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Investigation of Consumer Attitude Towards RAS-Produced Fish

- In Pursuit of a Viable Price Premium

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Executive summary

The current thesis investigates consumer attitude towards RAS-produced fish. The research is conducted using a sample of 238 Danish respondents who have answered either an online or a physical questionnaire. These participants have evaluated a number of attributes related to RAS-produced fish, as well as evaluated the characteristics of RAS-production itself. Initially, this evaluation is made in isolation and subsequently relative to conventional fish production. A modified Theory of Planned Behavior-model represents the framework of the investigation. First, the respondents evaluated a hypothesized RAS-product based on a number of attributes presented on the product packaging. Attributes that relate to the healthiness of this product were perceived more positively than attributes that relate to production sustainability and animal welfare. Personal norms were found to be more positively related to purchase intention than social norms. Finally, general organic food consumption is suggested to be positively related to RAS-fish purchase intention. A fact sheet, in which the production characteristics of four of the most prevalent fish production methods were introduced, did not alter the positive evaluation of RAS-production. This production type is deemed most positively by the participants on all of the measured parameters.

The willingness to pay (WTP) was measured both before and after the introduction of the above-mentioned fact sheet. A considerable amount of the participants indicated a WTP to pay both a 25, 50 and 100% price premium for RAS-produced fish. This WTP was positively affected by an increase in respondent knowledge level, and especially the percentage-wise proportion of respondents willing to pay a 100% price premium increased due to production information transparency. This segment of respondents who reacted positively to this information transparency share several demographic characteristics. Thus, it is suggested that RAS-producers should initiate marketing efforts, to affect this segment of consumers towards purchase intention.

Whether or not the findings from this research are generalizable to neighboring markets is questioned and thus it is suggested that RAS-producers should conduct extensive market research in several domestic markets in to establish an understanding of international consumer attitude towards RAS-production. This will enable effective market-specific marketing strategies.

Title Sheet

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Abbreviations

CADM:	The Comprehensive Action Determination Model
FOA:	The Food and Agriculture Organization of the United Nations
NAM:	Norm-Activation Model
OECD:	The Organization for Economic Co-operation and Development
RAS:	Recirculating Aquaculture System
TPB:	The Theory of Planned Behavior
TRA:	The Theory of Reasoned Action
WHO:	World Health Organization
WTP:	Willingness to pay

Introduction

This research is the product of my master's degree thesis work in International Marketing at Aalborg University. The investigation takes its point of departure from the fields of consumer behavior and consumer attitude formation and investigates the case of land-based aquaculture fish.

Aquaculture is one of the fastest growing food sectors globally. In recent years an innovative production platform has been developed, called closed containment land-based recirculating aquaculture systems (LBCC-RAS – in the remaining project merely abbreviated *RAS*). The term covers aquaculture facilities, in which the production water is purified before entering the production cycle and subsequently purified before leaving it again. This production method entails positive product- and production-related advantages compared to conventional aquaculture. These comparable advantages include products that are antibiotic-free, more sustainable production procedures and less negative impact on surrounding ecosystem. Within the past few years, technology, which enables large-scale saltwater RAS, has been developed and Denmark is in the absolute forefront of this advancement. Up until now two facilities have been established with an additional currently being built. I am involved in a startup, which will further continue this trend by establishing additional saltwater RAS, as well as seek to promote Denmark as being a trusted producer of high quality sustainable seafood.

The purpose of the current thesis is to investigate the attitudes that consumers hold towards RAS-produced seafood compared to seafood produced in traditional aquaculture systems, as well as wild-caught seafood. Moreover, I seek to examine consumers' intention to purchase RAS-produced fish and to investigate whether consumers are willing to pay a price premium for RAS-produced fish. This thesis will work as a small-scale pre-study, which will make up the foundation for subsequent larger-scale national and international investigations. The findings stemming from these researches will be used for branding, pricing, product- and company positioning as well as communication purposes.

Background

WHO expects the global food consumption to increase considerably in the near future. The organization ascribes this expected development to a growing global population, rising incomes and an increased urbanization (World Health Organization). WHO estimates that the aggregate global meat production will increase from 218 million tonnes in 1997-1999, to 376 million tonnes in 2030. As of 2012, FOA (Food and Agriculture Organization of the United Nations) estimated that fish represented 6.5 percent of the total global protein consumption by humans (OECD/FAO, 2015). One of the methods used for fish production is aquaculture, and according to OECD, aquaculture is one of the fastest growing food industries globally (OECD/FAO, 2015).

The fish consumed by humans come from two main sources; either it is wild-caught or farmed through aquaculture. Wild-caught fish is caught by net or line in the oceans or inland waters, whereas aquaculture relies on various production forms that resemble those of traditional farming (OECD/FAO, 2015). The ratio of fish caught in traditional fisheries and fish reared through aquaculture was estimated to be approximately 55 - 45% respectively in 2014 (Globefish, 2014). Between 2012 and 2014 the aggregate global fish production has seen an average yearly increase of 1.9 percent (OECD/FAO, 2015). The output of fisheries has been stagnant in recent years or even slightly declining on a year-to-year basis, whereas the output stemming from aquaculture is growing at a global average rate of 5.3 percent yearly. This tendency is expected to continue in future years and the World Bank expects aquaculture to reach 50 percent of the global market share by 2030 (World Bank, 2013). Throughout this period, the quantity of wild caught fish is expected to be stagnant at approximately 90 million tonnes yearly, whereas the aquaculture output is expected to grow 2-3 percent yearly (World Bank, 2013). One of the main reasons for the forecasted stagnancy in fishery output is the fact that wild fish represent a scarce resource, which is already being over-fished in many areas globally (OECD/FOA, 2015). Thus, the wild stocks will not be able to reestablish themselves naturally over time. This fact, in combination with the growing global demand mentioned earlier, is expected to result in a considerably larger market share for fish bred in aquaculture facilities in the future.

Within the past 30 years, aquaculture has matured into a serious alternative to traditional fisheries (Dianna et al., 2013). The term aquaculture represents three different production methods (Funge-Smith and Phillips, 2001).

- *Water-based systems:* Cages and pens are situated in sheltered coastal or inland waters. Poles on rafts that float on the sea suspend the cages and the net pens are attached to the bottom of the sea by poles.
- *Land-based systems:* Rain-fed ponds, irrigated or flow-through systems, tanks and raceways. Most of the land-based systems are naturally formed or manufactured ponds of a relatively small size. Flow-through systems consists of concrete "raceways" or tanks through which the aquaculture farmer can control the water flow.
- *Recirculating systems:* Recirculating aquaculture systems consist of concrete tanks or raceways that are placed either outside directly in nature or inside a covering building. The water which is used for the production is purified and re-used instead of discharged into nature.

All these production forms entail different comparative advantages and disadvantages. The two first types of production tend to cause a more pollution and disturbance of the local eco-systems, due to waste water, which is led into surrounding water sources. Moreover, conventional land-based production facilities entail a relatively large water consumption (Feucht and Zander, 2015). The fish in these systems are treated with medicine and antibiotics to achieve a high survival rate in the natural environment. This, however, is not necessary in recirculating systems. If fish in the water- and traditional land-based facilities are not treated with drugs and antibiotics, they will have a high risk of contracting diseases, causing a low survival rate. Furthermore, there is a risk that these fish will transfer their diseases to the local eco-systems. The Chilean aquaculture industry for instance encountered a major breakdown in the country's aquaculture production due to a disease breakout in the 00's (Asche et al., 2009). As a more current example of the risks associated with water-based systems, the Chilean producers risk losing up to 20 percent of their production yield in 2016 (The Guardian, 2016). These problems are the consequence of increasing water temperatures that have caused a bloom in poisonous algae. As a consequence, a large proportion of the fish in the aquaculture facilities as well as the wild stocks have died. Similarly,

traditional aquaculture producers worldwide are currently experiencing problems as the result of a sea lice outbreak. This outbreak is forcing the world's biggest aquaculture producer, Marine Harvest, to scale down its operations in Norway (Seaman, 2015). Finally, the sea-based systems have encountered problems with escapees – fish that escape from the cages. These escapees have had a negative impact on the local ecosystems causing disturbance of the natural stocks as well as the general flora (Gamble, 2012). Thus, the establishment of RAS seems to be an obvious solution. This production platform, however, also entails problematic issues. The establishment costs are steep and in order to make fully recirculating aquaculture systems viable, the output needs to command above average prices (Pinfold, 2014). Moreover, consumers tend to have a preference towards fish, which is produced as near-naturally as possibly (Feucht and Zander, 2015; Siegrist, 2008). Although the facility has several positive characteristics, it still has a greater immediate resemblance to industrial production than the other production types.

Different attributes have been identified as being important to consumers in connection to seafood products. These attributes include: absence of food additives, preservatives and residues, the nutritional benefits and healthiness of products, production method, animal welfare and a minimization of the negative environmental consequences (Sheppard et al., 2005). Products that stem from each of the three above-mentioned production types perform differently on each of these parameters. As aforementioned, consumers tend to have a positive attitude towards a production method, that is as "near-natural" as possible (Feucht and Zander, 2015). Feucht and Zander's (2015) research, which includes qualitative data involving German fish consumers, suggests that the aesthetics of the surroundings of an aquaculture facility is relevant. A comparison between ponds, flow-through systems and RAS was made, in which RAS was deemed less preferable of the three possibilities due to the distance from nature. However, according to the same study, "unnatural practices are only accepted if they serve consumer's well-being" (Feucht and Zander, 2015). Most of the participants were not aware of the fact that medications are used in fish production and only few of them approved of medication to treat sick fish. Thus, some consumers seem to experience a cognitive dissonance in this respect. Siegrist (2008) suggests the same notion – that the perceived naturalness of food production plays an important role in relation to the acceptance of novel production forms. This author claims that consumers are willing to compromise on the degree of naturalness, as long as this compromise entails a clear

compensation in other positive product attributes. This could be the healthiness of the produced food, positive environmental consequences or the like (Siegrist, 2008).

Feucht and Zander (2015) only consider land-based production forms. Rudd et al. (2011) have made an investigation about consumer attitude towards salmon farmed in coastal areas as opposed to wild salmon. As mentioned above, coastal production entails different negative consequences to the local eco-systems. Furthermore, this production method entails the use of drugs and antibiotics to keep the fish disease free. The researchers behind this investigation define the Canadian consumer as being knowledgeable about the negative effects of coastal aquaculture, as this subject has been elaborately portrayed in Canadian media. The participants perceive this production form to be very much problematic as both the healthiness of the fish stemming from these farms as well as the effect that the farms have on the local ecosystems are perceived negatively. Additionally, this investigation implies that a price premium for a cleaner product might be reachable, as the aversion towards contaminations was very high, although the levels were within the legally allowed range. The consumer view on traditional fisheries is primarily positive, however, a certain segment of consumers finds this production type to entail problematic consequences. This skepticism relates to both the healthiness attributes of the fish as well as the environmentally negative consequences of the production (Jacobs et al., 2015).

Mauracher et al. (2013) have investigated the attitudes of Italian consumers towards organic fish and these researchers indicate that organic aquaculture might be a promising differentiation strategy for aquaculture farmers.

Problem Discussion

The case company of this project is Skagen Aquaculture, which is a RAS-production company that was recently established in the Northern part of Denmark. The facility will not be in full production before 2017-2018.

As has been already briefly touched upon, the RAS-production method for breeding cold-water fish is still incipient. No company has yet proven the feasibility of such a production at a large scale. Based on a conceptual feasibility study Pinfold (2014) argues that a system with an output of at least 1000 tonnes of fish per year might be viable. The facility that Skagen Aquaculture will establish has a full output proportion of 1,200 tonnes yearly. Thus, this facility seems to meet the requirements related to size, to achieve a viable production. Pinfold further emphasizes the possibility of achieving a premium price as being one of the uncertainties that could ensure the viability of RAS-produced cold-water fish species. The author mentions a price premium of 25% as being a driving factor towards the viability of RAS. However, based on internal calculations made by Skagen Aquaculture and previous agreements signed by other RAS-companies, a price premium of 50-100% is targeted. Hard facts related to the subject of price premiums for organic fish products are hard to obtain and for RAS-produced products nearly impossible. However, statements from some of the large European fish producers indicate that price premiums for organic seafood products are in fact present. Marine Harvest, which is the largest Norwegian salmon producer, has recently invested 22 million euros in their organic production facilities (IntraFish Media, 2015). The company assesses that a price premium of at least 50% compared to conventional products is attainable. Moreover, the Irish Sea Fisheries Board states that a price premium is obtainable and that the prices for this product category is less volatile than for conventional products (The Irish Sea Fisheries Board, 2015).

Although the fish from recirculating aquaculture systems cannot obtain the organic label, this production type entails a level of sustainability, which is comparable to the traditional organic production forms. On some parameters RAS-produced fish is even more sustainable than organic fish. The question then remains whether RAS has the same potential in relation to achieving a price premium or if it is deemed inferior to the traditional organic facilities by consumers. This all depends on whether the production method is deemed as positive by relevant consumer

segments as organic production. If for instance the fact that RAS-production has similar characteristics as industrial production causes consumers to ignore its positive characteristics, the company could fail to achieve a substantial price premium. Thus, the communication of the positive production characteristics of RAS will be an objective for Skagen Aquaculture and other RAS producers alike. This can be done by identifying the consumer groups most likely to show a willingness to pay a premium price for RAS-produced fish, and subsequently to investigate how the different attributes of RAS are perceived by these segments. By establishing such insights, the company will be able to precisely and price effectively communicate the relevant production and product characteristics to the inclined consumer segment(s). The desired outcome of such initiatives will be to serve an explicit or latent need in the inclined customer segments and moreover to justify a price premium. Carlucci et al. (2014) suggest that knowledge about seafood is related to fish consumption frequency and it could be hypothesized that knowledge about RAS-production would entail a greater consumption intention as well. On the other hand, knowledge about the production form, which has aesthetical similarities with industrial production, might contrarily entail an aversion against its output. In such a case, marketers might be interested in only marketing the attributes that are perceived most positively and not actively use the production facility in its marketing efforts. For instance, the fact that the fish is guaranteed not to contain antibiotics or heavy metals could be emphasized instead.

According to Diana et al. (2013) the more-sustainable aquaculture fish products are poorly differentiated in the market. This results in a situation, in which the sustainable producers are not necessarily able to achieve an extra markup for their products. Identifying the above factors is an integral part of being able to successfully brand fish reared in RAS facilities. The present investigation seeks to identify the optimum mix of attributes to brand RAS-produced fish by and to identify the most inclined consumer segment(s) for the product. Seeing that Skagen Aquaculture will have a production capacity of a size that renders selling its output in full in the domestic market impossible, an assessment is subsequently made of the usability of these findings on an international scale.

Problem Definition

The outset of this research is to investigate whether consumer attitudes towards RAS-produced fish might entail the opportunity to differentiate this fish positively in the market. Different attributes associated with RAS-produced fish will be investigated to document the consumer attitude towards the production platform and its products. Finally, the likelihood of a possible price premium is examined. The investigated attributes relate to; the perceived healthiness, the perceived environmental impact of each production form and the perceived animal welfare. Moreover, a demographic investigation of the participating consumers is conducted to segment the consumers in the market based on their intention to buy the examined product. This will enable marketers working with RAS-produced fish to plan the marketing efforts aimed at their potential customers as efficiently as possible. The above considerations are summarized in the following problem statement:

Which factors should be considered in formulating a marketing strategy for a newly established RAS-based fish producing company in Denmark?

In order to operationalize this problem formulation, it is broken down into five supporting research questions. These questions form the framework of the research and will be answered individually in the analyses and in the subsequent problem discussion.

a) *What is the nature of consumers' intention to purchase RAS- fish in Denmark?*
b) *How is RAS-fish perceived by consumers when compared to traditional aquaculture production and fisheries?*
c) *Which factors influence the prices that Danish consumers are willing to pay for RAS-fish?*
d) *How should RAS-fish be branded in Denmark?*
e) *How will the Danish consumer knowledge help Skagen Aquaculture to export its products to neighboring countries?*

Delimitation

The current thesis has different delimitations stemming in part from a time constraint as well as from a limited budget. Thus, the investigation will only be carried out in Denmark, more specifically in the municipality of Aalborg. This has the implication that the results are not necessarily generally applicable neither to the entire Danish market nor to the European seafood market in general. Further research should be conducted, in which other national markets are included to assess differences in purchase intention, relative attribute importance and attainable price premiums. By doing so, RAS-producers will be able to make better decisions in relation to choosing the most favorable markets for their niche product.

Seeing that production costs are relatively high in RAS-production, these producers have employed a strategy to produce only high-value fish species. In Denmark, the producers have chosen either salmon or yellowtail amberjack for their breading programs. However, in this thesis only salmon will be included in the investigative questionnaire. The reasoning behind excluding yellowtail amberjack from the investigation and using salmon only, is that salmon is a well-known fish species by Danish consumers. By choosing a product, which is established in the market, it is believed that it is possible to imitate the mind state of consumers at the point of purchase more precisely. Seen from the perspective of the collective Danish RAS-producers, subsequent researches could include yellowtail amberjack as well, to investigate whether various species entail differences in attitudinal variance. Currently the advised intake of yellowtail amberjack is constrained in some markets, and thus sustainable production of this species might be perceived more positively than is the case for salmon in these markets.

Methodology

Theoretical underpinnings

"Methodology is a mode of thinking, but it is also a mode of acting. It contains a number of concepts, which try to describe the steps and relations needed in the process of creating and searching for new knowledge." (Arbnor and Bjerke, 2009).

According to Kuada (2012) research methodology consists of four steps: The philosophical/theoretical assumptions, epistemological choices, the methodological decisions, and different possible choices relating to research methods and techniques.

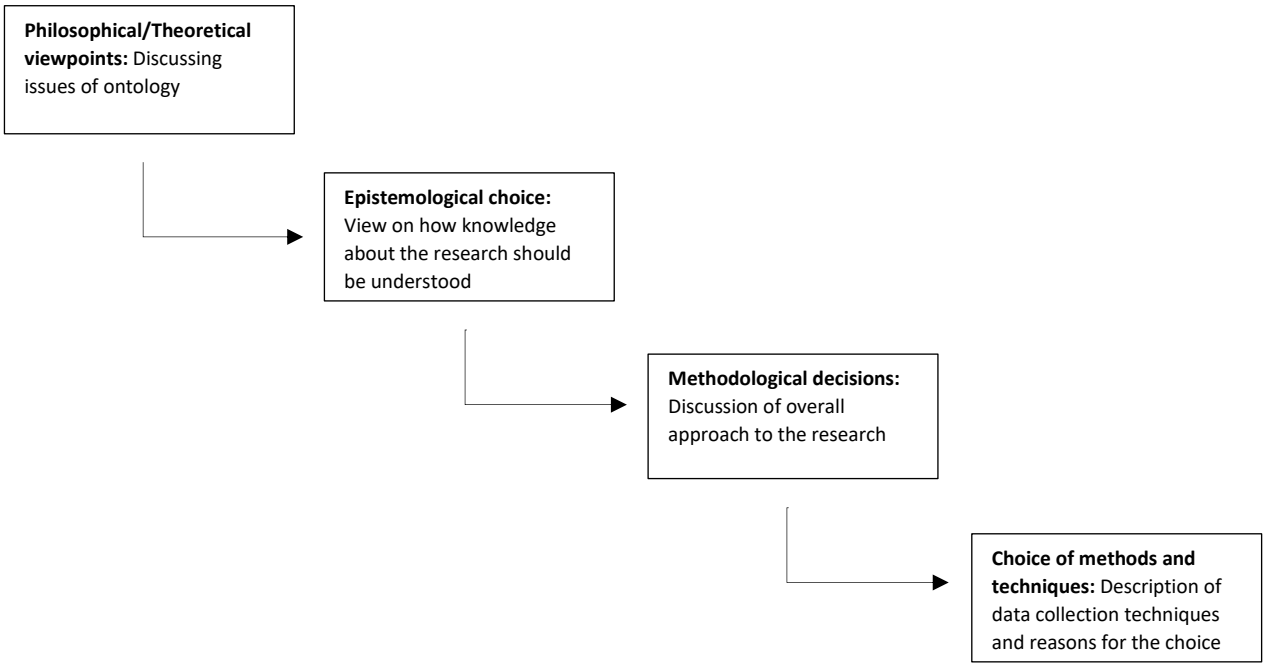


Figure 1: Structure and Levels of Discussions in a Methodology Chapter (Kuada, 2012)

1. Philosophical/Theoretical Viewpoints: At this first level the researcher discusses his or her views on *ontology.* This is the very basic level of an investigation and a point at which the researcher states his or her philosophical beliefs concerning the social world and the entities within this world. Is the social world an objective reality that exists externally from the people in it or is reality in fact created by the individuals inhabiting the world? This is essentially what make up the ontological beliefs of researchers.

2. Epistemological Level: At this point, the researcher should discuss his or her views upon the nature of knowledge – "how do we know what we know". Some researchers believe that it is possible to know an absolute truth about a given phenomenon independently of human beings whereas other believe that researchers cannot detach themselves from the subject investigated.

3. Methodological Approach: The methodological approach is the reasoning behind the chosen methods used in a given research process. Ultimately, one should describe how the knowledge will be attained and why this specific approach has been chosen. The methods used in researches should mirror the beliefs that researchers have described at the previous stages. If a researcher holds the belief that the social world can only be objectively described, he or she could choose an approach involving hypotheses and correlations. Contrarily, researchers who put an emphasis on single individuals would most likely make use of an approach at are more subjective level.

4. Methods and Techniques: This is the final step of the methodological latter presented above. This is the level where all the philosophical thoughts discussed previously will lead to a set of tangible data collection methods and techniques. The researcher should explicitly describe how the methods and techniques of choice comply with his or her general beliefs. Moreover, this section should describe why these exact methods and techniques are the optimum choices in accordance to the problem formulation of the research.

Arbnor and Bjerke (2009) have constructed a model that illustrates the connection between the ontology, epistemology, methodological considerations and the research area of interest (see

Figure 2). Their framework has stages that eat into each other and is designed to provide scientific work a philosophical consistency.

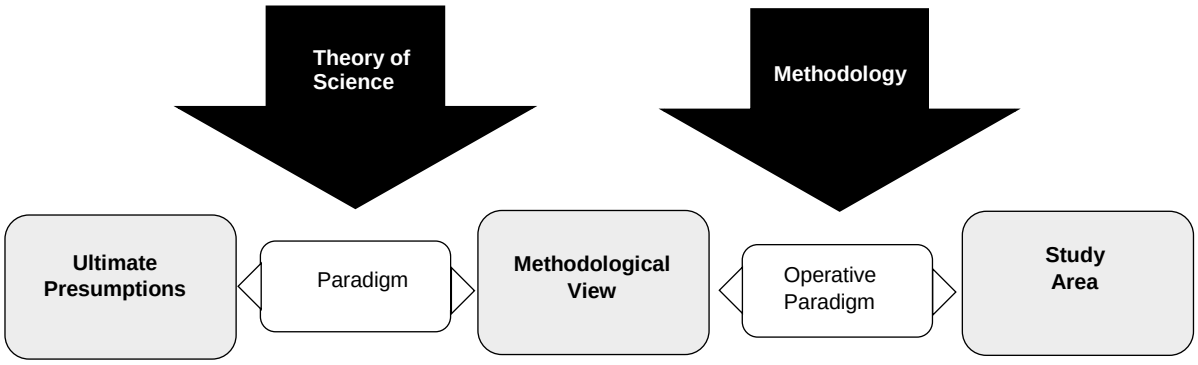


Figure 2: Theory of Science and Methodology (Arbnor & Bjerke, 2009)

The two first two stages of Kuada's framework are compiled into one single component, namely the *Ultimate Presumptions.* Given these presumption, researchers are to choose an established paradigm that encompasses these philosophical presumptions. In the "*Structure of Scientific Revolution*", Thomas Kuhn (1970) defines a paradigm as a cluster of beliefs used to describe given phenomena. "According to Kuhn, scientists working in a field can only make significant progress after they settle on a paradigm, which he labels as a concrete scientific achievement that provides a template for future research in the field." (Wray, 2013). Arbnor and Bjerke (2009) have grouped the most predominant paradigms in research into three methodological views: The analytical view, the systems view and the actors view. According to this model, choosing a paradigm will automatically mean belonging to one of the three methodological views. From the methodological view chosen, researchers will have different methodological procedures and methodics to their disposal. The most suitable methodological procedures will depend on the study area of interest. In other words, the researcher needs to consider the nature and ambition of the research to determine the optimum techniques and methodics, which are to be used.

Ultimate Presumptions

One of the main bones of contention in the discussion of scientific paradigms is the distinction between objective and subjective approaches (Kuada, 2009). The two in their purest form can be viewed as two opposite extremes on a continuum. The two views have the following divergent

characteristics compared on the grounds of; *ontology, epistemology, human nature* and *methodology.*

Dimension	The Objectivist Approach	The Subjectivist Approach
Ontology	Realism	Nominalism
Epistemology	Positivism	Anti-Positivism
Human Nature	Determinism	Voluntarism
Methodology	Nomothetic	Ideographic

Table 1: The Objectivist-Subjectivist Dispositions in Social Science (Kuada, 2012)

Objectivism: According to the concept of "realism" the world consists of various tangible structures that exist independently of the individuals inhabiting it (Kuada, 2009). When looking at the objectivist approach, different scientific methods are used, including quantification and statistics. Moreover, a deterministic causality will be present when researchers investigate variables associated to a social phenomenon (Donaldson, 2008). In other words, the nature of humans will to some extent cause them to act in a certain manner based on biology, the social reality they inhabit etc. The nomothetic methodology which is inherent in this school of thought entails researchers to construct and follow certain laws of science through their work. Thus, researches should be quantifiable and performed in such a way that they are repeatable (Williams, 2004).

Subjectivism: The ontological view associated with the subjective point of departure is nominalistic. The epistemology of this approach is anti-positivistic, which means that the notion that human experience can be interpreted through rigid data collection is rejected. Rather, culture, norms and values should be investigated in depth. Contrarily to the deterministic viewpoint inherent in the objectivistic approach, subjectivists believe that humans have a will that determine their actions (Given, 2008). This voluntarism means that people are actors who make decisions based on thought instead of on predetermined biological or societal grounds. Ideographic methodology is concerned with interpreting humans and human behavior through various techniques and methods (Williams, 2004). Instead of trying to quantify data as in the

nomothetic approach, an ideographic approach uses subjective analyses of specific cases as a means of understanding.

Paradigm

Arbnor and Bjerke (1997) have constructed a classification of the most predominant paradigms in social sciences based on the above distinction between objectivity and subjectivity.

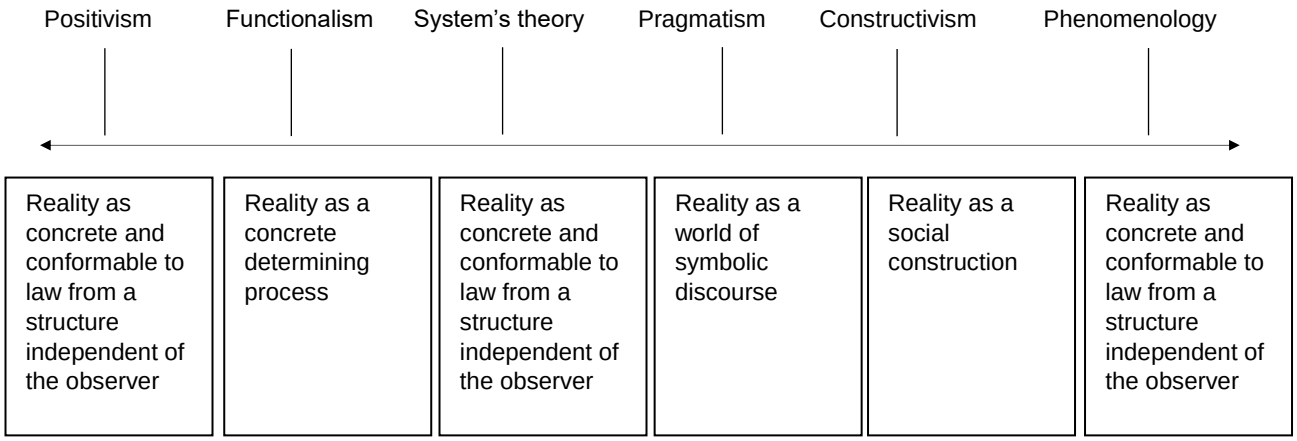


Figure 3: Prevailing Paradigms in Social Sciences Placed in Objectivism-Subjectivism Continuum (based on Arbnor and Bjerke, 1997)

Figure 3 illustrates the continuum in which six of the most prevailing paradigms in the social sciences are placed. The left-hand side of the continuum is represented by the most objectivist paradigms and the right-hand side is comprised by the most subjectivist paradigms. In between these two extremes paradigms are placed, which are less purist in nature and even consist of characteristics from both the objectivist and subjectivist schools. The continuum provides an easily understandable illustration of the differences between the various paradigms and thus makes the classification less abstract. However, the paradigms that have been included in this model are far from exhaustive. In reality, the diversity of paradigms is far more extensive, and thus the simplification provided by the framework should not limit researchers rather provide a useful point of departure.

