Fish Consumption and Attitudes towards Fish among Icelanders and Tourists:
Application of the Theory of Planned Behaviour

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Application of the Theory of Planned Behaviour.

30 ECTS final thesis to the completion of an M.Sc. degree in Marketing at the Faculty of Business at Reykjavík University.

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Abstract

Tourism in Iceland has increased rapidly in recent years and limited data has been collected about fish consumption of tourists in Iceland, and even of Icelanders themselves. This thesis investigates different components of fish consumption using the theory of planned behaviour as a conceptual model. Data was collected in Iceland by using an established questionnaire that was further adapted to the study. The sample consisted of 735 individuals, both Icelanders and tourists. Overall, participants had a positive attitude towards fish consumption and high behavioural intention to eat fish. Tourists had a more positive attitude and a higher behavioural intention than Icelanders. Regarding social norm, both groups found the opinions of their family, spouse, doctors and nutritionists the most important while making a fish choice. Opinions of advertisement, the food industry, and the government were considered unimportant by both groups. Regarding perceived behavioural control, availability, easiness to prepare, easiness of judging the quality, and making a good choice at purchase, were the three factors that participants, both Icelanders and tourists, found the most important while making a fish choice. Positive attitude towards eating fish, and high perceived behavioural control had a positive impact on the behavioural intention to eat fish. Subjective norm did not have a significant impact on behavioural intention. High behavioural intention to eat fish and high perceived behavioural control had a positive impact on fish consumption frequency. Results also indicated that higher age and the presence of children, had a positive impact on fish consumption frequency. These findings are important for the fishing industry in Iceland in terms of marketing and consumer behaviour, and the theory of planned behaviour adds a new perspective on previous research by highlighting different components of fish consumption. These results also provide information for the directorate of health and public policy regarding health in Iceland. Advertisers, restaurants, and distributers also benefit from this thesis since it has valuable information about the consumers’ preferences and behaviour.

Keywords: fish consumption, Iceland, attitude, theory of planned behaviour, tourism, marketing
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1. Introduction

1.1 Background

Fish consumption is a big part of Iceland’s history and culture, but up until the mid-19th century, most of the population worked as either fishermen or farmers (Jonsson, 1998). At that time, the Icelandic diet was very monotonous and mainly composed of fish and other animal products, such as red meat and dairy. These were the only foods available at that time period, since Iceland did not have the weather conditions or the necessary materials to grow a variety of fruit and vegetables. During the latter part of the 19th century, the Icelandic dietary habits changed tremendously. Grains and cereals became more available and they were inexpensive. Subsequently, fish and meat consumption decreased (Jonsson, 1998).

The directorate of health in Iceland recently conducted a large research among the Nordic countries where different aspects of health, such as food consumption and exercise, were studied (Hansen, 2017). Results showed that Icelanders consume larger amounts of sugary foods than people in the other Nordic countries, and they also consume the least amount of vegetables and fruit. Results also indicated an increase in unhealthy diets among Icelanders, but in 2011 around 19% of Icelanders had a diet that was considered unhealthy, but in 2014 the number had increased to 24%. However, Icelanders, both adults and children, consumed the most amount of fish out of all the Nordic countries. A recent study on fish consumption in Iceland showed that Icelanders ate fish two times a week on average, which is the recommended amount (Sveinsdóttir, Eyþórsdóttir, Einarsdóttir, & Martinsdóttir, 2011). However, this was not the case for all age groups. People aged 45 and older ate fish two times a week or more, but young people consumed less, and did not eat the recommended amount of two servings per week.

Iceland is a fishing nation, with a long history of fish consumption, and this decrease of fish consumption among young people is something that needs to be researched further. Fish is a healthy food, and is easily accessible in Iceland, so one would think that fish consumption would be more frequent. Some researchers have suggested that the decreasing fish consumption among young people in Iceland could stem from increased availability of fast food and ready meals, such as pizza, pasta, and other meat products (Sveinsdóttir, 2007). On average, attitude towards fish in Iceland is positive, especially among older people. However, a more negative attitude is found
among younger people between the ages of 18-24, but they are more likely to find fish to be smelly, bad tasting, and not worth the money (Sveinsdóttir et al., 2011). This trend towards a more negative attitude towards fish is not good for the Icelandic fishing industry, since a strong relationship has been found between attitudes and behaviour using the theory of planned behaviour (Ajzen, 1985).

The theory of planned behaviour is useful in a research of this kind since it helps to explain and define different determinants of attitude and behaviour. The basis of the theory is that attitude, subjective norm, and perceived behavioural control, all impact behaviour. These aspects will be researched in this thesis in relation to fish consumption in Iceland.

1.2. Justification

This thesis is conducted as part of a collaboration agreement between Fisheries Iceland and Reykjavík University. The thesis focuses on the consumption of Icelandic fish and studies aspects such as consumer ideas, attitudes, and behaviours related to Icelandic fish, using the theory of planned behaviour as a conceptual model. The overall aim of the study is to provide a comprehensive overview of consumer behaviour, mainly from a business to consumer perspective.

Since tourism in Iceland has been growing rapidly, and foreigners are a large part of the population, both Icelanders and foreigners take part in the study. Many of the previous studies on fish consumption in Iceland seem to focus on the frequency of fish consumption among Icelanders, but don’t seem to take the reasons behind the consumption into account. It is important to explore the reasons behind people’s behaviour to get an overall idea of why they behave in one way or another.

This thesis will have an impact on the Icelandic fishing industry by providing them with information about the consumers. Knowledge about fish consumers in Iceland is important for specific companies in the industry, such as restaurants, distributors, and fish processing companies. The outcome of the study can give an insight to why people have a positive or negative perception of fish, which types of fish they prefer, and how often they consume it. By knowing what the consumers prefer, the companies can tailor their marketing strategies towards their consumers, increase customer satisfaction, and become more profitable.
The directorate of health in Iceland and others researching health and fish consumption among Icelanders could also benefit from this study since it includes new information about fish consumption in Iceland.

Gathering data about the foreign fish consumers in Iceland is also valuable for the industry because their preferences can differ from Icelandic peoples’ preferences. There is a big marketing opportunity in targeting tourists because over one million people come to Iceland each year, and that number keeps increasing (World Travel & Tourism Council, 2017). The power of word of mouth can be huge, and if the tourists have a positive experience with Icelandic fish, the word will spread quickly and Icelandic fish could become more known across the globe.

The present study is one of the first in Iceland, to the authors’ knowledge, to apply the theory of planned behaviour to fish consumption, and one of the first to include tourists while researching fish consumption in Iceland. Based on the purpose of the study, the thesis aims to answer the following research questions:

*Do consumers in Iceland have a positive or negative attitude towards fish?*

*Do attitudes have an impact on fish consumption?*

*Do socio-demographic characteristics, such as age, influence fish consumption?*

*Do attitudes, subjective norm, and perceived behavioural control impact fish consumption?*

*Is there a difference between Icelanders and tourists regarding fish consumption behaviour?*

**1.3. Thesis Structure**

This thesis consists of six chapters; introduction, literature review, methodology, results, discussion, and conclusion. The introduction chapter goes over the background of fish consumption in Iceland and a justification for the thesis. The purpose and impact of the study are presented along with the research questions the thesis aims to answer. The literature review includes existing literature about fish consumption, distribution of fish in Iceland, tourism, and an explanation of the theory of planned behaviour and its different components. A description of the conceptual model and the hypothesis are also presented in the literature review chapter.
In the next chapter, methodology, a thorough description of each part of the methodology used in this study is given. This includes a description of the participants, procedure, measurements, research design, and data analysis. The fourth chapter contains the results, where the findings of the hypothesis are presented, and a comparison of the model between Icelanders and tourists. In the discussion chapter, the results are interpreted further and the main findings are discussed. The final chapter is the conclusion, where the limitations of the study are discussed and recommendations for future research are presented. References and appendixes follow.

2. Literature Review

This chapter contains a literature review that was conducted in a systematic manner, going through some key research (Ajzen, 1985; Fishbein & Ajzen, 1975; Verbeke & Vackier, 2005) that were found using EBSCO Host, Google Scholar, ProQuest, Science Direct, and Web of Science. Firstly, the health benefits and risks of consuming fish are presented because those aspects tend to affect attitude. To explain how the Icelandic fishing industry works, there is a chapter that explains the distribution of Icelandic fish. A chapter about the tourism in Iceland and the effects it has had on Icelandic economy is also presented since a big change has occurred in that industry in recent years. An overview of the theoretical frameworks this study is built on, the theory of reasoned action and the theory of planned behaviour, are also introduced. Lastly, a detailed explanation of the model used in this study is given, and the hypotheses are presented.

2.1. Fish Consumption and Physical Health

Most people consider fish to be a part of a healthy, balanced diet due to its high amount of protein, vitamins, and omega-3 fatty acids, and its small amount of saturated fats (Domingo, Bocio, Falcó, & Llobet, 2007; Sidhu, 2003). Multiple studies have been conducted in order to research the effects of fish consumption on various parts of human health. In particular, the relationship between fish consumption and coronary heart disease has been widely researched where most research indicate that fish consumption can lead to a lowered risk of coronary heart disease (de Deckere, 2001; Hu et al., 2002; Kris-Etherton, Harris, Appel, & Nutrition Committee, 2002; Lund, 2013; Norell, Ahlbom, Feychting, & Pedersen, 1986).
Other researchers have implied that eating fish can have other health benefits, such as weight control, and improved cognitive development in children (Lund, 2013).

Fish consumption has also been research in relation to sudden cardiac death. In an extensive longitudinal study, over 20,000 male physicians were researched in regards of their fish consumption and sudden death over the course of eleven years (Albert et al., 1998). Over the course of the study, there were 133 sudden deaths among the participants. Results showed that increased fish consumption was associated with lowered risk of sudden death when other variables, such as age and coronary risk factors, had been controlled for. Another research which used a similar longitudinal method dug deeper into this topic and found that the types of fish consumed can actually have a different effect (Mozaffarian, Lemaitre, Kuller, Burke, Tracy, & Siscovick, 2003). Eating baked or broiled fish three times or more per week was associated with a 49% lower risk of dying from ischemic heart disease compared to those who ate it less than once a month.

