measuring sales of ecological foods in 2008, there has been a steady increase in sales. Ekoweb believe the reasons for the increase are media, increased interest in environmental and animal friendly products, as well as focus on origin of foods and pesticides. (Ekoweb, 2014)

According to a report from Ekoweb (2014), never before have sales of ecological foods been this high, where approximately 80 per cent of the ecological food assortment in Swedish stores are KRAV-certified, and the rest are certified according to EU standards. The same report states that food categories where ecological foods are especially high are fruits/vegetables, beer/wine, eggs, meat, dairy and kids food. KRAV, the organisation responsible for KRAV-certified production rules and education to certified organisations (KRAV, 2015a), predicts a similar increase in 2015. An increasing number of people find it worth paying more for KRAV-certified foods. (KRAV, 2015b)

Further, the legal requirements on sustainable development are tightening and will continue to do so, as more governments and international governing agencies are implementing sustainable approaches. This means that the pressure on companies to improve their own work in these areas will increase. (UNEP, 2015)

As this trend is turning more profitable, new phenomena have occurred. One of them is 'greenwashing', which is when an organisation or company deceitfully uses green marketing to be perceived as environmentally friendly, in order to meet the increased consumer demand. Non-Governmental Organisations, (NGOs), are constantly monitoring the bigger companies. If it is revealed that an organisation puts more effort and monetary resources into green marketing than actual sustainable measures, it is often recognised and

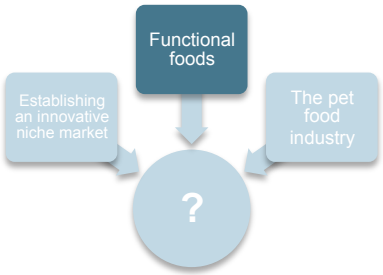
made visible to the public, which can severely damage the trust of the brand. (Kahle & Gurel-Atay, 2013)

Key takeaways – Establishing an innovative niche market

- A niche market strategy applies to a specific set of needs, and one of the success factors is having a product that is uniquely different.
- When adopting to a new innovation, consumers usually go through five steps. The last step consists of the decision whether this is something the consumer wants to try again.
- People differ in their readiness to try a new innovation. Rogers (1995) has developed an illustration for the different categories of adoption, where he discusses how different variables ('relative advantage', 'compatibility', 'complexity', 'trialability', and 'observability') affect the rate of adoption.
- Consumer behaviour regarding sustainability has shifted during the last couple of years, where consumers today increasingly prefer ecological food.

3.4 Functional foods

Throughout chapter 3.4, food for human consumption alone is referred to unless otherwise stated. This chapter starts with a background of the concept of functional foods, thereafter addresses product development. Further, four factors by Wennström (2009), relevant for launching of healthy foods, are presented, and followed by a consumer perspective on functional foods.



3.4.1 Background

The phrase and concept of functional foods was first used in Japan in the 1980's (Hardy, 2000). Later, the trend spread from there and took hold in Europe and the US. However, functional foods have been adopted in different

ways when comparing East and West. In Japan, functional foods have mainly been conceptualised as separate products, whereas the Western countries focus on functional foods as a concept, by adding functionality to existing products and product lines. As such, functional foods exist in many different categories of food, but are not necessarily homogeneously distributed among them. (Siró, et al., 2008)

The functional food movement originates from a widespread and a generally accepted understanding of the relationship between nutrition (i.e. what we eat on a daily basis) and health (Siró, et al., 2008). Additionally, societal developments, such as increased health care expenses and an increase in life expectancy, contributes to a growing demand, and also indicate a reliable future (Robertfroid, 2000).

The size of the functional foods market is hard to estimate, both locally and globally, due to differences in definitions and interpretations of what is to be included (Siró, et al., 2008). However, it can be concluded that the European market is contrasted, where a larger enthusiasm for functional foods is observed in the Northern and Central regions (Menrad, 2003).

Since today's consumers have accepted that there is a connection between health and nutrition to be exploited (Hilliam, 1998), the market of functional foods represents a lasting category within food (Siró, et al., 2008).

3.4.2 Product development

3.4.2.1 Overview

Due to the new legal requirements from the EU, functional food development requires medical knowledge in order to be able to produce sufficient proof of efficacy (Mark-Herbert, 2014). The obligations can be compared to those imposed on the pharmaceutical industry, both with respect to manufacturing and communication (Mark-Herbert, 2014). This makes it different from conventional food development, meaning development of functional foods is more expensive and precarious. As a consequence, the opportunities for

developing technologically advanced food products are not equal for all industry actors. A large multinational company with an established and financially stable R&D unit, for example, has a great advantage compared to a small, although innovative, firm. (Siró, et al., 2008)

When researching what these aspects mean for development of functional food products, and what needs to be considered to maximise chances of a successful product on the market, there is a variety of articles discussing the topic from different angles. However, they are very similar in what they conclude is important. Apart from obvious aspects such as the legislative, consumer acceptance is very recurrent. An example of a summary on what is widely considered important when developing functional foods products is (Siró, et al., 2008):

- Potential technological obstacles
- Legislative aspects
- Consumer demands
- Consumer acceptance

Technological obstacles can be very specific for different cases, but will be investigated for the case study at Doggy (chapter 4). The legislative aspects are explored in chapter 3.2, and consumer demands and acceptance in chapter 3.4.4.

3.4.2.2 Sustainable product development

Sustainable product development is a research area where a lot of research is done at the moment. Nonetheless, there seems to be a general agreement within the field on when it is most beneficial to put effort into sustainability. It is affirmed that the sustainability alignment of a product is to a large extent established during the product development phase, before it is introduced into a production line (Byggeth, et al., 2007). This means that for a company with sustainability ambitions, it is highly relevant to consider these aspects already in early development phases (Byggeth, et al., 2007). It is important that the method chosen for ensuring a sustainable product is integrated with the company's own product development process (Byggeth & Broman, 2000).

Fulfilling the sustainability criteria can be achieved, for example, by considering the Framework for Strategic Sustainable Development (FSSD). This is a tool based on the Triple Bottom Line, presented by the Alliance for Strategic Sustainable Development (2015), which is an international alliance of universities examining the science of sustainable development in collaboration with businesses, NGOs and policy makers. The FSSD, combined with a parallelly running engineering development process model, can create a sustainable and resource-effective products (Byggeth, et al., 2007). Another well-established method is a preliminary study with a life-cycle approach (Fiksel, 2009). The resulting aspects shall then be taken into account in the design of the product and the manufacturing process.

3.4.2.3 Pricing

When pricing a new product there are different strategies to consider. One pricing categorisation, commonly and widely used within the field of business administration, is to price according to either costs, value or competition. Armstrong, Kotler, Harker and Brennan (2012) present this categorisation in their widely used and approved text book within the field of business administration: *Marketing: An introduction*. This book is an up-to-date review of research in marketing, and it indicates these three categories as commonly used. Additionally, Ax and Ask (1995), in their text book *Cost Management*, highlight the same strategies. Since these categories seem to be the most accepted within different fields of business administration, they are considered valuable for this thesis.

Cost-based pricing, which means a product is priced based on its costs. Another pricing strategy is value-based pricing, which means pricing according to the perceived value of the product, from the consumers' point of view. A third pricing strategy is to take other internal and external considerations into account, such as competitors' prices. (Armstrong, et al., 2012)

3.4.3 Wennström's Four Factors

Peter Wennström, expert in marketing of functional and healthy food, has in his book *Wennström's Four Factors of Success: A simple tool to innovate healthy brands*

(2009) identified four crucial factors to consider. Wennström is the founder of The Healthy Marketing Team, consisting of specialist consultants within marketing of foods with health benefits (The healthy marketing team, 2012), and the Four Factors have been established by working with product development of foods with health benefits for 20 years. The authors have not found other, more suitable, guidelines for development of foods with a benefit, and have therefore chosen to use Wennström's (2009) factors as helping concerns in the analysis. The authors are aware that the Four Factors derive from one source (Wennström), but as Wennström and his team is prominent within marketing of healthy foods, the authors have deemed it sufficient for the purpose. Further, as these guidelines have been developed over 20 years, the authors believe the Four Factors to be of importance to highlight in this thesis, as they are suitable for consideration when developing an innovative functional pet food.

Wennström's factors originate in the consumers' complex decision process when choosing a product, where the secret to success is to know what affects that choice. The purpose of the Four Factors is to make it easy to increase the perceived value of the product, and to help with adapting the product for the chosen consumers. According to Wennström (2009), these four factors work best together, when all of them are fully met. The fewer factors are met, the less attractive the product will be to the consumers. Wennström's Four Factors was developed from studying launches of several products with health benefits around Europe, where the factors had been tested and applied for more than 20 years. The Four Factors are (Wennström, 2009):

Need the product: This factor addresses for whom the product is intended. The questions 'Who?', 'When?' and 'Why?' need to be answered in order to define the position of the product, the consumer segment, and how the product fits into their life.

Accept the ingredient: This factor concerns how the consumers need to see a logical fit between the ingredient and the product. It is important to study the awareness for the ingredient by conducting market research, to create an interest in the benefit, to spot market trends that can increase the interest, and lastly, to educate consumers about the ingredient.

Understand the health benefit: It is important for the consumers to experience or feel the health benefit of the product. For some products, e.g. products that offer cholesterol reduction, an acceptance of the benefit must be created by explaining the physical effect. A good way to do this is to target the consumers with the best understanding of the benefit, educate them about the problem in order to be able to sell the solution, and become the chosen brand for the health benefit. The emotional benefit - to connect a positive emotion to the product such as a feeling of doing something good - is an important motivation for consumers. The emotional benefit, together with endorsements by experts to add trust to the benefit, can create a strong platform for the brand.

Trust the brand: The fourth factor concerns the point of purchase for the consumer: how to get their attention. The image of a brand comes from associations, emotions, images and previous experiences in the consumers' mind. The brand image is the key to establishing trust. A brand promise is what consumers expect to be delivered - what the brand stands for. A strong brand identity and history in health can support its brand promise and have a strong advantage over newcomers.

3.4.4 Consumer perspective

Based on the articles within consumer perspectives of functional foods, found by the authors, the current research is very homogeneous.

Despite of all the studies indicating that consumer acceptance is a key aspect for successful launches of functional foods, rates of failure caused by lack of acceptance indicate that the factor is not sufficiently considered, or understood, in many cases (Verbeke, 2005). This may not be entirely due to ignorance, since it is not uncomplicated to study consumer acceptance within the field. When attempting to survey consumer acceptance of functional foods as a separate food category, it becomes clear that functional foods, from a consumer perspective, are viewed as components of the 'ordinary' food categories where they belong, rather than as an independent branch (Siró, et al., 2008). This also means that the consumers' choices, and decision processes, are different depending on which food category the functional food belongs to (Ares & Gámbaro, 2007).

However, some general, i.e. non-category-specific, conclusions can be drawn about functional foods from a consumer perspective. The belief in the food's health benefits are identified as main positive determinants, along with presence of ill family members. Knowledge also seems to be a contributor, where increased knowledge and education act as positive determinants. Together, belief, presence of ill relatives, and knowledge exceed socio-demographic factors in the acceptance process. (Verbeke, 2005)

Another observed determinant is that households involving young children appear to be more willing to buy functional foods, and thereby pay the premium price (Maynard & Franklin, 2003). An explanation to this may be that parenting generates an increased focus on nutritional values (Childs, 1997, cited in Siró, et al., 2008). Additionally, higher risk aversion, quality awareness, and geographic differences can also be discerned, where European consumers appear to be more reserved towards functional effects, as compared with their US counterparts (Siró, et al., 2008).

There is a general consensus that the common functional foods consumer (i.e. the most inclined user and/or buyer) is of a higher socio-economic class, and thus obviously have a better position, and thereby willingness, to pay a premium price for such added-value products (Siró, et al., 2008; Hilliam, 1996). They also have superior knowledge of the products, which has been confirmed as a positive determinant (Verbeke, 2005; Hilliam, 1996).

Different groups also look for different types of functional claims (Siró, et al., 2008). As an example, older people are more likely to look for food with health-preserving effects, in the same way that obese people may look for food that benefit weight reduction.

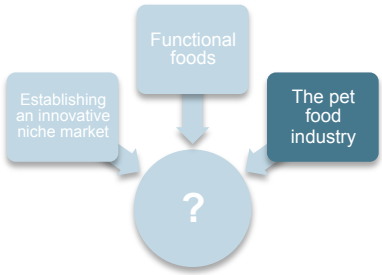
Key takeaways – Functional foods

- Due to legislation and the special characteristics of functional foods, special knowledge is required when developing such a products.
- When developing a functional food, it is important to take potential technological obstacles, legislative aspects, consumer demands, and consumer acceptance into consideration.