Looking at the epistemology in the above model, objective and subjective researches have different ambitions with regard to creating knowledge. Objective researchers seek to create

explanatory knowledge whereas researchers that have subjective beliefs work towards understanding the research area or subject (Arbnor & Bjerke, 2009).

Figure 4: The Boundary Between Explanatory and Understanding Knowledge ((Arbnor & Bjerke, 2009) *Modified version)).

Methodological views

As mentioned earlier, Arbnor and Bjerke (2009) have constructed three overlapping methodological views: The analytical view, the systems view and the actors view.

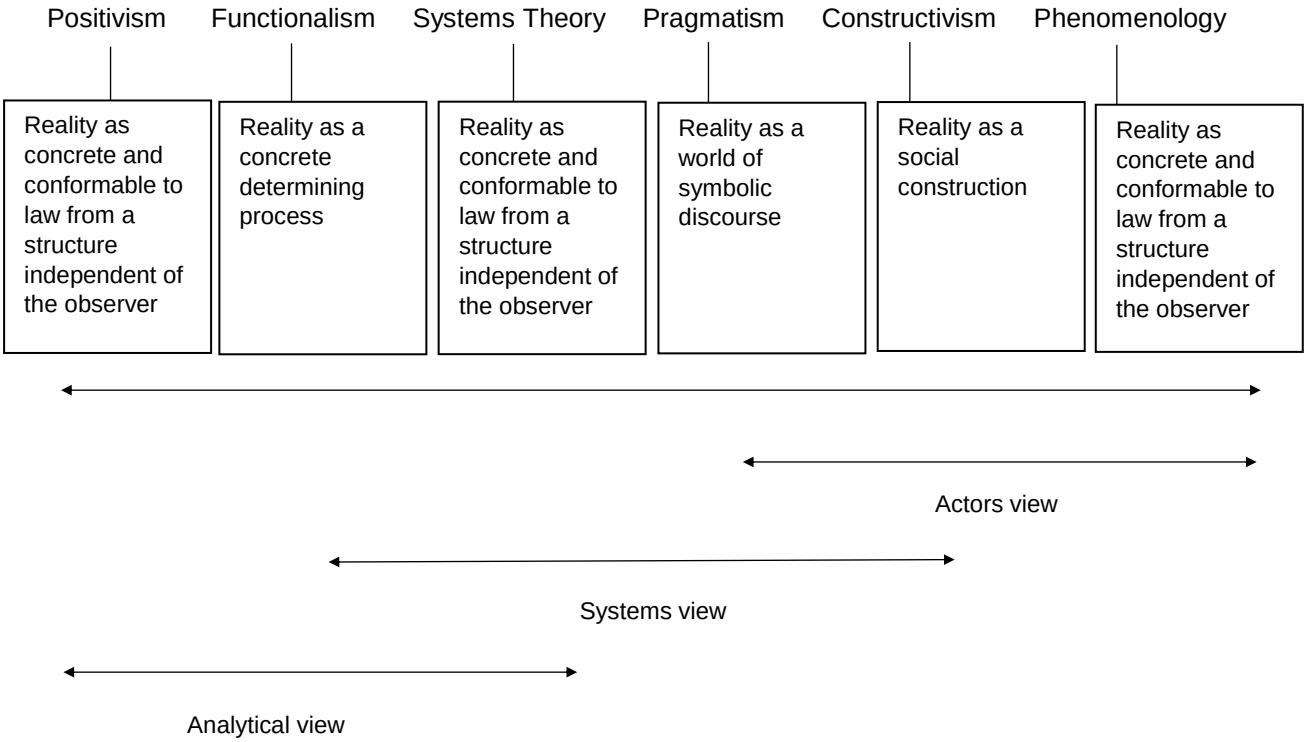


Figure 5: Prevailing Paradigms in Social Sciences Placed in Objectivism-Subjectivism Continuum (based on Arbnor and Bjerke, 1997)

1. The analytical view

Researchers who work within the analytical view perceive reality as being fact-filled and as being independent of individual perceivers (Arbnor and Bjerke, 2009). Moreover, they see science as being cumulative, in that research should be based on previous discoveries and new research should help to make the picture more extensive and complete. Analytical researchers will work towards making explanations about the research area of interest and to find patterns and regularities. Furthermore, analytical researchers usually use statistics and mathematics in their scientific endeavors and hypothesis testing is one of the main methods for answering research questions.

2. The systems view

"The systems view looks at reality as consisting of fact-filled systems structures in the objective reality and of subjective opinions of such structures, which are treated as facts as well." (Arbnor and Bjerke, 2009, p. 39). In other words, this can be perceived as a mediating methodological view in the objective-subjective continuum, as it recognizes both the objective facts as well as subjective opinion to make up the ultimate truth. The scientific ideal inherent in this view is to gradually add to the full picture of a given research area by investigating the various structures within this whole. Moreover, it has a pragmatic aim that stresses the importance of the practical use of the knowledge created.

3. The actors view

Researchers who work within the realms of the actors-view hold the belief that reality is a social construction that consists of chaos and uniqueness (Arbnor and Bjerke, 2009). However, within this state of the chaos that this philosophical encompasses, a number of relatively stable structures exist. These structures are dependent on the individuals inhabiting it. An epistemological logic inherent in this view is that researchers cannot detach themselves from the subject under investigation. Rather they themselves make up one of the subjective constructors that reality consists of. Thus, subjective researchers should realize the fact that their own subjective reality will affect the research that is being conducted and moreover should place him or herself in the center of the research area and interact with the research subjects.

Operative Paradigm

Each of the methodological views give rise to different types of investigative methods and techniques. Moreover, each of the views entail different degrees of formalism and instrumentalism. The analytical view entails a high degree of formalism, as this view is closely tied to the natural sciences that have the ambition to describe subject areas in as objective a manner as possible. Furthermore, the knowledge that is produced within the analytical paradigms should be replicable and such replication will only be possible if a rather rigid structure is used in the research. In the other end of the continuum, the actors view will give rise to an approach to research a given study area that is more ad hoc and flexible. When conducting research, scientists who work from the actors view will not plan and structure the operative paradigm to the degree that analytical researchers will. Rather, the operative paradigm is developed alongside conducting the research. Researchers following the systems view are somewhere in between the two above views.

Applied Approach

The methodological characteristics underlying this project is presented in the following section. First, the ultimate presumptions and the corresponding research paradigm are stated. These considerations will result in one of the three general methodological views stated in the previous section. Finally, the operative paradigm is described.

Ultimate Presumptions

Ontology

I hold the belief that the social world consists of a number of relatively stable structures that exist independently from the individuals inhabiting it. As human beings we are the sum of different biological processes. In this regard, we have different predisposed characteristics that make us act in certain ways when faced with given situations. Thus, I perceive reality for human beings as being somewhat deterministic. That being said, I also acknowledge the fact that human beings differ from many of the other species inhabiting earth, in that we have a free will and the ability to

control and alternate the aforementioned predisposed characteristics. The way in which we control and alternate emotions and other biological process that cause us to act in certain ways is our ability to perform complex cognition. Thus, human beings have the ability to analyze whether certain actions will lead to positive or negative outcomes, or at least to make assumptions that will project a given outcome. This cognition can be based both on such assumptions of outcome as well as on experiences gained through previous actions.

Human beings are social creatures and this has a number of implications for the individuals inhabiting the world. The fact that we take part in various collective realities affects the ways individuals can act. Institutions such as family, groups of friends, colleagues and society in general make up structures that the individual has to adjust to in order to continue to be a member of these entities. All these institutions have different norms and codes of conduct that the individual to some extent needs to align his or her behavior to. Aside from the aforementioned biological determinism, institutions hold the power to entail certain deterministic patterns of actions. However, many societies today are very much individualistic and thus the human beings that make up these societies have the possibility to act more freely than is the case in traditional collectivist societies.

Epistemology

Given the above ontological view, I believe that, to some degree, it is possible for researchers in the social sciences to measure certain regularities in the social realm. Thus, knowledge will in some cases be close to objective truths. Group processes have certain regularities and these regularities will be present regardless of the specific culture they are observed within. However, I also believe that it is difficult to state objective theories in the social sciences that are applicable to all cases, as social structures, norms and traditions affect behavior.

Researchers should have the ambition to produce knowledge that is as close to the objective truth as possible. However, they should still acknowledge the fact that objective and lasting truths within social sciences are difficult to reach. The structures surrounding individuals are different within different cultures. Moreover, cultures evolve over the span of time and this has the practical implication that the nature of the forces that affect individuals are changing in nature.

Therefore, behavior is affected by the characteristics of the institutions at the specific time and place of the research. The multitude of affecting processes within these institutions are great and complex and thus difficult to understand and describe. At the same time, individuals – although part of the same group: State, province, family etc. – encompass a number of individual characteristics and thus may have different incentives for a given behavior. Investigating individuals that share several common characteristics in a quantitative frame will enable researchers to explain approximations of an objective truth. In business such approximations are valuable as they support managers in their decision making. Knowledge in a business context, where time and economic constraints are present, needs to be applicable at the given time of decision-making and in the location where the decision is taken. In the case of consumer research, the knowledge which is created often needs to support decisions of whether to act upon a given business venture or not. Therefore, a quantifiable result is desirable as it will provide general approximations about the feasibility related to specific decisions, market offerings, concepts or ventures.

Paradigm

I am not a purist when it comes to paradigmatic viewpoints. I believe that the approach to a given research should be determined by the specific case. However, awareness of the paradigms that underlie any research will provide structure and valuable information for readers. Merging research with philosophical viewpoints will provide a common ground, on which the research can be discussed and through which the applicability of the research as secondary data for other researchers can be assessed.

It is important to note that most established scientific paradigms are subject to on-going discussions and evolvements. Researchers working from similar paradigms will of course have common beliefs and viewpoints as to how research should be conducted.

Critical Realism

I will not engage in a deeper philosophical discussion about the chosen paradigms, rather the main characteristics of the paradigm chosen will be presented in short. More importantly, the applicability of the chosen paradigm to the research area of consumer behavior is stated.

"Critical realism offers an ontology that can conceptualize reality, support theorizing, and guide empirical work in the natural and human sciences. It views reality as complex and recognizes the role of both agency and structural factors in influencing human behavior" (Clark, 2008).

Critical realists describe the human agency and social structures as being interdependent as human beings both reproduce and transform social structures within their societies through their actions (Clark, 2008). Moreover, social structures both enable and constrain social actions. Roy Bashkar is one of the researchers most closely linked to the formulation of the critical realistic view. He mentions three realms of reality: the actual, the real and the empirical realities (Clark, 2008). The actual realities are the observable events and subsequent outcomes that occur in the world. The real domain are all the structures and relations that underlie a given area or subject that could cause changes in the actual domain. In other words, this is where a researcher would be able to identify causal relations within a given research area. These causal relations will usually remain latent, however, under the right conditions certain relations will be detectable and describable. The empirical reality makes up the actor's perspectives of the world and his or her view upon certain subjects. Given the inherent ontological views of this paradigm, an objective reality exists that consists of both the actual and the real. Therefore, much of this reality is latent and immeasurable to researchers.

This paradigm works as a suitable mediator between my ultimate presumptions and the subject area which is ultimately consumer behavior. I acknowledge the fact that this research will not fully offer an in-depth explanation of the causalities underlying the observable results that this research produces. The observable results provided by this research will offer a structured and quantitative ground, on which an assessment of the attitudes towards RAS-produced fish can be made. The research is structured in a way that will thoroughly break the participant attitudes into different sub-parts. Given the fact that I acknowledge the subject area as being complex, I do not claim that the results will necessarily represent the ultimate truth within the research area.

Methodological View

The characteristics of critical realism are represented within both the analytical and systems view. The ontological and epistemological underpinnings show resemblance to those in the analytical view as it perceives the truth as being independent of the actors in the world and acknowledges the existence of causality. On the other hand, the paradigm has an inherent structuralism that places it within the system's view. I believe that researchers should strive to remain as objective a position in research as possible and thus to detach him or herself as much from the research area as possible. Moreover, given the research subject in which a quantitative investigation is conducted, this research will have more characteristics resembling those of the analytical view than the systems view.

Operative Paradigm

Seeing that I work from the outset of an analytical view, my methodical procedure and methods, when investigating consumers' attitude toward RAS-produced fish, follow the tradition in the field. An analytical research is typically based on previous knowledge and is well planned before empirical data is collected (Arbnor and Bjerke, 2009). In the following I present the methodological approach I have chosen, the secondary data included in the study as well as the theories that make up the structure of the survey. Moreover, the techniques that are used to collect the desired primary data are presented and explained.

Methodical Procedure

This research is conducted on the ground of several existing researches and established theories. Below is a presentation of this secondary data as well as an argumentation for the applicability of the data and theories.

Theories

The theories that are included in this research are established within the social sciences and have been developed and modified throughout many years. The main objectives of this research is to identify consumers' intention to purchase RAS-produced fish and to provide an evaluation of RAS-produced fish compared to fish stemming from other production methods. Moreover, the

respondents' willingness to pay (WTP) is examined to provide an approximation of the price premium, which RAS-produced fish has the potential to obtain.

A modified Theory of Planned Behavior-model, which incorporates components from the Comprehensive Action Determination Model (CADM) and Verbeke and Vackier's (2005) integrated TPB framework, is constructed. The Theory of Planned Behavior has been widely used in consumer behavioral researches throughout the past 25 years. However, the framework has been criticized for a lack of predictive ability. One of the points of criticism is the omission of habit and past experience as predictive indicators. The CADM, which has been proposed as measurement of behavioral intention in relation to ecological behavior, incorporates these components. The authors behind this framework suggests that these indicators are effective explainers of variance in the measurement of ecological behavioral intent. Moreover, the subjective norm component for predicting intention is complimented with a personal norm component. In the original TPB-model, the subjective norm measures the degree to which an individual's significant others influence his or her behavior. However, a number of researchers (Verbeke and Vackier (2005) among others) have suggested the personal norm as being a useful variable in explaining purchase intention. The authors, however, conclude that the external component was a poor predictor of variance and thus, for the sake of keeping the number of questionnaire items as low as possible, I have left this out.

The purpose of this research is to investigate the attractiveness of the product, which is currently not available in the market. Thus, the participants have not yet been presented with the choice of deciding whether to purchase it or not and therefore, of course, have not been able to perform the behavior of purchasing RAS-produced fish. Therefore, the behavioral component is left out of this study and instead the TPB is used solely to investigate the intent to purchase RAS-fish as well as an identification of the underlying variables of influencing this intention.

Existing Knowledge

Table 2 shows the scientific articles that form the basis of the hypotheses, which are introduced later in this thesis. All these researches except one are quantitative of nature. The researches have been conducted in western societies and are thus deemed as being applicable to this research,

which investigates the attitudes towards RAS in Denmark. Moreover, the researches were all carried out between 2005 and 2015 and are therefore deemed as representing a satisfying topicality. Feucht et al.'s (2015) is the only included research, which has a qualitative point of departure. The choice of using it in this thesis is due to its novelty in investigating consumer attitude towards RAS. The research is a valuable input for this pre-investigation, in that it provides an insight into the attitudes towards RAS itself and in relation to conventional production methods.

Author(s)	Year	Origin	Nature of Research	Research Technique	Participants
Brécard et al.	2009	Europe	Quantitative	Questionnaire survey	4748 participants
Carlucci et al.	2014	Europe	Quantitative	Meta-study	49 studies
Feucht and Zander	2015	Germany	Qualitative	Focus groups	56 participants
Grimsrud et al.	2013	Norway	Quantitative	Questionnaire survey	771 participants
Honkanen and Young	2015	UK	Quantitative	Questionnaire survey	755 participants
Hoogland et al.	2007	Netherlands	Quantitative	Questionnaire survey	371 participants
Hughner et al.	2007	N/A	Quantitative	Meta-study	33 studies
Klöckner et al	2010	Germany	Quantitative	Questionnaire survey	389 participants
Krystallis et al.	2005	Greece	Quantitative	Face-to-face, structured	164 participants
Magistris et al.	2008	Italy	Quantitative	Questionnaire survey	200 participants
Magnusson et al.	2001	Sweden	Quantitative	Questionnaire survey	2000 participants
Mauracher et al.	2013	Italy	Quantitative	Questionnaire survey	366 participants
Olsen	2003	Norway	Quantitative	Questionnaire survey	1070 participants
Pienak et al.	2013	Europe	Quantitative	Questionnaire survey	3213 participants
Shepard and Sjödén	2005	Sweden	Quantitative	Secondary data	2254 participants
Vanhonacker et al.	2010	Belgium	Quantitative	Questionnaire survey	852 participants
Verbeke and Vackier	2005	Belgium	Quantitative	Questionnaire survey	429 participants
Verhoef	2005	Netherlands	Quantitative	Questionnaire survey	269 participants
Zepeda and Li	2007	US	Quantitative	Questionnaire survey	956 participants

Table 2: Secondary Data Characteristics

Methodics

"Once a researcher has identified the concepts to be measured, the next step is to determine the specific ways to measure them" (Waltermaurer, 2008).

In this section, the methodics, which are used to carry out the investigation, are described in detail. As previously mentioned, the research is quantitative of nature and for this purpose a hypothesis-based approach is chosen. Based on the knowledge derived from the aforementioned researches, a number of hypotheses are stated that are tested through a structured questionnaire-investigation. The following section includes: the statistics and measurements underlying the research, the creation of the questionnaire as well as the approach chosen for collecting the desired data.

Multidimensional Scaling

Hankins et al. (2000) identify multiple linear regression and structural equation modelling (SEM) as two of the best suited statistical procedures for conducting TRA and TPB-researches. In their article they mention parameters, which researchers should have in mind when conducting either TRA or TPB-researches. Both multiple linear regression and SEM have advantages and shortcomings in this regard. Typically, researchers experience the inconvenience of having to perform two separate statistical procedures when using multiple linear regression. First, the relation between the three independent variables (IVs) *attitude, subjective norms and perceived behavioral control,* and the dependent variable (DV) *intention*[1] is calculated. Subsequently, the relationship between intention and behavioral components is calculated (Hankins et al., 2000). However, seeing that the behavioral component is left out of this research, a multiple linear regression approach should suffice. Hankins et al. (2000) mention additional problematic issues in using multiple linear regression procedures for TPB-investigations. One of the main concerns relates to the dimensionality in measuring the predictable components in the TRA and TPB. The two models are based on the assumption that the attitude and subjective norm constructs are unidimensional. However, this is not believed to be tenable. In fact, research shows that the two constructs can be deemed multidimensional in character, thus violating the assumption of the

[1] Seeing that the product under investigation is currently not available to consumers, what is measured is not intention in a classical sense. The intention is rather an expression of a hypothesized purchase intention if the product were attainable to the participants.

original theories (Hankins et al., 2000). The authors claim that this issue has importance in relation to the predictive power of the TRA and TPB. Given the above discussion, structural equation modelling is chosen for this research.

Structural Equation Modelling

Structural equation modeling (SEM) is a general term that describes a large number of statistical models used to evaluate the consistency of substantive theories with empirical data (Lei, 2007; pp. 974). Schumacker and Lomax (2010) describe SEM as being a popular technique in research, as it enables far more complex and sophisticated theory testing than had been previously possible. When using techniques that encompass only few variables, researchers will be limited in exploring complex phenomena.

This is done by estimating dependence relationships between constructs represented further by a multitude of measured variables (Malhotra, 2012). SEM can be used for either an exploratory or a confirmatory purpose. An exploratory analysis using an SEM procedure will try to establish a model based on a data set, by cross checking all of the data points against one another (Moutinho, 2011). Contrarily, a confirmatory SEM approach seek to confirm a model, which has been specified a priori, based on the specific data at hand. Thus, one of the main outcomes of the test is to measure the fit of a model in relation to the data stemming from a given research (Hull, 2007). The model fit is primarily estimated through correlation or covariance matrices at an item level (Malhotra et al., 2012).

The constructs in SEM, which are made up from the multiple variables or actual survey items, are unobservable. Thus, the foundations of the methods are similar to those of a factor analysis. However, in SEM the measurement error is considered, which is not the case in factor analysis (Malhotra et al., 2012). Measurement error describe to which degree the observed variables describe the latent factors in a given SEM model. Latent variables are illustrated in path diagrams by ellipses, whereas the observed variables are indicated by squares. Construct C_1 in Figure 6 illustrates a construct and three manifest variables that represent the latent factor. This construct is *exogenous,* which means that it is equivalent to independent variables in multivariate analysis.

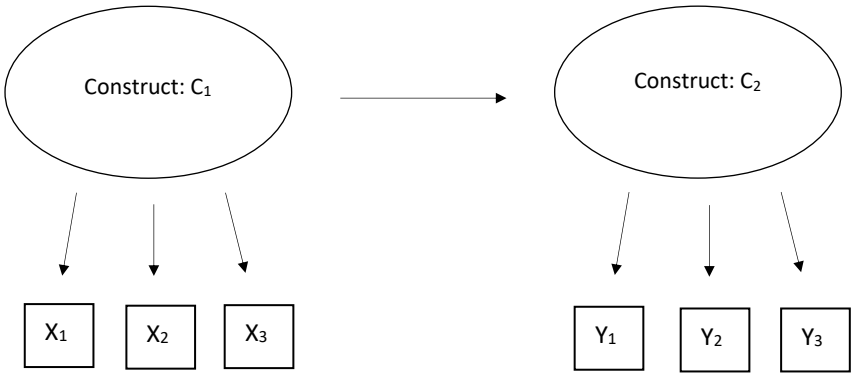


Figure 6: Path Diagram Showing Dependence Relationship
(Malhotra et al., 2012)

Construct C_2, however is *endogenous,* which means that it is a dependent construct. Such an endogenous factor is dependent on exogenous constructs in an SEM-model. Using the theory of planned behavior as an example; attitude, social norms and facilitating conditions are exogenous constructs, whereas intention is an endogenous construct. Straight arrows between the two latent factors graphically illustrate the relationship between exogenous and endogenous constructs.

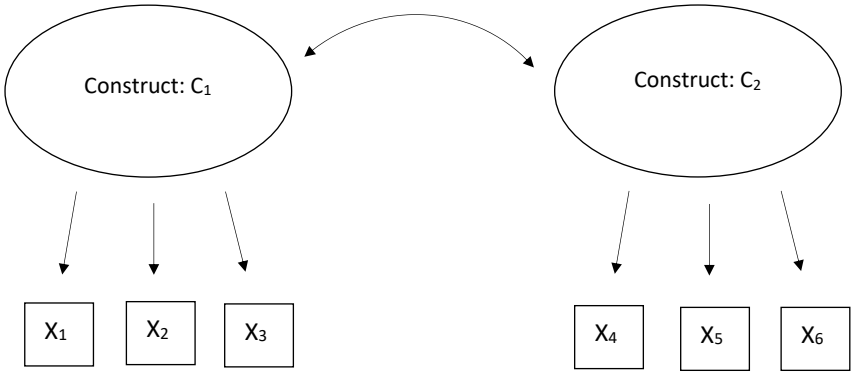


Figure 7: Path Diagram Showing Correlational Relationship
(Malhotra et al., 2012)

Figure 7, on the other hand, depicts a correlational relationship between two exogenous constructs. Correlational relations are also called covariance relationships and are illustrated by a two-headed curved arrow between two latent factors. In a TPB model such correlations are expected between the exogenous constructs; attitude, social norms and facilitating conditions.

Malhotra et al. (2012) suggest six steps related to conducting SEM:

1. Definition of individual constructs
2. Measurement model specification and sample size
3. Assessment of measurement model reliability and validity
4. Specification of structural model (given that the measurement model is valid)
5. Assessment of structural model validity
6. Conclusions and recommendations

The two first steps are performed a priori, whereas the subsequent six steps are conducted after the data is attained. Thus, the two first steps are presented in the following section and the following four steps are found in the analysis chapter.

Constructs and Measurement Model

Seeing that the current study is based on the theory of planned behavior, the model (see Figure 8) and thus also the included constructs resemble those proposed by Aizen and Fishbein. However, in order for the research model to fit the overall subject, a number of modifications and additions are introduced. Verbeke and Vackiers (2005) TPB model analyzing fish consumption has been taken into account, as well as Klöckner & Blöbaums (2010) CADM illustrating ecological behavior. Moreover, variables that are directly related to the investigation subject have been included. As previously mentioned, constructs and their manifest variables should be based on theory, when conducting SEM-analyses. Through the literature review presented in the theoretical chapter three variables are identified, which are important to consumers in connection to ecological food purchasing. Consumers perceive organic food to be superior, in terms of: healthiness, sustainability of production and animal welfare. Thus, the respondents are asked to indicate how they perceive RAS-fish to perform on these parameters. In order to gain a comparative evaluation of RAS-fish and conventional fish, the participants are moreover explicitly asked to evaluate RAS-fish to conventional fish. These four constructs are each the products of 2-4 manifest variables.

Moreover, they collectively make up the construct ‘attitude’. The construct ‘subjective norm’ is the product of the social norm, the personal norm, awareness of need an awareness of consequence.

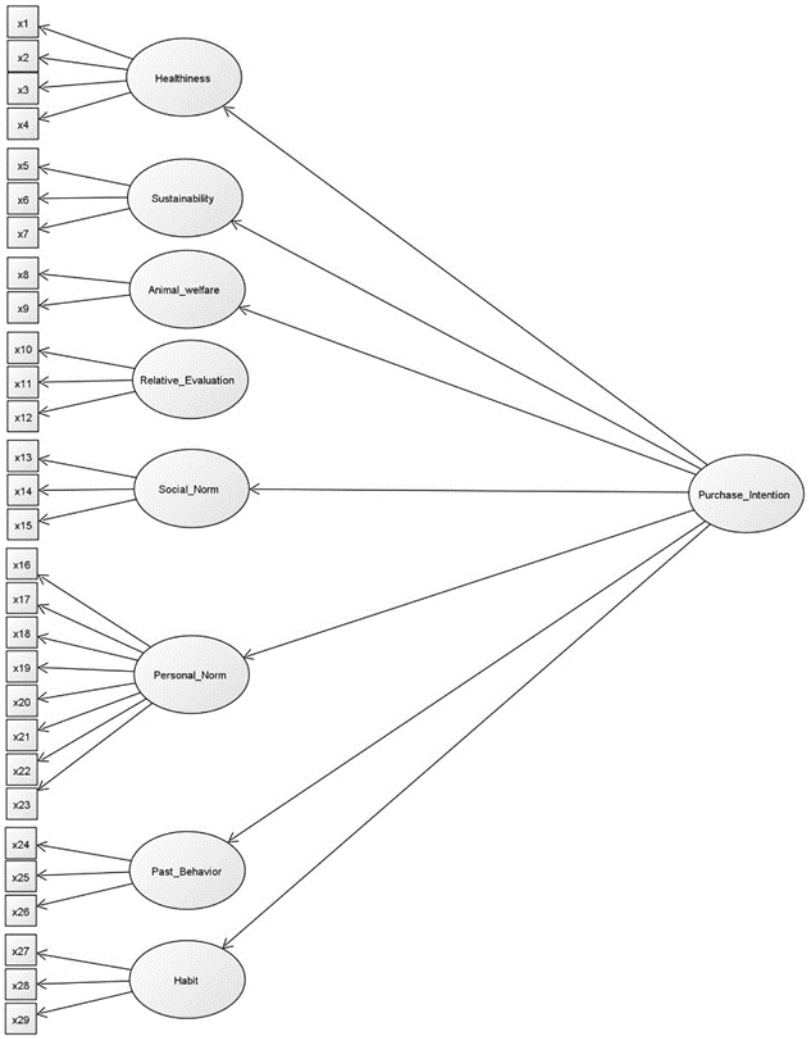


Figure 8: Proposed A Priori Structural Equation Model

Each of these constructs are the product of 2-8 manifest variables. The ‘facilitating conditions’ is a product of the constructs; price, seafood knowledge, health involvement, habit and past organic consumption. 2-5 items in the questionnaire forms the basis of each of the constructs.