Results from studies in this field appear rather unanimous where most of them indicate a negative relationship between fish consumption and coronary heart disease (de Deckere, 2001; Hu et al., 2002; Kris-Etherton et al., 2002; Lund, 2013; Norell et al., 1986). However, one study did not find any relationship between fish consumption and coronary heart disease (Morris, Manson, Rosner, Buring, Willett, & Hennekens, 1995). Another research indicated no relationship between overall fish consumption and coronary heart disease. However, when fatty fish and lean fish were separated, fatty fish was associated with lowered risk of coronary heart disease but lean fish did not have an effect (Oomen et al., 2000). This suggests that fatty fish might have a larger role than lean fish in fighting against coronary heart disease, but this needs to be researched further. Additionally, many of these studies only focus on researching either males or females separately. Future research should include both genders at the same time to see if fish consumption has the same effect on them, since coronary heart disease can appear differently in males and females (Barrett-Connor, 1997; Juutilainen, Kortelainen, Lehto, Rönneela, Pyörälä, & Laakso, 2004; Stoney, Davis, & Matthews, 1987; Van Lennep, Westerveld, Erkelens, & van der Wall, 2002).

Mercury is a toxic element that can be found in seafood, but it can come from contaminated waters or lakes the fish live in (Jiang, Shi, Feng, 2006).
This element has been researched a lot but studies have connected large doses of mercury to some negative effects on human health, especially children and infants (Levenson & Axelrad, 2006). The main type of fish mercury is called methylmercury, which is highly toxic (Clarkson, Magos, & Myers, 2003). Methylmercury is neurotoxic which targets the developing nervous system and it can also impair neuronal stem cell division and differentiation. Salonen et al., (1995) conducted a study on Finnish men where mercury intake was examined in relation to coronary heart disease and cardiovascular diseases. Results suggested that high mercury intake was associated with increased risk of death from both cardiovascular- and coronary heart disease.

This type of mercury can also disrupt neuronal migration which occurs during fetal development and early childhood (Clarkson, Magos, & Myers, 2003). A study on pregnant women indicated that higher fish consumption lead to higher cognition in the children but high mercury levels were connected to lower cognition (Oken et al., 2005). For that reason, children, pregnant women, and women who are planning on becoming pregnant, should try to minimize their mercury intake. These results seem contradicting since high fish intake has a positive effect on the children of pregnant women but high mercury levels have a negative effect. However, different types of fish have different amounts of mercury. For example, dark meat fish such as mackerel and swordfish are rather high in mercury, but white fish such as cod and haddock tend to have much less mercury (Oken et al., 2005). In conclusion, mercury is a rather negative aspect of fish consumption, and might be one of the reasons some people perceive fish in a more negative way. Mercury is not a big threat to those who consume Icelandic fish since mercury levels have been measured very low in the ocean around the country and in Icelandic fish (Umhverfissstofnun, 2013).

### 2.2. Fish Consumption and Mental Health

Since regular fish consumption seems to have a positive effect on physical health, researchers have also started to investigate if it influences people's mental health. Silvers & Scott (2001) conducted a study on 4644 New Zealanders between the years of 1996 and 1997 where they researched the relationship between fish consumption and self-reported physical and mental health status. Their results showed that fish consumption was significantly associated with a higher self-reported mental health status after all possible confounders had been adjusted (Silvers & Scott, 2001).
Another longitudinal study researched the relationship between fish consumption and various mental health disorders such as depression and anxiety (Sanchez-Villegas, Henriquez, Figueiras, Ortuño, Lahortiga, & Martínez-González, 2007). Their results indicated that those who consumed a moderate amount of fish had a 30% lower risk of having mental disorders.

Researchers have argued that this positive effect of fish consumption is due to the essential fatty acids in the fish, but these fatty acids are obtained solely through diet and can comprise up to 30% of the human brain's weight (Hallahan & Garland, 2005). These fatty acids are vital for our brains, but they have a large effect on the neuronal membrane and the function of the receptors, transporters, and neurotransmitters. Some of the fatty acids found in fish are the omega-3 fatty acids, particularly eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) (Oh, 2005). These acids have been shown to have a positive effect on healthy aging throughout life, from prenatal development, to cardiovascular function, and Alzheimer’s disease (Swanson, Block, Mousa, 2012). Research have been conducted where omega-3 levels in depressed patients are measured and results have shown that their omega-3 levels seem to be lower than in those who are not depressed (Logan, 2004). It has also been indicated that different dosages of omega-3 have helped to improve symptoms of bipolar depression, agoraphobia (Rudin, 1981), and anorexia (Ayton, Azaz, & Horrobin, 2004). However, not everyone agrees on this topic. One study examined the relationship between fish consumption and major depression and found that there was a strong correlation between the two (Hibbeln, 1998). Nevertheless, the author did not want to state that the fish itself could reduce the prevalence of major depression but other factors such as cultural-, social-, and economical factors could confound this simple connection and play a larger role than the fish alone. It is very important to keep in mind that correlations do not imply causations; there can always be other variables involved that cause a correlation.

2.3. Distribution of Icelandic Fish

The market conditions of the Icelandic fish market differ from other industries. Most of the fish is defined as an industrial product because a large part of it is sold to foreign distributors, into secondary processing or straight to restaurants (Knútsson, & Gestsson, 2006).
This means that the process flow mainly involves business to business marketing, and little is known about business to consumer marketing in the fishing industry in Iceland. For a long time, most of Icelandic fish was exported by a few large sales organizations such as Iceland Seafood International, and Icelandic (Árnason, & Sigfússon, 2011). These organizations operated like sales offices for the producers and the products were sold on consignment. Along with taking care of sales for producers, these organizations operated large factories in their main markets, where seafood was processed and various fish dishes produced.

In 1990 there were some changes in the industry, but a lot of the fisheries- and fish processing companies started handling their sales on their own, without the large sales organizations (Árnason, & Sigfússon, 2011). These companies also started buying fish from others in Iceland, to meet the demands of the foreign market. In 2011, around 40 Icelandic companies, with approximately 250 employees, specialized in sales and marketing of fish. Iceland is, and has for a very long time, been dependent on the fishing industry and therefore it is a big part of Iceland’s economy. In 2010, sales of Icelandic seafood amounted for 220 billion ISK (Árnason, & Sigfússon, 2011). Fish is one of the main export products, but in 2014, fisheries accounted for 23% of all exports (Ólafsson, Björnsson, & Finnbogason, 2015). However, it is difficult to increase this number because only a certain amount of fish can be caught every year to protect the fish stocks.

A large portion of the fish exported from Iceland stays within Europe, but around 66% of it goes to countries within the European Union, and 14% to European countries who are not in the European Union (Árnason, & Sigfússon, 2011). The largest buyers are Great Britain and Spain but around 17% of the fish goes to Great Britain and 7% to Spain. The biggest buyers outside of Europe are The United States of America, Japan, and Nigeria, around 5% of the fish is sold to the USA, 4% to Japan, and 4% to Nigeria.
2.4. Tourism in Iceland

Iceland has recently become a popular destination for travellers, and therefore tourism in Iceland has been growing rapidly in recent years. There was a particularly significant increase of foreign visitors between the years of 2010 and 2014 where they doubled, but the number of tourists visiting per year went from around 500,000 to 1,000,000 (Óladóttir, 2016). This increases the market size a lot since the population of Iceland is only around 330,000 people (The World Bank, 2015). Most of the tourists traveling to Iceland come from the United States of America, the United Kingdom, and Nordic countries, such as Denmark and Norway (Óladóttir, 2016).

Tourism has had a huge impact on the Icelandic economy but it recently became the most exported product in Iceland, accounting for 31% of all exports in 2014, compared to less than 10% in 2005 (Ministry of Finance and Economic Affairs, 2016). Aluminium and fisheries used to be the largest exports but now tourism is the top export, but fisheries are a close second at 23%. The tourism industry has generated a lot of jobs in Iceland but in 2016 it generated 10,000 jobs directly, but that is 5.5% of the total employment in Iceland (World Travel & Tourism Council, 2017). This number is expected to grow to 11,500 in 2017 which is 6.1% of all employment. These jobs come from hotels, restaurants, travel agencies, airlines, and more. This is the second highest direct contribution of tourism to employment in the world.

Total contribution of tourism to the gross domestic product was almost 800 billion ISK in 2016 and is expected to grow to 860 billion ISK in 2017. In 2016, Iceland generated 373 billion ISK in visitor exports and this number is predicted to grow by 10% in 2017. It is also expected that almost 2 million people will visit Iceland in 2017 (World Travel & Tourism Council, 2017). Foreigners also account for a large part of the Icelandic population but in 2016, there were 26,485 foreign citizens living in Iceland, which accounts for around 8% of the population (Hagstofa Íslands, 2016). Additionally, over 40,000 people, which are 12.6% of the population, were born outside of Iceland but have become Icelandic citizens. These numbers have been increasing over the last few years and are now higher than ever.

The number of tourists visiting Iceland per year keep growing each year and are predicted to grow even higher, but by 2027 tourist arrivals are predicted to be around 3 million (World Travel & Tourism Council, 2017). This is a great marketing opportunity for companies in Iceland that can’t be ignored.
2.5. Theoretical Framework

2.5.1. Theory of Reasoned Action and Theory of Planned Behaviour

Understanding human behaviour, and the reasons behind how we behave, is a complex topic that has been widely researched in the field of psychology. Fishbein & Ajzen (1975) studied human behaviour and investigated which factors could predict behaviour. They developed a theory called theory of reasoned action, which was designed to predict people’s behaviour. According to the theory, people make choices based on attitude towards the behaviour, and the subjective norm. These factors should then predict behavioural intentions which later become behaviour.