- Pricing can either be done in accordance to competition, costs, or perceived value by the consumers.
- When adopting to a sustainable product development approach, it is important to consider the necessary aspects early in the process.
- Wennström's (2009) Four Factors can act as a guide for successfully launching a healthy food with special benefit. The four factors are 'need the product', 'accept the ingredient', 'understand the health benefit', and 'trust the brand'. The more factors are met, the more attractive the product will be for the consumer.
- Failure of launch of functional food often derive from that consumer acceptance is not sufficiently considered.
- Consumers' knowledge and belief of the function can act as a positive determinant.
- Common functional foods consumers are often willing to pay a premium price for the function.

3.5 The pet food industry

The following survey of the pet food industry starts with an overview, which is followed by trends within the industry. Thereafter, an industry analysis, through Porter's Five Forces, is conducted in order to survey the competition within the industry.



3.5.1 Overview

Being a pet owner has evolved from keeping a pet for practical reasons to having them for social and personal reasons, which is visible in today's range of pet food (Bernroth, et al., 2004). In 2012, the number of households in Sweden with pets were almost 1.5 million (Agria, 2013), with an increasing trend of households with dogs (Statistics Sweden, 2012). On the pet food market, there are several brands to choose from, whereof some of the more well-known brands are Purina, Doggy, Iams, Friskies, Pedigree, Royal Canin, Eukanuba, Hill's Pet Nutrition, and Whiskas (Animail, 2015a). Manimalis is an NGO, whose purpose is to increase the knowledge about pets' positive effect on humans and society. According to their report in 2009, what differentiates the pet food products from each other is different types of flavours and nutritional values (Manimalis, 2009). The different brands' standard assortments, however, are similar, where foods for different activity levels, breeds, and ages are provided. Additionally, some products also have an added function, such as contributing to a shinier coat, stronger bones or healthier gums (e.g. Doggy, 2015b; Hill's Pet Nutrition, Inc., 2015; Mars, Incorporated, 2015a; Mars, Incorporated, 2015b; Mjau, 2015; Nestlé, 2015a; Nestlé, 2015b; Procter & Gamble, 2015a; Procter & Gamble, 2015b; Royal Canin, 2015a; Royal Canin, 2015b).

Three of the main distribution channels within the pet food industry are grocery stores, specialty retail stores for pet food, and e-commerce. The specialty retail stores have specialised knowledge of the selected products for sale, which attracts pet owners or organisations with a stronger interest in the pet food they purchase. The grocery stores do not have the specialised

knowledge and products, but a standard assortment of the basic products available on the market, which is more convenient for the pet owner. The third channel is the rapidly growing e-commerce, where all products mentioned above, both basic and specialised, are sold in special pet food stores online. (Doggy, 2015a)

3.5.2 Trends

A market trend report conducted by Nielsen (2014), a global media and information company, indicates an increase in the interest of pet food in Sweden (Nielsen, 2014). Current trends within the pet food industry, gathered from Lantmännen's annual report 2014 (Lantmännen, 2015b) and Fredrik Krook, former Marketing and Innovation Manager, now CEO, at Doggy (Doggy, 2015a), are:

Humanisation (Lantmännen, 2015b): Pet owners' way of choosing food for themselves is reflected in how they choose food for their pets. This humanising trend means that the pet owners want to become aware of the quality and type of ingredients are in the pet food they purchase. (Doggy, 2015a)

Health (Lantmännen, 2015b): Human trends within food and nutrition, such as natural and functional products, are starting to migrate to pet food (Manimalis, 2009). Pet owners want to buy natural pet food (Doggy, 2015a), where expressions such as 'fresh' and 'no additives' are important (Swanson, 2010).

Convenience (Lantmännen, 2015b): Pet food should be convenient for the pet owner. Appetite appeal is crucial, which means the packaging should be easy to open, portion out, close and dispose of. Today, 65 per cent of the market value is in 'single portion'. (Doggy, 2015a)

Pet parenting (Doggy, 2015a): Pet owners tend to evolve into pet parents, which means they treat their pets increasingly as kids (Doggy, 2015a). They love, care about, and spoil them, and are willing to spend more money on their pets compared to before (Hunsinger Benbow, 2013).

Three students at Lund University School of Economics and Management conducted research for their bachelor thesis, in order to divide dog owners into three different purchase groups. The first group is dog owners interested in buying cheap and practical food, as long as the dog is healthy. The second group is dog owners who buy dog food based on what is recommended by experts. For these consumers, the dog's health and the nutritional value in the food are critical factors. The third group is dog owners who want to buy the best dog food for their dog. The dogs' happiness and health is more important than the economic and nutritional aspects for this group. (Bernroth, et al., 2004)

According to the market trend report by Nielsen (2014), cat food was one of the biggest (by total value) categories within shelf stable food at grocery stores in Sweden in 2013. Additionally, the report states that the market value for dry cat food was 381 MSEK and for wet cat food 668 MSEK. The report also indicates that dog snacks was one of the fastest growing products within shelf stable food with a 12.1 per cent growth from 2012 to 2013. The Manimalis report (2009) indicates that dog snacks was a growing segment with a 30 per cent increase from 2006 to 2009.

3.5.3 Market analysis

Michael Porter, Professor at Harvard Business School and expert in business strategy, published his article *How competitive forces shape strategy* in Harvard Business Review in 1979. The Five Forces have been used within strategy for many years and is a well known tool for analysing competition, and the authors have not found another suitable tool to use in order to get a good overview of the competitive landscape. Unfortunately, limited information has affected the Five Forces analysis, where the authors have had to made assumptions at some points. The authors are aware that the competitive analysis therefore might not be complete or precise, but it serves the purpose by mapping the overall competition and strongest forces. Criticism towards Porter and his Five Forces exist, and one example is Michael E. Dobbs (2014) at the Department of Management at East Illinois University, who address critical points towards Porter's Five Forces. Mainly, what Dobbs (2014) is discussing in his article is the potential difficulties when using the Five Forces to understand strategic implications for companies within an industry.

However, the Five Forces analysis fill a purpose in this thesis by contributing to necessary conclusions about the competitive landscape, and is not intended for strategic decision for specific companies. Therefore, the authors have deemed this analytical tool relevant and useful for fulfilling the purpose of this thesis.

Porter (1979) claims that competition in an industry is rooted in underlying economics, where customers, suppliers, substitute products and potential new entrants contribute to industry competition (see figure 6 below for an overview of the Five Forces). The different forces have different degrees, depending on industry, to which they contribute to shaping the competition. The strongest force, or forces, are the most important ones to that specific industry, and is where the profitability is determined. (Porter, 1979) Figure 7, below, explains the criteria on the basis of which the Five Forces are analysed.

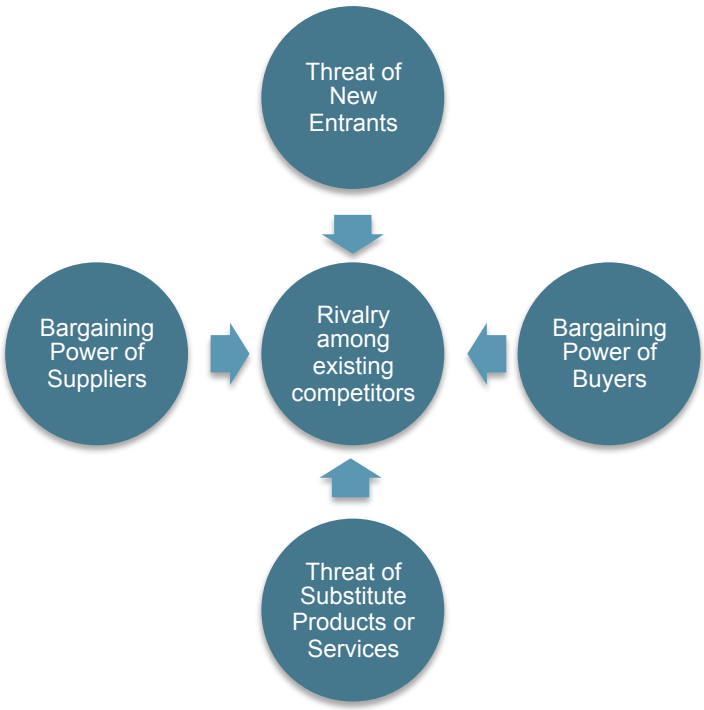


Figure 6. *The Five Forces That Shape Industry Competition. Authors' own image inspired by Porter (2008).*

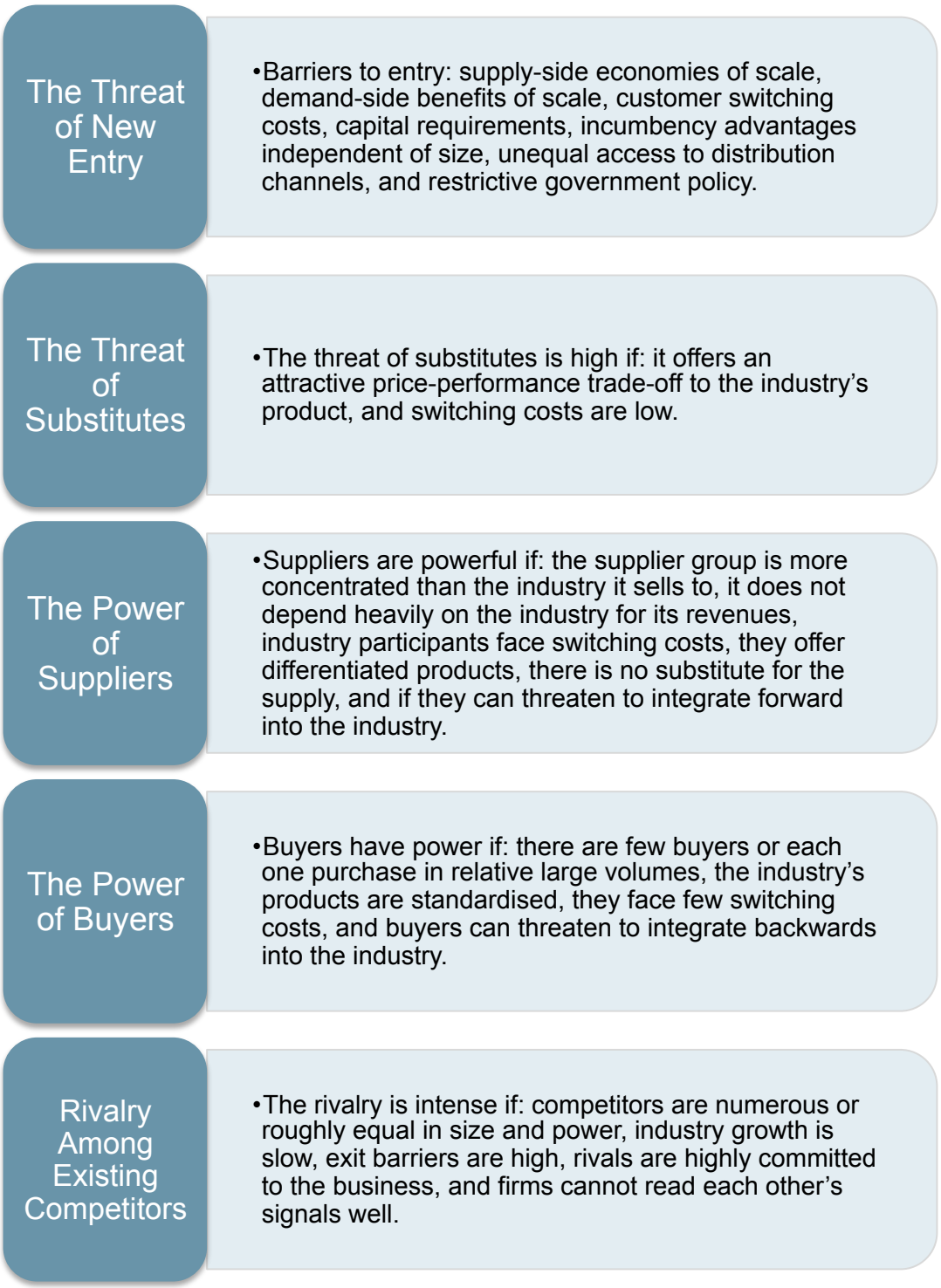


Figure 7. *Assessment criteria for Five Forces analysis. Authors' own illustration, based on Porter (2008).*

Threat of new entrants: The threat of new entrants within the pet food industry is considered intermediate according to Porter's (2008) criteria. The authors assume that, as a fast moving consumer goods industry, companies can exploit economies of scale as they can produce large volumes to a low cost per unit. Since the pet food industry relies on recommendations from experts, and consumers are not likely to try a new brand without recommendation (Swanson, 2010; Bernroth, et al., 2004), the pet food industry also exercise demand-side benefits of scale. The authors also assume that new entrants need to invest large financial resources to build trust for their brand, and to be able to produce the volumes necessary for a positive profit. These are all barriers of entry, according to Porter's (2008) criteria.Therefore, the threat of new entrants could be considered relatively low. However, as the sustainable trend within food for humans has resulted in numerous new, small, and successful brands, focusing on organic and healthy food, the authors assume that the same thing is possible for the pet food industry. This would increase the threat of new entrants, and therefore the authors consider this threat to be intermediate.