The three main constructs; attitude towards RAS, subjective norm and facilitating conditions are related to 'intention' in a dependent relationship. The relationships described above are depicted in Figure 8. Aside from the aforementioned relationships, the error measures from each manifest variable are illustrated.

Scaling

Ajzen (1991) mentions that most TPB-researches use 7-point evaluative scales for evaluative questions. Dawes (2008) have compared the implications of choosing either a 5-7- or 10-point scale for confirmatory factor analyses or SEM. The research suggests that no significant mean differences occur between 5-point Likert scales and 7-point Likert scales, once the results are rescaled to the same scale. A 10-point scale, however, will produce slightly lower attitude means, when rescaled. For the current study a 7-point Likert scale is chosen.

Sampling and Sample Size

Sampling is a key issue in social research design, providing the researcher with the advantages of; research feasibility, low costs, economy of time and organization of work (Trobia, 2008). Different approaches are available to researchers, each having a number of advantages and disadvantages. The current study investigates consumer attitude and purchase intention towards a high cost sustainable product. Previous research suggest that socio-demographic characteristics are shared by the group of consumers that generally purchase and show interest towards organic and other sustainable food products. The characteristics include; length of education, income, age and gender (Tveit and Sandøe, 2011). These authors have constructed six segments of Danish consumers. Three of these segments are very to moderately interested in organic products, whereas the remaining segments are indifferent towards organic food or outright skeptical and adversary to organic production. For the current project, the attitudes and purchase intention of consumers who are expected a priori to belong to the segments interested in the product and its product category are of course desired. Consumers with medium long educations with relatively high incomes are in general more inclined to be interested in organic and sustainable foodstuff. A non-probability sampling technique is chosen to accommodate the three latter parameters. *'Non-*

probability sampling relies on the personal judgement of the researcher rather than on chance to select sample elements' (Malhotra, 2012, pp. 501). Judgmental sampling is a technique in which participants are chosen solely because of the judgement of the researcher. For this research participants will primarily be recruited based on the geographical location of their home or the characteristics of their workplace. By using these two indicators, it is deemed possible to roughly identify participants who suit the characteristics of either educational length, income and preferably both.

An appropriate sample size for a structural equation model depends on several factors. These include: model complexity, estimation technique, the amount of missing data, the amount of average error variance among measured variables, and multivariate data distribution (Malhotra et al., 2012). Moreover, the required sample size increases if the constructs in the model are made up of less than three manifest variables, and if the model contains a large number of constructs. Malhotra et al. (2012) suggest that researches using models with more than five constructs, each made up by at least three manifest variables should aim for a sample size of 400 or more respondents. Moreover, the authors mention a measurement condition of 15 respondents pr. included manifest variables. Various researchers have suggested the minimum number of total subjects for studies, as well as subjects-to-variables (STV) measurement conditions (Zhao, 2009). The former ranges from rules of 100 to rules of 500 indicating the minimum number of subjects for factor analyses. The SVT ratio ranges from 20:1 to 2:1, indicating that the number of subject should be from two to 20 times higher than the number of variables included in a given research. Seeing that the current study encompasses a large number of variables, the requisite number of subjects is relatively high. Due to time constraints, however, the number of attainable subjects is limited. The sample size aim is thus set to 300-350 a priori.

Questionnaire

In this particular research, the order of the questions is very much important. One of the objectives of the investigation is to examine the need for, and attitude towards the proposed product, given the respondents current knowledge level. Subsequently, the respondents will be given information about the most prolific production methods in terms of fish production. The

purpose of this procedure is to be able to assess whether the production characteristics of RAS should be communicated to the potential customers or not. Furthermore, the investigation seeks to identify the attributes, which are perceived most positively be the participants. Following Lavraskas' (2004) proposal, the questionnaire is initiated with a couple of easily answerable items that moreover introduce the topic of the survey (Figure 9).

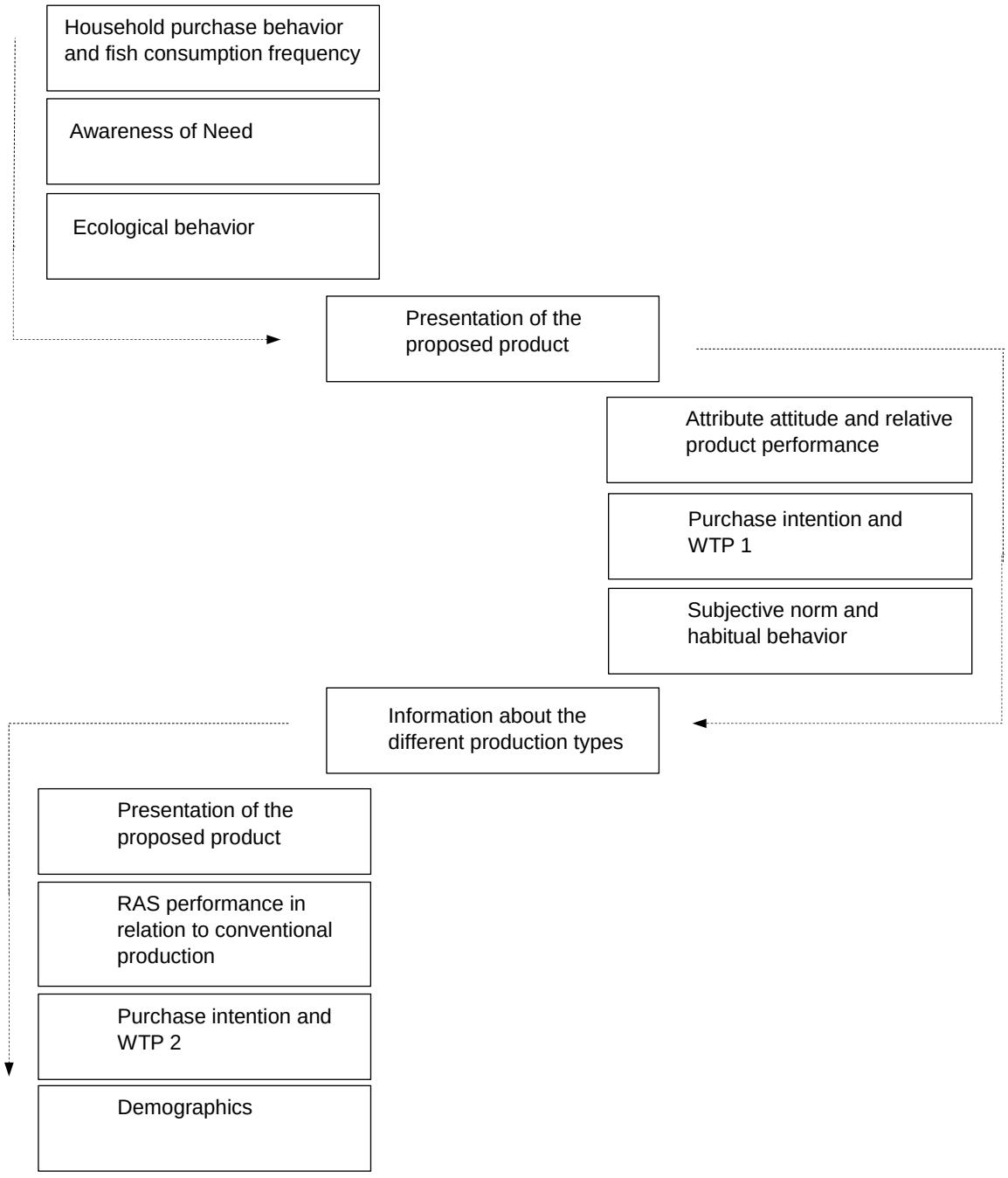


Figure 9: Questionnaire Sections

The respondents are asked about their household food purchasing behavior and fish consumption frequency. Subsequently they are asked whether they find the fish products currently on the market worrying on the three parameters. At this point the participants are shown an illustration of the proposed product illustrating the attributes of RAS-produced fish as packaging cues. Then they are asked to indicate their attitudes towards these attributes, and how they perceive this product to perform relative to the conventional products in the market. This is followed by a group of questions relating to their purchase intention and willingness-to-pay for the proposed product. Lusk (2003) suggests that adding a *cheap talk script* will result in more realistic WTP indications. Research suggests that by informing participants about the problem of WTP overestimation, they tend to indicate more realistic WTP. Thus, a script is added before the WTP questions to gain information, which is as reliable as possible. Having answered the initial purchase intention and WTP, the respondents are asked a series of questions, which evolve around the subjective norm and the extent to which they show habitual purchasing behavior, when purchasing fish. Subsequently, the respondents are given information about the production characteristics in connection to traditional fisheries, near-coastal aquaculture, earth pond aquaculture and RAS. At this point, the participants are expected to show a degree of answering fatigue, and thus the questionnaire scale will be a 7-point numerical scale ranging from -3 to +3. This choice has been made in the hope, that these easily comprehensible and answerable scales will provide usable information at a critical point of the survey. Finally, the respondents are asked to indicate their intention to purchase and WTP again, followed by a series of easily answerable demographic questions.

The amount of questions and the fact that the questionnaire is highly information heavy, might be troublesome. Despite the fact that the respondents are included in the draw for a price upon participation, the length of the questionnaire could entail complications. First, the dropout rate and thus the completion rate might be poor as a result of the time consumption needed for finishing the questionnaire. Moreover, the data output could risk being of poor quality due to answering fatigue and corresponding auto-completion, in which the participants do not consider their answers but simply check out the questionnaire items randomly. Worst case scenario, this would mean that one or more sections would show misleading results and therefore make the

data misleading. I have tried to avoid these risks by optimizing the flow of the questionnaire, and the sections entailing questions and the ones containing information.

Data Collection

Different survey methods can be utilized for collecting quantitative data. What is common for these methods, is that they are based upon structured questionnaires, which are distributed to a sample of the population of interest (Molhotra et al., 2012).

Having assessed the advantages and disadvantages of each of Molhotra et al.'s (2012) survey methods, the "face-to-face"-method is considered most suitable for this specific research. At first glance it might not seem rational to choose this method, which is described as the most expensive for. However, the price-raising factor of this survey method is man-hours. Thus, besides from the cost of printing the surveys, this method does not entail a cost for me besides time. The online survey might have been deemed as the most fitting for such a survey. It is relatively easy to make an online survey and the distribution is cost-free – at least when one uses his or her own social network. However, I see some possible problems in relation to this method. One of the main purposes of this investigation is to examine a research area of which consumers are not very knowledgeable. Seeing that many of my contacts know about the subject through what I have explained them, the results might turn out biased and the results would not necessarily be externally valid. Moreover, the contacts in my network represent a relatively narrow consumer segment, where age and income is lower than that of the average national distribution. As mentioned, research suggest that older consumers are the most frequent purchasers of both fish and organic foodstuff and therefore only a very small, if any, of the participants in the survey would represent this important age group. When using a face-to-face approach, I can avoid the bias, which might be connected to the personal relation between interviewer and interviewee. Obtaining a mailing list and making an online survey company could have been an option to reach this segment, however, such an option is expensive. If the survey is to be repeated at a later stage, both nationally and internationally within the framework of a company or interest organization this option is probably the best suited solution.

Having chosen the face-to-face technique, an approach within this framework needs to be decided upon. The mall-intercept approach, which entails contacting consumers in city centres or shopping centres, is commonly used in marketing research (Malhotra et al., 2010). However, I do not perceive this solution to be fitting to the characteristics of this survey. First, eating fish and buying sustainable food can be assumed to entail a degree of social desirability. Social desirability is respondents' tendency to submit answers that diverge from their actual thoughts but comply with what they deem to be socially acceptable (Callegaro, 2008). This might affect the answers given in a public sphere where the contact between interviewer and interviewee is close during answering. Second, a growing number of pedestrian street- and shopping center sellers have been working with an outreach approach in recent years. I assume that using a mall-intercept approach, will be confused with an employee from one of these companies and that I will thus not be granted the chance to properly introduce my project. This would make participant recruitment difficult and thus time consuming. Instead, I have chosen a door-to-door approach, which I deem to have a number of positive characteristics in relation to this survey. This approach enables me to sample the potential participants in middle class and higher middle class neighborhoods, where the consumers represented in the main segment assumedly reside. Thus, this approach can be deemed as being more precise than a mall intercept approach for this survey. I will approach the potential participants at home, introduce the purpose of the survey briefly and if potential participants wish to participate, I will hand over the questionnaire and schedule a time of collection. By doing so, the participant will be able to fill in the questionnaire away from my presence, minimizing the risk of a social desirability influence. Moreover, the fact that the participants have more time to finish the questionnaire might result in data, which is more accurate, than if it had been filled in in a stressful environment, where the participants are in a hurry to finish answering. Finally, when compared to online surveys, this method enables the participants to pose questions at the point of pick up, if they are confused about one or more of the survey questions.

Study Area

The study area, which is examined in the current thesis, is the market for seafood. In particular, the research takes its point of departure in the end-users in the value chain for sustainably

produced fish. The Danish market is used as a case and the results are thus not comprehensive in a Northwestern European or full European context. Due to time and monetary constraints, other European markets are not included in the research. Therefore, the results are not necessarily generally applicable in a European context.

The study mainly touches upon the academic fields of consumer behavior and consumer attitude, as well as incorporating a willingness-to-pay aspect. In a broader sense, the results, which are generated through this research, can be utilized in several marketing-related settings. B-2-C-branding, product positioning, pricing and communication are just a few examples of such settings. The knowledge, which is generated, can be deemed as basic knowledge in a field, which has only been shallowly investigated up until now. The market for sustainably produced fish has been investigated thoroughly in different marketing-related fields. However, comparative studies investigating consumer attitude towards seafood production types and in particular with an addition of fully recirculating aquaculture systems are not very prolific.

Theoretical Chapter

In this section the theoretical foundation of the current research is described. First, the theoretical underpinnings that underlie consumer behavior are introduced. Subsequently, the models that are used in the research are introduced and modified to fit this particular investigation. Finally, a literature review related to fish consumption and organic consumption leads to the formulation of hypotheses.

Consumer Behavior

Broadly speaking, the theoretical area of consumer behavior can be defined as; *"the study of the processes involved when individuals or groups select, purchase, use or dispose of products, services, ideas or experiences to satisfy wants and needs" (Solomon et al., 2006).* This, of course, is a relatively broad definition, and thus the scope of this project can be narrowed down and described using the following definition: *"Consumer behavior is essentially the attitudes, intentions, decisions, and actions of individuals as everyday consumers in the marketplace." (Gad, 2009)* In the following section, these four areas of research (attitudes, intentions, decisions and behavior) are introduced.

Attitudes

"Attitudes are general evaluations that people hold regarding a particular entity, such as an object, an issue, or a person" (Eaton and Visser, 2008). Such an evaluation will reflect a certain degree of positivity or negativity and these attitudes will have a tendency to be relatively enduring (Eaton and Visser, 2008). *"When an attitude is positive, we are inclined to approach and engage with the attitude object, but when an attitude is negative, we are inclined to avoid or reject it"* (Bodenhausen, 2013). An attitude is stored in the memory and will most likely persist stable over time, contrarily to fleeting momentary evaluations towards objects, issues or persons. Recent research has suggested that attitudes can be both explicit and implicit (Lawrence, 2008). This means that some attitudes are cognitively known and thus describable to the attitude holder,

whereas other attitudes are cognitively irretrievable to the attitude holder and thus immeasurable to researchers.

Attitude Formation

We form attitudes through either direct experience or the persuasion of others or the media (Miserandino, 2007). According to Eaton and Visser (2008) attitudes can be formed in three different ways:

1. It can be formed consequential to people's cognition towards an entity. An example of such an attitude formation, could be one in which a consumer makes a rational evaluation about a product based on different attributes, such as price, quality and duration, of the product.

2. The attitude formation can also stem from a more affective reaction towards the entity. In this case the attitude towards the entity is formed based on a more irrational point of departure. This could be the attractiveness of the packaging design, feelings that were aroused through a TV-commercial or the like.

3. Finally, attitudes can be formed based on previous behavior – the consumer might have purchased the given product before and then holds a certain attitude towards it.

Tricomponent Attitude Model

Historically, the most prominent framework for the study of attitudes has been the tripartite, or three-component model (…) In this view, the attitude is an unobservable psychological construct, which can manifest itself in relevant beliefs, feelings, and behavioral components… (Fazio and Olson, 2007).

The tricomponent attitude model consists of three components: the cognitive component, the affective component and the conative component (Shiffman et al., 2012).

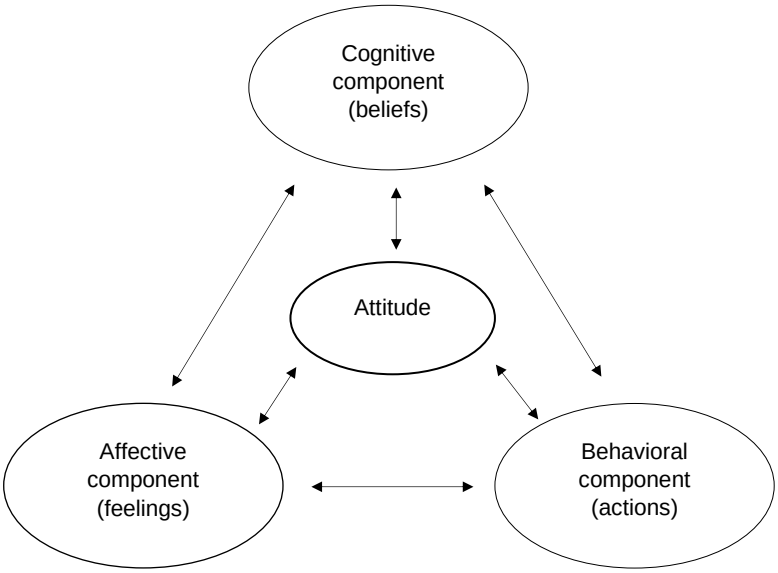


Figure 10: Tricomponent Attitude Model (Schiffman et al., 2012)

The cognitive component represents a person's cognitions - the knowledge and perceptions acquired through experience with the attitude object as well as information that the person has gained from various information sources. The aggregate knowledge and perceptions gained from experience and different sources of information will tend to result in one or more beliefs towards the attitude object. The perceived inherent attributes of an attitude object in combination with specific behavior will lead to specific outcomes in the mind of this person.

The affective component constitutes a person's feelings towards an attitude object. Examples of such evaluative affections towards an attitude object could be pleasantness-unpleasantness, positive-negative, happiness-unhappiness etc. According to Shiffman et al. (2012) the recollections of such affective notions may ultimately affect behavior. In research, the affective component can be used to construct a picture of consumers' feelings toward a product or a brand, which could also be an indicator of the intention to ultimately purchase the product or brand of interest.

The last part of the tricomponent attitude model is the behavioral component, which is concerned with the likelihood that a person will act or behave in a specific manner towards the attitude object. This component will usually be measured as a consumer's intention to buy the product or service of interest.

Intentions

In our everyday lives, we use the term intention in the sense that our intentions are not always realized by our actions (…) Under this conception, intentions are virtually indistinguishable from goals (Gollwitzer, 2013).

A distinction can be made between promotion and prevention goals (Gollwitzer, 2013). Promotion related goals focus on the positive impacts that a given set of goals is expected to result in to an individual. Contrarily, prevention goals are rooted in a prevention against the negative impacts the absence of a given goal will entail. The two are somewhat intertwined. Moreover, Gollwitzer (2013) argues that goals that have specified standards promote successful behavior more efficiently than vague goals that are kept in general terms. Once a goal has been made, an individual could plan relatively deliberately when, where and how the goal should be attained, also labelled *implementation intentions*. However, the degree to which such goals are deliberately pursued, or even pursued at all, vary. When an individual has committed to a given action or behavior, a goal is adopted and once in place, goals are often activated through an automated process, which does not entail a great amount of cognition (Friedman & Elliot, 2007).

In many cases actions are motivated by outside cues, such as marketing communications displayed in a buying situation. Thus, actions can be performed that are either aligned or deviate from the general goals that an individual has due to the time and information restrain. An additional factor that influences the degree to which individuals follow their overall goals is the individuals' self-regulatory strength. An individual who does not possess a high level of self-regulatory strength risks having a propensity to be incapable of attaining his or her goals or intentions. Such a problem is referred to as weakness of the will and this state of divergence between desired goal and actual behavior is labelled an intention-behavior gap (Gollwitzer, 2013).

Decisions

"Decision making refers to the act of evaluating (i.e., forming opinions of) several alternatives and choosing the one most likely to achieve one or more goals." (Simonson, 2007)

In the theoretical field of decision-making, researchers have originally focused on how individuals make decisions when faced with a situation with conflicting goals (Simonson, 2007). A theory called *subjective expected utility* is central to this area of research. One of the main assumptions in this theory is that, given an individual's values, expectations and beliefs he or she will make decisions that maximizes the overall utility. The above theory is based on normative aspects – in other words what people *should* do. The opposite field of decision research *behavioral decision theory* focuses on the actual behavior that an individual performs when making a decision. Although the expected utility theory is originally based on economics and not actual behavioral studies, researchers working within this paradigm believe that unfavorable behavior will be corrected in time, as an individual will eventually discover the behavior that causes the highest possible degree of utility. In other words, it should not be necessary to examine human behavior in order to discover decision behavior. Conversely, researchers working from a behavioral decision theoretical point of departure will claim that such a viewpoint is not valid, as behavioral research suggests that individuals frequently make decisions that violate the principle of utility maximization. Aspects such as information selection, trade-offs regarding various attributes in connection to a decision as well as the affective aspects of decision-making are believed to cause such irrational decisions.

Behavior and the intention-behavior gap

An integral element of measuring and analyzing behavior is to describe the behavior of interest in a precise and objective manner, which enables quantifiable findings. However, precisely formulated research questions do not necessarily result in objectively reliable data. When given a self-administered questionnaire, participants tend to provide answers that diverge from the objective truth (Yzer, 2012). Examples of such diverging indications could be either exaggeration – the participants might exaggerate how often they perform some positive behavior. Contrarily, they tend to understate the frequency with which they engage in behavior, which is deemed negative socially.

According to Sullivan (2009), behavioral economics evolve around three main topics: framing, heuristics and market inefficiencies. Framing is the presentation of a rational-choice problem, in

which participants are asked to make a choice. As explained earlier, heuristics are mental shortcuts that individuals make to lessen the number of complicated choices that they are faced with every day. Market inefficiencies are anomalies, such as mispricing for instance that cause lack of behavior due to prices that do not reflect consumer expectations. Such market inefficiencies can result in a gap between the intentions stated by participants in a consumer research with regard to the likelihood that they will purchase a given good on one side and their actual behavior on the other.

Intention-Behavior Gap

As aforementioned, the intention-behavior divergences make forecasting behavior difficult for researchers. Multiple studies have investigated the variables that most frequently cause the differences between intention and behavior (Sheeran, 2002; Vermier and Verbeke, 2006; Carrington et al., 2010).

Table 3 categorizes the intention-consistency in a 2 X 2 matrix (Sheeran, 2002). The first two decomposes intention of a certain behavior into either positive or negative, whereas the other two describe performance or non-performance of this behavior.

Decomposition of the intention-behavior relationship

	Intention	
Subsequent behavior	*Positive*	*Negative*
Acted	Inclined actor	Disinclined actor
Did not act	Inclined abstainer	Disinclined abstainer

Table 3: Decomposition of the Intention-Behavior Relationship (Sheeran, 2002)

The two groups that show intention-behavior consistency are the inclined actors and the disinclined abstainers. These are respondents that have either uttered a positive intention and acted upon it or individuals who have expressed negative intention and subsequently refrained

from performing the given behavior. Thus, the respondents who make up the intention-behavior gap are the inclined abstainers and the disinclined actors. According to Sheeran (2002), the inclined abstainers seem to make up the majority of the proportion of respondents who are responsible of the intention-behavior gap. Sheeran (2002) compares six studies and claims that this tendency seems to be generalizable. Having this trend in mind, it is interesting to further investigate the drivers that cause this apparent positive intention but subsequent lack of behavior.

Kollmuss & Agyemann (2002) have made a meta-study of some of the theoretical models that seek to explain the causes behind the intention-behavior gap within the field of pro-ecological behavior. The authors emphasize the fact that this is a very complex area of investigation and that the different models have different focal points. However, across these researches the authors have been able to find communalities.

A variable that has often proved to prevent pro-ecological behavior is price. According to Diekmann and Preisendoerfer (1992) pro-environmental attitudes only have a limited impact on pro-environmental behavior if the cost of this behavior is high.

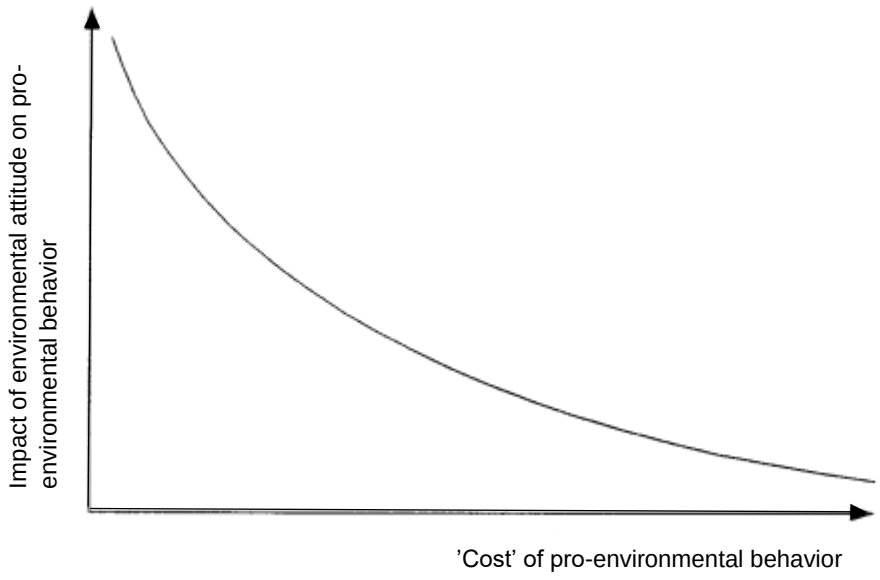


Figure 11: Impact of Environmental Attitude vs. Cost of Pro.Environmental Behavior Diekmann, A. & Preisendoerfer, P. (1992)

Cost in this sense is not only economic but is also defined as the time it takes to perform this behavior - the difficulties associated with the behavior. Carrington et al. (2010) refer to several studies that support this notion – the participants in surveys have a tendency to overestimate the amount of money that they are willing to spend on sustainable products. WTP is a concept that measures the maximum amount of money that individuals are willing to pay for a given market offering (Jennings, 2015). Thus, it measures how intention changes as a result of the price that a given market offering has. Jennings (2015) mentions, as could be expected, that WTP is affected by wealth or income constraint. In other words, the WTP changes because of individuals' disposable income or general economic wealth.