The theory of planned behaviour (Figure 1) is based on the previously mentioned theory, but Ajzen (1985) decided to develop the theory further by adding perceived behavioural control into the model. The idea behind the theory is that people's intentions to perform a behaviour can be predicted with high accuracy by measuring; attitudes towards the behaviour, subjective norms, and perceived behavioural control. These considerations combined, have been shown to account for significant variance in behaviour, and the theory has been supported by empirical evidence (Ajzen, 1991).

These two theories, the theory of reasoned action and the theory of planned behaviour, have been compared in a scientific matter where the results indicated that adding perceived behavioural control enhances the prediction of behavioural intention and behaviour (Madden, Ellen, & Ajzen, 1992). Figure 1 shows the framework of the theory of planned behaviour.
As stated by Ajzen (1985), human behaviour is guided by these three factors or beliefs. The attitude towards the behaviour is defined as a behavioural belief in the model. People’s beliefs and evaluations about the possible outcomes of the behaviour produce an attitude, either a favourable or an unfavourable attitude. Subjective norms, or normative beliefs, include beliefs about the normative expectations of other people and the motivation to abide by these societal expectations. Control beliefs or perceived behavioural control, are the person’s beliefs about the existence and perceived impact of different factors that might either obstruct or facilitate the behaviour.

These three different beliefs form a behavioural intention (Ajzen, 1985). The theory implies that the intention to implement a particular behaviour is stronger when the attitude and subjective norm are more positive, and perceived control is greater. Subsequently, if there is adequate control over the behaviour and the behavioural intention is high, the actual behaviour should follow. This framework is well known and popular among researchers, and has been widely used in relation to many different topics. The theory of planned behaviour has been shown to be a good fit for examining consumer behaviour towards various foods (Berg, Jonsson, & Conner, 2000; Dennison & Shepherd, 1995; Dunn, Mohr, Wilson, & Wittert, 2011; Lobb, Mazzocchi, & Traill, 2007); Vermeir & Verbeke, 2008; Wong & Mullan, 2009), including fish (Bredahl, & Grunert, 1995; Verbeke & Vackier, 2005).
2.6. Conceptual Model

The conceptual model used in this study is based on a model created by Verbeke & Vackier (2005). Verbeke & Vackier (2005) investigated individual determinants of fish consumption behaviour using the theory of planned behaviour, but their sample consisted of people from Belgium. Their framework was heavily based on the original model by Ajzen (1985), but it was tailored to fit their study about fish consumption. Figure 2 shows Verbeke & Vackier’s model and the model that is used in this present study, along with the five hypotheses that relate directly to the model.

![Figure 2. The conceptual model used in this study (Verbeke & Vackier, 2005).](image)

As can be seen in Figure 2, three main determinants of the intention to eat fish are presented; attitude towards eating fish, subjective norm, and perceived behavioural control. The first determinant, attitude towards eating fish, refers to the either positive or negative evaluation or beliefs the individual has towards fish. In this model, attitude is divided into evaluative and affective attitude because attitude is expected to have both aspects. Evaluative attitude refers to the perceived risks or benefits of performing the behaviour. Affective attitude on the other hand refers to positive or negative feelings gained from performing the behaviour, eating fish (Verbeke & Vackier, 2005).
Subjective norm refers to the perceived social pressure to either execute or not to execute the behaviour. Subjective norms are divided into social norms and personal norms. Social norm is the perceived pressure, expectations, and demands from external sources, such as society, friends and family members, but personal norms come from inside the individual, and include moral obligations. The third determinant, perceived behavioural control, reflects past experience, anticipated difficulties, or facilitating conditions (Verbeke & Vackier, 2005). If an individual perceives that they have great control over the behaviour, they are more likely to perform the behaviour.

These three determinants contribute to the behavioural intention to eat fish. According to the theory of planned behaviour, positive attitude, high subjective norm, and high perceived behavioural control, should have a positive impact on behavioural intention, and increase the likelihood of executing the behaviour of consuming fish.

2.7. Research Hypothesis

2.7.1. Behavioural Intention

According to the theory of planned behaviour, attitude, subjective norm, and perceived behavioural control, have a positive impact on the intention of performing a behaviour (Ajzen, 1991). A study on Icelandic fish consumers found that positive attitudes lead to increased fish consumption (Thorsdottir, Sveinsdottir, Jonsson, Einarsdottir, Thorsdottir, & Martinsdottir, 2012). Some people perceive fish to be expensive, and unpleasant to prepare and consume because of the smell and the small bones inside the fish (Leek et al., 2000). This negative attitude towards fish has been related to decreased fish consumption (Olsen, 2001; Olsen, Scholderer, Brunsø, & Verbeke, 2007). Other research on this topic have indicated that positive attitudes towards fish have a positive impact on fish consumption (Honkanen, Olsen, & Verplanken, 2005; Rortveit, & Olsen, 2007; Verbeke & Vackier, 2005) and the intention to eat fish (Honkanen et al., 2005; Verbeke & Vackier, 2005).

The theory of planned behaviour has been used on to explain various food behaviours where results have shown that the three components; attitude, subjective norm, and perceived behavioural control had a positive impact on behaviour (Hansen, Jensen, & Solgaard, 2004; Shah Alam & Mohamed Sayuti, 2011). Verbeke & Vackier (2005) researched fish consumption in Belgium using the theory of planned behaviour as a conceptual model and their results also indicated that all three components had a positive impact on behavioural intention.
However, there are also studies that have different results. One study examined intentions of buying organic foods in Iran where results indicated that attitude was the only factor that had an effect on behavioural intention (Yazdanpanah & Forouzani, 2015). Perceived behavioural control and subjective norm had no impact. This could be explained by the sample in their study but they had a small sample of less than 400 people who were all students and therefore not a good representation of the population.

The majority of the literature presented above implies that attitudes, subjective norm, and perceived behavioural control have a positive impact on behaviour. Therefore, the following hypotheses are put forward:

\[ H1: \text{Attitude towards eating fish will have a positive impact on the behavioural intention to eat fish.} \]

\[ H2: \text{Subjective norm will have a positive impact on the behavioural intention to eat fish.} \]

\[ H3: \text{Perceived behavioural control will have a positive impact on the behavioural intention to eat fish.} \]

### 2.7.2. Behaviour

As stated in the theory of planned behaviour, behavioural intention and perceived behavioural control have an impact on behaviour (Ajzen, 1985). Scholars have applied the theory to food consumption, where the results have implied that intention and perceived behavioural control have an impact on behaviour (Berg et al., 2000; Lobb et al., 2007). However, results from studies using the theory of planned behaviour are not unanimous. Siddique (2012) conducted a study on the consumption of dry fish in Bangladesh, using the theory of planned behaviour. Results indicated that behavioural intention, attitude, norms, and perceived risk had an impact on consumption frequency. However, perceived behavioural control had no effect on the consumption, which is contrary to the theory of planned behaviour. Verbeke & Vackier, (2005) applied the theory of planned behaviour to fish consumption and found that the behavioural intention to eat fish and perceived behavioural control had a positive impact on fish consumption.
Based on the previously mentioned studies, the following hypotheses are presented:

\textit{H4: Intention to eat fish will have a positive influence on fish consumption frequency.}

\textit{H5: Perceived behavioural control will have a positive influence on fish consumption frequency.}

\subsection*{2.7.3. Impact of Socio-Demographic Characteristics}

Various socio-demographic characteristics such as, age, gender, the presence of children, residence, income, family size, and education, are sometimes used to understand the food choices people make (Furst, Connors, Bisogni, Sobal, & Falk, 1996). These characteristics have been researched in relation to fish consumption and studies indicate that they do have an effect.

Results from an Icelandic study indicated that fish consumption increased with age, the older the participants were, the more often they ate fish (Sveinsdóttir, Eyþórsdóttir, Einarsdóttir, & Martinsdóttir, 2011). Additionally, the participants’ attitudes towards fish were overall positive, but most of them considered fish to be a healthy and tasty meal. A similar study added that people in the capital area of Iceland eat less fish than people living on the countryside (Sveinsdóttir, 2007). These results are in line with studies from other countries such as Norway, Sweden, and the USA, but multiple research have shown that there is a positive relationship between age and seafood consumption (Björnberg et al., 2003; Jahns et al., 2014; Myrland, Trondsen, Johnston, & Lund, 2000; Olsen, 2003; Trondsen, Braate, Lund, & Eggen, 2004a).

The presence of children in the household has been researched in relation to fish consumption but an Icelandic study found that fish consumption increased with family size (Einarsdóttir, 2008). However, Verbeke & Vackier (2005) indicated that the presence of children lead to a lower consumption of fish, contradictory to the aforementioned study. Trondsen, Scholderer, Lund & Eggen (2003) also researched this topic but they conducted a large study among 17,928 Norwegian women where they found that the age of the children in the household was actually a big factor in fish consumption. Women with children between the ages of 0-7 had a higher consumption of fish than those who did not have any children, but those who had teenagers aged 13-19 in the household, consumed significantly less amount of fish.
Myrland, Trondsen, Johnston, & Lund (2000) also suggested in their study that the presence of teenagers could lead to a lower consumption of fish because of their negative perception of fish.

Education has also been shown to have an impact on seafood consumption, but people with higher education tend to eat more fish than people who are less educated (Barberget-Geteau et al., 2002; Jahns et al., 2014; Trondsen, Braate, Lund, & Eggen, 2004b). However, there are researches that have gotten different results. Verbeke & Vackier (2005) found that people who have completed a higher level of education don’t actually consume more fish than those less educated but they have a higher intention to do so. Income has also been proven to have an effect on fish consumption but studies suggest that a lower income results in less consumption of fish (Trondsen et al., 2004b; Verbeke & Vackier, 2005; Verbeke, Sioen, Pieniak, Van Camp, & De Henauw, 2005).

There seems to be a common notion that fish is expensive (Leek, Maddock, & Foxall, 2000). This might lead individuals with a lower income to feel like fish is too expensive for them to buy and therefore they eat less of it than wealthier people. Additionally, less educated people tend to have a lower income than more educated people, so that could explain the relationship between education and fish consumption.