Threat of substitutes: The threat of substitutes is high according to Porter's (2008) criteria. Since the ranges of basic products are very similar for the well-established brands, the authors assume that there are no relevant switching costs involved. According to Porter (2008), the higher the perceived relative value of the substitute, the higher the threat is. As new products are launched within the industry, which is characterised by similar products, the authors assume that they need to have a higher relative value than the standard assortment to be worth launching. Conclusively, the threat of substitutes is high because of the perceived relative value of new products, combined with no switching costs.

Bargaining power of suppliers: The power of suppliers is intermediate according to Porter's (2008) criteria. The products from the suppliers are mostly by-products from, for example, the meat industry (Doggy, 2015a), and therefore the suppliers are assumed to not rely heavily on the revenues from sales to the pet food companies. Because of this, suppliers can exercise a leverage, where they work towards extracting maximum profits from the pet food companies, and thus increasing their bargaining power. Since pet food

industry actors are keen to receive good quality of fresh raw material (e.g. Doggy, 2015c; Mars, Incorporated, 2015c; Royal Canin, 2015c), there are costs involved in switching supplier, which means suppliers can exercise a leverage. However, as the authors assume that the suppliers do not offer differentiated products, but very basic raw material that is easy to substitute, the bargaining power of suppliers decrease. Lastly, the authors assume there is little reason for suppliers to integrate into the industry, since the pet food industry is not their main industry to serve. Therefore, the bargaining power of suppliers is intermediate.

Bargaining power of buyers: According to Porter's (2008) criteria, the bargaining power of buyers is high. Since the three main distribution channels are grocery stores, specialty retail stores and e-commerce, there are a lot of large-volume business customers to serve. As these large-volume customers are many, it could indicate a decrease in bargaining power. However, the products are fairly standardised and the authors assume that it is easy for both consumers and customers to find substitutes without any relevant switching costs. Therefore, the authors conclude the bargaining power of buyers to be high.

Rivalry among existing competitors: The rivalry among existing competitors within the pet food industry is high according to Porter's (2008) criteria. The authors assume that most of the companies are stable in size, and industry growth is slow because of the maturity of the market (Doggy, 2015a). The authors also assume that the competitors are highly committed to their business, and therefore their exit barriers are high.

The market analysis indicates that the pet food industry is characterised by intense rivalry. The strongest forces are the threat of substitutes and the bargaining power of buyers, which, according to Porter (2008), means this is where the profitability is determined. However, the authors question whether brand loyalty might affect the threat of substitutes. Considering the importance of expert recommendations within the industry, consumers seem to depend on stability and satisfaction foremost, and, in order to switch brand, there must be a good reason. Lastly, the pet food industry is a mature market (Doggy, 2015a), characterised by peak sales, low cost per consumer, high profits, middle majority of adaptors and a stable number of competitors

beginning to decline. In a mature market, objectives are usually to maximise profit while defending market share. (Kotler & Keller, 2012)

Key takeaways – The pet food industry

- Product lines within the pet food industry's different brands are fairly similar. Some products also have an added function.
- Pet food is mainly distributed through e-commerce, grocery stores, and specialty retail stores.
- Trends within the industry indicate that the natural trend within food for humans is migrating towards pet food. Additionally, pet owners way of choosing their own food is reflected in the way they choose pet food, and many owners turn into 'pet parents', by treating their pets increasingly like as if they were their kids.
- Dog snacks is one of the fastest growing categories within shelf stable foods.
- A market analysis according to Porter's (2008) Five Forces indicate that the pet food industry has an intermediate threat of new entrants, a high threat of substitutes, an intermediate power of suppliers, a high bargaining power of buyers, and a high rivalry among existing competitors, which characterise the pet food industry as highly competitive. The strongest forces are threat of substitutes and bargaining power of buyers, meaning a differentiated product meeting a specific set of needs, with no substitutes, is where profitability can be found.
- The pet food industry is a mature market, where focus should be on maximising profitability and defending market share.

4. CASE PRESENTATION

To investigate the legitimacy of the findings in the interconnected knowledge area, they will be tested on an actual product idea. The case is to create a pre-study for Doggy, since they are looking into creating a functional pet food product containing the active ingredient eidisine™.

The following chapter starts with an introduction to eidisine™ and the patent behind it, then continue with a presentation of Doggy. Lastly, the case product will be presented.

4.1 The active substance

To fully comprehend the case, it is helpful to gain a basic understanding of the basic science behind L-lysine, commercialised as eidisine™, but also the effects of the substance when used as a functional ingredient.

4.1.1 Lysine

4.1.1.1 Chemical background

Amino acids are the building blocks of proteins[2], and there are twenty amino acids that can form most of all natural proteins. For humans, nine of those are called 'essential amino acids', which means that they cannot be produced from other compounds in the body, and thus need to be taken in through food. Without a sufficient intake, deficiency diseases will arise. (Berg, et al., 2012)

In biochemistry, an amino acid is any molecule that has both amine[2] and carboxyl[2] functional groups[2] (see figure 8) (Berg, et al., 2012). The active substance[2] of eidisine™ is the essential amino acid L-lysine (Klamer, 2011).

[2] See Appendix A: Technical glossary

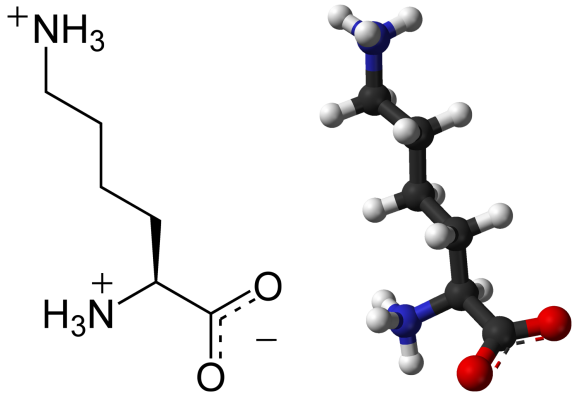


Figure 8. *Skeletal formula and Ball and stick model of L-lysine (Mills, 2009a; Mills, 2009b).*

L-lysine plays a major role in calcium absorption, building muscle protein, and the body's production of hormones, enzymes, and antibodies. Deficiency causes blindness and other problems, since it is present in most proteins. Lysine is an enantiomer[2], which means that it exists in two different versions, or rather two mirrored images, which cannot be superimposed on one another (figure 9). (Berg, et al., 2012)

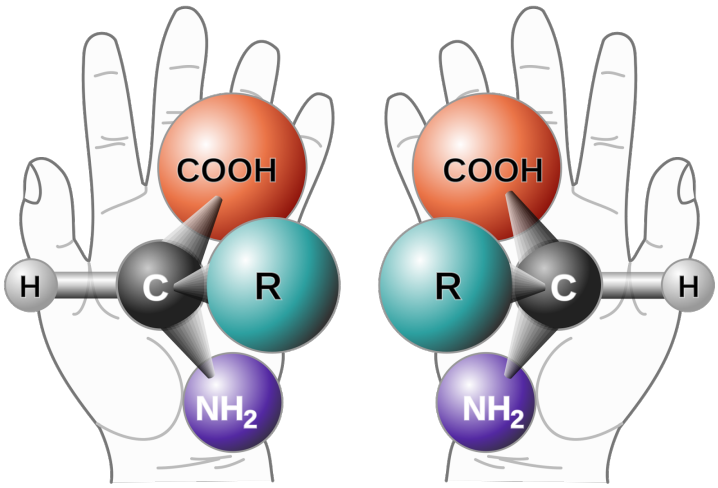


Figure 9. *Example of an enantiomeric amino acid ([Chirality with hands], 2011).*

[2] See Appendix A: Technical glossary

Depending on the orientation, the enantiomers are either called D- or L-form. In natural molecules, the L-form is the most common, and only L- amino acids are constituents of natural proteins (Berg, et al., 2012). Therefore, when 'lysine' is used in this text, it will henceforth refer to L-lysine.

4.1.1.2 Lysine as feed additive

Since lysine is an essential amino acid for all vertebrates[2], it is added or monitored in most feed, with well studied minimum recommended nutrient levels. It is industrially produced by microbial fermentation[2]. (Ball, et al., 2007) When working with products where a specific concentration of the substance is desirable, it is important to control whether any reactions, which change the concentration, take place. For lysine, the main cause of concentration change is the Maillard reaction[2] (Klamer, 2015). In carbohydrate[2]-rich environments, especially in temperatures between 140 °C and 165 °C, the amino group reacts with the sugar molecule's carbonyl[2] group. This means that the lysine becomes 'locked up', becoming non-bioavailable[2] (Coultate, 2009).

Lysine is also the limiting amino acid[2] of certain animals, e.g. pigs and chickens for meat production, and has been used in the breeding business since the 1970's (Food and Agriculture Organization of the United Nations, 2004). This also means that the safety aspects of this additive are well studied. Consequently, regarding lysine, it is rather the use of functional claims (see chapter 3.2), than the substance itself, which needs to be taken into consideration when developing new products.

One negative aspect found relating to this case is that high doses of lysine decelerate growth in immature dogs (Milner, 1981).

When reviewing EFSA's (The European Food Safety Agency) five categories of additives (see chapter 3.2.1), eidisine™ seems to be placed under a category that normally not would be the case for amino acids - the zootechnical category. Amino acids are, traditionally, explicitly sorted as nutritional additives. However, the function of eidisine™ (as described in chapter 4.1.2 below) would rather sort it as a zootechnical additive. Since the claim in this

case would be very different from the regular use of lysine today (nutritional), the zootechnical category is applied.

4.1.2 eidisine™

In 2008, Daniel Klamer, Associate Professor in Neuropharmacology at the University of Gothenburg, discovered new beneficial properties of lysine (Cognite, 2014a). What he found was cognition-enhancing effects in normal-functioning healthy individuals, both in rodents and humans. The effect means increased performance in functions connected to attention, memory, planning, focus as well as intellectual capacity, and occurs when reaching a higher dose of lysine than achieved through a regular diet.

Exactly why this effect arises is not known. However, it is determined that dosage is crucial for the effect, since the response operates as an inverted U-shaped curve. If the dose is further increased after maximum effect is reached, the results will decrease until baseline[2] is attained. This is illustrated in figure 10, showing change in cognitive performance (expressed as percentage deviation from baseline[2]) in rodents. The lowest and highest doses both have less effect than 1000 mg/kg, which means that there is an optimum dose somewhere between 500 and 2000 mg/kg. Alas, the response curve is an inverted U-shape.

[2] See Appendix A: Technical glossary

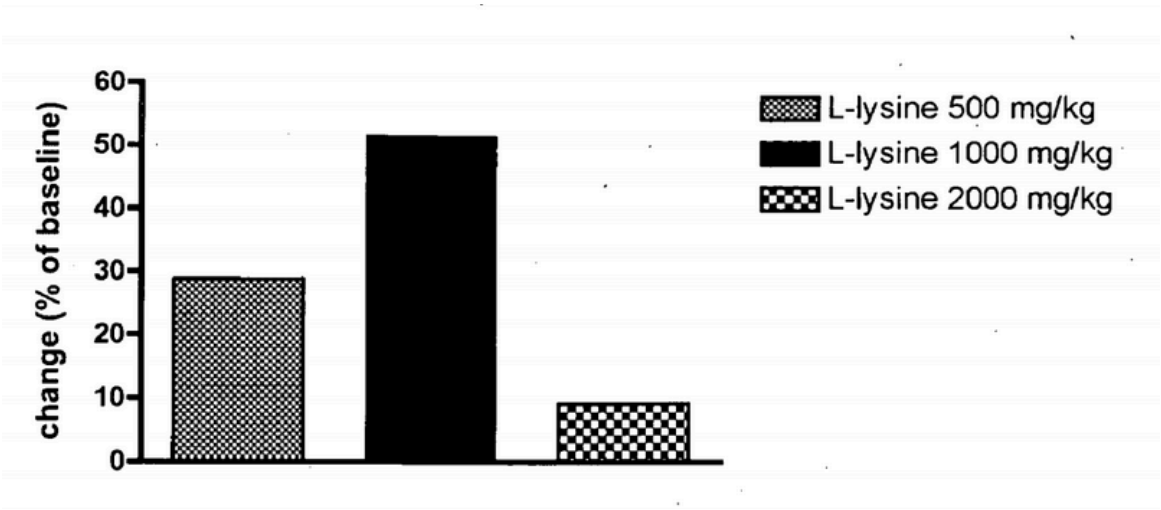


Figure 10. *Results (expressed as percentage deviation from baseline*) of administration of L-lysine to rodents. It can be clearly observed that the effect corresponds to an inverted U-shaped curve, meaning there is an optimum dose. (Klamer, 2011).*

The improvement lasts for four to six hours and persists as long as it is continuously administered. Other advantages are that the substance is safe, even though it is well used, no side-effects[2] or tolerance[2] are recorded, as well as no chemical addictiveness. The substance has little or no effect on taste, smell or texture. The product was named eidisine™, and is sold through the company Cognite. (Cognite, 2014b)

In 2011 the discovery was patented. The patent (Klamer, 2011:2) covers three different aspects of the L-lysine:

- *"...a composition comprising L-lysine for use in the improvement of cognitive functions and performances in normal healthy mammals."*
- *"...the use of L-lysine for the manufacture of a composition for the improvement of cognitive functions and performances in normal healthy mammals."*
- *"...a method for improving cognitive functions and performances in normal healthy mammals, wherein an effective amount of a composition comprising L-lysine is administered to a mammal."*

[2] See Appendix A: Technical glossary

Conclusively, lysine is patented as part of a composition, as part of a manufacturing process, as well as a method of improving cognitive function. The patent also covers different ways of manufacturing and assimilating the lysine.