Ottman & Hartman (2006) also mention the economic aspect of green consumerism as being an obstacle. Moreover, they point out the inferiority associated with green products when compared to conventional in terms of convenience in the purchase situation. It is usually more difficult and time consuming to locate such products and concurrently the perceived product performance is sometimes lower. This, combined with the fact that some consumers tend to estimate the real impact of buying sustainable as being low, means that some consumers refrain from choosing from this product category.

Finally, Carrington et al. (2010) point out an additional aspect that might cause a dissonance in the relationship between stated intention and observable behavior; namely the inappropriateness of the methodology inherent in self-reported surveys. When faced with the hypothetical question of whether or not to purchase a sustainable product many participants will have a tendency to overestimate their intention. This could either be due to consumers with an earnest intention to buy such products, but who for some reason are not able to fulfill this intention in the purchase situation. It might also be caused by the fact that respondents will have a propensity to provide answers that are perceived as being socially desirable. According to this line of thought, participants will display positive intentions towards a given ecologically friendly object, partly because they believe that this is the morally right answer to submit.

Multi-Attribute Attitude Models

'Multi-attribute models portray consumers' attitudes with regard to an attitude object (…) as a function of consumers' perception and assessment of the key attributes or beliefs held with regard to the particular attitude object.' (Malhotra et al., 2012). Wilkie and Pessemier (1973) define multi-attribute objects as bundles of attributes that lead consumers to more or less conscious cost benefit analyses.

Many different models have been proposed that each suggest different ways of measuring consumers' attitudes toward market offerings and their intention toward engaging in purchase behavior. In the following section three prolific models are presented: The attitude towards object model, the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB). Moreover, two models, which are influenced by the theory of planned behavior, are briefly touched upon. These models use the theory of planned behavior model as frameworks for explaining ecological- and fish consumption behavior and therefore fit well as reference researches. Elements from each of these models are incorporated into the modified model, which makes up the framework for the current investigation.

The Attitude Towards Object Model

According to Malhotra et al. (2012) the attitude towards object models are well-suited for measuring attitudes towards market offerings. The reasoning behind this model is that consumers' evaluation of different tangible and intangible attributes or beliefs associated with a given product or service, will represent an approximation of their intention to purchase this market offering. In other words, products or services, which consumers assess to have an adequate number of satisfactory and positive attributes and the absence of too many negatively deemed attributes will be desirable. Contrarily, market offerings that have an aggregately less positive attribute bundle will less likely be linked to a high purchase intention nor purchase behavior. Wilkie and Pessemier (1973) use the basic linear compensatory model to describe the components of consumers' attitude towards market offerings.

$$Ajk = \sum_{i=1}^{n} Iik\ Bijk \qquad \text{(e1)}$$

i = attribute or product characteristic, A_{jk} = consumer *k*'s attitude score for brand *j*,

j = brand, I_{ik} = the importance weight given attribute *I* by consumer k,

k = consumer or respondent B_{ijk} = consumer *k*'s belief as to the extent to which attribute *i* is offered by brand *j*.

Equation 1 shows the principals behind the attitude towards object model. Consumers' attitude towards a given brand (A_{jk}) can be measured by the extent to which a number of attributes are perceived to be positively or negatively inherent in a given brand (B_{ijk}) and by measuring the importance weights of these attributes (I_{ik}).

The Theory of Reasoned Action

The Theory of Reasoned Action was initially introduced by Fishbein in 1967 and was further developed by Fishbein & Ajzen in the 1970's and 1980's (Fishbein, 2004). This theory was developed because researchers experienced difficulties with predicting behavior based solely on attitude. Fishbein and Ajzen introduced the TRA in which an additional variable was added to the predictive model. The authors found empirical evidence, that adding a subjective norm, in which individuals assess the expected views that their significant others hold towards the behavior of interest, would improve predictability (Fishbein and Ajzen, 1975). Two of the main components of this model: attitude and subjective norms are described in equation 2 and 3.

$$A \alpha \sum_{i=1}^{n} b\,i \cdot e\,i \qquad \text{(e 2)}$$

A = attitude

b = belief strength

e = subjective evaluation

$$SN \alpha \sum_{i=1}^{n} n\,i \cdot m\,i \qquad \text{(e 3)}$$

SN = subjective norm

n = normative belief strength

m = motivation to comply

The TRA differs from The Attitude Towards Object Model in that the attitudinal component does not consist of the attitude towards different attributes. Rather, what is measured in the TRA is the attitude towards the perceived outcomes of engaging in the behavior of interest. Like in the aforementioned model, the belief strength is measured in the TRA in order to estimate how important the behavior and the behavioral outcomes are to the participants. The subjective norm is described in equation 3. This component consists of the normative belief strength, which describes how individuals perceive their significant others (family, friends, colleagues etc.) to evaluate the behavior of interest. Moreover, individuals are asked to state the degree to which they intend to comply with these perceived evaluations. If an individual expects his or her spouse or other family members to have either a strong negative or positive evaluation of the behavior and the individual concurrently states a great motivation to comply, then the subjective norm will be strong. The attitude and the subjective norm empirically showed an ability to explain a large proportion of the variance seen in individuals' behavioral intention (Hankins et al., 2000). In the TRA intention is further expected to be an efficient predictor of behavior (Figure 12).

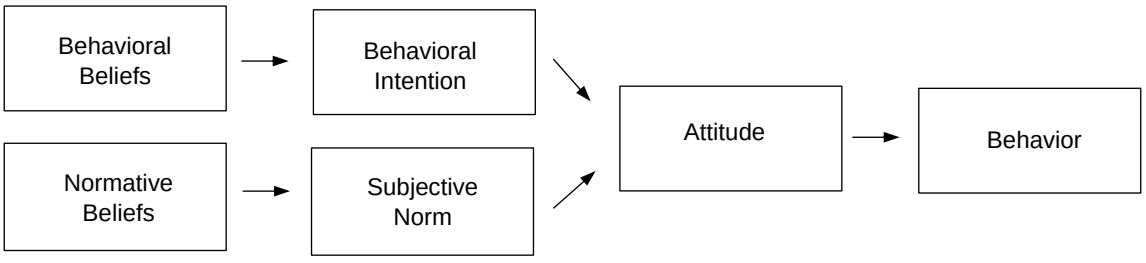


Figure 12: Theory of Reasoned Action Model (Fishbein, 2004)

Attitude in the TRA is based on an expectancy-value principle similarly to the *subjective expected utility* (SEU) theory (Pligt and Vries, 1998). SEU theory assumes that individuals will assess the expected utility of alternative behaviors and then eventually choose the behavior, which entails the highest SEU. In practical terms, the SEU is identified by multiplying the likelihood that individuals will engage in given behaviors with the utility or desirability of the outcome expected to be related to the behavior of interest. This is illustrated in the following equation:

$$SEUj = \sum_{i} Pij \cdot Uij \qquad \textit{(e 4)}$$

SEU_j = Subjective expected utility of behavior $_j$ P_{ij} = Perceived probability of outcome $_i$ of behavior j U_{ij} = Perceived utility of outcome $_i$ of behavior $_j$

Fishbein and Ajzen argue that individuals usually base their attitude towards a given behavior on five to nine salient beliefs about the consequences associated with the behavior (Pligt and Vries, 1998). These salient beliefs are typically discovered by asking a number of individuals about a given market offering or behavior and through this identifying the most frequent beliefs. Fishbein and Ajzen (Plight and Vries 1998) do not believe that the importance of each of the behavioral beliefs can be determined. This means that a ranking cannot necessarily be made, in which the strongest behavioral beliefs are identified (Pligt and Vries, 1998).

Although the TRA has been widely used in behavioral research, some limitations have been identified. Most importantly, it has been problematized that the TRA is only applicable to behavior, which lies within the scope of individuals' own behavioral control (Brannon, 2007). In other words, the TRA does not take into account situations where individuals are limited in their behavioral possibilities by external factors. In response to this limitation, Ajzen developed The Theory of Planned Behavior (TPB), a framework which is similar to the TRA but consists of an additional component.

The Theory of Planned Behavior

Ajzen introduced The Theory of Planned Behavior in 1991. In addition to the two psychological variables (attitude and the subjective norm), the framework incorporates the *perceived behavioral control (PBC)* as a predictor of intention and behavior (Klöckner, 2011).

Ajzen (1991, p. 181) formulates the justification of the inclusion of the PBC as being: *"(…) necessary by the original model's limitations in dealing with behaviors over which people have incomplete volitional control."* When investigating behavior, which is completely within the scope

of individuals' own control, the TRA can relatively precisely predict behavior, however, when this term is violated, predictability is lower (Ajzen 1991). Thus, according to the author, the motivational or intentional indications are not necessarily predictors of future behavior, and factors such as availability and personal resources – time available, money, skills and cooperation of others - have an impact on behavior.

$$\sum_{i=1}^{n} ci\ pi \quad \text{PBC } \alpha$$

PBC = perceived behavioral control

c = control beliefs

p = perceived power of control factor

(e 5)

In equation 5, the perceived behavioral control is explained in mathematical terms. The PBC is a function of the control beliefs that individuals perceive to have toward a given behavior as well as the power, which individuals perceive to have over that behavior. Ajzen (1991) mentions the perceived constraints that individuals are faced with as being evident and influential on intentions and future behavior. This behavioral control varies across different situations and is therefore not a stable construct. The perceived behavioral control may alternate in different situations and cannot be seen as a general disposition that individuals have in every situation.

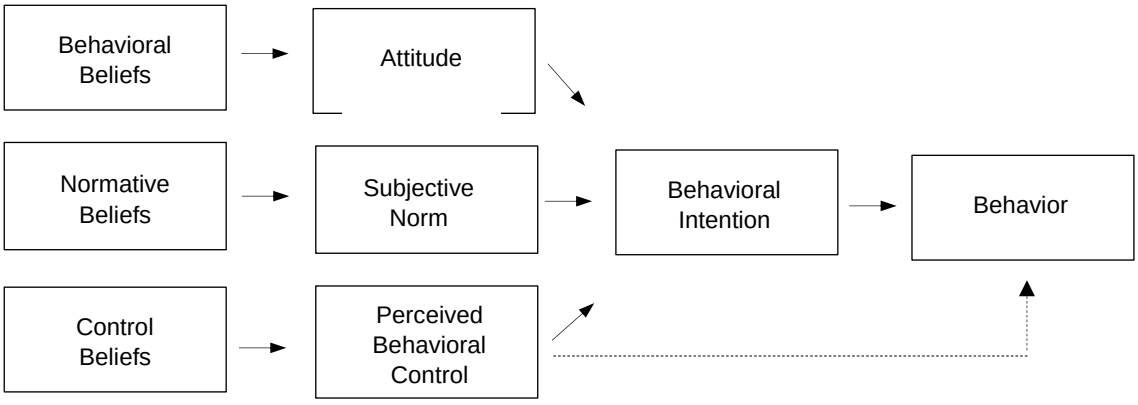


Figure 13: The Theory of Planned Behavior Model
(Ajzen, 1991)

As can be seen in Figure 13, the perceived behavioral control is hypothesized not only to influence behavioral intention, but in many cases to exert a direct influence on behavior itself. *"Even if a person adjusted his or her intention to a limited amount of control, it could still be that the execution of an intention interferes with perceived control in a certain situation"* (Klöckner, 2011).

Similarly to attitude and the subjective norm, the perceived behavioral control is determined by a set of underlying beliefs – the control beliefs. Ajzen (1991) mentions the importance of individuals' perceived self-efficacy, which is their own assessment of how well they would be able to succeed in a given behavioral situation, as being integral to whether or not they are going to engage in the behavior at all. The control beliefs are usually based on previous behavior as well as information granted from significant others (Ajzen, 1991). Ajzen notes that the three components may vary in their prediction of behavior relative to different types of behavior and situations. In some instances, attitude alone will be able to account for the vast majority of intention and in others attitude and the subjective norm will describe most of the intention. In other situations, attitude and perceived behavioral control will be effective predictors of intention and others yet again, all three components are needed in predicting intention.

Critique of the Theory of Planned Behavior

TPB is a widely used model in behavioral research. However, the adequacy of the model in predicting purchase behavior has been questioned. One of the proposed shortcomings of the model, is the fact that it does not incorporate two factors that are widely apparent in purchase decisions. Thus, Klöckner et al. (2011) suggest the addition of *habitual behavior* and *personal value systems* to the existing framework. Ajzen himself has previously suggested that with repeated performance, behavior becomes routine and no longer requires much conscious control for its execution (Ajzen, 2007). As a result of this process of habituation, initiation of behavior becomes automatic, and control over the behavior is transferred from conscious intent to critical stimulus cues. The finding that frequency of past behavior is an effective predictor of later behavior and that it has a residual impact on later behavior over and above the influence of intention and perceived behavior control, has been taken as evidence for automaticity in social behavior. Klöckner (2011) suggests habits as being a potential additional mediator between intent and behavior. Moreover, he believes that personal norms exert an influence on the intention, alongside the three existing variables that the model already incorporates.

Finally, Sheppard et al. (1988) mention the lack of a "choice among alternatives" in these predictive models. *"It is important to know, therefore, what happens when the theory of reasoned*

action is extended to situations in which individuals are forced to choose among alternative behaviors" (Sheppard et al., 1988, pp. 326). Fishbein and Ajzen (1975) claim that the attitudes and feelings associated to alternatives behaviors will be implicitly inherent in the attitudes that individuals hold towards the focal behavior. Thus, it is argued that if individuals hold particularly positive attitudes toward alternative behaviors and negative towards the focal behavior, this will show from the attitudinal beliefs stated towards the focal behavior. Sheppard et al. (1988) argue that the lack of explicit comparison and assessment of alternatives will lead to a less accurate prediction of behavioral performance.

TPB and Ecological Behavior

"The need for a comprehensive theory becomes evident when the complexity of pro-environmental behavior in real life is analyzed." (Klöckner and Blöbaum, 2010). In an attempt to predict ecological behavior, Klöckner & Blöbaum have proposed a modified TPB-model.

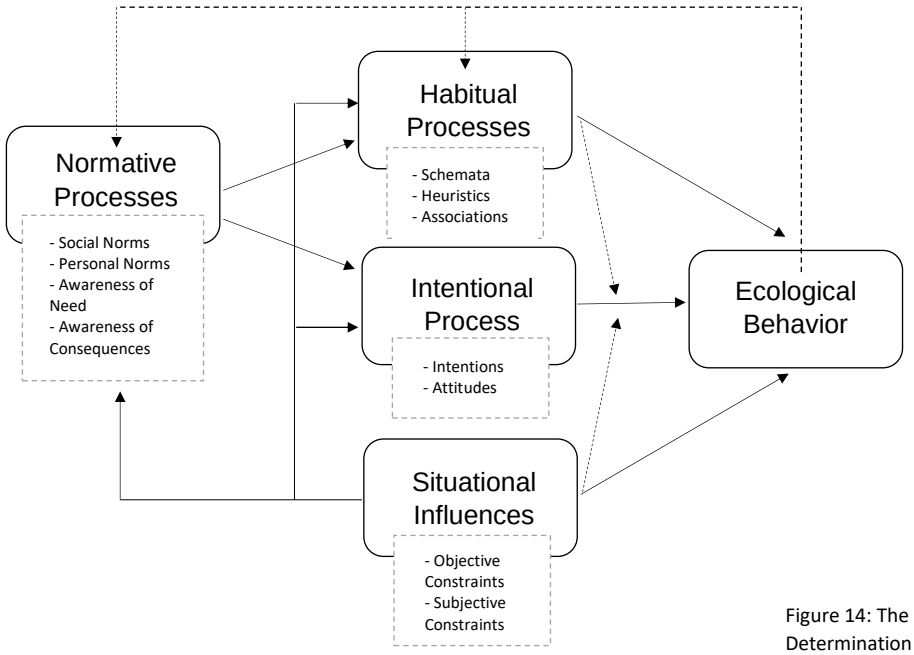


Figure 14: The Comprehensive Action Determination Model (Klöckner & Blöbaum (2010)

These authors propose both habitual processes as well as personal norms as additions to the traditional model. The authors have named this integrated model *The Comprehensive Action Determination Model* (CADM) and this framework is illustrated in Figure 14.

The subjective norm has been elaborated to consist of four elements: social norms, personal norms, awareness of need and awareness of consequence. The social norms are similar to those of the original models, whereas the personal norms describe how individuals' personal norms or moral obligations influence the choice of whether or not to engage in ecological behavior. This behavior is suggested to only take place, if an individual is aware of a certain pro-ecological need. Moreover, the individual must perceive a causal relationship between his or her pro-ecological behavior and a positive consequence. These normative processes are incorporated from the norm-activation model, which was introduced by Schwartz and Howard (Klöckner and Blöbaum, 2010).

TPB and Fish Consumption

Verbeke & Vackier (2005) have also employed an extended version of the TPB in an investigation of the personal determinants of fish consumption (Figure 15).

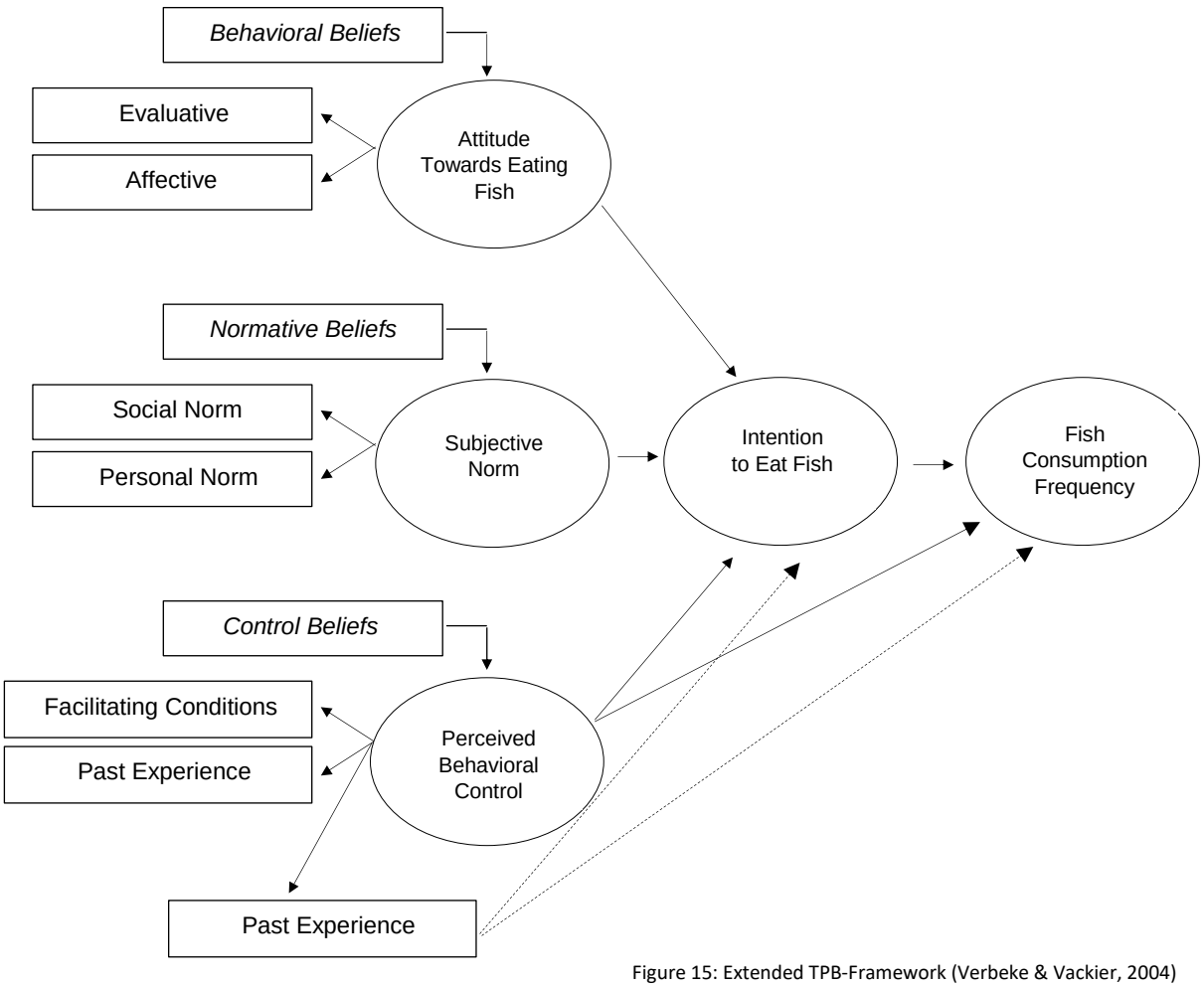


Figure 15: Extended TPB-Framework (Verbeke & Vackier, 2004)

The authors integrate three additional predictors of behavior into the traditional TPB-framework, all of which have been touched upon in Ajzen's own work (1991). First, if we look at the attitudinal component, the attitude toward eating fish, has been split into an evaluative and an affective component. The evaluative aspect entails the perceived risks, costs and benefits of performing a behavior, whereas the affective component investigates the positive or negative feelings associated with the behavior.

Secondly, the subjective norm is divided into two components; the social norm (which also occurs in the traditional TPB) and a personal norm, which is also present in the CADM. Verbeke and Vackier (2005) stress the fact that the social norms and the personal norms can sometimes be conflicting. They mention an example of a family in which one or more family members try to influence the person in charge of cooking not to cook fish, but where this person at the same time is affected by his or her own personal norm of serving healthy meals to the family. Finally, *past experience* and *habit* has been incorporated into the component *perceived behavioral control*. Similarly, to the CADM, habit is theorized to exert an influence on both the general intention as well as directly on behavior or non-behavior.

Integrated framework

In this section, each component in the modified model are described in detail, incorporating the relevant theoretical and empirical underpinnings related to ecological buying behavior and seafood. The information directly related to ecological and fish consumption is presented in the below section, where the hypotheses are also presented. The integrated model differs from the original models in a few ways.

One of the main differences lies in the fact that the attitudinal component does not measure the attitude towards the behavior of purchasing or consuming RAS-produced fish, which is the case in the TRA and TPB. Rather, the focus is on the product itself, and the attribute-bundle of which it consists. This choice has been made as the research does not only seek to predict behavior (or non-behavior) but also aims at discovering the attributes that are most closely related to these potential behaviors. Thus, the objective of the current investigation is not merely predicative, but

an attempt to dissect the hypothesized product for the derived knowledge to be applicable in a marketing setting.

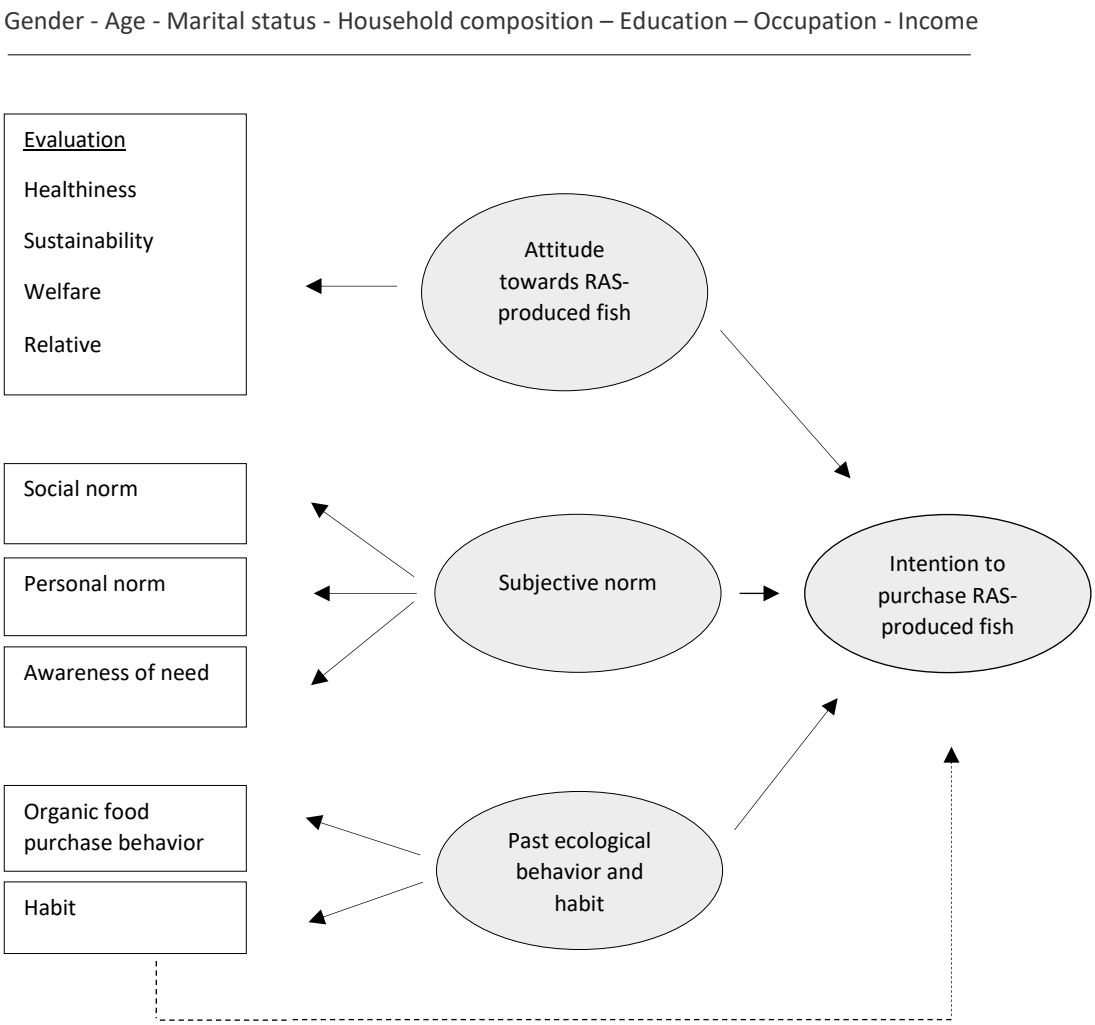


Figure 16: Integrated Framework

The behavioral beliefs are replaced with a different importance indicator or weighting. Four different constructs are included in the attitudinal section: healthiness, sustainability, animal welfare and a relative (to the existing products in the market) evaluation. Each of the three first constructs are the results of underlying manifest variables. In the evaluation of each of these variables, the participants are asked to assess the importance of them individually. The weighted evaluations consist of an evaluation of each attribute, followed by an assessment of how important these attributes would be in the participants' purchase decision. The sum of these two

evaluative indicators make up the weighted importance of each attribute. The salient beliefs, which Fishbein and Ajzen mention as representing the most frequent beliefs about the outcomes of a given behavior, have moreover been omitted in the integrated model. The prolific beliefs about organic food and organic fish in particular, which are included, have been derived from the literature review that forms the base of the research instead.

The subjective norm resembles both Klöckner and Blöbaum (2010) as well as Verbeke and Vackier's (2005) subjective norm components in that it has been broken down into both a social and a personal norm. Moreover, the awareness of need component stemming from Klöckner and Blöbaum's model has been incorporated to investigate whether the participants experience a need for a product like the one investigated. The awareness of consequence component is deemed as redundant, as the awareness of consequence can be derived from the intentional component. If the respondents state an awareness of a need and concurrently show a high intention to purchase the proposed product, based on the information about the product, then the awareness of a positive consequence can be established. The questions regarding both the social and the personal norms are posed and subsequently the participants are asked how important these norms are perceived to be in the decision of whether to purchase the proposed product. The perceived behavioral control is the component, which differs most from the original model. This component is intended to mirror the perceived ease or difficulty related to acquiring and preparing the market offering of interest. However, seeing that the product in this research is hypothetical of nature and that the behavior of purchasing the product is entirely out of the scope of the participants, this component is deemed superfluous. This leads to the removal of the control beliefs as well as the facilitating conditions suggested by Verbeke and Vackier (2005) and the situational influences proposed by Klöckner and Blöbaum (2010). Instead, the past experience and habitual constructs proposed by Verbeke and Vackier (2005) are used as indicators of intention and ultimately planned purchase behavior of the product. Seeing that past experience with purchasing a similar product is nearly impossible, this indicator consists of manifest variables mirroring general ecological food purchase experience. It is expected that past ecological food purchase behavior is positively related to the intention to buy RAS-produced fish. The habit-construct, on the other hand, is expected to be negatively related to purchase intention. If consumers generally base their food choice on superficial heuristics, it is expected that they will

not recognize the positive differential attributes of a product such as the one that is investigated in the current thesis.