Based on previous literature, the following hypothesis are presented:

**H6**: Age, income, education, and the presence of children will have a positive impact on fish consumption.

**H7**: People in the capital area of Iceland consume fish less frequently than people living in other parts of Iceland.

### 2.7.4. Icelanders and Tourist

Individuals from different countries can perceive fish in different ways and have different attitudes towards it. A recent study on fish consumption among Icelanders indicated that Icelanders had a positive attitude towards fish (Sveinsdóttir et al., 2011). Another study among young Icelandic consumers added that participants who found health and healthy eating important had a more positive attitude towards fish than others (Thorsdottir et al., 2012). Additionally, those who liked the smell and taste of fish also had a more positive attitude and a more frequent consumption.
A large research on 4786 participants from five European countries studied the impact of health beliefs, health involvement, and risk perception in relation to fish consumption (Pieniak, Verbeke, Scholderer, Brunsø, Olsen, 2008). Results showed that those who perceived fish as a riskier food had a lower consumption of fish than others. Danish and Spanish participants scored the lowest on the risk perception but Belgian and Dutch participants scored the highest. Therefore, Belgian and Dutch participants perceived fish to be riskier to consume than participants from the other countries did. Since high risk perception leads to lower fish consumption, it can be assumed that Belgian and Dutch participants have a more negative attitude towards fish than others. A study on Americans found that most fish consumers had a positive attitude towards fish (Hall & Amberg, 2013). Participants viewed fish as a healthy part of the diet and reported that familiarity, price, and freshness were the biggest influencers of their fish decisions.

Since Icelanders have been measured to have a positive attitude towards fish, and are being compared to tourists from all over the world, it is hypothesised that tourists have a more negative attitude towards fish than Icelanders.

*H8: Tourists have a more negative attitude than Icelanders towards fish consumption.*
3. Methodology

3.1. Participants

There were 735 individuals who participated in this study but they were gathered from different places in Iceland to get a more diverse group of people. A large part of the participants, 294 individuals, came from the online survey which took place on Facebook, 46 came from Reykjavík University but out of those, 18 participants were undergraduate students studying business, and 28 were graduate students studying marketing. Eighty-one participants came from Norðurál, a large aluminium factory with around 600 employees in West-Iceland, 27 came from the grocery store Bónus in Akranes, 27 from the grocery store Krónan in Akranes, 23 from Bónus Mosfellsbæ, 34 from Krónan Mosfellsbæ, and finally 203 individuals from Skólavörðustígur. The overall response rate was good but around 90% of the people who were asked to participate did participate. The response rate in Reykjavík University was the highest at 100%, but the lowest response rate came from the grocery stores, around 70%. Two participants could not complete the questionnaire for different reasons. One of the participants was vegan, which means he or she did not consume any animal products, such as fish, and felt like they could not finish the survey. The other participant was allergic to fish and did not have any opinions or experience in consuming or buying fish, and did not complete the survey. Since the objective of the study was to explain fish consumption using the theory of planned behaviour as a conceptual model, all participants met the criteria of eating fish, those who said they never ate fish were not included in the analysis.

3.2. Procedure

First, the survey was translated from English to Icelandic. To make sure the questions were translated correctly and were understood in the same way in both languages, they were translated again to English. When the survey was completely ready, it was pretested on several friends and family members. Pretesting is very important and can increase the success of the main study (Hunt, Sparkman Jr, & Wilcox, 1982; Van Teijlingen, Hundley, 2002). The purpose of the pretesting was to see how long it would take on average to complete the survey, and to see if there were any questions that were confusing or needed change. Participants were asked to answer the survey in their own time and encouraged to ask questions if they had any.
A stopwatch was used to measure the response time but the average time was between 6 and 7 minutes. The participants didn’t have any problems answering the survey and therefore no changes were made.

Two types of data collection were used in this study, an online survey, and a printed survey. The online survey was created using Google Forms and was posted on Facebook for friends, family, and acquaintances of the author to participate. At the beginning of the survey there was a short text about the purpose of the study and a disclaimer that explained that the survey was anonymous and answers could not be traced to individuals. Most of the questions were mandatory but questions that might not have been relevant to everyone were not mandatory, for example questions about a spouse, which not everyone had. The survey could only be handed in if all of the mandatory questions had been answered. The online survey was open for responses for one week from March 14th to March 21st.

The printed version of the survey was created using both Microsoft Excel and Microsoft Word. To get foreign participants, the author along with an assistant went to Skólavörðustígur, a popular tourist destination downtown Reykjavík, where pedestrians were asked to answer the questionnaire. Other places where the study took part were the grocery stores Bónus and Krónan, Reykjavík University, and Norðurál. Participants were told that the survey was a part of a master’s thesis and that their participation would be very important for the results. It was also explained to them that the survey was anonymous and would only take a few minutes to complete. The questionnaire was self-administered by the participants without any interruptions from the researcher. However, if participants had any questions about particular questions in the questionnaire, they were more than welcome to ask. All the data was gathered over a two-week period in March of 2017.

3.3. Measures

The survey used in the study was based on a questionnaire created by Verbeke and Vackier (2005). The Icelandic version of the survey was six pages long and had 84 items (See Appendix A), but the English version had 88 items on seven pages (See Appendix B). The latter one had more questions because it included additional questions for tourists about their consumption of Icelandic fish while in Iceland. The actual scale was the same in both languages and had 61 items in total.
To measure fish consumption participants were asked how often they ate fish (from 1 = never, to 7 = once a day). The rest of the scale included statements where the answers were on a five-point Likert scale (from 1 = totally disagree/totally unimportant, to 5 = totally agree/very important). To measure attitude towards eating fish, 18 items were used, 20 items measured subjective norm, 19 items measured perceived behavioural control, 3 items measured the intention to eat fish, and one item measured fish consumption frequency. Appendix C shows in detail which questions measured each construct of the model.

Various background questions were also added to the questionnaire so the data could be analysed further. This included questions about age, gender, children, residency, finances, education, job status, and relationship status. Also, questions about the participant’s favourite types of fish, and how good or bad they found different fish courses were added. The main purpose of these questions was to add information for Fisheries Iceland about what types of fish were the most popular in Iceland and to see if tourists had different preferences than Icelanders.

3.4. Research Design

The design of the study was a quantitative research design, and a survey was used to collect data. Some of the data was collected through an online survey to get more data since the face-to-face method was time consuming. However, the face-to-face method has been shown to result in a higher response rate than some other methods (Krysan, Schuman, Scott, & Beatty, 1994; Ryu, Couper, & Marans, 2006) and therefore that was the main method used in this study. A convenience sample was used to reach a lot of people in a small amount of time. It would have been ideal to use probability sampling but it would have been difficult to reach the tourists that way. The author came to the conclusion that a convenience sample was the sampling method that had to be used to get a large group of tourists to participate. Another reasoning for using a convenience sample was to get participants at grocery stores, which were in the shopping mind-set. The most efficient way to get participants from grocery stores was to use a convenience sample.

A difference was detected between those who answered the online survey versus those who answered the printed survey. Those answering the online survey had lower scores on all components of the model than those who answered the printed survey.
It is assumed that this difference occurred because the groups were of different size and those who answered the online survey were all Icelanders. Therefore, it is hard to presume that the difference between the groups occurred because of which type of survey they answered.

3.5. Data Analysis

The data was analysed using the statistical program SPSS. Before analysing the data and conducting any estimates of reliability, all reverse-scaled items were reversed so they matched with the rest of the questionnaire. All items of the scale were on a five-point Likert scale except for the question about fish consumption frequency which was on a seven-point Likert scale. Before working with the data, this single question was recoded to a five-point Likert scale to match with other items in the model. Those who chose the first answer option to the question: “How frequently do you eat fish?” which was “never”, were not used in the analysis since the objective was to explain fish consumption frequency but not to research the decision of eating or not eating fish. Nobody chose the last option, which was “everyday”, and therefore that option was deleted and only five answer options remained. To make each construct, the variables were computed using SPSS and the mean score was used so each construct had scores from 1-5.

3.6. Evaluation of the Model

Cronbach’s alpha coefficient was used to measure the internal consistency and reliability of the different components of the model. This measurement is sensitive to the number of items in the scale, which means that short scales tend to have a low Cronbach’s alpha value. The ideal value can differ between the type of scale but it is recommended that the value is higher than 0.7 (Pallant, 2013). Table 1 shows the Cronbach’s alpha value for each component of the model.
<table>
<thead>
<tr>
<th>Scale</th>
<th>No of items</th>
<th>Cronbach's alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude towards eating fish</td>
<td>18</td>
<td>0.78</td>
</tr>
<tr>
<td>Affective judgements</td>
<td>9</td>
<td>0.64</td>
</tr>
<tr>
<td>Evaluative judgements</td>
<td>9</td>
<td>0.72</td>
</tr>
<tr>
<td>Subjective norm</td>
<td>20</td>
<td>0.88</td>
</tr>
<tr>
<td>Personal norm</td>
<td>10</td>
<td>0.88</td>
</tr>
<tr>
<td>Social norm</td>
<td>10</td>
<td>0.84</td>
</tr>
<tr>
<td>Perceived behavioural control</td>
<td>19</td>
<td>0.88</td>
</tr>
<tr>
<td>Control beliefs</td>
<td>12</td>
<td>0.71</td>
</tr>
<tr>
<td>Past experience</td>
<td>7</td>
<td>0.92</td>
</tr>
<tr>
<td>Behavioural intention</td>
<td>3</td>
<td>0.93</td>
</tr>
</tbody>
</table>

The four main components of the model, attitude towards eating fish, subjective norm, perceived behavioural control, and behavioural intention, all had values above 0.7. This indicated that all the components of the model had a good internal consistency.
4. Results

In this chapter, descriptive statistics are presented, where the sample is described in detail. The chapter also includes the main findings of the hypothesis and mean scores of each component of the conceptual model. Finally, a comparison of Icelanders and tourists is presented.