The licensing rights of the use of eidisine™ in products containing grains is owned by Lantmännen.

If incorporating eidisine™ in a commercial product, relevant legislation has to be considered (chapter 3.2). The claim on the product in question is interpreted as 'innovative' (as opposed to 'generic'), since the claim is neither common, nor well established.

4.2 The case company

4.2.1 Company background

Sweden's today largest producer of dog and cat food started out as Vårgårda Hundmjöl in 1903 (Doggy, 2015c). This was a small family-owned company in Vårgårda, making dog and cat food from by-products from the family farm (Doggy, 2015a). In 1998, the company changed its name to Doggy, and after the acquisition by Lantmännen in 2001, another change to the present-day name, Lantmännen Doggy AB happened in 2006 (Doggy, 2015c). Doggy employ 166 persons and had a turnover of 570 million SEK 2014 (Doggy, 2015a).

4.2.2 Sustainability and strategies

Since Doggy is a part of the Lantmännen group, the slogan stated by Lantmännen (2015b) about responsibility "*from field to fork*" (or in this case bowl) applies to Doggy as well. They further claim to use responsibly produced and natural viands, and to continuously work with sustainability for instance through ISO 14001, a standard for companies to voluntarily work with improving their environmental performance. Lantmännen are also signed to the tools and guidelines of the Global Reporting Initiative - an independent

global organisation that has developed a framework for sustainability reporting, and Global Compact - the UN initiative for responsible business enterprise (Lantmännen, 2014). Doggy is today not working actively with sustainable product development, but rather with monitoring energy efficiency in the production (Haraldsson, 2015).

The main four strategic goals of Doggy are reducing costs, achieving profitable growth through innovation, to be the customer's first choice, and to have proud and motivated employees (Lantmännen, 2015b).

4.2.3 Products and product strategies

Today, Doggy produce eight brands, whereof three are, by far, bigger than the others:

- Doggy: dog food produced for a large segment of consumers
- Mjau: the corresponding choice for cats
- Bozita: a brand for specialty retail with products for both cats and dogs, with Bozita Robur as their premium line of dog food.

Doggy use value-based pricing, usually through the introduction of added value to the products. When launching a bigger innovation, such as the addition of functionality to the pet food, Doggy applies a conscious strategy to maximise profit from the innovation. By introducing the innovation to the specialty retail stores first, a premium price can be charged for added value, as well as novelty and exclusivity. When the product is no longer new, it is introduced into the product assortments sold in grocery stores. This way, the innovation will create value in the short term as well as in the long term. (Doggy, 2015a) Additionally, most of Doggy's brands are distributed via different websites for pet food (e.g. Animail, 2015b; Zoozoo, 2015; Hemfoder, 2015).

Since Doggy already have several functional products in their product range, such as breath fresheners and immune system enhancers, they are used to working with claims. Considering EU legislation, caution needs to be exercised when making a claim (in this case functional) about a product. Fredrik Krook, then head of Marketing and Innovation (now CEO) at Doggy, visualises this

with a 'claims ladder' (figure 11), where increasingly stronger claims need to be supported by more extensive scientific proof. To further improve the credibility of claims, Doggy cooperate with Sveriges Hundungdom, as well as notable sledge dog teams, by giving them samples to evaluate. Potential future cooperation could include scientists at the Swedish University of Agricultural Sciences or distinguished veterinarians. (Doggy, 2015a)

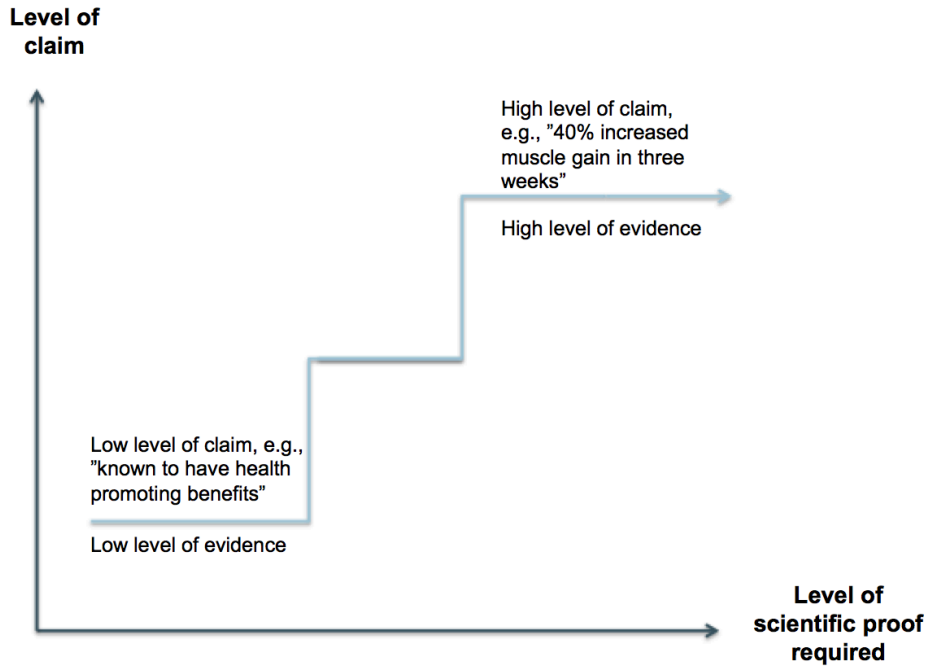


Figure 11. *Claims ladder: the level of claim decides the corresponding need of scientific substantiation. Authors' own illustration, based on information from Doggy (2015a).*

4.2.4 Production

To be able to develop a new product, certain limitations have to be taken into account. An example is the company's existing production process, which the product has to fit into. To not reveal Doggy's complete production process, only the steps that could be in any way important for the addition of eidisine™ to the product will be shown, and for the relevant product types. This means the wet food production will be left out since this product type is not deemed suitable for the case product by the authors (further discussed in chapter 4.3).

The factory in Vårgårda produces both wet and dry pet food. These come in three different shapes (depending on the contents): , traditional packages (sealed paper and plastic bags), a special tetra package, or cans. Special filled treats are co-manufactured for Doggy in Europe, but all other production is based at the factory in Vårgårda in order to secure the quality. (Doggy, 2015a)

The process for dry dog food production consists of three connecting branches (figure 12). Fresh and frozen meat, and animal by-products, are mixed to a slurry, which is later mixed with dry products like grains, vitamins and other additives. The new mix will then pass through an extruding* machine, where heated vapour and pressure treats the paste and shapes it. The temperature exceeds 120 °C in this step. After the extrusion[2], the product is dried in an oven for 30 minutes at about 90 °C. The last step is the coating, where the finished product gets a layer of flavour and other nutritional reinforcements. (Doggy, 2015a)

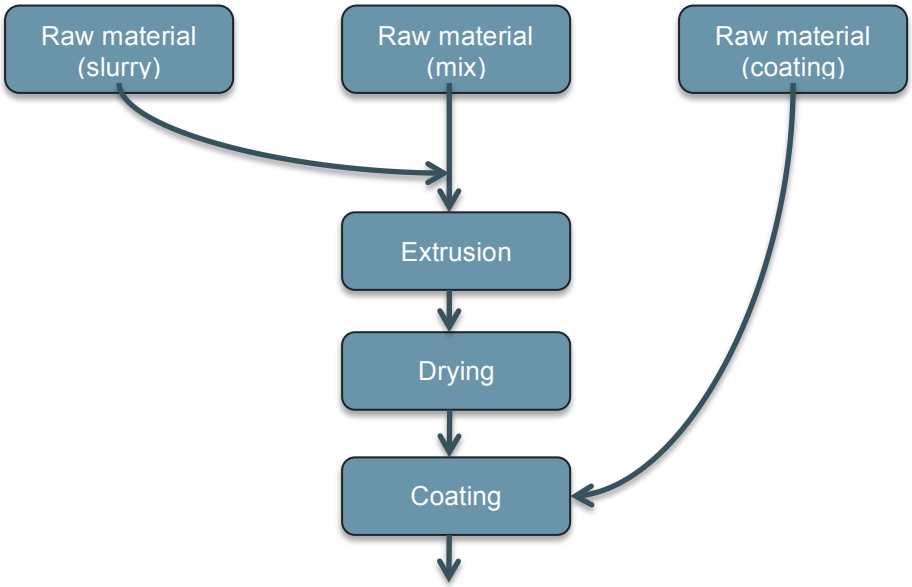


Figure 12. *Overview of dry food production at Doggy, with only the critical steps for the case product included. Authors' own illustration, based on information from Doggy (2015a).*

The process schemes for the filled snacks, co-manufactured for Doggy, is not available. It is assumed that it is the same as the process for the dry food, but

[2] See Appendix A: Technical glossary

with the addition of a liquid core added between the extrusion and drying steps. This liquid core will maximum reach the temperature of the drying, thus leaving heat sensitive substances less affected.

4.3 Case product description

4.3.1 Product and production

Based on the technical aspects of eidisine™, some features of the contemplated product have been set before moving into the analytical tool.

The authors propose that the case product, which will act as a hypothetical product for testing the case with the interconnected knowledge area, should be in the form of a dog treat snack, for enhanced cognitive performance in adult dogs. Dogs will be the target group for the case product, as they are to a greater extent trained and working (compared to cats), and therefore the need for a product like this is higher for dog owners.

The product will be in the form of a snack, because timing and dosage are crucial aspects for optimising the effect of eidisine™. Therefore, regular pet food, like Doggy's wet food products, is not optimal since pet owners usually give their pets food once in the morning and once in the evening. eidisine™'s effect lasts for four to six hours and is effective within 20 minutes of intake, which is why the form of a snack is more suitable. In that way, the pet owner can provide the snack 20 minutes before the effect is desired, and can easily refill with another snack, when the effect wears off. Since the active substance was evaluated as concentration relating to body mass for rats, it is assumed that the dosage also for dogs is related to mass. This means that dosing correctly, adjusting to the weight of the dog, is crucial for optimal effect. With a snack, it is easier for the pet owner to calculate how many snacks are necessary. By using an already existing product type, the entrance height for the innovative product is lowered, which increases the user convenience.

In order to simplify this prototype, the product is designed to fit into the existing production line without any major modifications or efforts. It is hard

to say if this will generate an optimised product, but the design will bring the function to the consumers while being cost effective for the company, and can thus be deemed acceptable. Both a snack of dry food-type as well as with filled core seems possible. Less consideration of the Maillard reaction needs to be made in the case of the liquid core snacks, as the active substance will reach a lower temperature, and thus the reaction speed will be slower. As Doggy know what is most convenient and desirable, this decision will be left to the case company. This also applies to the level of the claim, but indications from Lantmännen suggest that they want to position themselves on an intermediate level.

4.3.2 Potential substitute products

A wide range of functional pet food products exist on the market (as touched upon in chapter 3.5.1). In addition to these, there are other pet food products on the market bearing claims related to cognitive function.

For example, Purina PRO PLAN® ANTI AGE™ is targeted at mature dogs (7 years or older) that have increasing difficulties with using glucose as energy source for the brain; the product claims to provide an alternative energy source, which helps maintain the dog's cognitive abilities as it ages (Nestlé, 2015c). Among other things, the product contains antioxidants and the amino acid arginine[2] as functional ingredients (Pet Food Industry, 2014). Another example is products containing Royal Canin's 'aging formula', which also claims to help with maintaining cognitive functions in older dogs (in this case cognitive functions as, e.g., disrupted sleep or appetite disorders) (Royal Canin, 2015d). In this case, the amino acid tryptophan[2] is the key ingredient. Royal Canin have also developed special food for pregnant dogs, which, among other things, claims to have "beneficial effects on the puppies' future cognitive abilities" (Royal Canin, 2015e).

There are more products available similar to those described. However, after researching all pet food products claiming improved cognitive function, it can be concluded that none of them provide the same effect as eidisine™. The cognitive effects described are preventing a decline in cognitive ability (by aiding maintenance), as opposed to almost immediately enhancing the effect

[2] See Appendix A: Technical glossary

relative to normal cognitive function in dogs with fully functional brains. It can also be concluded that eidisine™ is not a controversial ingredient in this context, since amino acids like arginine and tryptophan are already additives on adjacent markets.