Hypotheses

The Integrated Model

The integrated model will be replicated in various markets and refined to define international market attractiveness for Skagen Aquaculture in the future. Aside from a number of macro indicators, the intention of consumers in foreign markets to purchase the fish stemming from RAS is an important factor in the assessment of market readiness and thus attractiveness. Moreover, the multi-component constructs in the model are expected to be important pieces of information for the marketing efforts in the single markets. Thus, it is hypothesized that the proposed model is applicable to examine the intention of consumers to purchase and consume RAS-produced fish.

H1: The constructs in the integrated model are efficient predictors of the intention to purchase RAS fish.

Attitude Towards Purchasing RAS-Produced Fish

Looking at the evaluative component, the theoretical body behind this area of research identifies factors that influence consumer attitudes about organic food. Organic or sustainable fish consumption is an area of research with substantial information gaps. Thus, the information that underlies the following hypotheses relate both to sustainable fish consumption, as well as general sustainable or organic food consumption.

According to Shepard et al. (2005), healthiness of food products (absence of food additives, preservatives and residues, contaminants, the nutritional benefits etc.), production methods, animal welfare and positive environmental consequences are important attributes in organic food purchasing. Mauracher et al. (2012) corroborate the fact that healthiness is an important aspect in the case of seafood. Their research suggests that healthiness is one of the main drivers behind

organic fish consumption and thus that consumers expect organic products to be superior to conventional when looking at healthiness. Vanhonacker et al. (2010) also mention the nutritional and health aspects as being main drivers behind fish consumption. However, they also mention the ambiguity which is inherent in the food category. They call this ambiguity *the nutritional-toxicological conflict,* which is rooted in the fact that fish on one side is associated with nutritional and health benefits, but on the other hand believed to entail some level of chemical contaminants. Based on an extensive literature review, Carlucci et al. (2014) reach a similar conclusion; that current research suggests that one of the main drivers behind fish consumption is the perception of the food category as being superior to other food groups when it comes to healthiness. Furthermore, this research acknowledges the fact that risk perception could be a factor when assessing non-behavior. The review suggests that the risk perception is relatively rare and isolated to certain consumer groups (older, well-educated consumers, pregnant women and mothers of young children etc.). In the literature review, healthiness, sustainability and animal welfare were all frequently mentioned attributes of importance in organic food consumption.

H2: A high level of perceived product healthiness will affect consumers' purchase intention more significantly than perceived sustainability of production and perceived animal welfare.

Social and Personal Norms

Verhoef (2005) finds that consumers do not feel a pressure from their closest social sphere towards buying organic meat. Moreover, a study conducted by Zepeda and Li (2007) suggests that having children reduces the probability of buying organic food products - without specifying the possible underlying drivers behind this. Contrarily, Hughner et al. (2007) conclude that households with small children have a higher propensity than other household to buy organic products. If consumers who have children in the household in fact have a higher propensity to buy organic, the reasons behind this higher frequency cannot necessarily be ascribed to a social norm. However, it could be assumed that the reasoning behind this purchasing behavior could be due to a wish to serve healthy food for the other family members. Thus, there might be an internalization of a behavior that is perceived socially desirable. However, this behavior is likely to stem from a

personal norm, which entail a moral obligation to act in an altruistic manner towards one's significant others.

As previously mentioned, personal norms are values or moral obligations that individuals live by and that affect most of our actions to varying extents. Klöckner et al. (2010) assume that the personal norms are rooted in individuals' personal value systems. These norms are not always activated but can be activated in any given situation. Although personal norms are expected to be relatively stable, they will not necessarily affect variables such as intention and behavior equally throughout all situations. Habits and different situational processes are suggested to affect the extent to which personal norms are acted upon. The authors claim that the personal norm is usually shaped and alternated through social interactions. Thus, as previously suggested, the two variables are very much intertwined.

Steg et al. (2014) mention several studies that point toward the fact that individuals' beliefs, attitudes, norms and actions are related to the strength of their self-enhancement and self-transcendent values respectively. Self-enhancement values reflect a concern of individuals' own interests, whereas self-transcendent values relate to a concern toward the collective and external interests. Two types of self-enhancement values are mentioned: hedonic and egoistic values. Consumers' hedonic values can be defined as the emotive and sensory aspects that consumers relate to a certain behavior or a market offering, including; scents, tastes, sounds, tactile impressions etc. (Ekström, 2011). Egoistic motives are rooted in the wish for maximizing individuals' personal gains from a given behavior and safeguarding one's own resources (Steg et al., 2014). In a social setting such egoistic motives will be apparent when individuals perform behaviors with the expectation that they will be repaid in the future or gain appreciation for one's actions (Reis, 2007). This would be the case if consumers buy organic food expecting that this behavior will be repaid through improved health in the future. Contrarily, altruistic behavior is enacted with no regards to individuals' self-interests and thus solely having other individuals' welfare in mind (Reis, 2007). Finally, biospheric values mirror a concern for the environment. Most individuals encompass all four types of values, however, according to these authors, people who strongly endorse self-enhancement values are not as likely to have pro-environmental beliefs as individuals who have strong self-transcendence values. Verhoef (2005) on the other hand, suggests that consumers who purchase organically produced meat engage in this behavior due to

self-enhancement motives such as reducing a sense of fear, which they will tend to experience when buying conventionally produced meat.

H3: Personal norms influence RAS-fish purchase intention more strongly than social norms.

Awareness of Need

The subjective norms and values that might lead an individual to perform certain pro-environmental behaviors need to be activated by the awareness of a need. Thus, in this specific case of sustainable seafood, consumers will have to perceive the conventional products as entailing problematic characteristics to be interested in the sustainable offerings, that are more expensive and difficult to obtain. According to recent research, such an awareness is present within certain consumer segments: healthiness of products (Shepard et al., 2005; Carlucci et al., 2015; Verbeke & Vackier, 2005 etc), sustainability of production (Honkanen & Young, 2015) and animal welfare (Grimsrud et al., 2013; Hoogland et al., 2007).

H4: The immediate awareness of a need for RAS-produced fish and thus a corresponding awareness of the positive consequences of buying such products are present.

Past Experience

The fact that the product under investigation is hypothetical of nature and that no similar product is currently on the market means that past experience with purchasing and consuming such products cannot be investigated. Instead, a hypothesis that past organic or sustainable food purchase behavior will be an indicator of the intention to purchase RAS-produced fish can be proposed. Krystallis and Chryssohoidis (2005) discovered that the WTP for organic aquaculture-produced fish was relatively strong, and that the WTP resembles that of other organic food products. At a price premium of 45 and 60 percent, for instance, the WTP for organically produced fish was stronger than the WTP for organic eggs, poultry and milk among other products.

H5: Past purchases of organic food products is positively related to the intention to purchase RAS-produced fish.

Habit

Habitual behavior has been found to influence the extent to which individuals are willing to engage in ecological behavior (Klöckner and Blöbaum, 2010). However, in the literature relating to organic food purchasing behavior it has not been possible to find studies that incorporated habit as a model component. Thus, the below hypothesis is not based on existing knowledge but is rather incorporated as a means to investigate whether or not this construct might exert an influence on intention to purchase RAS-produced fish.

H6: Habitual behavior influences intention to purchase RAS-produced fish negatively.

Demographics

Olsen (2003) has investigated the relationship between age and seafood consumption and has found that age is positively related to the frequency of seafood consumption. This relationship is a mediator of consumers' general attitudes towards eating fish, their health involvement and perceived convenience of purchasing and preparing seafood products. Older consumers were suggested to be more inclined to buy seafood and concurrently have a corresponding health involvement. When looking at socio-demographics in connection to sustainable seafood, research claims that the consumer segment most interested are young, well-educated and knowing females (Brécard et al. (2009). Magnusson et al. (2001) also reach this conclusion and claim that young female consumers the age of 18-25 is the consumer group that is the most positive towards organic food. This might indicate varying results between the two researches or alternatively, differences related to or caused by the organic aspect.

H7: Socio-demographics such as gender, age, educational level and household income are expected to be predictors of RAS-produced fish purchase intention.

Knowledge and WTP

Various researches emphasize product category knowledge as a construct, which influences organic food purchasing behavior (Aertsens et al., 2009; Pienak et al., 2010; Magistris and Gracia, 2008). Aertsens et al. suggest that an improved level of product knowledge tend to transform into improved attitude and WTP for organic food products. Magistris and Gracia (2008) corroborates this suggestion and conclude that an increase in product information transparency will result in an increase in organic food demand. Pienak et al. (2010) claim that information campaigns, in which the positive attributes of organic food are emphasized, could be an effective way to increase organic food demand as well as enable higher price premiums.

Organic and sustainable products entail higher prices than conventional products and thus consumers' willingness to pay premium prices for these products is essential. As mentioned above, certain segments of consumers indicate a WTP considerable price premiums for organically produced fish. However, the degree to which consumers are willing to purchase these organic products depends on the magnitude of these price premiums. At price premiums of 45-60 percent 10-15 percent of the inclined actors are still interested in buying organically produced fish. At bigger price premiums the WTP declines considerably. In the current thesis prices ranging from 25 percent below the average price for salmon to a pricing of 100 percent of the average price are investigated. It is expected that inclined actors will show an inclination to pay a premium price for the proposed product, however, this intention is expected to be steeply declining at price levels exceeding 50 percent from the average market price.

H8: At a level of full information transparency, consumers are hypothesized to evaluate RAS-produced fish more positively than traditionally produced fish.

H9: A high level of knowledge is expected to affect WTP positively.

H10: Inclined actors are expected to show a WTP a premium price for the RAS-produced fish. However, this intention is expected to decline steeply at price levels exceeding 50 percent from the average market price.

Empirical Findings

In this section the results from the data collection are presented and the hypotheses are answered. First, the characteristics of the sample of respondents are presented and the experiences from the data collection are described. Subsequently, the hypotheses are answered using the statistical methods presented in the methodological section.

Data Collection

The data was collected over a period spanning approximately eight weeks, from mid-June to mid-august 2016. 246 cases were collected, however, eight of these are discarded due to a substantial amount of missing answers. Thus, a total sample of 238 cases forms the basis of the analysis. A priori, the ambition was to collect between 300-350 cases, but this was not possible given the time frame at hand. This aim was formulated using a 1:10 ratio between model items and cases respectively. However, other researchers claim that a 1:5 ratio is sufficient. Furthermore, other researchers claim that a sample consisting of 200 respondents will be sufficient in most cases. Seeing that the proposed model for this research contains more items than most models, the amount of cases needed is expected to be greater. The sample of 238 cases is deemed to be usable, but not necessarily ideal.

Initially, the data collection was planned to take place in a part of Aalborg called Hasseris, where the population has average incomes and educational levels, which are above other parts of the city. Research shows that people who have an above average income and educational level consume fish and organic food more frequently. Thus, it was hypothesized that by using this approach, the consumers that are most likely to consume the proposed product could be targeted most efficiently. A few obstacles were encountered in this phase of recruiting respondents and collecting answers. I chose an approach in which I went from door to door in order to recruit respondents. First, the weather was an obstacle, in that it rained quite a lot, making the process troublesome. A number of potential participants were on holidays and thus were not at home. Moreover, the timeframe, in which it was possible to meet the respondents in their houses, was relatively short. On days where the weather was good and it was possible to meet the possible respondents, the approach proved relatively successful. People were friendly and interested, and

more than half of the contacted potential respondents were willing to take part in the questionnaire investigation. In order to be able to spend more of my day collecting, I contacted a number of Aalborg-based companies asking for permission to visit them and distribute questionnaires to their employees. I managed to collect questionnaires from the municipality office of Aalborg as well as Job-Center Nord. These two approaches resulted in 62 replies, of which eight were discarded due to a considerable amount of missing answers. After having decided that the above approach of manually distributing the questionnaires and collecting them was not time efficient enough, an online questionnaire was created as well. The above approach would have been adequate if the data collection had been performed by a team of four to five people, however, as a one-man group this would have been too time-consuming. Having created an online questionnaire, I printed several invitations to take part in the investigation. These one-page invitations were distributed by mailbox in Hasseris. At first 200 invitations were printed and distributed, to assess the efficiency of the approach. Four days after having distributed the invitations, a total of 13 questionnaires were filled in. A response rate of more than six percent was deemed tolerable and thus further 800 invitations were printed and distributed in Hasseris. After realizing that only targeting inhabitants living in Hasseris would not suffice, the distribution area was expanded to include the mid-town area as well. A total of 3300 invitations were distributed in Hasseris and the city center. This resulted in a total of 243 respondents, who either answered the questionnaire in its entirety, made incomplete answers with missing items or only typed the link but rejected the investigation after reading the introduction text. 184 of the respondents are included in the sample. Thus, approximately 5,6 percent of the invitations resulted in usable questionnaire, which is only slightly below the ratio found in the initial experimental distribution.

Data Cleaning

'Data cleaning, also called data cleansing or scrubbing, deals with detecting and removing errors and inconsistencies from data in order to improve the quality of data.' (Rahm and Do, pp. 1[2]).

[2] This source was found on a website, which does not explicitly state the year of publication

Figure 17 shows a lists of potential data quality problems related to single-source- and multi-source researches respectively (Rahm and Do). The current research can be defined as single-source, as the questions and measures are homogenous across all data sets. However, the fact that the research was conducted using both a physically distributed questionnaire, as well as an online questionnaire, have resulted in a few differences between the 54 cases that were physically distributed and collected, and the remaining 184 cases from the online questionnaire. Thus, both the single-source problems, as well as the multi-source problems, which were encountered are treated below.

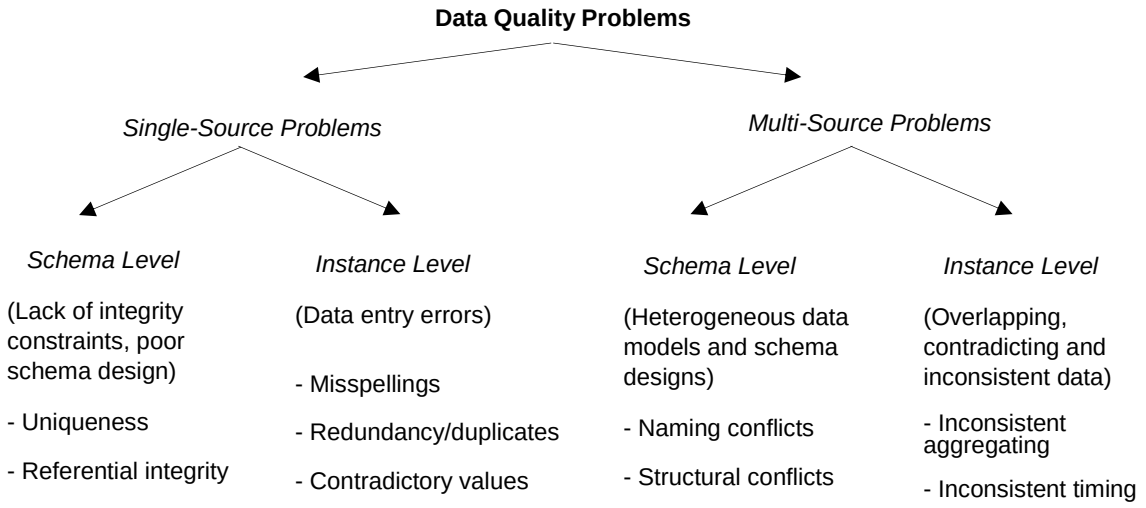


Figure 17: Classification of Data Quality Problems in Data Sources

Single Source Problems

As aforementioned, eight of the cases from the physical distribution and collection procedure were discarded at the point of data entry. These cases lacked considerable amounts of data, whole sections of questions and were thus not usable. Aside from these discarded cases, only two of the remaining 54 cases missed data. The missing data points were detected after having run a frequency test of all the variables and a subsequent manual check of the column containing the variable of interest. Both only missed a single data point, and thus these have been replaced by calculating the series mean. Subsequently, data entry errors were diagnosed. These values were

out of the range of the possible options and were easy to detect. Seeing that the questionnaires were numbered, it was possible to find the problematic questionnaires and retype the correct values. The third and final problematic point of the physical questionnaire, is the fact that respondents were able to check more than one box in each question. This problem was encountered in the first questions, where the participants were asked who the person in charge of planning and purchasing for their household meals is. Three of the respondents had checked both the box indicating that they themselves are in charge of planning their household meals, as well as checking the option, that another household member is in charge of planning. In this case, I simply noted, that the meals are planned jointly in their household instead. Similarly, four participants had checked the two first options of the second question. Instead, this was corrected to the third option indicating that the purchasing is done jointly.

The online questionnaire entails the advantage that the respondents were not able to finish the questionnaire if any values were missing. Moreover, the participants were only able to check one option relating to each question. This fact omitted the risk of the problems noted above.

Multi-Source Problems

A multi-source problem is encountered because a few of the scales could not be directly replicated in the online questionnaire. In the physical questionnaire, the scales relating to the attributes of the proposed product, presented in the first part of the questionnaire consisted of both a scale asking about attitude towards these attributes, as well as a scale indicating how important these attributes would hypothetically be on their intention to purchase the product. These double scales were proposed to relativize the positive attitude towards these attributes. In other words, the presented attributes were expected to all be deemed relatively positively, however, they might not have been deemed important as purchase ques. The same reasoning led to the similar double scales used for the questions relating to the subjective norms. As mentioned, it was not possible to reproduce these scales in the online questionnaire. After having read through the physical questionnaires, it becomes apparent that the scales indicating the importance of the attributes and the subjective norm questions were deliberately used by approximately every other respondent. The remaining participants simply double checked the same points on both scales. In

the attribute sections the second scale was mostly used to indicate a lesser value in the items relating to windmill energy, water usage and killing method. In total this second scale has affected the values of the above variables by approximately one point. Similarly, in the subjective norm questions, the second scale was predominantly used to indicate that the items were not important to their purchase decisions. This scale approximately resulted in a 1,5-point lower total item score across most of the items in the section. The items that were least negatively affected by the second scale were the ones relating to the personal norms.

Sample Characteristics

This section briefly compares the sample to the general demographic characteristics of the Danish population, to assess the generalizability of the results. First, it should be noted that the data stems from only one city and therefore, the results cannot by default by generalized. Results might vary between urban and rural areas for instance. The demographic characteristics of the sample is aggregated in Table 4. Moreover, in the case where the data was available, the national characteristics have been added for comparison. All of these data points stem from Danmark Statistik's (2016) most recent publication regarding the Danish population.

Sample Characteristics

		Sample percentages	National percentages
Gender			
Male		44,1	49,7
Female		55,9	50,3
	Total	100	100
Age			
17-24 years old		24,4	13
25-39 years old		35,7	24
40-54 years old		23,5	27
55-69 years old		13	23
70+ years old		3,4	13
	Total	100	100
Marital status			
Single		27,3	54
In a relationship		39,5	11
Married		31,9	34
Widowed		1,3	
	Total	100	99
Household composition			
1 person		25,6	38
2 persons		42,9	34
3 persons		13	12
4 persons		15,1	11
5 persons		3,4	4
	Total	100	99
Household children			
No children		66,4	
1 child		12,6	
2 children		18,1	
3 children		2,9	
	Total	100	

		Sample percentages	National percentages
Education			
State school		2,9	
Upper secondary		21,4	
Technical/vocational		17,2	
Bachelor's degree		34	
Masters degree		20,6	
Ph.d or doctorate		3,8	
	Total	100	
Occupation			
Employed		55	54,2
Self-employed		3,4	4,2
Unemployed		6,3	2,7
Stay-at-home		1,3	
Student		27,3	8,5
Retiree		6,3	26,4
Not able to work		0,4	3,9
	Total	100	99,9
Household income			
Less than 10.000 kr		15,5	
10.000-29.999 kr		39,1	
30.000-49.999 kr		28,2	
50.000-70.000		10,1	
More than 70.000		6,7	
	Total	100	

Table 4: Sample Characteristics Compared to the Characteristics of the Danish Population

A closer look on the gender characteristics of the sample shows that the majority of the respondents are female. According to Danmarks Statistik (2016) females represent a slight majority of the Danish population – 50,3 percent – and thus the respondents are skewed towards an over-representation of females.

The mean age of the Danish population as of the 1. January 2016 was 41,2 years. For this research age intervals have been used, and thus it is not possible to calculate the exact mean age of the sample. However, if the center of each interval is calculated by the frequency of the occurrence of each interval, the mean age will be calculated to 38,1 years (the +70 interval was set to range from 70 to 84, making a center point of 77 years). Thus, the mean age of the current sample is slightly lower than the national average. When looking at the age distribution in each of the five categories, the three first categories are overrepresented in comparison to the national average. The two first categories are highly overrepresented by more than 10 percentage points each, whereas the third is slightly overrepresented. The two categories comprising the oldest participants are equivalently very much under-represented both by approximately 10 percentage points. This could have a number of causes. First, the participants who were recruited at their work places were most likely underrepresented in the last category at least. Moreover, the majority of the invitations to take part in the online questionnaire were distributed in the city center, were younger inhabitants are over-represented. Finally, the fact that most of the participants filled in the online questionnaire might have caused the older less computer savvy potential participants to decline participation.

One of the most distinctive differences between the respondents and the national distribution is the frequency of singles. According to Danmarks Statistik (2016), more than half of the families on the national scale consist of single men and women. In the sample merely half of this amount are singles. This is not necessarily what could be expected, given the fact that younger people are over-represented in the sample. On the other hand, people who are in a relationship but not married far exceeds that of the national frequency. The number of respondents who are married is roughly the same as what is seen on a national scale.

Households encompassing only a single individual is occurring more frequently on the national scale than in the sample. Contrarily, two-person households are occurring more frequently in the

sample than nationally. The number of 3-person and 4-person families are occurring slightly more frequently in the sample than on a national scale, whereas 5-person households are represented roughly as frequently in the sample as would be expected from the national data.

The educational categories are not directly comparable to the ones, which Danmarks Statistik (2016) uses. However, a quick glance of comparison between the sample and the national average shows that the respondents in general have a higher educational level than the national average. It should be noted that Danmarks Statistik (2016) have aggregated the highest degree of completed educational level for people between 30-69 years of age. Seeing that the two youngest age categories in this sample are over-represented when compared to the national average, the sample and the national average are not directly comparable. On the national scale, the percentage of people who have finished either a bachelor's degree, a master's degree or a Ph.D. is 11,6 percent. In this sample the percentage amounts to almost 60 percent. Thus, the sample can be said to be vastly skewed towards a higher educational level.

The occupational statuses of the sample also differ from the national percentages. The number of employed participants resembles that of the national percentage. The number of self-employed participants is slightly lower than what can be seen on a national scale, and the ratio of unemployed participants is almost twice as high as nationally. The category, which really distinguishes the sample from the national average is the one encompassing students. The ratio of students in the sample is more than three times as high as nationally. This fact might have a considerable impact on the results of the research. Moreover, the number of retirees in the sample is four times lower than what is seen on the national scale. The implications that these over- and under-representations might have is discussed in a later section. The number of respondents who are currently not able to work is lower than nationally.

It was not possible to retrieve statistics regarding the national disposable household incomes distributed into categories similar to the ones proposed in the questionnaire. However, according to Danmarks Statistik (2016) the national average monthly disposable household income is 28.737 kroner. As mentioned, the respondents were not asked to give a numerical value of their disposable incomes, rather it was categorized. Thus, it is not possible to calculate the exact average of the sample. However, when choosing the center point of each category, multiplied with

the frequency and finally divided with the total number of respondents, the sample average amounts to a monthly disposable income of 31.281 kroner. Therefore, the sample average disposable income is slightly higher than the national average. This might not be what would be expected given the large proportion of students. The proportion of 1-person households is less than what is seen nationally, which means that a higher proportion of households have two separate incomes, making the household disposable income higher.

Sample Purchasing Behavior

The participants were asked whether they themselves plan the meals in their household, if someone else plans the meals in their household, if the planning is done jointly, or if no planning usually takes place. Figure 18 shows how the participants responded.

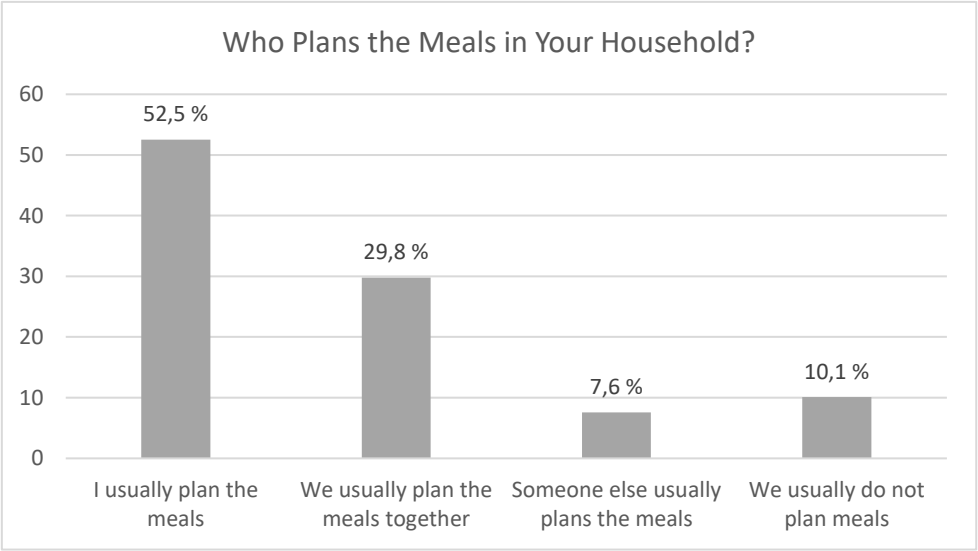


Figure 18: Who Plans the Meals in your Household?

The majority of the respondents either plan the meals themselves or take part in the planning with one or more other household members. A relatively small percentage does not take part in the planning and approximately 10 percent of the respondents state that the meals are not planned in

their households. This, of course, is relatively important to the usability of the cases, as this means that the respondents directly affect which products are purchased to their households.

Moreover, as Figure 19 shows, a large proportion of the respondents either solely do the grocery purchasing in the households or do them jointly with other household members.

Figure19: Who Purchases the Groceries for your Household?

More than 90 percent of the respondents either purchase the groceries for their households themselves, or do it jointly with other household members. As mentioned above, this is an important fact, as this means that the participating respondents affect which products are purchased for their households and which are not.

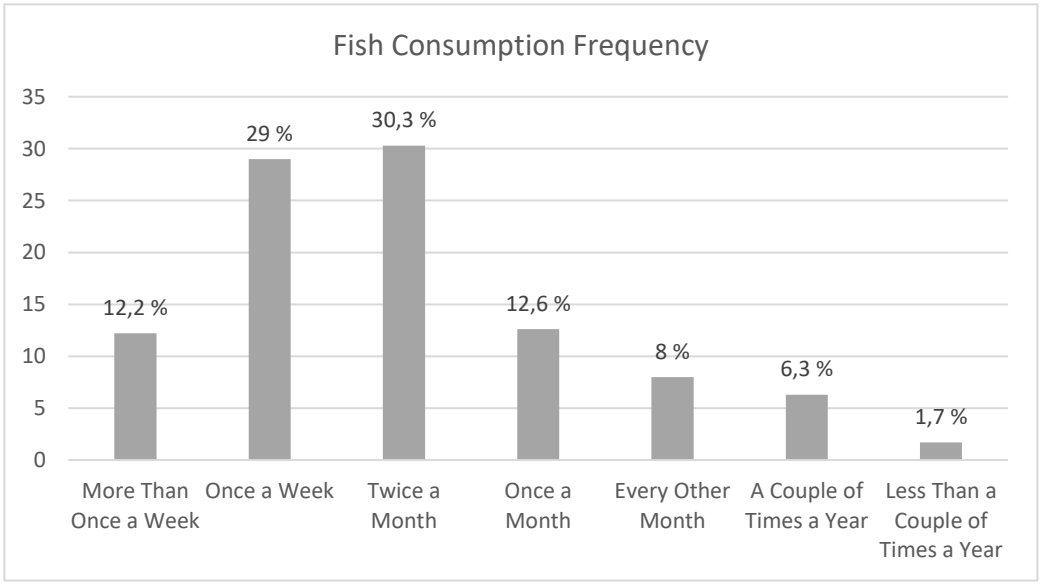


Figure 19: How Often do you Consume Fish in your Household?