4.1. Descriptive Statistics

Answers from 735 individuals were used in this analysis. Out of those, there were 298 (40.5%) males, and 437 (59.5%) females. Participants were divided into six different age groups; 21 years old and younger (5.3%), 22-34 (29%), 35-44 (15.5%), 45-54 (22.6%), 55-65 (22.6%), and 65 years old and older (6%). Around 68.4% of the participants were Icelanders and 31.6% were tourists. Table 2 shows a description of the sample based on gender and nationality.

Table 2

<table>
<thead>
<tr>
<th></th>
<th>Icelanders</th>
<th></th>
<th>Tourists</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Age</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>21-</td>
<td>17</td>
<td>16</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>22-34</td>
<td>58</td>
<td>86</td>
<td>23</td>
<td>47</td>
</tr>
<tr>
<td>35-44</td>
<td>41</td>
<td>36</td>
<td>17</td>
<td>20</td>
</tr>
<tr>
<td>45-54</td>
<td>44</td>
<td>76</td>
<td>18</td>
<td>28</td>
</tr>
<tr>
<td>55-64</td>
<td>37</td>
<td>62</td>
<td>21</td>
<td>38</td>
</tr>
<tr>
<td>65+</td>
<td>13</td>
<td>16</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>211</td>
<td>292</td>
<td>87</td>
<td>145</td>
</tr>
</tbody>
</table>
4.2. Structural Model and Hypothesis

Pearson’s correlation was used to explore the relationship between each component of the model. The results are presented in Figure 3.

Figure 3 shows significant positive relationships between the independent and dependent variables. This means that any increase or decrease in the value of the independent variables should have the same effect on the values of the dependent variables. There is a strong positive correlation between fish consumption and behavioural intention ($r (735) = 0.65, p < 0.01$), and a moderate correlation between fish consumption and perceived behavioural control ($r (375) = 0.48, p < 0.01$). There is a strong positive correlation between behavioural intention and attitude towards eating fish ($r (375) = 0.65, p < 0.01$), and a moderate correlation between behavioural intention and perceived behavioural control ($r (375) = 0.49, p < 0.01$).

Using linear regression analysis, it was detected that attitude, and perceived behavioural control, had a positive impact on the behavioural intention to eat fish (Table 3). Attitude towards eating fish had the largest effect on behavioural intention and subjective norm had the smallest effect which was not significant. Therefore, H1 and H3 are confirmed, but H2 is rejected.
Table 3

*Impact of independent variables on behavioural intention*

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>Std. Error</th>
<th>Beta</th>
<th>t</th>
<th>p - value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-2.67</td>
<td>0.27</td>
<td>-0.74</td>
<td>9.74</td>
<td>0.000</td>
</tr>
<tr>
<td>Attitude towards eating fish</td>
<td>1.30</td>
<td>0.08</td>
<td>0.53</td>
<td>15.41</td>
<td>0.000</td>
</tr>
<tr>
<td>Subjective norm</td>
<td>0.08</td>
<td>0.06</td>
<td>0.04</td>
<td>1.22</td>
<td>0.220</td>
</tr>
<tr>
<td>Perceived behavioural control</td>
<td>0.39</td>
<td>0.07</td>
<td>0.20</td>
<td>5.86</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Table 3 shows that attitude had the strongest impact on behavioural intention ($\beta = 0.53, p < 0.01$). Behavioural intention increases by 1.3 when attitude increases by 1. Around 46% ($R^2 = 0.46$) of the variance in behavioural intention can be explained by attitude, subjective norm, and perceived behavioural control.

Linear regression was used to calculate the impact of behavioural intention and perceived behavioural control on fish consumption frequency (Table 4). Both variables had a significant positive effect on fish consumption frequency which confirms H4 and H5.

Table 4

*Impact of perceived behavioural control and behavioural intention on fish consumption frequency*

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>Std. Error</th>
<th>Beta</th>
<th>t</th>
<th>p - value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.074</td>
<td>0.20</td>
<td>0.37</td>
<td>0.71</td>
<td></td>
</tr>
<tr>
<td>Perceived behavioural control</td>
<td>0.42</td>
<td>0.06</td>
<td>0.21</td>
<td>6.84</td>
<td>0.000</td>
</tr>
<tr>
<td>Behavioural intention</td>
<td>0.54</td>
<td>0.03</td>
<td>0.54</td>
<td>17.32</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Table 4 shows that behavioural intention had a stronger impact ($\beta = 0.54, p < 0.01$) on fish consumption frequency than perceived behavioural control ($\beta = 0.21, p < 0.01$). Fish consumption frequency increases by 0.54 when behavioural intention increases by 1. Fish consumption frequency increases by 0.42 when perceived behavioural control increases by 1. Around 46% ($R^2 = 0.455$) of the variance in fish consumption frequency can be explained by perceived behavioural control and behavioural intention ($F (3, 731) = 207, p < 0.01$).
4.2.1. Socio-Demographic Characteristics

Age

Age had positive impact on fish consumption, the older the participants were, the more often they ate fish. The lowest possible fish consumption frequency was 1 (a few times a year) and the highest was 5 (a few times a week). The mean score of the youngest age group, 21 and younger, was 3.5 which translates to between a few times a month and ones a week. The mean score of the oldest age group, 65 and older, was 4.4 which is between once a week and a few times a week. Using one-way ANOVA, a significant difference between the groups was found $F \ (5, 729) = 8.9, p< 0.01$. Table 5 shows the mean fish consumption frequency among each age group.

Table 5

<table>
<thead>
<tr>
<th>Age</th>
<th>N</th>
<th>Fish consumption frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-</td>
<td>39</td>
<td>3.5</td>
</tr>
<tr>
<td>22-34</td>
<td>214</td>
<td>3.6</td>
</tr>
<tr>
<td>35-44</td>
<td>114</td>
<td>3.7</td>
</tr>
<tr>
<td>45-54</td>
<td>166</td>
<td>3.9</td>
</tr>
<tr>
<td>55-64</td>
<td>158</td>
<td>4.1</td>
</tr>
<tr>
<td>65+</td>
<td>44</td>
<td>4.4</td>
</tr>
<tr>
<td>Total</td>
<td>735</td>
<td>3.8</td>
</tr>
</tbody>
</table>

A post-hoc Tukey HDS test was done to detect between which age groups the biggest difference on fish consumption frequency was located. A significant difference was found between age group 1 and 6. The second age group, 22-34, and groups 4, 5, and 6 also had a significant difference. Finally, a significant difference was detected between group 3, and groups 5 and 6.
Financial status

To measure financial status the question “How easy or hard has it been for your family to make ends meet in the past year?” was used. The answers were on a five-point Likert scale from 1 = very hard, to 5 = very easy. When looking at the impact of financial status on fish consumption frequency, there was no difference between groups $F (4, 730) = .25, p = 0.9$.

The presence of children

Around 65% of the participants did not have children under the age of 18, but 34.6% did. When testing the difference between the two groups using ANOVA, a significant difference was found $F (2, 732) = 7.7, p< 0.01$. The presence of children had a positive impact on fish consumption frequency. Participants who did not have children had the mean score of 3.7 but those who had children had a mean score of 4.1. To quantify the difference between the two groups, Cohen’s $d$ was calculated to measure effect size, by using the means and standard deviation of both groups (Cohen, 1992). According to Cohen (1992), an effect size of 0.2 is considered small, 0.5 is considered medium, and 0.8 is considered large. Cohen’s effect size between those who had and didn’t have children was 0.24 which is small.

Education

When reviewing the impact of education on fish consumption frequency, no significant relationship was detected $F (5, 279) = 1.6, p = 0.14$. However, there was a trend in the results, more educated people had a slightly higher mean of fish consumption than less educated people, but the difference was not significant. H6 is therefore partially confirmed. Age and the presence of children had a positive impact on fish consumption frequency, but education and financial status did not have a significant impact.

The people in the capital area of Iceland had the mean fish consumption score of 3.9, while people in other parts of the country combined had the mean score of around 4.4. The difference between groups was significant $F (6, 498) = 2.53, p< 0.01$. This confirms H7. Additionally, Icelanders living outside of Iceland had the lowest score of 3.17.
4.3. Comparison of Icelanders and Tourists

Participants who were tourists in Iceland got additional questions about their fish consumption in Iceland. There were 232 individuals, 105 males and 127 females. Around 82% were visiting Iceland for the first time, while the rest had been there before. The largest proportion of the tourists came from the United Kingdom (17.3%), the United States of America (14.7%), China (7.3%), Canada (6.5%), Germany (5.6%), Norway (5.2%), France (4.7%), and Ireland (4.7%).

When asked “Do you want to buy fish in Iceland?”, around 83.5% said they did, but 16.5% did not want to buy fish in Iceland. They were also asked “Have you bought fish in Iceland?”, 57.6% said they had, and 42.4% had not bought fish in Iceland. Those who had bought fish in Iceland had a more positive attitude towards eating fish than those who had not $F(1, 226) = 10.9, p< 0.01$. When asked on a scale of 1 to 5 how much they disliked or liked the fish they bought in Iceland, the mean score was 4.7. Only one individual did not like the fish they had in Iceland. This indicates that tourists liked Icelandic fish a lot. The mean fish consumption frequency on a scale of 1 to 5 was 3.93 among tourists but 3.78 among Icelanders, which is about once a week. Tourists tended to consume fish more frequently than Icelanders but the difference between the two groups was not significant $F (1, 733) = 2.8, p = 0.095$.