Therefore, it can be concluded that a niche for functional pet food already exists. However, functional foods are broadly defined, and niche markets subjectively depend on the spectator. It should then be possible to create a niche within an already existing niche for the case product, or a new niche within pet food industry, for the specific function of instant increase of the cognitive function.

5. ANALYSIS

In this chapter, the knowledge, both from the three knowledge areas and from the case (chapters 3 and 4), is applied on the Business Model Canvas (BMC) (as described in chapter 2.2). The building blocks chosen from the BMC (Value proposition, Customer segment, Customer relationship, Channels, Cost structure and Revenue streams) are treated separately and form their own parts of the analysis (see figure 13 for chapter references and overview of the buildings blocks treated).

Figure 13. *Treated building blocks from the BMC (with chapter references). Image from Osterwalder & Pigneur (2010), with authors' own numbering.*

Each of the analysis chapters (BMC building blocks) are further divided into two sub-headings; the first, 'interconnected knowledge area', treats only the knowledge from chapter 3, and the second, 'application of knowledge', applies the knowledge on the case to assess its applicability for real-life decisions.

Discussions combining general knowledge with case knowledge, as well as combinations of the different building blocks, are conducted in chapter 6 ('Discussion').

5.1 Value proposition

5.1.1 Interconnected knowledge area

When developing an innovative functional pet food, the value proposition should be centred around the function of the product. Parrish et al. (2006) state that one of the niche market success factors is having a specialised product that appeals to a certain consumer segment's needs. The definition of functional foods throughout this thesis states that functional foods have a benefit beyond basic nutrition. The value proposition should be centred around what value is delivered to the consumer and what problem it solves, according to Osterwalder & Pigneur (2010). Therefore, when developing a functional pet food, the function of the product should be the centre of the value proposition.

Summary – Value proposition
The function of the product should be the centre of the value proposition

5.1.2 Application of knowledge

The value proposition for the case product offers a solution for dog owners who wish and/or need their dog to be smarter, without giving them any unnatural ingredients. The value proposition is a four to six hour long cognitive boost without side effects, obtained from a natural substance.

In accordance with the interconnected knowledge area, the value proposition meets the interconnected knowledge by focusing on the function. As so, when developing a functional pet food, the function should be the centre of the value proposition, as it then appeals to a specific set of needs from the pet owner.

5.2 Customer Segments

5.2.1 Interconnected knowledge area

To have a good understanding of who the intended customer segment is, and their purchase behaviour, is crucial when developing an innovative functional pet food product. Since the pet food industry is characterised by intense rivalry and fairly similar product lines, the industry analysis through Porter's (2008) Five Forces indicate that profitability can be collected by differentiated products with no substitutes. This lowers the consumers' bargaining power. Due to the similar product lines, developing a functional pet food can narrow the customer segment to consumers with a distinct set of needs that are not fulfilled by the original market. When adopting an approach where consumer acceptance of functional food is always kept in mind, the first step is to identify the consumers that have this particular need. As consumers react differently to functional foods, and as pet owners view their pets with different degrees of emotional attachment, where some spend a lot of money on their pets, the segment must be narrowed down in order to know what affects their behaviour. Both Armstrong et al. (2012) and Wennström (2009) stress the importance of identifying *who* the consumer is, and in order to create a niche market, their specific need must also be identified. Therefore, when developing a functional pet food product, it is crucial, and even more important for a product of a less complex character, to have a good understanding of the intended consumers, and how they act in order to create a product that meets their demands better than the competition.

According to Wennström (2009), the questions 'who?', 'when?' and 'why?' need to be answered in order to understand the intended customer segment's need. The 'who?' for a functional pet food should be the identified consumers willing to invest a lot of time and money on their pets. Functional foods have proven most successful within groups with superior knowledge of the function and a good understanding of the benefit, and within the pet food industry trends indicate that 'pet parents' are willing to spend more money on their pets. However, pet owners can possess knowledge of the function without being a 'pet parent'. One example is the trend within the pet food industry that indicates that many pet owners are increasingly becoming aware of what is added to the pet food.

This group could therefore also be of interest to the intended customer segment. The 'why?' should be connected to the function of the product - what need or problem does it solve? The pet parenting group purchase pet food based on expert recommendations, and can be compared to the third purchase group identified from Bernroth et al.'s (2004) study. This purchase group believe that the happiness and health of their pet is more important than economic factors. Lastly, the 'when?' can be connected to Rogers (1995) criteria for readiness of adoption, where the complexity of the function influences how difficult it will be to meet those criteria. Therefore, when working with an innovative functional pet food, the 'when?' must be approached with caution.

One way to approach the difficulties of 'when?' is to identify innovators and early adopters, and getting experts to try the innovative functional pet food early on, which can accelerate the adoption process as well as pave the way for the innovation to the broad masses. In functional foods, a function not usually in food is added. In some cases, these functions are innovative and new to the market. Pet owners seem to be sensitive towards recommendations, as indicated by current trends, and are increasingly becoming aware of what goes into the pet food. Therefore, when developing an innovative functional pet food, it is of utmost importance that the identified customer segment is ready to adopt the innovation, and the readiness can differ according to Rogers (1995). The key then, to succeeding in launching a product of innovative nature within the pet food industry, is to identify innovators and early adopters, who can break grounds for the product. If these groups would successfully adapt to an innovation, and recommend it to other pet owners, the innovation would not seem as risky, since others have tried it and are willing to try it again. Also, endorsements by experts can be of help, since there are strong indications that expert recommendations are important within the pet food industry, where an opinion by for example a veterinarian would probably make the pet owner more secure in adopting the innovation. Therefore, the combination of experts as early adopters of an innovative pet food product could yield a faster adoption process.

Since different societal groups desire different claims, it seems safe to assume that trend-sensitive people are more interested in buying products with innovative claims. Targeting consumers who are innovators requires looking into trends within food for human consumption. The pet food industry is undergoing a humanising trend, which means that the customer segment for a functional pet food coincide with the same consumers that are willing to experiment to a larger extent within trends for food for human consumption, e.g. with ecological foods. The authors assume that consumers who are innovators or early adopters within food for human consumption also are within pet food (if they have a pet), as the trends indicate that pet owners' way of choosing food for themselves is reflected in how they choose food for their pets. Therefore, targeting a conscious consumer group that are in the leading edge of adopting new trends also demands a deeper look into the trends and perspectives within food for humans. One important trend within food for human consumption is the ecological food trend, where consumers demand a consciousness for sustainability rooted within the product. With sustainable product development it is important to take actions for sustainability into consideration early on. By doing this, the sustainable qualities of the final product can be secured, thereby making it more appealing to trend-sensitive consumers.

Summary – Customer segment

The customer segment analysis concludes that within the identified niche, resulting from whose needs are solved by the function, the customer segment when launching functional pet food should be pet owners willing to spend a lot of time and money on their pets. However, in order to reach this customer segment, the initial segment should be experts and other opinion leaders. By analysing current trends within both food for pets and humans, trend-sensitive consumers willing to adopt early to an innovation can be identified and targeted.

5.2.2 Application of knowledge

The case product targets every dog owner with an interest in a smarter dog. This ranges from owners of working dogs to pet parents. Examples of working dogs are hunting dogs, dogs competing in agility or other obedience sports, guide dogs or police dogs.

By focusing the product around the function, Doggy can identify the customer segment and address Wennström's (2009) 'why?'. The customer segment's need, in this case a smarter dog, is met by the case product better than the competition, since other products with instant cognitive boost do not exist on the market. The case product indirectly targets working dogs, whose owners have a bigger need for the product, and within this dog owner segment the authors assume that most consumers are trend-sensitive and willing to spend more money. A part of the intended segment probably act as early adopters, where another part of the segment rather prefer to be recommended than to recommend, which means that they adopt later in the adoption curve.

The interconnected knowledge seems to be well applicable to the case study in the case of customer segment, however not in the exact same way. The "pet owners willing to spend a lot of time and money on their pets" in the general case is highly likely to coincide with pet owners working with their dogs in different ways. These are, to a large extent, also opinion leaders within the pet food industry. Hopefully, the initial customer segment stated by the case analysis could, as suggested in the general case, also pave the way for slower adopters. Conclusively, the results from the interconnected knowledge area are applicable to, and agree with, the case study.

5.3 Customer Relationship

5.3.1 Interconnected knowledge area

Building a customer relationship on trust is crucial when developing an innovative functional pet food product. Within functional foods, an important aspect to take into consideration is consumer acceptance, and two of Wennström's (2009) factors involve building trust, and accepting the ingredient, respectively. Additionally, within the pet food industry, it is strongly indicated that expert recommendations are influential, and it can be assumed that pet owners trust the experts. In combination with what is known about consumer acceptance of functional foods, a customer relationship built on trust towards the product is crucial when developing a functional pet food.

The innovative functional pet food product needs to be compatible with experts within the pet food industry, and the better the compatibility is, the faster the rate of adoption. One way to establish trust for a functional pet food product is to focus on the confirmation step when the consumers seek reinforcement on whether an adoption decision was correct or not. As the key to successfully launching foods with a claim is to know what affects the intended customer segment's choice, assimilating this knowledge might help prevent a negative outcome. Expert recommendations are important for acceptance of functional ingredients within food for human consumption, but they are important in the pet food industry as well. Additionally, consumer acceptance of functional food is often disregarded. Therefore, in order to get experts to try the innovation, they need to see the fit between the ingredient and the product, as well as the compatibility with their values and beliefs. The better the functional pet food innovation fits the experts' needs and values, the faster this consumer group adopts to the innovation and recommend it to others, which speeds up the adoption process. Further, the faster the experts adopt to the innovation, the faster a trustful relationship to the overall customer segment can be established, and the confirmation step is more likely to have a positive outcome. However, if the consumers experience a negative result conflicting with the expectations when trying the innovation, it can result in a negative outcome and hurt the trust. Yet again, the better acquainted with the customer segment the organisation in question is, the better opportunities for getting the consumers to accept the function and create a trustful relationship. Being acquainted with the customer segment means knowing who they are, and knowing their needs, values and beliefs.

A trustful customer relationship can also be established by working with sustainability when developing an innovative functional pet food product. As concluded from the *Five Forces* analysis, buyers (i.e. consumers) have a high bargaining power within the pet food industry. As research about niche market strategy states, as well as Wennström (2009), it is important to know the intended consumers and what they prefer; within the pet food industry the trends indicate that pet owners increasingly want the same for their pet as what they purchase for themselves. Today's consumers increasingly want to purchase sustainable products, and the trends within food for humans are spreading to the pet food industry. The authors assume that meeting the demands on sustainability from

those consumers can establish a sense of environmental responsibility from the company (and/or product), which could indirectly lay a foundation for trust.

Validating the function of an innovative functional pet food with claims can facilitate trust towards the product. One of the main purposes of the EU legislation is to prevent misleading communication to the consumer, wherefore all claims need to be supported by valid scientific evidence. As current trends within the pet food industry indicate an increase of pet owners' awareness of what goes into the pet food, it becomes even more important to claim the function in a correct manner, as the trend indicates an increased awareness and knowledge of ingredients, functions and claims. Therefore, by validating functional claims of the function, the consumer can trust what the innovative product achieves, and that it has been properly tested.

When building trust, it is preferable to research whether the intended customer segment is brand loyal or not. This should be done prior to development of an innovative functional pet food product. The brand image is the key to establishing trust, according to Wennström (2009), and expert recommendations together with an emotional benefit tied to the product can create a strong foundation for a brand. Within the pet food industry, expert recommendations are considered beneficial, and many of the big brands within the industry can be considered to have a strong brand identity according to the authors. Additionally, the emotional benefit applies to the 'pet parents', as they have strong emotional attachments to their pets, and treat them as if they were their kids. A strong brand image is one of the niche market strategy success factors identified by Parrish et al. (2006), who discuss how a loyal consumer base can be established by having a strong brand image. As the pet food industry is characterised by some more well-known brands, it can be assumed that pet owners are brand loyal, where a trust towards the brand they are loyal to have been established. However, as Parrish et al. (2006) state, not all consumer groups are brand loyal, and might switch brand if a new product is perceived as more beneficial. The trustful relationship plays a crucial part here since, if consumers are brand loyal, it deepens the bond. If consumers are not brand loyal, they still need to be persuaded to try the innovative functional pet food by being able to trust that claims are sufficiently substantiated. Therefore, prior to developing an innovative functional pet food it is important to research whether the intended

customer segment is brand loyal or not, as the trust might not be adequate to pursue consumers to abandon their loyalty towards another brand.

Summary – Customer relationship
The customer relationship analysis concludes that a trustful relationship is recommended when launching an innovative functional pet food. This is concluded by analysis of the correlation between the confirmation step and how expert recommendations can affect the outcome in a positive way. Additionally, when the claims regulations give room for interpretation, it is advisable to always keep undoubtedly on the 'safe side' as a foundation for building trust. Working with sustainability is also recommended for the same reason. Lastly, researching whether the intended customer segment is brand loyal will affect how important the building of trust is for the intended innovation.