Ideally, the cases in which the respondents indicate that they do not take part in the grocery shopping could have been discarded, however, given the relatively small dataset, all of these cases are included in the sample.

Figure 19 shows the frequency at which the participants purchase fish. More than 40 percent purchase fish at least once a week, more than 40 percent purchase fish once or twice a month and the remaining 16 percent purchase fish every other month, a couple of times a year or less. When the sample is compared to an analysis carried out by the Danish supermarket chain Coop, the consumption frequency of the different categories is relatively close to the ones estimated on a national level (Coop, 2011).

Data Analyses

The data analyses presented in the current section all have the common purpose of answering the hypotheses that were formulated in the theoretical chapter. These hypotheses are treated individually in the following sections.

Hypothesis 1: Model Fit

The model proposed as an integrated framework for the current research is hypothesized to fit the data. Before the fit of the model can be assessed, different assumptions must be meet in the data, for it to be eligible for SEM analysis. Schumacker and Lomax (2010) define SEM as a correlation research method. Thus, the measurement scale, restriction of range in the data values, missing data, outliers, nonlinearity, as well as non-normality all affect the covariance between the variables and can impact a given analysis. The measurement scale in the current research poses no risk of affecting the results, as all the variables included in the SEM are based on a 7-point Likert scale. This, of course, also has the implication that the possible variable ranges are the same throughout. Missing data was treated in a previous section and Likert scales are assumed not to be able to contain outliers. Having read some entries about the topic of the possibility of outliers in Likert scales data, I am aware that there is an ongoing discussion about the possibility of outliers. However, I have chosen not to go further into consideration on the topic and assume that no outliers are possible. Therefore, only nonlinearity and non-normality will be considered here.

The originally proposed model did not fit the data well, and thus a new model needed to be established. This was done through exploratory factor analysis (EFA). Most notably, the factors ‘habit’ and ‘attitude towards RAS sustainability’ were extracted, as these showed very low loadings in a maximum likelihood procedure. Moreover, the items ‘personal norm 1’, ‘personal norm 8’ and the manifest variable relating to a need awareness in terms of healthiness of the fish currently in the market were removed for the same reasons. Having made these extractions, the pattern matrix shown in Table 5 occurred.

	Factor						
	1	2	3	4	5	6	7
Chronbach's Alpha	.906	.863	.783	.855	.943	.785	.728
Personal_Norm_4	1,022						
Personal_Norm_6	,977						
Personal_Norm_5	,792						
Personal_Norm_3	,600						
Personal_Norm_2	,582						
Personal_Norm_7	,559						
Relative_Sustain		,873					
Relative_Health		,813					
Relative_A.Welfare		,813					
Eco_Con_Meat			,905				
Eco_Con_Seafood			,695				
Eco_Con_Vegs			,653				
Eco_Con_Eggs			,551				
RAS_No_Meds				,929			
RAS_No_Antibio				,915			
RAS_No_H.Metals				,567			
RAS_No_Stress					,997		
RAS_K.Method					,883		
Social_Norm_2						,812	
Social_Norm_3						,724	
Social_Norm_1						,689	
Fish_Sustain							1,033
Fish_Welfare							,519

Extraction Method: Maximum Likelihood.
Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

Table 5: Exploratory Factor Analysis: Pattern Matrix

Seven factors emerged from the EFA, which cumulatively explain 66.11 percent of the variance. These factors all load acceptably – a few of the loadings are borderline low, however, this is accepted. The Chronbach's Alpha levels are all above .70 and moreover a KMO and Bartlett's test showed a value of .849. This is a relatively good indicator, .80 is considered good, and .90 very good. The personal norms have been aggregated into one single factor through the factor analysis,

after being proposed as three different factors from the original model. I tried to maintain the personal norms as independent factors by forcing an eight-factor model in SPSS. Two of the personal norm indicators were allocated into this eight factor, however, they both loaded too low to be kept as an independent factor.

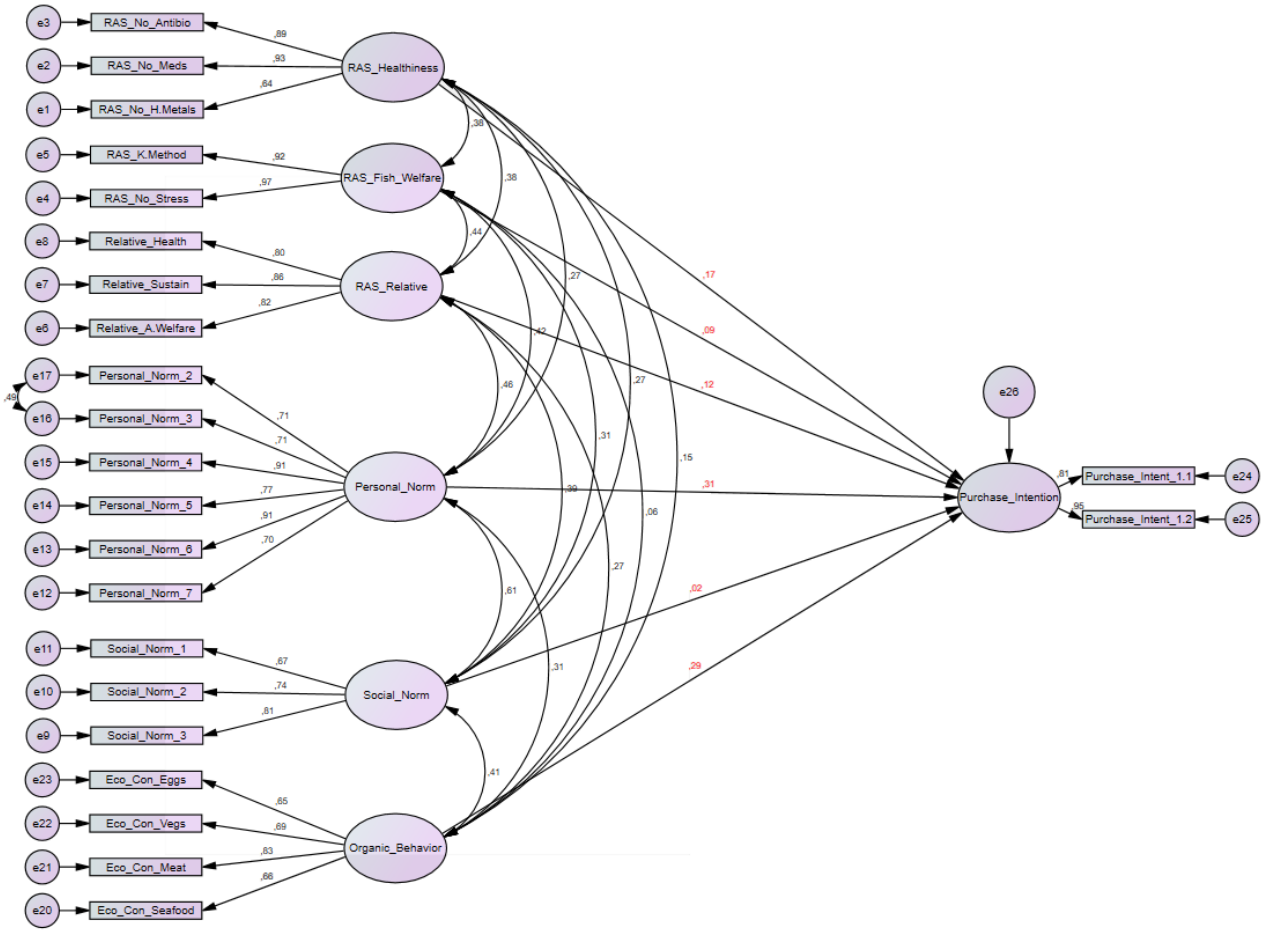


Figure 20: Confirmatory Factor Analysis: Proposed Model

After establishing the seven factors, I created a visual model in AMOS depicting the latent variables and their proposed relations to the dependent variable *purchase intention (Figure 20).* Having run an analysis of the model and allocated each of the relationships between the latent variables and the purchase intention, it became apparent that the latent variable 'awareness of need' consisting of the two manifest variables; 'Fish Sustain' and 'Fish Welfare' did not contribute

to the model. The result of the above iterations, result in the model depicted in Figure 20. The model fit of this model is considered good, with a CMIN/DF of 1,580, a CFI of ,963 and a RMSEA of ,049. A closer look on the beta weights (the values that are colored red) in the established model, shows that the construct RAS_Fish_Welfare, which was the attitude towards the welfare attributes of the RAS-product, explains almost none of the variance in purchase intention. Similarly, for the latent variable 'social norm' only a small proportion of the variance in the dependent variable is explained. The remaining four constructs, on the other hand, all have relatively high beta weights. The manifest variables related to the perceived healthiness of the proposed product have a construct beta weight of .17. The factor that indicates how the respondents perceive RAS-produced fish relative to the current products in the market, has a beta weight of .12. The personal norm construct explains 31 percent of the variance, whereas the general organic purchasing behavior explains 29 percent.

In conclusion, the originally proposed model was not an efficient model for explaining purchase intention and thus hypothesis 1 is not supported.

Hypothesis 2: Healthiness Explains Purchase Intention

The second hypothesis stated that the construct, which consists of manifest variables related to the healthiness attributes of the proposed product, is a better indication of purchase intention than the sustainability and animal welfare constructs. Seeing that the sustainability items did not conform into a usable construct, and the animal welfare construct has a very low beta weight in the above model, hypothesis 2 is supported.

Hypothesis 3: Personal Norms vs. Social Norms

Here it was hypothesized that the personal norms are stronger predictors of purchase intention than social norms. Initially, the personal norms were hypothesized to factor into three distinct constructs: Egoistic, altruistic and bio-spherical norms. However, the SEM did not support this hypothesis. The social norms, however, factored into a unified construct. After having removed one item related to the egoistic norm and one related to the bio-spherical norm, the personal

norm construct was established. The personal norm factor explains a large proportion of the variance in purchase intention, whereas the social norms had close to none predictive power of purchase intention. Thus, hypothesis 3 is supported.

Hypothesis 4: Awareness of Need is Present

The fourth hypothesis stated that there would be an immediate awareness of a need for a product that entails the attributes similar to those of RAS-produced fish. In the initial exploratory factor analysis, 'awareness of need' was established as factor, which was included in the subsequent confirmatory factor analysis. However, seeing that the construct had a beta loading close to zero, the construct did not show any notable relation to the purchase intention. Therefore, hypothesis 4 is not supported.

Hypothesis 5: General Ecological Purchasing Behavior

The fifth hypothesis stated, that there would be a positive relation between general ecological food purchasing behavior and the intention to purchase RAS-produced fish. The data supported this hypothesis, in fact this factor showed the second highest beta weight of .29. Hypothesis 5 is thus supported.

Hypothesis 6: Habitual Behavior

Here it was hypothesized that habitual behavior would affect the purchase intention of RAS-produced fish negatively. The construct 'habit' was not included in the model as a result from the exploratory factor analysis. The items of the construct did not factor well and were excluded from the model. I suspect that the measurement scale, which was used for these items were poorly executed and that this caused the construct to be inadequate for the further analysis. Seeing that a suspected measurement flaw caused the inadequacy of the construct, the hypothesis will not be identified as unsupported per se. The conclusion thus is that the hypothesis is neither supported

nor unsupported. For future analyses, the measurement scale will be redeveloped to try and measure the effect of habitual behavior.

Hypothesis 7: Demographics and RAS-Production

The seventh hypothesis states that the respondents' demographic characteristics are predictors of purchase intention. This hypothesis was investigated using a multiple regression procedure, to examine whether the demographical factors are significantly related to purchase intention or not. First, I used the intention indicator '1,1' derived from the initial questionnaire section, as a dependent variable and; gender, age, education and household income as the independent variables. The R square, which is an indicator of how much of the variability seen in the dependent variable 'purchase intention' is explained, had a low value of ,039. Thus, the four independent variables are not great predictors of the variability in purchase intention. Moreover, the associated ANOVA-test did not indicate a significant relation between the dependent and independent variables at a confidence level of .05. In order to be sure whether or not a relation existed, I did a similar analysis with the second purchase indicator (intention indicator '1,2') as the dependent variable. The resulting ANOVA-test showed a significance value of .013, thus indicating a relation.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,229[a]	,052	,036	1,482

a. Predictors: (Constant), Household_Income, Gender, Education, Age

b. Dependent Variable: Purchase_Intent_1.2

Table 6: Multiple Regression Model Summary

As can be seen in Table 6, the R square value is low (.052), which indicates that the independent variables only account for a very small proportion of the variability in the dependent variable. The coefficient table showed a significance value of .029 on age, indicating that age is related to purchase intention. The corresponding beta score is .220, which means that an increase in age has a relatively small positive relation to the intention to purchase RAS-produced fish. Based on the multiple regression analysis performed on both of the dependent variables, the relation between

any one demographic factor and purchase intention is not seen as being significant enough to support the hypothesis. Thus, hypothesis 7 is not supported.

The above hypotheses were confirmed or rejected based on the data stemming from the proposed model. The remaining hypotheses do not relate to this model and thus will be answered using data from both the first and second section of the questionnaire. The two sections are divided by the information section, in which the participants were given information about the conventional production methods, as well as the production characteristics from RAS.

Hypothesis 8: RAS vs. Conventional Production

The eighth hypothesis states, that at a level of full information transparency, consumers will evaluate RAS-production more positively than conventional production. This hypothesis will be tested both on the overall level, as each production form as a category, as well as on health factor. For an initial overview of how each of the production forms score, as a value indicating how each production method score on; healthiness, sustainability and animal welfare, I look at the means and standard deviations of each production form. Table 7 shows these values and the means illustrate that RAS has the highest mean of 4,98, followed by fisheries (4,16), earth ponds (3,72) and near-coastal production (3,65). Moreover, RAS-production has the lowest standard deviation, which indicates that the values are relatively unified around this high mean.

	N	Minimum	Maximum	Mean	Std. Deviation
Fisheries_Aggr	238	1	7	4,16	1,626
NetPens_Aggr	238	1	7	3,65	1,360
Ponds_Aggr	238	1	7	3,72	1,340
RAS_Aggr	238	1	7	4,98	1,337
Valid N (listwise)	238				

Table 7: Production Method Means and Std. Deviations

The fisheries that have the second highest mean, on the other hand, have a higher standard deviation, which means that the scores are more varied on this scale. Near-coastal production as well as earth pond production both have lower standard deviations, closer to that of RAS-production

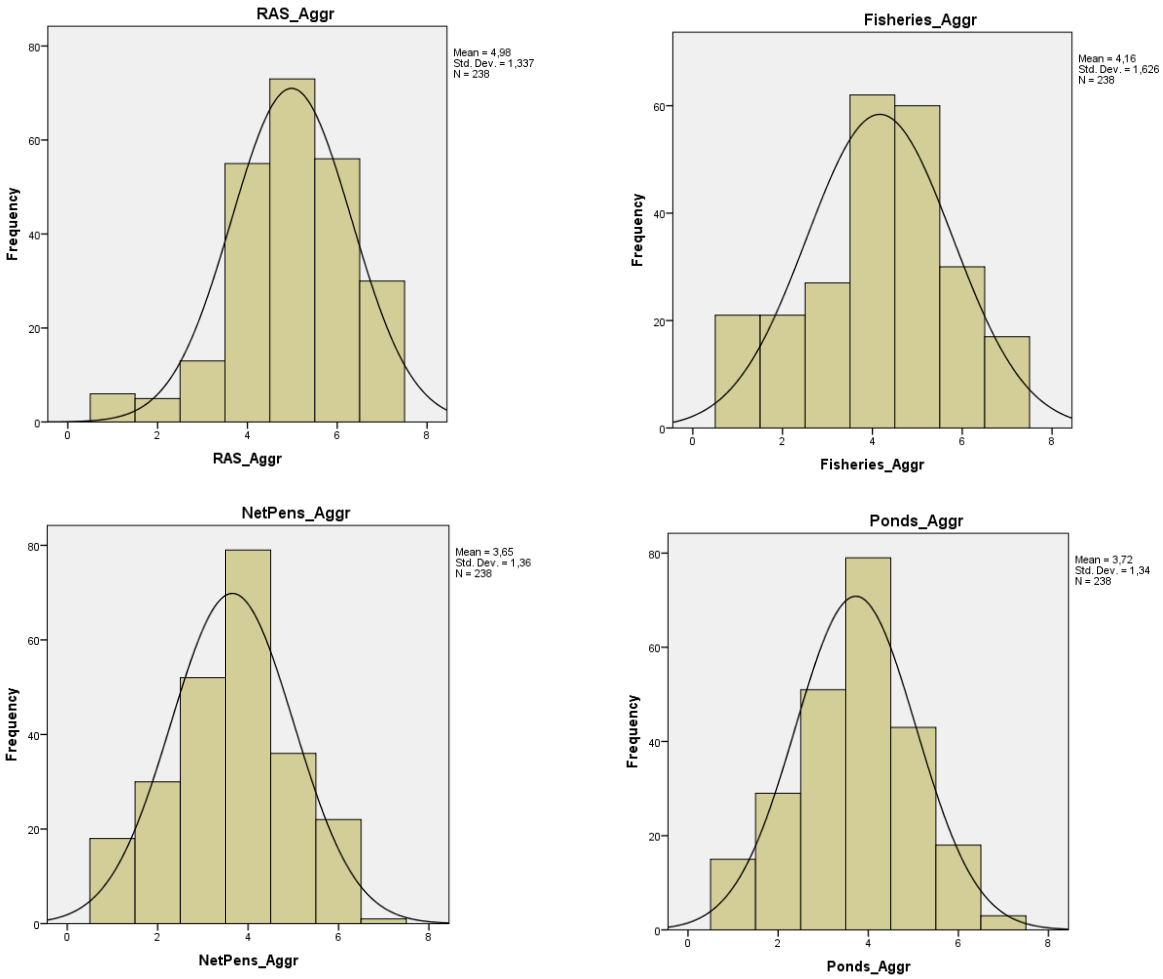


Figure 21: Answer Distributions, Aggregate Evaluation: Fisheries, Near Coastal, Earth Ponds and RAS Compared:

Figure 21 provides a visualization of the distributions of each of the four production methods. RAS-production has a relatively normal distribution which is centered to the right of neutral value of 4. Only few of the participants have indicated negative values to RAS on this item suggesting RAS' superior performance across the three presented parameters. When looking at fisheries, the respondents have answered more evenly across the potential performance indicators. A

considerable proportion of the respondents have indicated negative performance of either '-1' or -2'. Near-coastal production and earth pond production have almost identical distributions, with a large proportion of the respondents indicating an indifferent attitude towards the performance of the production types. Both of these production types are slightly skewed to the left, indicating a negative evaluation.

In order to make sure that the three parameter measures really represent the opinion stated in the aggregate measure, and thus that the answers were not simply submitted arbitrarily, a regression analysis is performed (Table 8). The desired outcome of this analysis is that the three parameters explain a substantial proportion of the variability seen in the aggregate measure and that the relation between each of the parameter measures are significantly related to the aggregate indicator. The R square indicates that the three parameter measures explain ,732 of the variability in the dependent variable 'RAS aggregate'. Thus, a relatively large proportion of the variability in the aggregate measure is explained. Moreover, the ANOVA showed significance (,000).

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	T	Sig.
(Constant)	,465	,191		2,439	,015
RAS Health	,298	,049	,307	6,070	,000
RAS Sustainabilit	,247	,046	,264	5,379	,000
RAS Welfare	,379	,033	,457	11,657	,000

a. Dependent Variable: RAS Aggregate

Table 8: Relationship Between RAS-Production Parameters and RAS Aggregate

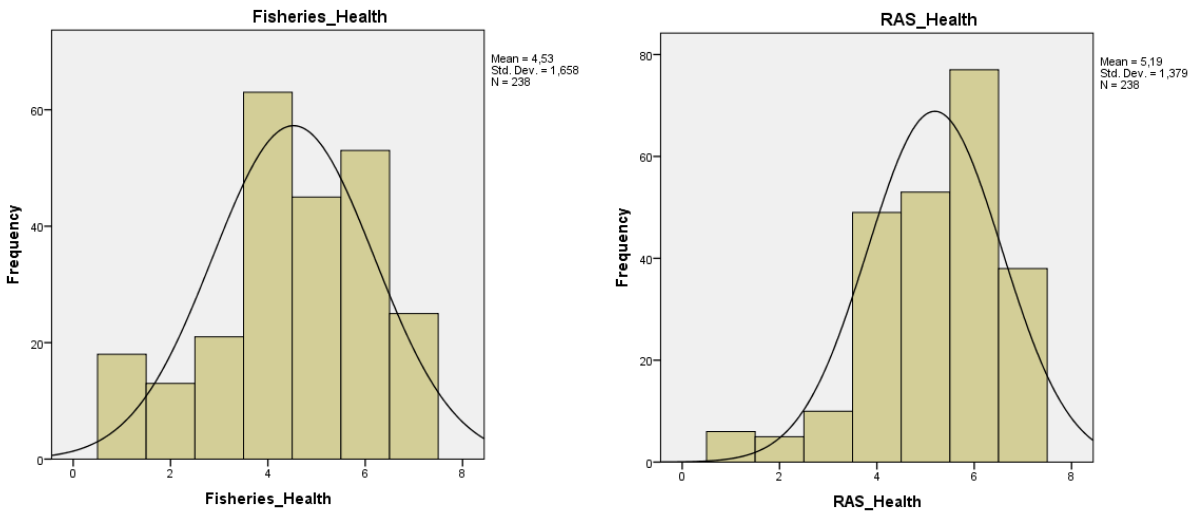
In aggregate - measured on the three dimensions included in the survey - RAS is deemed most positively by the participants. However, as the previously established model proposes, not all the three measured parameters are deemed equally important. Healthiness was the only parameter that showed a considerable relation to purchase intention and thus it would be useful to know how RAS performs on this parameter alone, relative to the other production forms. Seeing that the aggregate valuation can be expected to entail this importance weight, I will still include this analysis to make sure that RAS really is performing best on the parameter.

Table 9 shows the means, standard deviations and variances of fisheries, near coastal production, earth pond production and RAS respectively. A closer look at the means shows that RAS is deemed most positively, followed by fisheries. Near coastal production has a slightly higher mean than earth pond production, but the two seem to be relatively close, as was the case when measured aggregately. The standard deviation and variances indicate that near coastal production, earth pond production and RAS production have similar assessments. Fisheries, on the other hand, show more variance, indicating that the respondents have mixed thoughts on the health of the fish stemming from this production form.

	Fisheries_Health	NetPens_Health	Ponds_Health	RAS_Health
N	238	238	238	238
Mean	4,53	3,96	3,84	5,19
Std. Deviation	1,658	1,380	1,378	1,379
Variance	2,748	1,905	1,898	1,901

Table 9: Fisheries, Near Coastal, Earth Ponds and RAS: Health Parameter Compared

An illustration of the above characteristics is seen in Figure 22, which depicts the distributions on the parameter 'health' for the four production types. Similar to the distributions of the aggregate item, RAS only has a small number of negative scores, whereas fisheries have a higher number of negative scores. Fisheries peak with neutral scores, where RAS has a peak point of positive scores. Near coastal production and earth pond production show very similar distributions, as in the case in the aggregate evaluation.



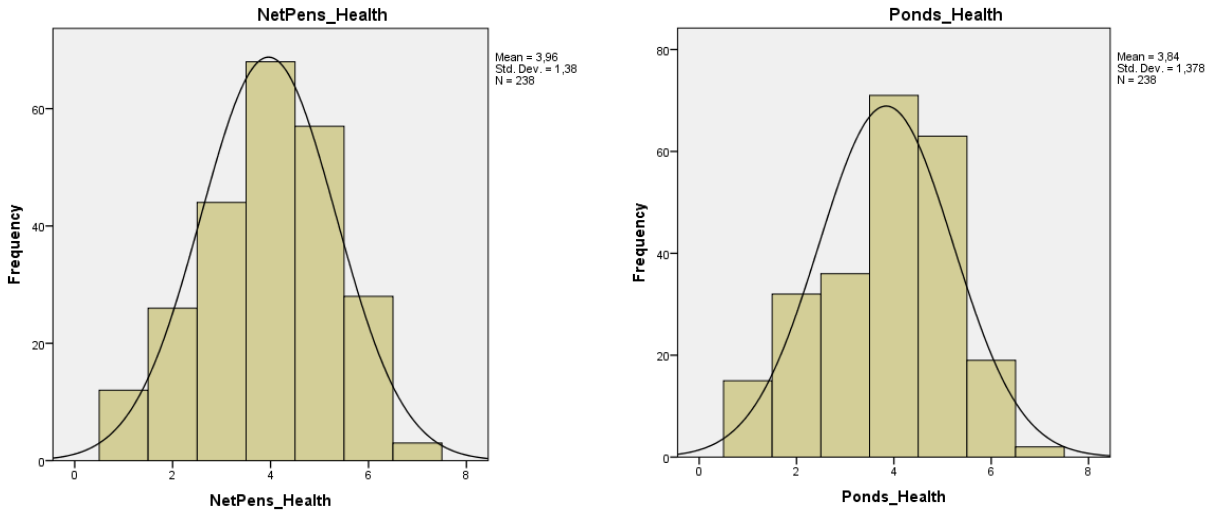


Figure 22: Fisheries, RAS, Near Coastal and Earth Ponds: Health Distributions

In conclusion, at a point of full information transparency, RAS is deemed more positively than the other production types. This is the case both aggregately, as well as on the parameter deemed most important by the participants; healthiness. Thus, hypothesis 8 is supported by the data.

Hypothesis 9: Willingness-to-Pay

In hypothesis 9 it was stated that the inclined actors were expected to show a considerable WTP for RAS-produced fish. However, this WTP is expected to steeply decline at a price level exceeding 50 percent relative to the average market price.

Figure 23 shows the proportion of respondents who are willing to pay for the proposed product at various price points. The price point 34,95 mirrors the average price in the market for a packing of salmon. 43,95 indicates a price premium of 25% from the average, 52,95 a price premium of 50% and 69,95 a 100% percent price premium. According to the data, approximately 80 percent of the respondents indicate that it is ‘somewhat likely’, ‘likely’ or ‘very likely’ that they would chose the proposed product at the average market price. At a price premium of 25% the WTP drops from 80 percent to approximately 55 percent. At this point there is still a considerable proportion of the respondents who indicate a WTP.