Participants were asked one open ended question about their favourite type of fish. The most popular types of fish among Icelanders were haddock, cod, lobster, salmon, and monkfish. The most popular types of fish among tourists were salmon, tuna, lobster, shrimp, and cod. When asked “Where do you usually buy fish?” the most popular answers among Icelanders were “At the grocery store” (46%), “In fish stores” (26.8%), and “Straight from a fisherman” (22.1%). The most popular answers among tourists were “At the grocery store” (52.6%), “In restaurants” (27.6%), and “In fish stores” (10.3%). In terms of cooking method, Icelanders preferred dried fish, oven cooked fish, grilled fish, and breaded fish. Tourists preferred oven cooked fish, deep-fried fish, and grilled fish. The least popular for both groups were fish tacos and smoked fish. Dried fish and fish balls were the least popular among tourists but those are considered traditional foods in Iceland.
4.3.1. Comparison of Icelanders and Tourists on the Model

The mean scores of Icelanders and tourists on the model, the standard deviation, \( p \)-value of significance, and Cohen’s effect size, are presented in Table 6.

Table 6
Comparison of Icelanders and tourists on the model

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>( p )-value</th>
<th>Cohen's d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Icelanders</td>
<td>503</td>
<td>3.84</td>
<td>0.49</td>
<td>0.000</td>
<td>0.58</td>
</tr>
<tr>
<td>Tourists</td>
<td>232</td>
<td>4.10</td>
<td>0.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subjective norm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Icelanders</td>
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<td>3.14</td>
<td>0.61</td>
<td>0.000</td>
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<td>232</td>
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<td>Perceived behavioural control</td>
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</tr>
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<td>Icelanders</td>
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<td>0.58</td>
<td>0.000</td>
<td>0.38</td>
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<td>Tourists</td>
<td>232</td>
<td>3.93</td>
<td>0.59</td>
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<td></td>
</tr>
<tr>
<td>Behavioural intention</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Icelanders</td>
<td>503</td>
<td>4.04</td>
<td>1.21</td>
<td>0.005</td>
<td>0.23</td>
</tr>
<tr>
<td>Tourists</td>
<td>232</td>
<td>4.30</td>
<td>1.01</td>
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</tr>
</tbody>
</table>

Attitude towards eating fish

The highest possible score for Attitude was 5 and the lowest was 1. A low score indicated a negative attitude while a high score indicated a positive attitude. The highest measured score was 4.89, the lowest measured score was 1.61 and the mean score was 3.92 (\( SD = 0.48 \)). This indicates an overall positive attitude towards eating fish.

Icelanders had a mean score of 3.84 on the attitude scale, but tourists had a mean of 4.1, the difference between the groups was significant \( F (1, 733) = 49.9, p < 0.01 \). This indicates that tourists have a more positive attitude towards fish than Icelanders. Therefore, H8 is rejected. The difference between attitudes of Icelanders and tourists had the effect size of 0.58 which is moderate.

In general, the participants found fish to be rather expensive, but also nutritious, healthy, and tasty. Table 7 shows how each factor of attitude impacted attitude towards eating fish for both Icelanders and tourists.
Table 7  
*Impact of the attitude factors on attitude towards eating fish*

<table>
<thead>
<tr>
<th></th>
<th>Icelanders</th>
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<th>Tourists</th>
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<td>Beta</td>
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<tr>
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<td>0.000</td>
<td></td>
<td>7.56</td>
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<td>Trustworthiness</td>
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<td>4.55</td>
<td>0.000</td>
<td>0.25</td>
<td>3.93</td>
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<td>Healthiness</td>
<td>0.26</td>
<td>6.88</td>
<td>0.000</td>
<td>0.29</td>
<td>4.25</td>
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<td>Safety</td>
<td>0.05</td>
<td>1.29</td>
<td>0.197</td>
<td>0.14</td>
<td>2.24</td>
<td>0.026</td>
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<td>Price</td>
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<td>-0.90</td>
<td>0.369</td>
<td>0.06</td>
<td>1.20</td>
<td>0.232</td>
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<td>Nutritional value</td>
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<td>4.16</td>
<td>0.000</td>
<td>0.01</td>
<td>0.10</td>
<td>0.925</td>
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<td>Smell</td>
<td>0.13</td>
<td>4.71</td>
<td>0.000</td>
<td>0.22</td>
<td>4.24</td>
<td>0.000</td>
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<tr>
<td>Bones</td>
<td>0.06</td>
<td>1.97</td>
<td>0.050</td>
<td>-0.12</td>
<td>-2.29</td>
<td>0.023</td>
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<tr>
<td>Taste</td>
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<td>3.47</td>
<td>0.001</td>
<td>0.07</td>
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<tr>
<td>Meal satisfaction</td>
<td>0.23</td>
<td>5.85</td>
<td>0.000</td>
<td>0.18</td>
<td>3.01</td>
<td>0.003</td>
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For Icelanders, healthiness had the biggest impact on attitude ($\beta = 0.26, p<0.01$) and meal satisfaction had the second biggest impact ($\beta = 0.23, p<0.01$). For tourists, healthiness also had the biggest impact ($\beta = 0.29, p<0.01$) but trustworthiness came second ($\beta = 0.25, p<0.01$). Nutritional value had a significant impact on attitude among Icelanders ($\beta = 0.15, p<0.01$), but had the lowest impact for tourists ($\beta = 0.01, p = 0.925$).

When looking at the different components of attitude using ANOVA, the biggest difference between Icelanders and tourists was on questions related to trustworthiness, smell, bones, and meal satisfaction. When answering the statement “The bones in fish are unpleasant”, tourists had a significantly higher score (higher agreement) than Icelanders $F(1, 731) = 17.1, p<0.01$. When answering the statement “Fish has an unpleasant smell”, tourists also had a higher score than Icelanders $F(1, 731) = 13.9, p<0.01$ ($d = 0.29$). Icelanders found eating fish to be more trustworthy ($F(1, 731) = 29, p<0.01$) ($d = 0.42$) and were more satisfied than tourists when fish was on the menu ($F(1, 731) = 11.3, p<0.01$) ($d = 0.26$).
**Subjective norm**

The lowest possible score for Subjective Norm was 1 and the highest was 5. The lowest score measured for Subjective Norm was 1.1 and the highest was 4.7, the mean was 3.2 \((SD = 0.63)\). The mean of Subjective norm, social and personal, among Icelanders was 3.14 but the mean among tourists was 3.65. The difference between the groups was significant \(F (1, 733) = 18.7, p < 0.01\). Cohen’s \(d\) was 0.89 which is considered a large effect size. However, Icelanders had a higher score than tourists on the personal norm. The mean for Icelanders on the personal norm was 4.2, but 3.64 for tourists. When looking at the items of social norm, both groups find the opinions of their family, spouse, doctors and nutritionists the most important while making a fish choice. Opinions of advertisement, the food industry, and the government were considered unimportant by both groups.

**Perceived behavioural control**

The lowest score of Perceived Behavioural Control was 1.58, the highest was 5, and the mean was 3.73 \((SD = 0.60)\). Perceived Behavioural Control among Icelanders was 3.64, and 3.93 among tourists, the difference between the groups was significant \(F (1, 733) = 39.9, p < 0.01\). Cohen’s \(d\) was 0.38, which is considered to be between small and medium effect size. Availability, easiness to prepare, easiness of judging the quality, and making a good choice at purchase were the three factors that participants, both Icelanders and tourists, found the most important while making a fish choice. The chance to make a bad choice while choosing fish was the one factor that was the least important to both groups.

**Behavioural intention**

Behavioural Intention to consume fish had the lowest score of 1, and the highest score of 5, but the mean was 4.12 \((SD = 1.2)\). The mean score of behavioural intention was high among both groups, 4.04 among Icelanders and 4.30 among tourists. The difference between the two groups was significant \(F (1, 733) = 7.8, p < 0.01\), which indicates that Icelanders have a lower intention than tourists to consume fish. Calculating Cohen’s \(d\), the effect size was 0.23 which is considered a small effect size.
5. Discussion

The aim of this study was to explore fish consumption in Iceland by studying attitudes and behaviour of consumers using the theory of planned behaviour as a conceptual model. The purpose was also to examine the difference between Icelanders and tourists in Iceland. Overall, the participants of the study were frequent consumers of fish and had a positive attitude towards it, but most found fish to be a healthy, nutritious, and tasty food.

The theory of planned behaviour served as a good model for the research but the results were not completely in line with previous research. Based on the theory, it was hypothesized that attitude towards fish, subjective norm, and perceived behavioural control would have a positive impact on the behavioural intention to eat fish. Positive attitudes had the strongest impact on the behavioural intention to eat fish but perceived behavioural control also had a significant impact. This is in line with the results from Verbeke & Vackier’s study (2005). However, subjective norms did not have a significant impact on behavioural intention which does not fit the theory of planned behaviour (Ajzen, 1985). Participants were overall rather low on the subjective norm scale, particularly social norms. This indicates that people don’t find great importance in the opinions of others while making a fish choice.

Regarding fish consumption frequency, it was hypothesized that the intention to eat fish and perceived behavioural control have a positive influence on fish consumption frequency. These hypotheses were confirmed and these results are in line with the theory of planned behaviour and the previous research by Verbeke & Vackier (2005). This means that those two have a high intention to consume fish and have high perceived control of their behaviour, consume fish more frequently than those who don’t. Socio-demographic characteristics have also been shown to have an impact on fish consumption but based on previous research, it was hypothesized that age, income, education, and the presence of children would all have a positive impact on fish consumption. This hypothesis was not fully confirmed but only age and the presence of children had a significant positive impact on fish consumption which reflects what previous researchers have also found (Einarsdóttir, 2008; Trondsen et al., 2003). However, some studies have indicated a lower consumption in families with children but especially when teenagers are living in the home (Myrland et al., 2000; Verbeke & Vackier, 2005).
Increased age had a positive impact on fish consumption frequency which is in line with previous research (Björnberg et al., 2003; Jahns et al., 2014; Myrland et al., 2000; Olsen, 2003; Sveinsdóttir et al, 2011; Trondsen, et al. 2004a). Education did not have an impact on fish consumption which is similar to Verbeke & Vackier’s (2005) results. This does not reflect most studies in the field who imply that higher education correlates with higher fish consumption frequency (Barberger-Geteau et al., 2002; Jahns et al., 2014; Trondsen, Braate, Lund, & Eggen, 2004b). Financial status did not have an effect on fish consumption which does not reflect results from previous studies who indicate that a lower income results in less consumption of fish (Trondsen et al., 2004b; Verbeke & Vackier, 2005; Verbeke, Sioen, Pieniak, Van Camp, & De Henauw, 2005). This could stem from the fact that participants in this study were asked how easy or hard it had been for them to make ends meet in the last year but not asked about their actual salary. This can also be considered a sensitive question because not everyone is ready to share their salary and might be embarrassed if they have a very low salary.