5.3.2 Application of knowledge

The case product, which would be the only one of its kind, will create a niche without competition. This can label Doggy as innovative, and thus give them a competitive advantage. The slightly risk-taking image of an innovative company can be balanced with having more than 100 years of experience within the dog food industry, which makes Doggy a well-established actor with a well-known brand name. Furthermore, trust for the case product can be increased by the brand image of the parent company Lantmännen.

In order to further increase trust and make people believe in, and perceive, the effect of the product, which is even more important for an innovative product, Doggy should work with objective experts who can communicate how they experience the product. The case product will have an effect that can be difficult for the individual dog owner to observe in normal situations, and because of that it is crucial to create a situation where the consumers' expectations are still met. Also, since the product would be affecting brain functions, the authors assume that a higher level of trust is needed. Therefore, the creation of trust, built by satisfying the consumers' confirmation stage, depends on the consumers' expectations beforehand. If expectations are high, and the consumers have a high brand trust, the consumers should perceive the

result of the case product more satisfying than if expectations and trust were lower.

Doggy already cooperates with a number of dog organisations in Sweden, and could perform tests in collaboration with them when developing the case product.

As Doggy's main sustainability focus is directed rather towards the production process than the product design, it seems like they have the possibility to increase their sustainability measures. However, as long as the communicated responsibility does not exceed the actual measures taken, most consumers would accept this as enough to increase trust. Additionally, Doggy should focus on providing extensive evidence in order to claim the function in the category of innovative claims, which will have a positive effect on the trust in the customer relationship. By providing extensive evidence of that the case product will increase cognitive function, the claim will make it possible for the message of the case product's function to be clearly communicated. This will prohibit miscommunication to the consumers, and provide a good foundation for trust towards the case product.

Lastly, the brand loyalty of the intended customer segment - dog owners who want a smarter dog - needs to be further investigated in order for Doggy to fully comprehend how important trust is for these consumers.

Doggy have the right conditions in place to establish a trustful relationship with the customer segment, with support both from its own brands and the Lantmännen group. Since the claim of the case product would be very innovative, as it concerns brain functions, trust will probably be *even more* important than for other innovative, but less controversial, functional pet food products. With that said, it may be important to evaluate the level of innovativeness of the claim when working out a strategy for establishing a trustful relationship. However, a higher level of innovativeness may be beneficial for the brand by labelling Doggy as cutting edge, thereby attracting early adopters. No conclusions can be drawn from the case regarding brand loyalty. Other than that, the interconnected knowledge area is applicable to

the case study, and help with making decisions in the product development process.

5.4 Channels

5.4.1 Interconnected knowledge area

When developing an innovative functional pet food product, it is preferable to use specialty retail stores and e-commerce as channels. According to niche market strategy, the aim is to satisfy a specific need not satisfied by the regular market, by differentiating a product. As has been stated by Wennström (2009), as well as Parrish et al. (2006), it is crucial to know the intended customer segment's behaviour when working both with a niche market strategy as well as functional foods. Additionally, consumer acceptance of the function is important to take into consideration when developing a functional food. Also, within the pet food industry, consumers are becoming increasingly aware of what goes into a product, which means that communication and a correct claim is beneficial. Specialty retail stores are focused on having a good understanding of their selection of products in order to capture more conscious consumers, which corresponds well with this segment. Therefore, the best channel for an innovative functional pet food is the specialty retail store.

E-commerce is a growing distribution channel worth taking into consideration when developing a functional pet food. Prince and Simon (2009) state that the internet affects the rate of adoption of an innovation by facilitating product research. However, the success of launching an innovative functional pet food solely through e-commerce might depend on how well educated the consumer is about the product, claim, and brand. If the product is already known to the consumers, it can be expected that a lot of consumer reviews and other information can be found on the internet. On the other hand, consumers do not get the chance to talk to an educated store employee, and can not be recommended the product or spot it on the shelves as they are not in a store. The answer depends on who the customer segment is, how well educated within the area they are, how accepting they are to technology, and how big their need for the specific function is. Nevertheless, e-commerce is a growing

channel, and when the innovation has been accepted and established, this channel will be a good addition to the specialty retail stores.

The use of experts as communication channels towards the rest of the industry can strengthen the introduction of an innovative functional pet food product. As previously stated, pet food industry experts have the possibility to influence pet owners by recommending products. Also, Wennström talks about the importance of experts endorsing the product, or the benefit within a product, when launching functional foods. It has been established that experts are opinion leaders within the pet food industry. It has, in another context, been pointed out that early adopters function as opinion leaders when adopting a new innovation. If assumed that these opinion leaders coincide between innovation adoption and the pet food industry, it can be concluded that pet food experts are also early adopters. In any case, the connection between opinion leaders in both segments implies that there should at least be some overlap, meaning at least some of the pet food experts are early adopters. Therefore, using opinion leaders as communication channels within the pet food industry can strengthen the introduction of a new functional food by allowing it to be recommended by experts early on, assuming the experts find the product satisfying in the confirmation step.

An innovative functional pet food will be adopted faster by consumers if it is easy to understand and to try the product, as well as observing if the result from trying the product meets the expectations. In order to speed up the rate of adoption, as it can be assumed that the sooner the opinion leaders adapt to the innovation, the sooner the rest of the industry is willing to adapt. It is important to take complexity, trialability and observability of the innovation into account. The first two factors - relative advantage and compatibility - are addressed by adopting a niche market strategy, where in a niche market a product is differentiated to meet as specific set of needs, hence has relative advantage over other products and is compatible to those consumers within the specific niche. However, claims and their legislation are complicated matters. Also, functional foods can range from simple to rather intricate functions, and the intended customer segment within the pet food industry can vary in terms of interest in, and knowledge, of what their pets eat. Therefore, when developing an innovative functional pet food it is beneficial for the adoption rate if it is

easy to understand the product, to try it, and lastly to observe if the result meets the expectations. The easier the degree of these three factors are for the opinion leaders, the faster they can confirm to the innovation and recommend it to others (or not).

Summary - Channels
The analysis of channels concludes that it is important for consumers to understand the benefit, and by distributing via the specialty retail stores, the customer segment with higher knowledge of the function is accessed. However, depending on the customer segment and their level of knowledge of the function and willingness to be innovators or early adopters, e-commerce is a strategically good channel as well. Opinion leaders can act as indirect channels, for facilitation of adoption of the innovation.

5.4.2 Application of knowledge

As discussed in chapter 5.3.2, trust will be of utmost importance when releasing the case product, and the communication channels via expert recommendations can also be an important way of impacting the trust. The most suitable initial channel for the case product, as well as it being the initial channel for most of Doggy's new launches, is through the specialty retail stores under the brand name Bozita. Then, depending on how the market develops, it can be progressively introduced into grocery stores, in accordance with Doggy's existing strategy. As the product is a unique and innovative product, it fits well into the more exclusive brand Bozita Robur, Doggy's premium pet food brand. This way it will be easy to reach the intended customer segment; partly by using the specialty retail stores as the primary distribution channel, and the brand name of Bozita that already attracts the right consumers, but also owing to the differentiated character of the case product that has no identified substitutes.

Launching via specialty retail stores seems to be the best alternative for the case product also when looking back at the interconnected knowledge area. Doggy will launch the case product through the specialty retail stores, where the authors assume is where most of the customer segment purchase their food. One potential problem with the case product is the complexity compared

to other functional pet food products. By using the specialty retail stores as a channel, the factors complexity and trialability can be facilitated by using the specialty retail stores' expertise about the products they distribute. This expertise can also act as a facilitator of acceptance for the immediate cognitive enhancement. It is also important to take the shift towards e-commerce seriously, as this might be seen as the most convenient way of buying the product again if the consumer is satisfied after the first buy.

Additionally, by collaborating with their partners, Doggy actively strive for experts and opinion leaders to confirm the product, and thus recommend it to others. This way, Doggy can create trust for the case product. Thus, the case product can reach the aware, but less price sensitive, consumers as well.

The case product fits very well into the assortment of Doggy's existing brand *Bozita Robur*. Since this brand is targeted at specialty retail stores as it is today, this is completely in line with the recommendations from the interconnected knowledge area. Doggy also have collaborations with opinion leaders in place, which means initiating collaborations with them around the case product is a natural step, and will help with communicating the product to the targeted consumers. Conclusively, the case study confirms the channels proposed by the interconnected knowledge area.

5.5 Cost Structure

5.5.1 Interconnected knowledge area

When developing an innovative functional pet food it is crucial to make sure the correct degree of claim is made for the function in order to avoid indirect costs. In order to be able to claim a function when marketing a functional food within the pet food industry, safety and efficacy studies need to be conducted. Depending on the tests and legislation, different degrees of claims can be made. The Nutrition and Health Claims regulation aims at protecting consumers from misleading communication by companies, by stating that all claims must be supported by valid scientific evidence. Also, consumer acceptance is an important factor to take into consideration when developing functional foods, and getting consumers to accept the function and trust the brand are success factors according to Wennström (2009). Additionally, trends within the pet food industry indicate that pet owners are becoming increasingly aware of what is added into the pet food. It is therefore of importance to make sure the correct claim is made for a functional pet food in order to communicate the function and reassure the consumers of the tests conducted. Legislation, or the lack of tests conducted, prohibits certain claims to be made. The authors assume that this can affect the consumer decision process as they may not trust the function if claims are weak. Additionally, information about the function will be incomplete if claims are not substantiated, which will prohibit the product from differentiation from the rest of the products. Additionally, according to the definition applied throughout this thesis, the product is not a functional food without its claim. Vague or complex claims that are difficult for the consumer to understand can disrupt the knowledge and persuasion steps in their decision process, meaning a decision is harder to reach. As a result of this, the adoption speed is affected. If consumers have trouble reaching the adoption decision, less recommendations, or even bad recommendations, can be expected. These are costly consequences, since it might affect consumer acceptance, and thereby lead to failure.

Working with sustainable product development when developing an innovative functional pet food can also reduce indirect costs. As for food for human consumption, the sustainability trend is increasing rapidly. Additionally, according to the Market

and Innovation Manager at Doggy, pet owners tend to increasingly have the same purchase behaviour for their pets as for themselves. Therefore, it can be assumed that the pet food industry will probably also experience an increase of the sustainable trend. Sustainable aspects should be considered early on in the development process when working with sustainable product development (Byggeth, et al., 2007). Therefore, if not applying sustainable product development throughout the whole process when developing a functional pet food, it can be assumed to have a negative effect on the product, or company. Such negative effects can be consumers refusing to try the product, or bad reputation for the product or company.

Other, more direct, costs that can be expected when developing an innovative functional pet food product are costs involved in product development, such as working with sustainability, patenting, conducting scientific trials, and marketing in order to inform the consumer of the product and build trust. Large and established companies, with a financially stable R&D unit, have an advantage when developing a functional food (Siró, et al., 2008). Additional costs that can be expected are ones involving targeting the right consumer group and researching their behaviour, which both Wennström (2009) and Parrish et al. (2006) stress the importance of.

Summary – Cost structure

The analysis of the cost structure discusses the potential indirect cost of not claiming a function at the right degree, where there is risk for failure of the functional pet food. Another indirect cost involves working with sustainable product development, which, if not applied, could harm sales and reputation as consumers increasingly demand sustainable products. Direct costs are to be expected when working with sustainability, patenting of an effect, conducting scientific trials, and marketing.

5.5.2 Application of knowledge

The direct costs connected to the case product are costs for product development, marketing, and production. It can be beneficial for Doggy to also invest in sustainable product development. Since the claim is categorised

as innovative, more extensive evidence of the effect needs to be produced. As discussed in earlier sections, marketing will be of high importance in order to spread the message and inform the consumers of the case product. Since Lantmännen have a well-established R&D department, from which Doggy can utilise synergies, costs concerning the product development will be lower. Another synergy for Doggy that reduces the cost for building trust is the brand identity, already established from both Lantmännen (for humans) and Doggy (for pets).

Indirect costs are potential setbacks due to insufficient substantiation of claim or sustainability work. Regarding the claim being categorised as innovative, spending money on providing the requested evidence reduces indirect costs in the long run, since the message to consumers will be clearer, and therefore the benefit is more likely to be understood and accepted. Additionally, claiming without enough evidence can be damaging and costly, which is also explained by Doggy's claims ladder. Lastly, to proceed not to take on an active strategy for sustainable product development, might be costly in the bigger picture. However, Lantmännen have a sustainable image, which might be beneficial for Doggy, depending on how well-read the consumer is about the companies' connection. As consumers are becoming more well-educated within sustainability, Doggy should consider working more extensively with sustainable product development as a pre-active stance can prevent higher costs due to potential legislation on sustainability in the future.