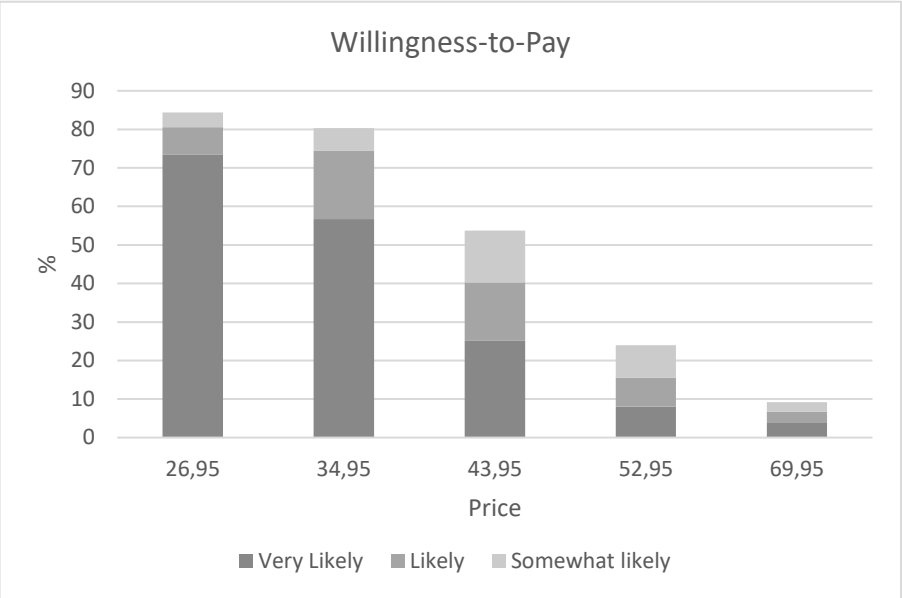


Figure 23: WTP at Different Price Points

However, it becomes apparent that especially the proportion of respondents who stated that it is very likely that they would purchase the product has decreased. The WTP here seems to have regressed towards a neutral point. At a 50% percent premium, the WTP further more than halves. At this point approximately 25 percent of the respondents have indicated that they are 'somewhat likely', 'likely' or 'very likely' to pay for the proposed product. Finally, at a 100% price premium a little less than 10 percent of the respondents indicate a WTP. When considering the proportion of Danish consumers who buy ecological food or are inclined to do so at a premium price, this is a deemed a considerable proportion. However, the hypothesis that the WTP would drop considerably from the 50% to the 100% price premium is supported, as this is the largest drop percentage-wise between the different price points. In fact, the change in WTP can already be said to be considerable from the 25% to 50% price increase with a 50 percent decrease in the proportion of respondents who are willing to pay.

Hypothesis 10: Knowledge and WTP

A priori it was hypothesized that an increase in knowledge level regarding the different production types would result in an increased WTP for RAS-produced fish. As can be seen in Figure 24, the data supports this hypothesis. The WTP has increased at all the proposed price points.

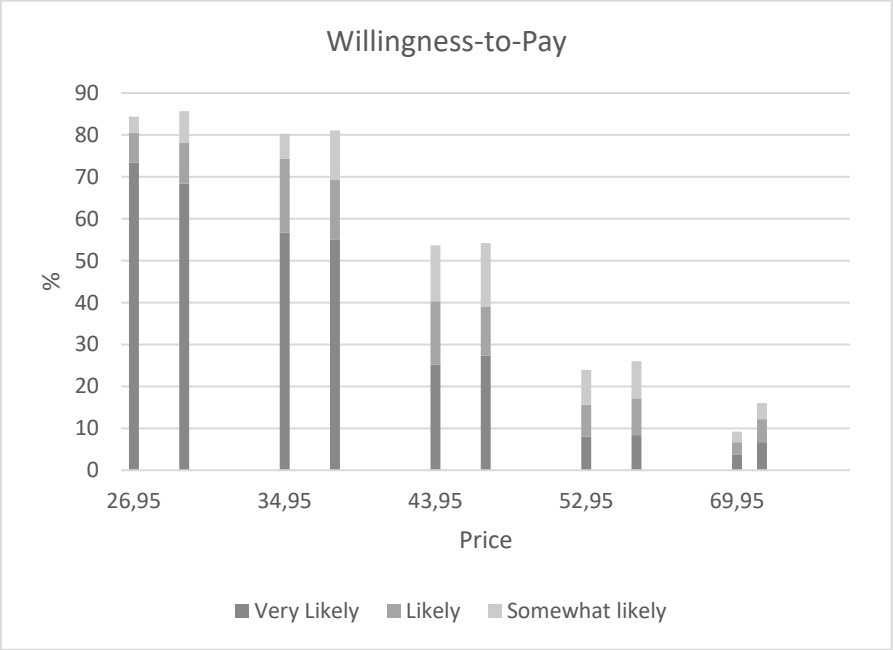


Figure 24: WTP at Limited and Full Information Level

At the first three price points, which represent -25% from the average market price, the average market price and a 25% price premium from the market average, the WTP is marginally higher. More interestingly, the WTP at a 50% and 100% price premium has increased. As mentioned earlier, the increased production costs associated with producing RAS-fish makes a considerable price premium crucial for the viability of such a venture. The WTP a price premium of 50% has increased with 8 percent and at a 100% price premium the WTP has increased 73 percent. Furthermore, and maybe more importantly, the increase in the latter category mainly consists of respondents who have noted 'likely' or 'very likely' when asked of their WTP. It can be concluded, that an increase in knowledge level has a very positive impact on the respondents' WTP a considerable price premium. Thus, hypothesis 10 is supported.

Discussion

The current research seeks to answer the problem statement and the supporting research questions defined in a previous section:

Which factors should be considered in formulating a marketing strategy for a newly established RAS-based fish producing company in Denmark?

a) What is the nature of consumers' intention to purchase RAS-fish in Denmark?

b) How is RAS-fish perceived by consumers when compared to traditional aquaculture production and fisheries?

c) What factors influence the prices that Danish consumers are willing to pay for RAS-fish?

d) How should RAS-fish be branded in Denmark?

e) How will the Danish consumer knowledge help the company export its products to neighboring countries?

Marketing activities have different underlying objectives and desired outcomes. In the current research, one of the main objectives is to establish an understanding of the intention to purchase the product, which Skagen Aquaculture will produce in the future. Just as importantly, an objective is to dissect the attitude that the inclined actors have towards the product based on its attributes. This will allow the marketing department to market the products in an effective manner towards these inclined actors. Furthermore, an experiment was conducted, where the participants were exposed to an amount of information about the RAS production method relative to the conventional production methods. This experiment was conducted to assess the desirability of actively informing the potential customers about the production characteristics of RAS. Feucht and Zander's (2015) study, in which RAS was compared to other conventional production types, and they found that RAS was deemed least favorable by the participants. Given these results, it would not have been desirable to market the products by the production characteristics directly. Rather it would make sense to simply differentiate the products based on the positive attributes associated with the products. This could be the attributes related to healthiness or simply one or

more sustainability attributes presented in a more discrete manner. The current study reaches a different conclusion than Feucht and Zander and therefore the differentiation possibilities can be deemed greater and more flexible. The data indicates direct positive effects of presenting RAS in comparison to the various conventional production characteristics. Most importantly, the fact that a high knowledge level seems to result in a higher WTP supports the notion of fully or partly marketing the product transparently. Seeing that the immediate awareness of a need for a product that has the characteristics of RAS-produced fish, was not significant it would make sense to problematize the characteristics of the conventional production facilities to consumers.

A valuable insight for Skagen Aquaculture would be to understand the characteristics of the inclined actors both pre and post information transparency. The inclined actors are defined as the respondents who have indicated an intention to purchase RAS-produced fish at a 50-100% price premium. It was hypothesized that the purchase intention prior to the point at which the additional information was given will mirror the purchase intention when the product is simply encountered in the supermarket without any further marketing efforts associated. It should be emphasized that this is a simplified assumption. In a supermarket setting consumers would most likely not know the full attribute bundle of the proposed product due to heuristics. Moreover, the product will be part of a larger assortment of substituting products, thus further lessening the likelihood of a full attribute recognition. But given the aforementioned assumption as a prerequisite, a two-part analysis should be conducted. The first, in which the characteristics of the inclined actors are stated, and a subsequent, in which the characteristics of the inclined actors post information transparency are described. This will have a number of implications. First, by knowing the characteristics of the inclined actors at a point at which the information transparency is limited, Skagen Aquaculture will be able to tailor its product presentation most efficiently in the supermarkets. Moreover, the company will have a broad idea of the quantities it will be able to sell without supporting marketing efforts. Comparing the inclined actors before and after full information transparency, the company will be able to make estimations of the return on investment of launching promotional campaigns.

Table 10 is a comparison of the characteristics of the full sample and the inclined actors before and after the point of full information transparency. In brief, the inclined actors before the point

of information transparency are predominantly women and older consumer than the average respondent.

	Full sample	*Inclined actors pre IT**	*Inclined actors post IT**
Gender			
Male	44,1%	37,9%	36,4%
Female	55,9%	62,1%	63,6%
Age			
17-24	24,4%	6,9%	18,2%
25-39	35,7%	34,5%	31,8%
40-54	23,5%	31,0%	25,8%
55-69	13,0%	20,7%	21,2%
70+	3,4%	6,9%	3,0%
Marital status			
Single	27,3%	24,1%	31,8%
In a relationship	39,5%	32,8%	30,3%
Married	31,9%	41,4%	36,4%
Widowed	1,3%	1,7%	1,5%
Household composition			
1 person	25,6%	15,5%	24,2%
2 persons	42,9%	44,8%	40,9%
3 persons	13,0%	17,2%	13,6%
4 persons	15,1%	20,7%	21,2%
5 persons	3,4%	1,7%	
Children in household			
No children	66,4%	55,2%	62,1%
1 child	12,6%	17,2%	13,6%
2 children	18,1%	25,9%	22,7%
3 children	2,9%	1,7%	1,5%
Educational level			
State school	2,9%	3,4%	4,5%
Upper secondary	21,4%	13,8%	15,2%
Technical/vocational	17,2%	25,9%	25,8%
Bachelor's degree	34,0%	24,1%	27,3%
Master's degree	20,6%	25,9%	22,7%
Ph.d.	3,8%	6,9%	4,5%
Occupation			
Employed	55,0%	70,7%	63,6%
Self-employed	3,4%	3,4%	3,0%
Unemployed	6,3%	3,4%	4,5%
Student	27,3%	10,3%	21,2%
Retiree	6,3%	12,1%	7,6%
Household income			
> 10.000	15,5%	5,2%	12,7%
10.000-29.999	39,1%	34,5%	34,8%
30.000-49.999	28,2%	36,2%	28,8%
50.000-70.000	10,1%	13,8%	15,2%
< 70.000	6,7%	10,3%	9,1%

Table 10: Full segment and Inclined Actors; Pre and Post IT Compared.

*Information Transparency

More specifically, the respondents are relatively likely to be between 25 and 54 years of age. They are less likely to be in a non-marriage relationship than the average respondents and are more likely to be married. Furthermore, they are more likely to live in a household with two, three or four household members and less likely to be single. As a natural consequence hereof, the respondents in this segment are more likely to have one or two children than is seen on average. This segment has an overrepresentation of participants with a technical or vocational education, are underrepresented by bachelor's degree holders and slightly overrepresented by master's degree holders. Furthermore, the participants in this segment are considerably more likely to be employed than the average respondent, and considerably less likely to be a student. The segment moreover has twice the amount of retirees compared to the full sample. Finally, the average monthly disposable household incomes of the respondents' households are above average. The profile of the average respondent who have indicated a WTP in this category indicates that the WTP could result in the decision to purchase RAS-produced fish. The respondents generally share a number of demographic characteristics with the average organic consumer in Denmark (Rasmussen and Lundø, 2016).

The segment of respondents who indicated a WTP a 50-100% price premium post information transparency has slightly different characteristics. As previously mentioned, the number of inclined actors has increased as an effect of the increase in knowledge. More specifically, the number of inclined actors increased by nearly 14 percent. This segment is still predominately women, but the average age has decreased. The percentage-wise proportion of respondents in a relationship has also decreased and the percentage-wise number of single respondents has equivalently increased. The household composition has changed towards more one-person households with no children. The percentage-wise proportion of respondents who have a state school education, an upper secondary, or a bachelor's degree as their highest completed educational level has increased and concurrently the percentage-wise proportion of master's degree holders has decreased. The percentage-wise proportion of retirees and employed respondents has decreased and the proportion of students has increased equivalently. Finally, the proportion of respondents in the middle household income category has decreased in percentages, and the proportion of respondents in the lowest income category has increased. The proportion of respondents in the highest income category has slightly decreased and the

percentage-wise proportion in the second highest income group has increased slightly. It becomes immediately apparent that the influx in this category is caused predominantly by students. This indicates that this group of respondents are most likely to be positively influenced by the increased level of knowledge. The downside of this development is that these respondents have considerably lower incomes than the average respondent in the pre-information segment. Whether this stated WTP would actually result in purchases is questionable. This does not mean that these results should be dismissed altogether. Although these respondents are currently relatively unlikely to fit such purchases into their budgets, this is still considered a group of respondents in transition. The transition from students towards employment might indicate a likelihood that these respondents would indeed purchase the proposed product in the near future. A cross-tabulation between educational level and occupation when segmenting only the inclined actors post information did show that the majority of the influx of new respondents have indicated either bachelor's degree or master's degree as their highest achieved educational level. This means that these respondents will hold master's degrees and Ph.Ds. at some point in the near future, making it more likely that they will actually perform the behavior. The indicated WTP is still deemed hypothetical for these consumers, but at least more realistic than if the respondents were mostly enrolled in an upper secondary education.

In the above review I implicitly establish the notion that the second segment is an expansion of the first – an expansion which predominantly consisted of an influx of students. However, when only looking at the percentages of the two segments it is not possible to establish an understanding of the migration of respondent, which occurred. This is a desired insight as it will indicate the characteristics of the inclined actors who responded positively and negatively to the information transparency. If the respondents who reacted positively and negatively respectively have common denominators in terms of demographic characteristics, this would provide the marketing department of Skagen Aquaculture with an insight into which consumer segments should be treated with extensive information in the promotional activities and who should not.

The exclusion of all cases that are not present in *both* the pre information and post information inclined actor segment results in 45 eligible cases. This means that 45 respondents were inclined to pay a premium price both prior to and after the full information level was established. The first segment of inclined actors consists of 58 cases and the second segment of 66 cases. This means

that 13 respondents have left the first inclined actors segment after the point of information transparency, whereas 21 new respondents entered the segment at this point. In percentages this is a 22 percent decrease of the originally inclined actors and a 36 percent increase. Unfortunately, the total sample size is relatively small and thus the case counts in this sub-segment is small. This, means that it is not possible to perform the desired statistical tests, which would enable an establishment of valid relationships between various variables and purchase intention. A closer look at the demographics did not show any characteristics that might be associated to the decrease in WTP. Moreover, the attitude towards RAS post information transparency was not more negative nor positive in comparison to the other production types. I was only able to find one relevant indicator, which separates the group of respondents who left the group of inclined actors from the one that did not. 44,7 percent of the respondents who are inclined actors in both groups noted that they purchase organic fish 'every once in a while' or more often. In the group of respondents who left this group, 70 percent noted that they purchase organic seafood every once in a while or more often. This proportion reflects a vast overrepresentation in organic fish consumption in relation to the average respondent and a considerable positive difference from the inclined actors. Thus, it could be hypothesized that a part of these respondents simply changed their WTP because they do not perceive RAS-production to entail the characteristics, which they relate to organic production.

The group of respondents who reacted positively to the informative fact sheet share several characteristics. 76 percent of these respondents are women. This is a valuable insight when drawing the profile of the demographic group most likely to respond positively to promotional activities. The smallest proportion of these respondents are between 40 and 54 (14,3 percent), whereas the age groups 17-24, 25-39 and 55-70 each account for 28,6 percent. Singles and people in a relationship accounts for 38,1 percent each and 19 percent are married. Most of the respondents live in 1-person- 2-person or 4-person household (33,3; 33,3 and 23,8 percent respectively). The majority of the respondents have either no children (61,9 percent), 1 child (14,3 percent) or 2 children (19 percent) living in the household. This segment has an overrepresentation of people who have shorter educations. 14,3 percent have noted state school, as their highest achieved educational degree, 23,8 percent have noted upper secondary school and 33,3 percent have noted technical college or vocational education. The remaining 28,6

percent consists of bachelor's degree or master's degree holders. A cross-tabulation between education and occupation shows that most of the respondents who have noted one of the three lowest educational levels are employed, thus these are not currently working towards are higher educational level. 52,4 percent are employed, and 33,3 percent are students. All these students except one have noted a monthly disposable household income below 10.000kr, whereas the employed respondents have noted an income of either 10.000-29.999kr (14,3 percent), 30.000-49.999kr (23,8 percent) or 50.000-70.000kr (14,3).

In conclusion, the participants most likely to react positively to informative inputs are relatively young females, living in 1- or 2-person households. Moreover, they are likely to have no children and to have a shorter education and be either employed or students. Finally, they are likely to represent lower to medium income households.

A comparison of all of the variables included in the pre-information did not show any significant differences in attitude between the inclined actors who are present both pre and post information, and the ones who only indicated a WTP a 50-100% price premium after information transparency. The inclined actors who are present both before and after information transparency are more likely to consume fish more than once a week (20 percent) compared to the other segment of inclined actors (9,5). However, the post information only inclined actors are more likely to consume fish once a week (38,1 percent) or twice a month (23,8 percent) when compared to the other group (35 percent and 17,8 percent respectively). In the variables measured in the second section, however, the post information only inclined actors separate themselves from the pre and post inclined actors. When looking at the aggregate scores associated with the different production methods, the scores indicated by post information inclined actors are generally lower than those indicated by the other group.

	Fisheries Aggregate	NetPens Aggregate	Ponds Aggregate	RAS Aggregate
Mean	4,14 (4,88)	3,00 (3,15)	3,71 (3,46)	5,10 (5,63)
Std. Deviation	1,931	1,517	1,271	1,700
Variance	3,729	2,300	1,614	2,890

Table 11: Comparison of Production Method: Aggregate Evaluation

Table 11 shows this trend. What is also interesting is the fact that earth pond production is actually perceived relatively more positively by this group than the pre- and post-information inclined actors. These trends are present in all the variables; perceived healthiness of products, sustainability of production and animal welfare associated to the production types. This could mirror a general skepticism at the point of information transparency. However, a skepticism that for some reason results in a higher WTP for RAS-produced fish. The fact that no specific variable seems to be decisive for this trend means that the promotion of RAS-produced fish will be hard to conduct effectively to these consumers. Had one single production characteristic been assessed significantly differently by this group of participants, then this attribute could have been used in the promotional efforts. Further research could be conducted with the focal point of trying to generalize the assumption of the existence of such a group of consumers, who react positively to information and moreover try to further dissect the reasons for such a trend.

The findings from the previous section have different implications for Skagen Aquaculture's future marketing initiatives. The segments of consumers described above that react positively to the charactistics should, of course, be targeted primarily. The management of Skagen Aquaculture should plan a thorough plan of how to reach these consumers most efficiently. Seeing that the consumers that reacted most positively to these attributes are women, and especially young women, the company should carry out marketing campaigns where the RAS platform is described. An important factor at this early stage of the existence of the product category will be to raise awareness, and therefore informative campaigns could be initiated in media that communicates to the above segments. This could include both online media as well as printed media and the goal should be to highlight, especially, the positive health implications of RAS-produced fish. I will not go further into the most suited marketing channels for RAS-producers here. Having raised awareness, the next issue will be to provide the consumers with cues enabling them to retrieve the benefits of RAS in the purchasing situation. I propose that Skagen Aquaculture and other RAS producers could design one or more symbols that are used in the marketing campaigns and which are also present on the packaging of their products. The development of certification schemes that illustrate the health benefits could be an effective way to achieve the desired link.

Internationalization of Skagen Aquaculture

The output that Skagen Aquaculture will produce is relatively large compared to conventional aquaculture facilities. The system will have a yearly output approximately equivalent to the current total organic fish production in Denmark (Dansk Akvakultur, 2015). In spite of the fact that RAS-produced fish will not be able to achieve the label 'organic', this is still the market that the company will compete in. 90 percent of the organically produced fish from Denmark is exported and this indicates that Skagen Aquaculture will have an international outlook even at this early stage (Miljø- og Fødevarestyrelsen, 2014). For obvious reasons, the company strategizes to maximize the proportion of its output, which it is able to sell in the domestic market. This strategy entails lower distribution costs and is in line with the overall business strategy to minimize the negative environmental footprint. This being said, it is not necessarily realistic to sell the entire output at a premium price in the Danish market. Thus, the company needs to establish an understanding of the foreign markets that show the biggest potential. The European Union organization EUMOFA (European Market Observatory for Fisheries and Aquaculture Products) has named the five biggest markets in the European Union, in terms of organic aquaculture products (EUMOFA, 2015). Figure 25 shows these countries and their yearly consumptions.

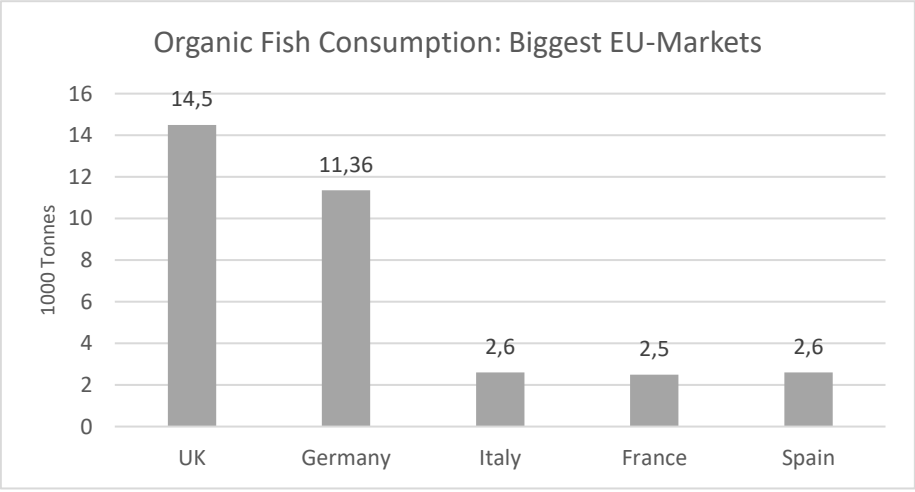


Figure 25: Biggest Domestic EU-Markets for Organic Fish
(EUMOFA, 2015)

The United Kingdom and Germany represent the biggest markets, with a 14,5 and 11,36 tonnes consumption respectively. Spain (2,6), Italy (2,6) and France (2,5) have an aggregate yearly consumption of 7,7 tonnes. EUMOFA, moreover mentions the development in this consumption from 2013-2014. The percentage-wise development in the United Kingdom and Germany was 4, 24 and 14 percent respectively. These are promising indicators for Skagen Aquaculture, outlining a number of expansive potential market. The demand for organically produced fish in the EU is of such a proportion, that the domestic producers are not able to meet it. EUMOFA (2015) describes the imports from non-EU-producers as being 'significant'. There seems to be potential market shares for Skagen Aquaculture to compete for. However, the company needs to acquire insights into the attitudes towards its products when compared to conventional and organic production in order to assess, whether it is able to compete in this market altogether. The current research suggests that a relationship exists between organic food consumption and a positive attitude towards RAS-produced fish. The question then remains whether or not this trend is generalizable in other markets, or if the trend is market specific to the Danish market.

One of the overriding dogmas, from which Skagen Aquaculture will operate, is that of 'market orientation'. Kohli and Jaworski (1990) define market orientation as: *'...the organizationwide generation of market intelligence pertaining to current and future customer needs, dissemination of the intelligence across departments, and organizationwide responsiveness to it.'* In this view the customer is placed at the focal point and the operations undertaken by a given company – on all levels of the business – must be done in order to ultimately satisfy the customer needs most efficiently. Moreover, the focal company should seek to gather competitor intelligence as well, in order to be able to form strategies not only based on customer needs but also relative to the behavior of the competitors. Cano et al. (2004) have conducted a meta-study investigating the implications of company market orientation. These authors corroborate the notion of a relationship between the degree of market orientation and business performance. This study included cases from 23 different countries spanning five continents. Gellynck et al., (2012) made a study, in which European SMEs in the food industry were examined, measuring their degree of market orientation and marketing management capabilities. The study finds that a considerable proportion of the participating businesses lack marketing management capabilities. Despite the fact that the companies indicated a relatively high degree of market orientation, a considerable

proportion of the companies lack the ability to plan and implement a marketing strategy. If this trend extends to the European seafood industry, Skagen Aquaculture could possibly gain a competitive advantage in the market by having an extensive market orientation, as well as by acquiring qualified personnel to transform this intelligence into operational strategies. The company strategizes to reach an output of between 5,000 and 10,000 metric tonnes of fish yearly. In a market, which is currently in a development stage, the possible achievable price premiums are still relatively unknown. Having such a large output, even small increases in the achievable price premium will have a sizeable positive economic consequence for the company. Thus, the investment in a capable marketing department might prove truly profitable for Skagen Aquaculture.

The above considerations mainly concern a developmental stage, at which Skagen Aquaculture has an output. At the current stage, where the company has just been established, one of the main objectives is to establish an understanding of the potential markets to engage its future operations in. At this point in time, the company needs to assess the attractiveness of different markets in order to narrow down the potential export markets. The most attractive markets will be the ones that suit the products, which the company will produce on a number of parameters. As aforementioned, the UK, Germany, Spain, Italy and France are the markets that consume the largest quantities of organic seafood in the European Union. These countries would seem to be the most attractive markets to study a priori. However, the question is whether these markets are as attractive in relation to RAS-produced fish. A number of parameters might affect the attractiveness of these markets. First, macro-indicators such as general fish consumption, organic fish consumption, disposable consumer incomes, general organic consumption etc. could prove to be indicators of market attractiveness. The latter was investigated in the current research to examine whether a positive correlation exists between general organic consumption and a positive attitude towards RAS-produced fish. Such a relationship was established and it would be interesting to gain further insights into the extent to which such a relationship is generalizable across national borders. If such a trend in fact is generalizable, the company would have a country attractiveness indicator, which does not require extensive research in the preliminary market screenings. When a few countries have been selected through the initial screening process, the company should conduct further research into the attractiveness of the individual markets. I

propose a two-step analysis. One should investigate the b-2-b attractiveness, where potential collaborators such as processors, distributors, retailers etc. are analyzed. This could be done through interviews in order to investigate the likeliness that the product would suit their assortments. Moreover, the perceived potential problems and opportunities should be assessed here. The second analysis should have a b-2-c-aspect, where the potential end-users are examined through qualitative and quantitative analyses. The model, which was established in the analysis in the current thesis, should form the basis of these investigations. I propose a process, in which the model and the investigative approach is subject to continuous iterations to establish a model that is internationally generalizable. This model should contain the predictors most likely to explain WTP in relation to RAS-produced fish. Such a model would enable Skagen Aquaculture to assess market attractiveness based on consumer attitude and moreover provide its marketing department with insights into how the product should be marketed locally.

The above analyses should have the character of longitudinal studies and should thus be repeated continuously. This will allow the company to detect changes in the environments and subsequently to strategize and act accordingly. When the company reaches a stage, where its products are marketed, this will enable Skagen Aquaculture to analyze the effects of various promotional efforts across different markets and to establish a best practice. Such a practice should be continuously measured and even questioned. Markets are changing entities and Skagen Aquaculture needs to be aware of the changing needs of their customers and to follow the behavior of its competitors. By doing so, the company will be qualified to make meaningful decisions and, hopefully as a result hereof, to perform better than their competitors.

Conclusion

The current research investigates the attitudes of Danish consumers towards RAS-produced fish. A sample of 238 respondents from the city of Aalborg are included in the research, which took part in either an online- or a physical questionnaire.

The research is divided into two general sections. First, the participants were shown a hypothetical RAS-product, on which different product-specific attributes were presented. These attributes are divided into three categories: healthiness, sustainability of production and animal welfare. Subsequently, the participants were introduced to information about the production characteristics related to fisheries, near coastal aquaculture, earth pond aquaculture and RAS.

Having been introduced to the hypothesized product, the attitude towards RAS-produced fish was widely positive - both measured in aggregate and on the product- and production specific parameters. The majority of the respondents indicated that it is either 'somewhat likely', 'likely' or 'very likely' that they would choose RAS-produced fish if it were available. The attributes relating to healthiness were generally deemed most positive when compared to the sustainability and animal welfare attributes. The fact that RAS-production minimizes the negative impact on the surrounding environment and ecosystems was also deemed particularly positively. At this point, the majority of the respondents evaluated RAS-production and products more positively on all of the aforementioned parameters in comparison to conventional production and products. The information transparency did not alter this positive evaluation by the participants. The four included production methods were evaluated on the above parameters and RAS was generally perceived to perform superiorly on all these parameters as well as in aggregate.