When comparing Icelanders and tourists, results showed that tourists had a more positive attitude towards fish consumption than Icelanders, opposite to what was hypothesized. Tourists also had a higher behavioural intention to eat fish compared to Icelanders. However, tourists had a more negative opinion than Icelanders about the smell and bones in fish. Regarding subjective norms, tourists had a higher overall subjective norm but Icelanders scored higher on the personal norm. This indicates that tourists find the opinions of others more important when making a fish choice while Icelanders rather listen to themselves when making a fish choice.

6. Conclusion

This thesis provides valuable information since it is one of the first research conducted in Iceland to the authors best knowledge, which applies the theory of planned behaviour to fish consumption. It is also one of the first research to compare Icelanders to tourists in Iceland in relation to fish consumption. The main results from this study indicate that positive attitudes towards fish and high perceived behavioural control do have a positive effect on the intention to eat fish. The results also detected a difference between Icelanders and tourists which is important for this field of studies since there is limited knowledge about fish consumption of tourists in Iceland.
Results showed that participants, both Icelanders and tourists, did not find the opinions of advertisement, the government, and the food industry important, in relation to fish. They rather listen to opinions of their family members, and doctors and nutritionists. This information is important and useful for those who are in the business of marketing and others who promote fish consumption, such as the directorate of health. It is alarming to see the trend of younger people consuming less fish than older people and this is something that needs to be changed. Getting doctors and nutritionists on board to promote fish consumption, could increase the credibility of advertisements since people find their opinions important. Credible advertisement could then possibly have a positive impact on fish consumption.

What participants in this study found the most important while choosing fish was availability, easiness to prepare, easiness of judging the quality, and making a good choice at purchase. This indicates that people want something that is cheap, and quick and easy to cook. There was a rather big difference between Icelanders and tourists on purchasing behaviour but tourists were much more likely than Icelanders to purchase fish from restaurants. Icelanders rather cook the fish at home and many of them even get the fish straight from fishermen. Fish preferences were also quite different but the tourists in this study preferred fish such as tuna and shrimp, while Icelanders chose fish such as haddock, cod, and monkfish. Not a single Icelander mentioned tuna while almost 10% of tourists said it was their favourite fish.

Having this data about tourists and fish consumption preferences is important to the fishing industry in Iceland as a whole, but grocery stores, restaurants, and marketing managers also benefit from this information. Since tourism in Iceland keeps growing and does not seem to be stopping any soon, it is important for companies in Iceland to incorporate tourism into their strategies. Iceland is a very small country and the number of tourists coming every year is much larger than the population of Iceland.

6.1. Limitations and Future Research

One limitation of the study was the different size of the groups, Icelanders and tourists. Even though the overall sample size was good, getting a larger sample of tourists would have been preferable to get an even better representation of the group. The method, going out and finding tourists to participate, was time consuming and for that reason, fewer tourists participated in the study.
Future research should consider a more time efficient method of collecting data or even conducting the study over a longer period of time.

Another aspect that could be improved was the length of the questionnaire, but it was rather long. It would be easier to get more individuals to participate if the survey was shorter as it would take less time to collect data. It would also have been preferable to collect all data in the same way, but the online survey was added to get a larger sample in a short amount of time. There was a difference between the answers of those who answered the online survey versus the printed survey. It is hard to pinpoint why that difference occurred but it was not the focus of the study to compare these two groups. Future studies could inspect if and why there is a difference between those who answer surveys online versus face-to-face.

The question about children under the age of 18 living in the home could be improved by asking about the specific age of the children since that has been shown to make a difference. Some researchers have suggested that having children increases fish consumption frequency in the home but having teenagers can decrease it (Myrland et al., 2000; Trondsen et al., 2003). To make the questionnaire more up to date, future research could add questions about different types of advertisement such as online advertisement, mobile advertisement, and social media advertisement. Participants in this study did not find the opinions of advertisement important while making a fish choice. Adding questions about different types of advertisement platforms to the questionnaire would help to see if people find any specific type of advertisement more credible than other, and which one would suit the promotion of fish the best for different target groups.

This thesis is a good base for future research to add on to, but the model can be used on other food items or other industries, and different determinants can be added into the model. Even though there were some limitations to the present study, the overall method was strong and the results provide good insight into the fish consumption behaviour of Icelanders and tourists.
References


FISH CONSUMPTION AND THE THEORY OF PLANNED BEHAVIOUR


FISH CONSUMPTION AND THE THEORY OF PLANNED BEHAVIOUR


Appendix A
Icelandic version of the survey

Fiskneysla og viðhorf til fisks meðal Íslendinga og ferðamanna á Íslandi

Þessi könnun er partur af MSc. ritgerð í markaðsfræði í Háskólanum í Reykjavík og er unnin í samstarf við SFS. Markmið ritgerðarinnar er að ná yfirliti yfir núverandi stöðu fiskiðnaðarins á Íslandi en ritgerðin leggur áherslu á fiskneyslu og mun einnig rannsaka þætti eins og viðhorf og hegðun neytenda í tengslum við íslenskan fisk. Vinsamlegast svarið spurningunum af hreinskilni en ef einhverjar spurningar eiga ekki við má sleppa þeim. Könnunin er nafnlaus og því er ekki hægt að rekja svörin til einstaklinga.

Takk fyrir þátttökuna, Karen Gréta Minney Pétursdóttir

Hvert er kyn þitt?
- Karlkyn
- Kvenkyn
- Annað

Hver er aldur þínn?
- 21 eða yngri
- 22-34
- 35-44
- 45-54
- 55-64
- 65 eða eldri

Hver er hjúskaparstaða þín?
- Einhleyp/ur
- Í sambúð/sambandi
- Gift/ur
- Ekkja/Ekkill

Átt þú barn/börn sem eru 18 ára eða yngri?
- Já
- Nei
Hvert er hæsta stig menntunar sem þú hefur lokið?

- Grunnskóli
- Iðnpróf á framhaldsskólastigi
- Stúdentspróf
- BS, BA eða sambærileg gráða
- MS eða sambærileg gráða
- Doktorsgráða

Hver er núverandi staða þín á vinnumarkaði?

- Í námi
- Í námi og vinnu
- Atvinnulaus
- Í hlutastarfi
- Í fullri vinnu

Hversu auðvelt eða erfitt hefur það verið fyrir þig og fjölskylduna þína að ná endum saman síðastlíðið ár?

- Mjög erfitt
- Frekar erfitt
- Hvorki né
- Frekar auðvelt
- Mjög auðvelt

Í hvaða landshluta býrð þú?

- Á höfuðborgarsvæðinu
- Á vesturlandi
- Á vestfjörðunum
- Á suðurlandi
- Á norðurlandi
- Á austurlandi
- Ég bý ekki á Íslandi
Hversu oft borðar þú fisk?
- Á hverjum degi
- Nokkrum sinnum í viku
- Einu sinni í viku
- Nokkrum sinnum í mánuði
- Einu sinni í mánuði
- Sjaldnar en einu sinni í mánuði
- Aldrei

Hversu sammála eða ósammála er tu eftirfarandi staðhæfingum?
1 = Mjög ósammála 2 = Ósammála 3 = Hvorki né 4 = Sammála 5 = Mjög sammála

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Hversu mikilvæg finnst þér eftirfarandi atríði þegar þú velur þér fisk?
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**Hversu sammála eða ósammála ertu eftirfarandi staðhæfingum?**

1 = Mjög ósammála 2 = Ósammála 3 = Hvorki né 4 = Sammála 5 = Mjög sammála

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<td>○</td>
</tr>
<tr>
<td>Til þess að gefa mér eða fjölskyldu minni næringarríka máltíð, kaupi ég fisk</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Til þess að bjóða mér eða fjölskyldu minni fjölbreyttta fæðu, kaupi ég fisk</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

**Hversu mikilvæg finnst þér eftirfarandi atriði þegar þú velur þér fisk?**

1 = Alls ekki mikilvægt 2 = Ekki mikilvægt 3 = Hvorki né 4 = Mikilvægt 5 = Mjög mikilvægt

<table>
<thead>
<tr>
<th>Að gefa mér eða fjölskyldu minni holla máltíð</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Að gefa mér eða fjölskyldu minni næringarríka máltíð</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Að gefa mér eða fjölskyldu minni fjölbreyttta fæðu</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

**Hversu mikilvægar finnst þér skoðanir eftirfarandi aðila þegar þú velur þér fisk?**

1 = Alls ekki mikilvægar 2 = Ekki mikilvægar 3 = Hvorki né 4 = Mikilvægar 5 = Mjög mikilvægar

<table>
<thead>
<tr>
<th>Fjölskyldu minnar</th>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vina minna</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Stjórnvalda</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Lækna og næringarfræðinga</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Auglýsinga</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Maka míns</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Matvælaiðnaðarins</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
Hversu sammála eða ósammála erut eftirfarandi staðhæfingum?

1 = Mjög ósammála 2 = Ósammála 3 = Hvorki né 4 = Sammála 5 = Mjög sammála

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ég á erfitt með að dæma geði fisks</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Ég get búið til margar mismunandi máltíðir úr fiski</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Það eru miklar líkur á því að ég velji rangt þegar ég kaupi fisk</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Fiskur er auðfáanlegur fyrir mig</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Það er erfitt að elda fisk</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Ég veit aldrei hvort ég hafi valið rétt þegar ég kaupi fisk</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Ég er vanur/vönn því að borða fisk</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Ég hef mikla reynslu af því að kaupa fisk</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Ég veit um margar tegundir af fiski sem hægt er að elda</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Ég hef mikla þekkingu á fiski</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Ég er upplýst/ur um fisk</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Ég er vanur/vönn því að elda fisk</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Það er partur af venjum mínun að borða fisk</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
</tbody>
</table>

Hversu mikilvæg finnst þér eftirfarandi atriði þegar þú velur þér fisk?