Overall, the costs are applicable to and correspond to Doggy's ways of working today. However, Lantmännen, and by extension Doggy, already owns the licensing rights for the patent. Also, marketing should be made less expensive by support from already trustworthy brands. These are special conditions in this case, but are not proven to be untrue in other cases. The case study rather proves that the costs involved are all applicable to a real case. Concerning sustainable and legislative aspects, it is concluded that a pre-active stance is recommended.

5.6 Revenue Streams

5.6.1 Interconnected knowledge area

When pricing an innovative functional pet food, value-based pricing is the best strategy. Market research indicates that within the pet food industry, most brands' product lines are relatively similar in their assortment. The niche market theory states that a niche is created by a differentiated product that meets a specific set of needs not met by the regular market. Also, the likelihood of competition will decrease when working with a niche market strategy, and market size, growth and profit potential will emerge. In addition, the product's attractiveness will increase the more of Wennström's (2009) factors are met, where at least 'need the product' is satisfied since the niche is created for a specific need. Parrish et al. (2006) state that within a niche market, consumers are willing to pay a premium price for a product that satisfies their needs. Research regarding functional foods state that the most inclined consumers of functional food are willing to pay more for an added function. Additionally, a trend within the pet food industry indicates that pet owners are increasingly willing to spend more money on their pets. Therefore, the most suitable pricing strategy for a functional pet food is value-based pricing, since little or no competition exists and a differentiated product can price according to its value instead of its costs.

Revenues can also be retrieved if choosing to make the innovative functional pet food as a dog snack. Statistics indicate that the number of households with dogs in Sweden is increasing, and dog snacks are one of the fastest growing segments within shelf-stable foods according to a market report. Additionally, a reliable future for functional foods is predicted (Robertfroid, 2000). Therefore, the authors assume that revenues can be collected, specifically from the dog snack segment.

Adapting a sustainable product development approach when developing an innovative functional pet food can be profitable, since it can have positive effects on sales. The Ekoweb (2014) report clearly indicates that sales of ecological food has increased substantially, and is predicted to increase just as much in the near future, where one of the biggest categories is kids food. Further, the KRAV

report (2015b) indicates that an increasing number of people find it worth paying more for ecological food. In the case of kids food, as well as pet food, it is not the physical consumer of the product, but the 'parent', who is the buyer. Additionally, one distinguished trend within the pet food industry, according to Doggy's Market and Innovation manager, is the 'pet parenting' trend. Combined with another trend within the pet food industry indicating that the pet food industry is undergoing a humanisation, where pet owners' way of choosing pet food is reflected upon how they choose food for themselves. This indicates that adopting a sustainability perspective when developing a functional pet food can be rewarding.

Summary – Revenue streams

The analysis of revenue streams concludes that value-based pricing, resulting in a premium price, is the optimal pricing strategy when developing a functional pet food. Trends within both food for humans and pets indicate that consumers are willing to pay increasingly more money for functional food and pet food, and by eliminating competition with a niche market strategy it is possible to price the product accordingly. Revenues can also be collected from entering the functional pet food niche, specifically within the increasingly growing dog snack segment, and adopting a sustainability perspective when developing a functional pet food can be rewarding.

5.6.2 Application of knowledge

Value-based pricing is a strategy already in practice at Doggy. Combined with the opportunities that arise from being without competition in this specific market niche, it appears to be the best strategy to apply in this case as well. This is also supported by launching the product under Doggy's premium brand Bozita Robur, which already attracts a more conscious, and less price-sensitive, customer segment. It is not established whether the case product will be developed according to sustainable product development, but it can be assumed to have the same level of sustainability as the rest of Doggy's products.

Doggy is also working with a strategy where products are launched under the premium brands, and later migrate to the assortments for grocery stores. This might be an opportunity for the case product as well, securing revenue even if the product in the future is no longer considered to be 'innovative' or at all appeal to selective consumers in specialty retail stores.

Value-based pricing is already in practice at Doggy (and thereby the brand of Bozita), where the case product would probably be launched. This strengthens the interconnected knowledge, since it is works for Doggy. Paying for value also means that a more innovative and functional product will generate even more revenue than Bozita's existing products by being more 'valuable'.

6. DISCUSSION

The initial part of this chapter conducts a discussion of the analysis in chapter 5, and is followed by criticism of the analysis. Further, a complementary discussion of the three aspects missing from the Business Model Canvas - future perspective, competition, and risks and opportunities - is conducted. Following this are expert comments on the analysis, in order to strengthen or reject the findings. Thereafter, a discussion about ethics is held, and the chapter ends with a discussion about the conclusions and whether they are substantiated enough to qualify as final conclusions for the thesis.

6.1 Discussion of analysis

The analysis has been conducted by analysing the building blocks of the BMC separately (as opposed to where one decision becomes the input for the next). However, the authors are aware that some influencing by previous knowledge have occurred.

Mainly, none of the blocks are contradictory, but rather conform to create a coherent overall picture. This means they support, rather than foil, each other, by being compatible with analysis results from adjacent building blocks. The results, if applied in a real product development process, also go well together and can be co-implemented. However, an observation is the combination of customer segment and channels, where experts and opinion leaders act both as the customer segment and, in some way, a channel towards the rest of the industry. Due to the nature of the pet food industry, where experts within the industry can be assumed to act as early adopters, a situation occurs when it is not sufficient to view the intended customer segment as who will initially buy the product, as this group is too small.

The EFSA legislation, affecting the food and feed industries, lays the foundation not for what is possible, but what is feasible and profitable. By evaluating and positioning the product in the claims ladder early in the product development process, several subsequent decisions become a direct consequence of the desired position. This means that the claim should be

contemplated when looking into all of the aspects of the BMC, and that all the building blocks help support the intended level of claim. For example, a higher claim requires a higher level of trust, and corresponds better with established companies with an already beneficial brand image. Consequently, the decision of how much to claim, i.e. the position in the claims ladder, should be settled early in the development process.

Working with sustainability in order to meet the increasing demand from consumers has been discussed in the analysis as having positive effects on revenue and trust from consumers. It is not difficult to establish that it is a growing trend that is here to stay, and consumers are increasingly becoming aware of factors contributing to a long-term sustainable product. For an actor only wanting to invest just enough to meet these demands, an evaluation of how extensively sustainable product development needs to be implemented should be conducted. Correctly implemented, it can create positive synergies such as reducing production costs through a more effective use of resources, and increased longevity of the product. It is, however, important not to try to create a sustainable image only through marketing, as this might be labelled as 'greenwashing', that can severely damage the brand image and the work towards building a relationship based on trust.

When evaluating the customer relationship in order to build trust, the case study indicates that different types of claims, although all innovative, can be more or less controversial. To make sure the focus on relationship building is never under-prioritised, a recommendation would be to start by investigating how the claim is perceived by the consumers. This should come naturally, seeing as the importance of consumer acceptance has been highlighted.

Finally, the authors believe the combination of the three knowledge areas has contributed with new insights. By combining and applying knowledge from the different fields with, and on, each other, it becomes clear that there are new insights and conclusions to be made from the outcome of the analysis. What remains to be discussed, in further chapters, is the applicability of these findings, rather than whether they are part of the interconnected knowledge area.

6.2 Criticism of analysis

Further studies within the field are necessary in order to validate the conclusions. The authors believe a useful foundation for future research has been established by this thesis, which should be further tested with different case companies in order to increase the validity. However, as the thesis is of a qualitative character, testing a different case company might not coincide completely with the analysis. Still, the authors believe the conclusions to be helpful for companies planning to develop an innovative functional pet food, as they can be used as guidelines. The analysis findings are a result of the chosen framework and analytical tool, where other findings might have emerged from another framework. This does not mean that the analysis findings of this thesis are deficient, but that the authors are aware that probably other findings useful when developing an innovative functional pet food exist as well, just not through this specific framework and analysis tool.

Parts of the analysis are based on the authors' assumptions and interpretations of the industry, but rightly so, because the research is only building the foundation for this area to be further explored. Also, within some areas, little basis exist to found a complete analysis on. The authors have strived towards an objective analysis of the interconnected knowledge area, but as this thesis originates from the assignment from Lantmännen it is difficult to completely ignore the possibility of subjectivity. Another criticism towards the analysis is the difficulty in applying the general background knowledge within each part of the selected building blocks. Originally, the BMC is intended to work as a structure for decision-making within the different building blocks. When conducting the analysis of background knowledge to create the interconnected knowledge area, parameters to consider when making these decisions are discussed, rather than making the decision (which must be evaluated from case to case). Therefore, the analysis of the interconnected knowledge area within each building block becomes more of a helpful way of thinking when using a BMC to plan for a future innovation within functional pet food.
As mentioned in chapter 2.5.2, the BMC does not address some important factors worth mentioning in this discussion. One important aspect is the fact that the analytical tool does not consider the future of the product, but only projects a 'snapshot' of the present. Another important factor is competition, which it is of utmost importance to take into consideration when developing a

market strategy. However, the authors are aware of that the concepts of the future and competition has, unavoidable, been touched upon briefly within the building blocks for customer segment and channels. This has been difficult to avoid due to the nature of innovative products, but further discussion of the future perspective and competition has been saved for chapter 6.3. Additionally, the BMC does not cover risks and opportunities linked to the innovation and its development process. These factors are identified as important enough to let them be raised as separate parts of the discussion, below.

6.3 Complementary analysis discussion

As discussed above, the BMC does not consider the future, competition, and risks and opportunities. The authors believe these three aspects to be relevant when developing a product, and therefore this chapter will discuss these three aspects in order to complement the discussion in section 6.1.

6.3.1 Future perspective

As time goes by, and new products enter the market, competition will probably arise. As the BMC only applies a strategy for a snapshot in time, usually before the product is launched on the market, strategies should to be revised towards handling of competition. In general, it is important to stay agile and quickly respond to trends, whereas this process of revising strategies should be initiated rather quickly after launch.

Additionally, as an innovative product gets accepted by consumers and turns into an established product, the decision process for consumers changes. The main differences between the two processes are the first steps. When the decision concerns an innovative product, the first steps mainly focus on making consumers aware of the innovation and pursuing them to try it. This is the situation for the case product, which is a new and innovative product, where focus must lie on establishing trust for the function and the brand in order for people to be open to try it. However, as the case product will become

accepted, and competition probably enters, it is important to shift strategy towards making consumers choose this specific product, as opposed to all other products on the market.

Initially targeting experts and opinion leaders (as early adopters) is concluded to be the most beneficial strategy when developing an innovative functional pet food, according to the analysis. However, this is quite a narrow customer segment, not really financially sufficient in the long run as the innovation would only be adopted by a small number of people. It has also been established that, according to current trends, a growing number of pet owners are willing to pay more for exclusive pet food products. This means that as the innovation goes through the adoption process, the targeted customer segment for an innovative functional pet food needs to be revised into targeting the adopter group next in line (primarily early majority). Following the diffusion of innovation curve, this is also a natural step to take after gaining the trust of the early adopters.

Even though the initial targeted customer segment will change over time, it is part of a conscious strategy and does not mean time spent on reaching the previous target consumers will be in vain. In the case of functional pet food, it has been established that expert recommendations is a good way of reaching the broader masses, who require a trustful relationship, and need to accept the ingredient and understand the benefit. Thereby, the initial customer segment of opinion leaders also becomes part of a method, a channel, to gain the trust of not-so-early-adopters, and by that take the next step for the product.

A change in customer segment, and thereby also the consumers' decision process, may also lead to a need to broaden product channels to not only include specialty retail stores, in order to fulfil the criteria for customer relationship and convenience. The next step, when the innovative functional pet food is accepted and is an established product on the market, would be to investigate whether it is something worth selling in the grocery stores. Whether the grocery stores are worth selling through probably depends on the complication of the function, and who the customer segment is. As for the case product, the function is rather complicated, and the intended customer segment is dog owners who are quite involved in their dog's training.

Therefore it can be questioned whether grocery stores are profitable distribution channels for the specific case product.

6.3.2 Competition

Competition is touched upon in many of the building blocks individually, but not with a holistic approach. The niche 'functional pet food' does exist, as products with functions are present. But as functional foods is widely defined, and niche markets subjectively depend on the spectator, there should be possibilities of creating a niche within an already existing niche. Thus, by applying a niche market strategy and finding the specific need that the innovative functional pet food satisfies, the competition can be reduced. However, applying a niche market strategy does not guarantee elimination of competition, as a profitable niche might attract competitors. Therefore, additionally to applying a niche market strategy, patenting of the effect and use of the function, can reduce or eliminate the competition. The more of the function that can be patented, the bigger the competitive advantage will be, as competitors need to find their own solutions to find a way to satisfy the consumers' need. If, or when, competition is inevitable, strategies for how to differentiate from the competition need to be developed, and pricing within the niche market might have to switch towards competition-based pricing.