The establishment of a RAS-facility entails significant capital requirements and moreover the production costs are greater when compared to conventional fish production. Feasibility studies indicate that the viability of such a facility is attainable, however, a prerequisite for such viability is the possibility of achieving a premium price for the output. Thus, one of the main purposes of this thesis is to establish an understanding of the willingness to pay (WTP) for RAS-produced fish. The data indicates that a price premium is obtainable for RAS-produced fish. As would be expected,

the achievable price declines proportionally to the magnitude of the proposed price premium. More than half of the full sample of respondents indicate a WTP a 25% price premium. Approximately 25 percent of the sample indicates a WTP to pay a 50% premium and just less than 10 percent answered that they would be willing to pay a 100% price premium. The WTP was positively influenced by the level of full information transparency. Especially the WTP a 100% price premium was positively affected by a higher knowledge level. The proportion of respondents who indicated a willingness to pay a premium of this magnitude nearly doubled as a result of the fact sheets.

The health factors are generally deemed most positive out of the presented product-specific attributes. Thus, the absence of antibiotics, medicine and heavy metals could be emphasized in the branding of RAS-produced fish. If the proposed product is to be sold in supermarkets without any supporting marketing efforts, one or more of these attributes could be given an enhanced position on the product packaging. The current research suggests that a segment of consumers, who consume fish more frequently than the average consumer would react positively to these heuristics. These consumers are likely to be between 25 and 54 years of age, to be married and live in a household with one or two children. The consumers who reacted most positively, by an enhanced WTP, to the problematization of fish production had a few distinct characteristics. 76 percent of these respondents are women and more than half of these are between 17 and 39 years old. Approximately 76 percent of the respondents who reacted positively to the information transparency are either single or in a non-marital relationship. The majority of these respondents either live in 1-person or 2-person households with no children or one child living in the household. If the suggested insights are generalizable to the entire Danish population these insights would provide RAS-marketers with valuable information. This segment seems to be the one most responsive to a problematization of the conventional production methods in relation to RAS-production, and react with an increased WTP.

The integrated model established in the analysis, based on the collected data, provides a framework with which the consumer attitude towards RAS-produced fish in the Danish market can be investigated on a larger scale. Moreover, this framework could be used in the investigation of potential export markets. Skagen Aquaculture will work from a market orientation paradigm,

which supports the notion that the organization should collect extensive information about its potential customers to be able to tailor its market offerings to suit the potential customers' needs most effectively. The needs of different consumer segments both nationally and internationally vary and thus the insights gained in one market might not be generalizable to other markets. Research suggests that the degree to which companies are market oriented will affect their performance positively. Moreover, it is suggested that companies in the European food industries are market oriented to some degree. Concurrently it is suggested that these companies lack the capabilities to transform their market information into operational marketing strategies. Seeing that one of the success parameters for Skagen Aquaculture is the ability to attain a price premium, the company should consider establishing a capable marketing department. This department should have as one of its main objectives to investigate potential markets extensively and based on these insights, formulate market-specific marketing strategies.

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Appendices

Appendix 1: Questionnaire

AALBORG UNIVERSITET

Kære deltager

Denne spørgeskemaundersøgelse er en del af arbejdet med mit speciale på Aalborg Universitet. Undersøgelsen omhandler et nyt fødevareprodukt, der vil blive introduceret til det danske marked. Mere specifikt er der tale om et nyt mærke af laks, og jeg er meget interesseret i at vide, hvad du synes om det. Det er vigtigt, at alle spørgsmål besvares efter bedste evne.

Som tak for din hjælp deltager du i lodtrækningen om enten to billetter til Fårup Sommerland, en middag for to personer på Søgaards Bryghus eller fire biografbilletter til Biocity Aalborg. For at deltage i lodtrækningen skal du blot notere din mailadresse eller dit telefonnummer sidst i spørgeskemaet. Alle spørgeskemaer vil blive makulerede efter brug og hverken mailadresser eller telefonnumre vil blive gemt, når undersøgelsen er færdig.

Et par generelle spørgsmål

Hvem er normalt ansvarlig for at planlægge måltiderne i din husstand?

Jeg planlægger normalt måltiderne i min husstand □

En anden fra min husstand planlæggerne normalt måltiderne □

Vi planlægger normalt måltiderne sammen i min husstand □

Vi planlægger normalt ikke måltiderne I min husstand, men beslutter os, mens vi er ude at handle □

Hvem er normalt ansvarlig for at handle ind i din husstand?

Jeg er normalt ansvarlig for at handle ind i min husstand □

En anden person er normalt ansvarlig for at handle ind i min husstand □

Vi handler normalt ind sammen i min husstand □

Hvor ofte spiser I normalt fisk i din husstand?

Mere end en gang om ugen □

Ca. en gang om ugen □

Ca. to gange om måneden □

Ca. en gang om måneden □

Ca. hver anden måned □

Et par gange om året □

Mindre end et par gange om året □

Hvad er din holdning til følgende udsagn?

' Jeg mener ikke, at sundheds-værdien og renheden af kød fra fisk i supermarkederne er optimal. '

Meget uenig			Neutral			Meget enig
☐	☐	☐	☐	☐	☐	☐

' Jeg mener ikke, at bæredygtigheden af fiske-produktionen er optimal. '

Meget uenig			Neutral			Meget enig
☐	☐	☐	☐	☐	☐	☐

' Jeg mener ikke, at dyrevelfærden i fiske-produktionen er optimal. '

Meget uenig			Neutral			Meget enig
☐	☐	☐	☐	☐	☐	☐

Hvor ofte køber du eller andre i din husstand følgende økologiske varer?

Økologiske æg

Aldrig			Indimellem			Hver gang
☐	☐	☐	☐	☐	☐	☐

Økologiske grøntsager eller frugt

Hver gang			Indimellem			Aldrig
☐	☐	☐	☐	☐	☐	☐

Økologisk oksekød, svinekød eller fjerkræ

Aldrig			Indimellem			Hver gang
☐	☐	☐	☐	☐	☐	☐

Økologisk fisk eller skaldyr

Aldrig			Indimellem			Hver gang
☐	☐	☐	☐	☐	☐	☐

Skagen Aquaculture: Laks

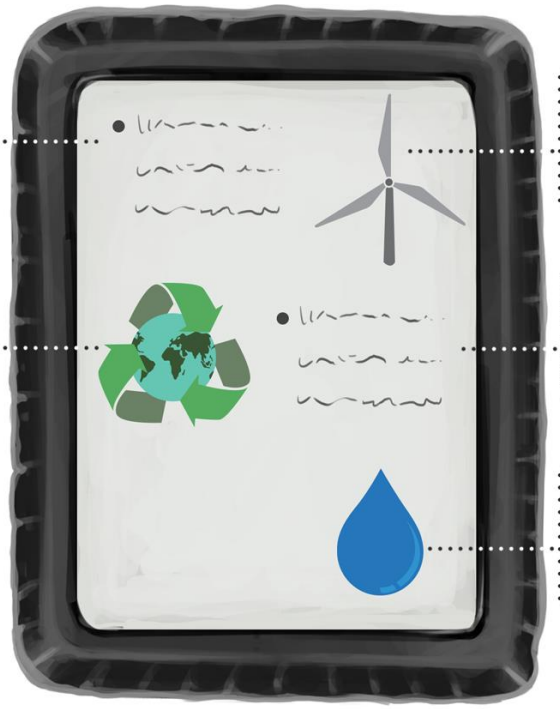
Denne fisk har ikke fået antibiotika

Denne fisk har ikke fået medicin

Denne fisk indeholder ingen tungmetaller

Smertefri og hurtig aflivningsmetode

Minimalt miljømæssigt aftryk



Al strømmen i produktionen stammer fra vindmøller

Ingen unødig stress forud for slagtning

100 gange mindre vandforbrug end ved konventionel produktion

Venligst angiv hvordan du vurderer de følgende aspekter ved det ovenstående produkt, samt hvor væsentlige aspekterne ville være for din lyst til at købe produktet.

Fisken er ikke behandlet med antibiotika

				Neutralt				
Meget negativt	☐	☐	☐	☐	☐	☐	☐	Meget positivt
Meget uvæsentligt	☐	☐	☐	☐	☐	☐	☐	Meget væsentligt

Fisken er ikke behandlet med medicin

				Neutralt				
Meget positivt	☐	☐	☐	☐	☐	☐	☐	Meget negativt
Meget væsentligt	☐	☐	☐	☐	☐	☐	☐	Meget uvæsentligt

Fisken indeholder ingen tungmetaller

				Neutralt				
Meget negativt	☐	☐	☐	☐	☐	☐	☐	Meget positivt
Meget uvæsentligt	☐	☐	☐	☐	☐	☐	☐	Meget væsentligt

Produktionen påvirker ikke omkringliggende miljø eller økosystem negativt

				Neutralt				
Meget negativt	☐	☐	☐	☐	☐	☐	☐	Meget positivt
Meget uvæsentligt	☐	☐	☐	☐	☐	☐	☐	Meget væsentligt

I produktionen er der kun anvendt energi, der stammer fra vindmøller

				Neutralt				
Meget negativt	☐	☐	☐	☐	☐	☐	☐	Meget positivt
Meget uvæsentligt	☐	☐	☐	☐	☐	☐	☐	Meget væsentligt

Vandforbruget i produktionen af denne fisk er op til 100 gange lavere end ved konventionel produktion

				Neutralt				
Meget negativt	☐	☐	☐	☐	☐	☐	☐	Meget positivt
Meget uvæsentligt	☐	☐	☐	☐	☐	☐	☐	Meget væsentligt

Fisken er aflivet ved en hurtig og smertefri metode

				Neutralt				
Meget negativt	□	□	□	□	□	□	□	Meget positivt
Meget uvæsentligt	□	□	□	□	□	□	□	Meget væsentligt

Fisken er ikke blevet udsat for stress forud for aflivningen

				Neutralt				
Meget negativt	□	□	□	□	□	□	□	Meget positivt
Meget uvæsentligt	□	□	□	□	□	□	□	Meget væsentligt

Hvordan forventer du, at dette produkt præsterer på følgende parametre, sammenlignet med den fisk du normalt køber?

Sundheds-værdi og renhed (fravær af antibiotika, medicin og tungmetaller)

Meget dårligere	Dårligere	Marginalt dårligere	Tilsvarende	Marginalt bedre	Bedre	Meget bedre
□	□	□	□	□	□	□

Produktion (minimal negativ miljøpåvirkning, bæredygtigt energi- og vandforbrug)

Meget bedre	Bedre	Marginalt bedre	Tilsvarende	Marginalt dårligere	Dårligere	Meget dårligere
□	□	□	□	□	□	□

Dyrevelfærd (aflivningsmetode, stresspåvirkning forud for aflivning)

Meget dårligere	Dårligere	Marginalt dårligere	Tilsvarende	Marginalt bedre	Bedre	Meget bedre
□	□	□	□	□	□	□

Hvis du skulle have laks til aftensmad, hvor sandsynligt er det da, at du ville vælge det ovenstående produkt frem for de øvrige produkter i supermarkedet?

Meget usandsynligt						**Meget sandsynligt**
□	□	□	□	□	□	□

Hvis jeg ser ovenstående produkt i køledisken, har jeg tænkt mig at købe det frem for de andre lakse-produkter.

Meget usandsynligt						Meget sandsynligt
□	□	□	□	□	□	□

Hvor sandsynligt er det, at du ville vælge ovenstående produkt ved de følgende priser?

Den gennemsnitlige pris for to stykker laks af samme vægt er 35,95kr., svingende fra 26,95kr. og 69,95 kr. I undersøgelser, hvor man undersøger forbrugeres villighed til at betale for et hypotetisk produkt, er det et udbredt problem, at deltagerne ubevidst udviser en lidt større villighed til at betale, end de egentlig er, når de skal beslutte sig i supermarkedet. Hav venligst dette i tankerne, når du vurderer nedenstående.

26,95 kr.					Neutral				
	Meget sandsynligt	□	□	□	□	□	□	□	Meget usandsynligt
34,95 kr.									
	Meget usandsynligt	□	□	□	□	□	□	□	Meget sandsynligt
43,95 kr.									
	Meget usandsynligt	□	□	□	□	□	□	□	Meget sandsynligt
52,95 kr.									
	Meget usandsynligt	□	□	□	□	□	□	□	Meget sandsynligt
69,95 kr.									
	Meget usandsynligt	□	□	□	□	□	□	□	Meget sandsynligt

I hvilken grad er du enig i de følgende udsagn?

(Og angiv herefter venligst, hvor vigtige udsagnene ville være for din beslutning om, hvorvidt du skulle købe produktet, du fik præsenteret tidligere, eller ej.)

' Min familie og mine venner ville finde det positivt, at jeg købte det ovenstående produkt frem for lignende produkter i køledisken. '

Helt uenig	□	□	□	□	□	□	□	Helt enig
Meget uvæsentligt	□	□	□	□	□	□	□	Meget væsentligt

‘ Min familie og mine venner ville forvente, at jeg købte ovenstående produkt, såfremt det var på markedet. ’

Helt enig	□	□	□	□	□	□	□	Helt uenig
Meget væsentligt	□	□	□	□	□	□	□	Meget uvæsentligt

’ Min familie og mine venner ville vurdere, at det ville være en naturlig del af min livsstil at købe det præsenterede produkt. ’

Helt uenig	□	□	□	□	□	□	□	Helt enig
Meget uvæsentligt	□	□	□	□	□	□	□	Meget væsentligt

‘ Det ville være forbundet med en positiv følelse af sundhed at købe det præsenterede produkt. ’

Helt uenig	□	□	□	□	□	□	□	Helt enig
Meget uvæsentligt	□	□	□	□	□	□	□	Meget væsentligt

’ Ovenstående produkt ville gøre mit indkøb af laks lettere, da jeg ville slippe for at skulle bekymre mig om, hvorvidt den fisk jeg skal spise indeholder usunde stoffer eller ej. ’

Helt uenig	□	□	□	□	□	□	□	Helt enig
Meget uvæsentligt	□	□	□	□	□	□	□	Meget væsentligt

’ Det ville være forbundet med en form for tryghed at købe det præsenterede produkt, da jeg ikke skulle bekymre mig om hvorvidt produktet indeholder usunde stoffer eller ej. ’

Helt uenig	□	□	□	□	□	□	□	Helt enig
Meget uvæsentligt	□	□	□	□	□	□	□	Meget væsentligt

’ Jeg ville overveje at købe det præsenterede produkt, for at kunne tilbyde min familie et sundt måltid. ’

Helt uenig	□	□	□	□	□	□	□	Helt enig
Meget uvæsentligt	□	□	□	□	□	□	□	Meget væsentligt

’ Hvis jeg fik venner på besøg, ville jeg overveje at købe det præsenterede produkt, for at kunne tilbyde dem et sundt måltid. ’

Helt enig	□	□	□	□	□	□	□	Helt uenig
Meget uvæsentligt	□	□	□	□	□	□	□	Meget væsentligt

' Jeg ville overveje at købe ovenstående produkt, hvis jeg skulle lave mad til mine egne, familiemedlemmers eller venners børn, for at kunne tilbyde dem et sundt måltid. '

Helt uenig	□	□	□	□	□	□	□	Helt enig
Meget uvæsentligt	□	□	□	□	□	□	□	Meget væsentligt

' Jeg ville overveje at købe det ovenstående produkt, da jeg forventer, at det medfører en mindre negativ miljømæssig belastning end de øvrige lakse-produkter i køledisken. '

Helt uenig	□	□	□	□	□	□	□	Helt enig
Meget uvæsentligt	□	□	□	□	□	□	□	Meget væsentligt

' Jeg ville overveje at købe det præsenterede produkt, da jeg mener, at det er vigtigt, at de dyr vi spiser ikke bliver udsat for unødige stresspåvirkninger eller smertefuld slagtning. '

Helt uenig	□	□	□	□	□	□	□	Helt enig
Meget uvæsentligt	□	□	□	□	□	□	□	Meget væsentligt

' Når jeg køber fisk I supermarkedet, kigger jeg kun på forsiden af produktet. '

Aldrig			Indimellem			Hver gang
□	□	□	□	□	□	□

' Når jeg køber fisk I supermarkedet kigger jeg på bade for- og bagside, for at få så mange informationer som muligt. '

Aldrig			Indimellem			Hver gang
□	□	□	□	□	□	□

' Når jeg køber fisk i supermarkedet, kigger jeg - foruden på udseendet af fisken - næsten udelukkende på certificeringsmærker, for at vælge det rigtige produkt. '

Aldrig			Indimellem			Hver gang
□	□	□	□	□	□	□

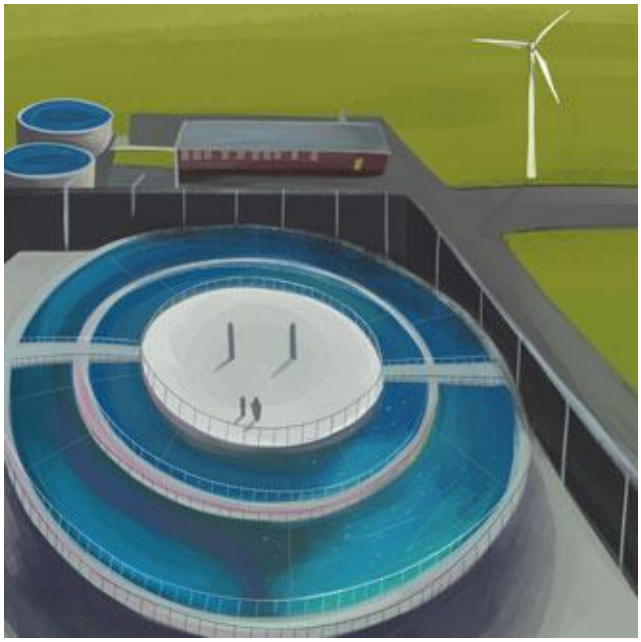
En smule information

Den fisk vi spiser, stammer hovedsageligt fra tre forskelligartede produktionsformer: Traditionelle fiskerier, kystnære net-bure, og landbaserede beton eller jordbaserede dambrug. Fisken du fik præsenteret tidligere stammer fra en ny type landbaserede anlæg, der kaldes CCLB-RAS.

Traditionelle fiskefartøjer fanger hovedsageligt fisk via net. Efter fiskene er blevet halet indenbords, bliver de lagt på is og dør ved kvælning. Cirka en tredjedel af fangsterne kasseres, da de enten ikke er de ønskede arter, eller fordi de ikke lever op til krav om mål. Størstedelen af disse er døde, når de smides overbord. Sundhedsstyrelsen anbefaler, at man begrænser sit indtag af visse større fiskearter fra Østersøen, da disse har et relativt højt indhold af tungmetaller og andre skadelige stoffer. Mindre fiskearter er der ikke nogen anbefalede begrænsninger på.

Net-bure er runde bure, der er fæstnet til havbunden i kystnære områder. Fiskene heri får normalt mindre mængder antibiotika og medicin, for at kunne overleve i naturen. En del af fiskenes ekskrementer, deres foder, samt antibiotika og medicin ryger ned på havbunden og udgør en negativ påvirkning på den omkringliggende natur. Herudover slipper fiskene med jævne mellemrum fri fra burene og ud i naturen. Her parrer de sig med den lokale bestand og udgør på andre måder en negativ påvirkning på de lokale økosystemer. 1-2 uger før slagtningen faster fiskene. Herefter suges fiskene op i et fartøj og transporteres til et forarbejdningsanlæg. Fiskene bliver normalt enten frosset og kvæles, eller får et elektrisk stød og bliver lammet med det samme.

Landbaserede dambrug består normalt enten af såkaldte beton-raceways eller vandhuller. Disse anlæg er enten recirkulerende, hvilket betyder, at vandet i produktionen renses og genbruges, eller gør brug af store mængder vand, der sendes gennem produktionscyklussen og sendes ud i naturen igen. I denne produktionsform ryger der en mængde antibiotika og nitrogen ud i det naturlige økosystem, hvilket medfører en negativ påvirkning på dette. Hvor stor en negativ påvirkning, der her er tale om varierer fra anlæg til anlæg. Fiskene fra denne produktionsform bliver halet op med net og bliver så slagtede. Antibiotika og medicin bliver normalt brugt, for at minimere dødeligheden af fiskene. Fiskene faster normalt i tre dage op til slagtning.



'I CCLB-RAS bliver fiskene opdrættet i betontanke indendørs. Vandet der bruges i produktionen hentes fra kystnære områder og bliver renset inden det når produktionscyklussen. Den indledende rensning betyder, at der ikke er brug for antibiotika og medicin i produktionen. Fisken er herudover garanteret fri for tungmetaller. Vandet i produktionsanlægget bliver løbende renset og sendt tilbage i naturen. Vandet der sendes ud i naturen renses stort set helt ned, og er derfor lige så rent, som da det blev hentet ind i produktionscyklussen. Inden aflivning bliver fisken ført ind i et mindre bassin, hvor den faster i 7 dage. Herefter bliver den aflivet via stød. Fiskene i denne produktionsform står tættere og har derfor mindre plads end ved de øvrige produktionsformer.

Hvordan vurderer du de forskellige produktionsformer på følgende parametre?

Fiskenes sundheds-værdi

(Venligst sæt en cirkel omkring, eller afkryds dit valg. +3 er yderst godt og -3 er yderst dårligt)

Traditionelle fiskerier

-3 -2 -1 0 +1 +2 +3

Kystnære net-bure

-3 -2 -1 0 +1 +2 +3

Traditionelle landbaserede dambrug

-3 -2 -1 0 +1 +2 +3

Indendørs recirkulerende anlæg (CCLB-RAS)

-3 -2 -1 0 +1 +2 +3

Bæredygtighed af produktionen

Traditionelle fiskerier

-3 -2 -1 0 +1 +2 +3

Kystnære net-bure

-3 -2 -1 0 +1 +2 +3

Traditionelle landbaserede dambrug

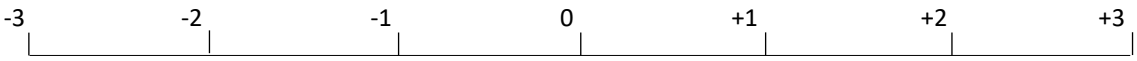
-3 -2 -1 0 +1 +2 +3

Indendørs recirkulerende anlæg (CCLB-RAS)

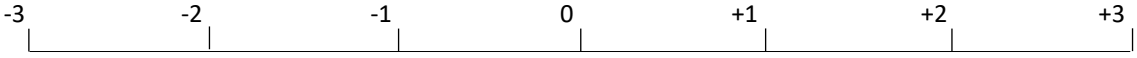
-3 -2 -1 0 +1 +2 +3

Dyrevelfærd

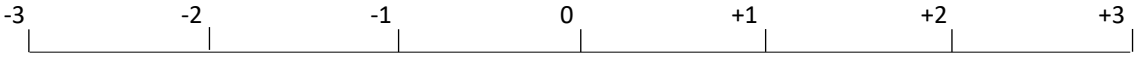
Traditionelle fiskerier



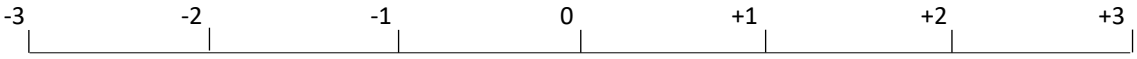
Kystnære net-bure



Traditionelle landbaserede dambrug

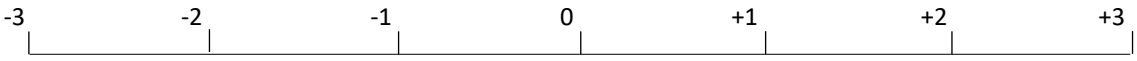


Indendørs recirkulerende anlæg (CCLB-RAS)

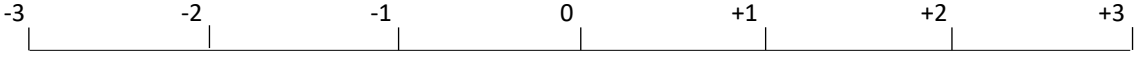


Samlet præstation på tværs af ovenstående parametre

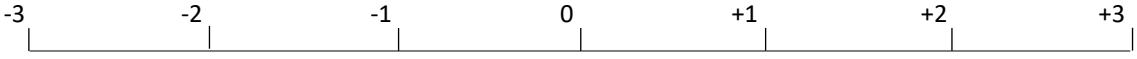
Traditionelle fiskerier



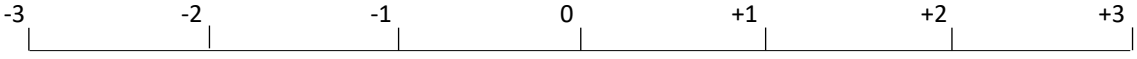
Kystnære net-bure



Traditionelle landbaserede dambrug



Indendørs recirkulerende anlæg (CCLB-RAS)



Hvis du skulle have laks til aftensmad, hvor sandsynligt er det da være, at du ville vælge det præsenterede produkt frem for de øvrige produkter i supermarkedet?

Meget usandsynligt						Meget sandsynligt
□	□	□	□	□	□	□

Næste gang jeg skal købe laks og jeg ser det præsenterede produkt i køledisken, har jeg tænkt mig at købe dette.

Meget usandsynligt						Meget sandsynligt
□	□	□	□	□	□	□

Hvor sandsynligt er det, at du ville vælge LLBC-RAS-laksen frem for de øvrige alternativer ved de følgende priser?

(Den gennemsnitlige pris for to stykker laks af samme vægt er 35,95kr., svingende fra 26,95kr. og 69,95 kr.)

26,95 kr.					Neutral			
	Meget sandsynligt	□	□	□	□	□	□	□	Meget usandsynligt
34,95 kr.								
	Meget usandsynligt	□	□	□	□	□	□	□	Meget sandsynligt
43,95 kr.								
	Meget usandsynligt	□	□	□	□	□	□	□	Meget sandsynligt
52,95 kr.								
	Meget usandsynligt	□	□	□	□	□	□	□	Meget sandsynligt
69,95 kr.								
	Meget usandsynligt	□	□	□	□	□	□	□	Meget sandsynligt

Tak fordi du deltog I min undersøgelse, det er en uvurderlig hjælp. Nu skal jeg blot bruge nogle få informationer om dig og så er undersøgelsen færdig.

Hvad er dit køn?

Mand □ Kvinde □

Hvad er din alder?

- 17-24 år gammel □
- 25-39 år gammel □
- 40-54 år gammel □
- 55-69 år gammel □
- 70 år eller ældre □

Hvad er din parforholdsstatus?

- Single □
- I et forhold □
- Gift □
- Enke □

Hvordan ser sammensætningen af din husstand ud?

- 1 Person □
- 2 Personer □
- 3 Personer □
- 4 Personer □
- 5 Personer □
- 6 Personer □
- 7+ Personer □

Hvor mange børn bor der i din husstand?

- Ingen børn □
- 1 barn □
- 2 børn □
- 3 børn □
- 4 børn □
- 5+ børn □

Hvad er dit højest bestående uddannelsesniveau?

Folkeskole til og med 9. eller 10. klasse	□
Gymnasie eller handelsskole	□
Teknisk skole eller erhvervsuddannelse	□
Bachelor	□
Kandidat	□
Ph.d. eller doktorgrad	□

Hvad er din beskæftigelsesstatus?

I beskæftigelse	□
Selvstændig	□
Arbejdsløs og jobsøgende	□
Hjemmegående	□
Studerende	□
Pensionist	□
Ikke i stand til at arbejde i øjeblikket	□

Hvad er den månedlige husstandsindkomst i din husstand efter skat?

Under 10.000 kr.	□
10.000-29.999 kr.	□
30.000-49.999 kr.	□
50.000-70.000 kr.	□
Over 70.000 kr.	□

Mange tak for dit bidrag. Hvis du ønsker at deltage i lodtrækningen om enten to billetter til Fårup Sommerland, middag for to på Søgaards Bryghus eller 4 biografbilletter, notér da venligst din mailadresse eller dit telefonnummer herunder. Der trækkes lod i starten af august måned 2016. Vinderen vil få direkte besked, og der vil blive sendt en mail til alle de deltagende herefter (såfremt det er en mail man har noteret).

Telefonnummer eller mailadresse _____