6.3.3 Risks and opportunities

One way of applying a niche market strategy is by using a push strategy, where the product is developed before finding a suitable segment. When developing a product by a push approach, there might be a risk that the consumers do not desire the, in this case, specific effect from the additive. It should be possible to minimise this risk by putting emphasis on communicating the benefit and thereby working towards creating a need. The need can be created in hindsight, after a product is developed, where consumers might not always be aware of their need of the product beforehand. This risk can be eliminated by using a pull approach instead, meaning the need already exists. Hence consumers do not have to be convinced as to why they need the product.

As a result of the innovative nature of the product, consumers' behaviour and acceptance becomes a thoroughly discussed concept throughout the analysis. However, it should be noted that failure rates within the functional food industry has, to a large extent, been derived due to shortcomings regarding the consideration of consumer acceptance. If this is due to industry actors disregarding the factor altogether, or to difficulties in identifying the correct determinants of acceptance, remains uncertain. Thus, it is important to be aware of the complexity of developing an innovative functional pet food and getting acceptance. The textbook examples of how to plan and act beforehand are merely guidelines, not factors guaranteeing success. Regardless, timing is crucial for consumer acceptance, since it might be that the market is not ready for the innovation, and the adoption never catches on. As for the case product, which can be perceived as rather radical and innovative since it applies to cognitive functions in an immediate way, the step from the existing functional pet foods might be too big for consumers today. To confront this risk, it could be a good idea to study the market and the intended consumers in order to understand whether the timing is right.

Lastly, the authors identify a few opportunities and positive effects that can be derived from developing an innovative functional pet food. After having successfully developed and launched a functional product within the pet food industry, the knowledge and experience gained can be utilised into developing a portfolio of products. The knowledge and experience can also be utilised into developing products for other industries or markets. As for the case product, this means that Lantmännen have the possibility to use the insights from the use of eidisine™ in dog food, and transfer this knowledge to other products, for example for their product range within food for humans. Additionally, paving the way for innovative functional foods within the pet food industry, and taking on a challenge like this, can have positive effects on the image of the company or brand. Being pioneers, and developing an innovative functional pet food which will create a niche market, can affect the way that the competition, and the consumers, view the brand.

6.4 Expert comments on analysis

To test the findings of the analysis conducted in this thesis, experts Håkan Nordholm and Peter Wennström (presented in chapter 2) provided input.

When formulating the value proposition of the product, Wennström emphasises the importance of recognising the *problem* of the consumer: what is today's challenge with their pets' cognitive health and how do they notice? Nordholm highlights the relevance of communicating the naturalness of the active substance, since the claim may bring "illegal narcotic substances" to mind, which would deter consumers.

Communicating the naturalness of the product is a pervading theme throughout Nordholm's comments. When discussing customer relationship, Nordholm points out that not only is it important to launch the product within an existing brand, but also to be careful that the new product concept does not interfere with the established image of that brand. The authors conclude that the relationship between brand and product goes both ways, where it is imperative to make sure they lift each other, as opposed to inflicting damage.

Wennström states that the most important conclusion from the analysis is the decision on customer segment, where he considers finding a consumer group who are willing to pay a premium price for the added value of the product to be the crucial point. The added value is, according to him, created mostly by emotional values, and not rational. He agrees with the comparison between pet owners and parents, and stress a feeling of guilt in the consumer, which drives the readiness to pay more in order to guarantee that the pet (or child) receives proper nutrition, thereby fulfilling the responsibilities imposed on the owner (or parent). This supports, and elaborates, the authors' conclusions regarding the effects of the pet parenting trend on the consumer decision process.

Nordholm agrees with the strategy of targeting experienced pet owners working with dogs initially. He exemplifies with hunters, sled dog owners, and military training dogs. Also in line with the authors' recommendations, he goes on to propose the interested dog owners, who work with their dog more as a

hobby, as the natural next step. This consumer, he claims, buys his/her food in specialty retail stores, which also conforms with the conclusions regarding channels. Moving on to channels, Nordholm believes the case product is a typical product for specialty retail stores, and is very hesitant whether it will ever reach the grocery stores.

From these comments by Wennström and Nordholm, the authors can strengthen the findings of the analysis. Thereby, none of the findings should be discarded at this stage.

6.5 Ethical considerations

Ethical considerations linked to development of functional pet food, as identified by the authors, include some important aspects. One of them is the communication to the consumers. Even if legislation aims at protecting consumers by regulating the way companies market their products, industry actors are driven by profit and may prefer to create shortcuts. When studying existing products on the market (specifically potential competitors to the case product), several different claims have been made relating to an active substance. When looking into research regarding the stated effect of the substance on dogs, contradictory reports have been found, where, sometimes, a majority of the articles do not observe the stated effect. Even if this, at this point, does not apply to the case product, it is an important ethical consideration when developing innovative functional food products.

Another ethical aspect to bear in mind is the fact that the pet that will consume the product, cannot understand the consequence, and hence not disapprove of the intake. As the case product's functional substance is an essential amino acid with no side-effects, the ethical discussion is left to Doggy, but should be considered by anyone planning to develop a functional pet food. Also, this applies to all pet food products.

6.6 Discussion of conclusions

As a result of the analysis and discussion, this is a review of what conclusions can be drawn, and on what grounds, from this thesis. The conclusions aim at being generally applicable, and do not tend to the case study separately. All potential conclusions presented here are directly based on the analysis findings in chapter 5.

The most important conclusion from the **Value proposition** analysis is that *it is important to emphasise the function of the product.* This is concluded by the authors by combining theories from all three knowledge areas, all strong and well-supported in themselves. This indicates that this is a factor that is both necessary and relevant to consider. Depending on the nature of the claim, it may also be important to communicate naturalness.

The **Customer segment** analysis concludes that *targeting opinion leaders is recommended.* This is backed up by theory of diffusion of innovation and the role experts play within pet food industry. It is possible it will be required to change the customer segment in the future, and as a result of this, it is only possible to draw conclusions regarding customer segment at the time of launch. However, the conclusion regarding the initial customer segment is recurrent through most building blocks, as well as the case study, and supported by all three knowledge areas. As such, it is considered a legitimate conclusion.

The most important conclusion from the analysis of **Customer relationship** is that *trust, both for the product and the brand, is of utmost importance.* As found in the analysis, the theories that are combined to produce this conclusion originate from several of the knowledge areas; based on analysis of the pet food industry, but to a large extent also on established theories. Because it is strongly supported by all three knowledge areas, it is considered as a strong statement.

The **Channels** analysis concludes that *specialty retail stores is the most appropriate channel.* This is based partly on the chosen customer segment, but

also on the importance of differentiating the product in a competitive market, thereby making sure consumers understand the benefit and can accept the ingredient. The difference between specialty retail stores and grocery stores is based on the industry analysis, which is not as strongly substantiated. Therefore, this conclusion is regarded as weaker than other conclusions.

From the analysis of the **Cost structure**, it is clear to the authors that indirect costs are the important costs to consider. The direct costs found are not specific for development of innovative functional pet food products, and are therefore not considered relevant as a conclusion in this thesis. Therefore, the conclusion is that *indirect costs, such as claims substantiation and sustainability work, are important to consider.* This means that by not working sufficiently with these aspects, unnecessary costs may emerge and sales may be damaged.

Combining knowledge from niche markets and functional foods, to suggest **Revenue streams**, suggests that *value-based pricing is the most beneficial pricing strategy to secure revenue*. This is also supported by consuming trends within the pet food industry. Trends can be questioned, but the fact that the same pattern is recurrent through several of the trends gives backs it up. Combined with the strong niche marketing argument, value-based pricing is considered verified as favourable. However, it is important to note that strategies from competitors, and how to meet them, are not included in the decision making.

6.7 Suggestions for future research

As this research is of a qualitative nature, there is still room for a lot of different research approaches to the subject. Changing the analytical tool, case company, and function of the case product, as well as other factors, could provide new views, and conclusions. As pet food is an international market, it would also be useful to extend this research to other national markets, to compare differences and similarities. Other research that would be beneficial for this research area is to study what trends within food for humans that will have an effect on the pet food industry.

7. CONCLUSIONS

This thesis aims at providing conclusions regarding development of innovative functional pet food products. The conclusions address industry actors faced with the challenge of developing such products, and have been produced by combining three different knowledge areas - 'establishing of an innovative niche market', 'functional foods', and 'the pet food industry' - through the building blocks of the Business Model Canvas.

The theoretical framework, figure 3, has provided useful guidance and helped produce relevant conclusions. Additionally, the Business Model Canvas has been useful as a structure, contributing to forming and aligning analysis findings, to produce guidelines for industry actors.

Six of the block-specific findings are considered to be relevant to form the final conclusions of this thesis:

Value proposition: The value proposition is supposed to address the problems solved and the needs satisfied by the product. From analysing the value proposition, the first conclusion is that, when developing an innovative functional pet food, the value proposition should be centred around the functionality of the product.

Customer segment: The customer segment concerns what customers the product is suitable for. The analysis concludes that, at the time of launch, the targeted customer segment should be opinion leaders within the pet food industry, who can later recommend the innovation further.

Customer relationship: The customer relationship addresses what kind of relationship a company want to establish with their customers. From the customer relationship analysis, the third conclusion is to create, and foster, a customer relationship built on trust, in order to get consumers to adapt and accept an innovative functional pet food.

Channels: Channels concern the means of getting in touch with the specific customer segment. The analysis of channels find that specialty retail stores is

the most suitable channel to launch through when developing an innovative functional pet food. However, as this analysis is based mostly on the industry analysis which is not as substantiated, this conclusion is regarded as weaker than the others.

Cost structure: The cost structure concerns the costs involved in the business model. Indirect costs can potentially be expected from not working sufficiently with sustainable product development, or not undergoing enough scientific studies to claim at a high level, and can be damaging in the long run.

Revenue streams: Revenue streams address the revenues tied to the business model. The analysis finds that when developing an innovative functional pet food, value-based pricing is the recommended pricing strategy to use.

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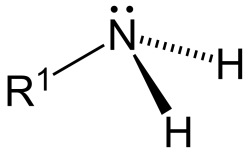
9. APPENDICES

Appendix A: Technical glossary

Active substance: The substance or ingredient that is biologically active within a product, i.e. producing the biological effect.

Amine (functional group): Group of atoms containing a nitrogen (N) atom with a pair of valence electrons not shared with another atom (figure shows primary amine, where the R is a connecting chain). See also *Functional group*.



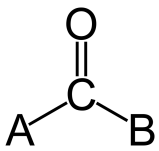
Arginine: a conditionally essential amino acid for mammals. This means it can not be metabolised by the body, but whether or not it is required to be healthy depends on the individual. (For *amino acid*, see chapter 4.1.1.1)

Baseline: The point of reference in a scientific experiment, in this case corresponding to cognitive function of normal healthy individuals (before intake of active substance).

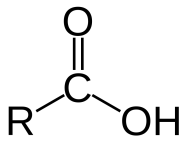
Bioavailability: A pharmacological term, referring to the fraction of an administered dose that reaches the blood circulation. This is a measure of how much of the substance is taken up by the body.

Carbohydrate: A molecule containing carbon (C), hydrogen (H) and oxygen (O) atoms, that is the most important energy source for our bodies. Widely present in food and pet food.

Carbonyl (functional group): A group of atoms containing a carbon (C) atom double-bonded with an oxygen (O) atom. See also *Functional group*.



Carboxyl (functional group): A group of atoms containing a carbon (C) atom double-bonded to an oxygen (O) atom and bonded to a hydroxyl (OH) group. The carboxyl functional group is a characteristic of organic acids, where the hydroxyl group brings its acidic qualities. See also *Functional group*.



Enantiomer: One of two molecules that are mirror images. It is important to note that despite the small apparent difference, large differences can be observed within functionality (including toxicity) among enantiomers.

Extrusion: Manufacturing process that creates products with a cross-sectional profile. Its is characterised by high temperatures and pressures.

Fermentation: See *Microbial fermentation.*

Functional group: Specific groups of atoms (or bonds) within organic molecules. The groups are responsible for their own characteristic chemical reactions, which will always be the same regardless of the molecule it is a part of.

Limiting amino acid: The essential amino acid responsible for first limiting protein synthesis, by not being present in sufficient amounts.

Maillard reaction: A series of chemical reactions that occur between amino acids and certain types of sugars (sugar is a form of carbohydrate), usually at high temperatures. The reaction is responsible, among many other colours and flavours, for browning of steaks and bread as well as the flavour of coffee.

Microbial fermentation: Fermentation is a chemical process that converts sugar to alcohol, acids and/or gases. Microbial fermentation refers to fermentation performed by microorganisms.

Non-bioavailability: See *Bioavailability*.

Protein: Large biological molecules, that consists of chains of amino acids.

Tolerance: When a subject's reaction to a specific drug and concentration of the drug is progressively reduced, requiring an increase in concentration to achieve the desired effect.

Tryptophan: an essential amino acid. (For *amino acid*, see chapter 4.1.1.1)

Vertebrate: Animals belonging to the animal classification Vertebrata, i.e. animals with backbones (spines).