1 = Alls ekki mikilvægt 2 = Ekki mikilvægt 3 = Hvorki né 4 = Mikilvægt 5 = Mjög mikilvægt

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hversu auðvelt það er að dæma geði fiskins</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Fjöldi máltíða sem þú getur búið til úr fisknum</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Líkurnar á því að velja rangt</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Framboð</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Hversu auðvelt það er að elda fiskinn</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Að gera góð kaup</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
</tbody>
</table>

Hvaða fiskur/fiskmeti er í uppáhaldi hjá þér?

Hvar kaupir þú yfirleitt fisk?

- Í matvörubúðum/stórmörkuðum
- Á netinu
- Í fiskbúðum
- Beint frá sjómanni
- Á veitingastöðum
Hversu góðir eða vondir þykja þér eftirfarandi fískréttir?
1 = Mjög vont 2 = Vont 3 = Hvorki né 4 = Gott 5 = Mjög Gott

<table>
<thead>
<tr>
<th>Soðinn fískur</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fískibollur</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Fískur í raspi</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plokkfískur</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fískréttir eldaðir í ofni</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Djúpsteiktur fískur</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fískisúpur</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grillaður fískur</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fískréttir með marineringu</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sushi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harðfískur</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reyktur fískur</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Fískitakkó</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Appendix B

English version of the survey

Fish consumption and attitudes towards fish among Icelanders and tourists

This questionnaire is a part of a MSc. thesis in marketing at Reykjavik University in collaboration with SFS (Fisheries Iceland). The purpose of the study is to provide a comprehensive overview of the status of Iceland’s fishing industry but the thesis will focus on the consumption of Icelandic fish and study aspects such as consumer ideas, attitudes and behaviours related to Icelandic fish. Please try to answer each question honestly but you can skip questions that are not relevant to you. The survey is anonymous and therefore the answers cannot be traced to individuals.

Thank you for your participation, Karen Gréta Minney Pétursdóttir

How many times have you been to Iceland?

- Once
- Twice
- Three times or more

What country are you from?

_____________________

Are you a tourist?

- Yes
- No

What is your gender?

- Male
- Female
- Other

Do you have any children under the age of 18?

- Yes
- No
How old are you?
- 21 or younger
- 22-34
- 35-44
- 45-54
- 55-64
- 65 or older

What is your current relationship status?
- Single
- In a relationship
- Married
- Widow/Widower

What is the highest level of education you have completed?
- Primary school (Elementary school)
- Secondary school (High school)
- Bachelors’ degree
- Masters’ degree
- PhD

What is your current employment status?
- Student
- Student with a job
- Unemployed
- Part time job
- Full-time job
How easy or hard has it been for your family to make ends meet in the past year?
- Very hard
- Hard
- Neither nor
- Easy
- Very easy

How frequently do you eat fish?
- Once a day
- Several times a week
- Once a week
- Several times a month
- Once a month
- Few times a year
- Never

To what degree do you agree with the following statements?
1 = Totally disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Totally agree

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>The chance that I eat fish in the next 2 weeks is high</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am planning to eat fish in the next 2 weeks.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My willingness to eat fish is large</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eating fish is not trustworthy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eating fish is healthy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eating fish is safe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eating fish is expensive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eating fish is nutritious</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish has an unpleasant smell</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The bones in fish are unpleasant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish has a good taste</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am very satisfied when fish is on the menu</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
To what degree do you find the following aspects important when making a fish choice?

1 = Totally unimportant 2 = Unimportant 3 = Neutral 4 = Important 5 = Very important

<table>
<thead>
<tr>
<th>Aspect</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trustworthiness</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Healthiness</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Safety</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Price</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Nutritional value</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Smell</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Bones</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Taste</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Meal satisfaction</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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</tbody>
</table>

To what degree do you agree with the following statements?

1 = Totally disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Totally agree

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>My family thinks that I should eat/buy fish</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>My friends think that I should eat/buy fish</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>The government stimulates me to eat/buy more fish</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Doctors and nutritionists think that I should eat/buy fish</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Advertising stimulates me to eat/buy more fish</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>My partner thinks that I should eat/buy fish</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>The food industry encourages me to eat/buy more fish</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>To give myself/my family a healthy meal, I buy fish</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>To give myself/my family a nutritious meal, I buy fish</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>To offer myself/my family a varied meal, I buy fish</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

To what degree do you find the following aspects important when making a fish choice?

1 = Totally unimportant 2 = Unimportant 3 = Neutral 4 = Important 5 = Very important

<table>
<thead>
<tr>
<th>Aspect</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Giving myself or my family a healthy meal</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Giving myself or my family a nutritious meal</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Offer myself or my family a varied meal</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
To what degree do you find the opinion of the following persons/institutions important when making a fish choice?

1 = Totally unimportant 2 = Unimportant 3 = Neutral 4 = Important 5 = Very important

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>My family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My friends</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>The government</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Doctors and nutritionists</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advertising</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>My partner</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The food industry</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

To what degree do you agree with the following statements?

1 = Totally disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Totally agree

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
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<tbody>
<tr>
<td>I find it difficult to judge the quality of fish</td>
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<td>I can make many different meals with fish</td>
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<tr>
<td>When I buy fish, the chance to make a bad choice is big</td>
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<td>Fish is easily available for me</td>
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<td>Fish is difficult to prepare</td>
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<td>When I buy fish, I never know whether I make a good choice</td>
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<td>I am familiar with eating fish</td>
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<td>I have much experience in buying fish</td>
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<td>I know a lot of fish species that can be prepared</td>
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<td>I have much knowledge about fish</td>
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<td>I am well informed about fish</td>
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<td>I am familiar with preparing fish</td>
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<tr>
<td>Eating fish is a part of my eating habits</td>
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To what degree do you find the following aspects important when making a fish choice?

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<tbody>
<tr>
<td>Easiness of judging the quality</td>
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<td>Number of different meals that you can make</td>
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<td>Chance to make a bad choice</td>
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<td>Availability</td>
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<td>Easiness to prepare</td>
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<tr>
<td>Making a good choice at purchase</td>
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</tbody>
</table>
What is your favorite type of fish/seafood?

___________________________________

Where do you usually buy fish?

- Supermarket
- Online
- Fish stores
- Straight from a fisherman
- Restaurants

How good or bad do you find the following fish dishes?
1 = Very bad 2 = Bad 3 = Neither 4 = Good 5 = Very good

<table>
<thead>
<tr>
<th>Fish Dish</th>
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</thead>
<tbody>
<tr>
<td>Poached fish</td>
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<td>Fish balls</td>
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<td>Crusted fish</td>
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<td>Oven cooked fish</td>
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<td>Deep-fried fish</td>
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<td>Fish soups</td>
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<td>Grilled fish</td>
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<td>Marinated fish</td>
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<td>Sushi</td>
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<td>Dried fish</td>
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<tr>
<td>Smoked fish</td>
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<tr>
<td>Fish tacos</td>
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</tbody>
</table>

Do you want to buy Icelandic fish?

- Yes
- No

Have you bought fish in Iceland?

- Yes
- No
If you have bought fish in Iceland, how much did you like it?
   o I disliked it a lot
   o I disliked it
   o Neither nor
   o I liked it
   o I liked it a lot
Appendix C

A detailed description of the scales

**Behaviour**

How frequently do you eat fish?

Once a day - Several times a week - Once a week - Several times a month - Once a month - Few times a year - Never

**Behavioural intention**

To what degree do you agree with the following statements?

Totally disagree – disagree – neither – agree – totally agree

- The chance that I eat fish in the next 2 weeks is high.
- I am planning to eat fish in the next 2 weeks.
- My willingness to eat fish is large.

**Attitude towards eating fish – Behavioural beliefs**

To what degree do you agree with the following statements?

Totally disagree – disagree – neither – agree – totally agree

**Evaluative judgements**

- Eating fish is not trustworthy (reverse-scaled).
- Eating fish is healthy.
- Eating fish is safe.
- Eating fish is expensive (reverse-scaled).
- Eating fish is nutritious.

**Affective judgements**

- Fish has an unpleasant smell (reverse-scaled)
- The bones in fish are unpleasant (reverse-scaled)
- Fish has a good taste.
- I am very satisfied when fish is on the menu.

**Evaluation of the belief's attribute**

To what degree do you find the following aspects important when making a fish choice?

Totally unimportant – unimportant – neither – important – very important

Items:

Subjective norm – Normative beliefs

To what degree do you agree with the following statements?
Totally disagree – disagree – neither – agree – totally agree

Social norm
• My family thinks that I should eat/buy fish.
• My friends think that I should eat/buy fish.
• The government stimulates me to eat/buy more fish.
• Doctors and nutritionists think that I should eat/buy fish.
• Advertising stimulates me to eat/buy more fish.
• My partner thinks that I should eat/buy fish.
• The food industry encourages me to eat/buy more fish.

Personal norm
• To give me or my family a healthy meal, I buy fish.
• To give me or my family a nutritious meal, I buy fish.
• To offer me or my family a varied meal, I buy fish.

Motivation
Social norm
To what degree do you find the opinion of the following persons/institutions important when making a fish choice?
Totally unimportant – unimportant – neither – important – very important
Items:
My family – My friends – The government – Doctors and nutritionists – Advertising – My partner – The food industry

Motivation
Personal norm
To what degree do you find the following aspects important when making a fish choice?
Totally unimportant – unimportant – neither – important – very important
Items:
Giving me or my family a healthy meal – Giving me or my family a nutritious meal – Offer me or my family a varied meal

Perceived behavioural control – Control beliefs

To what degree do you agree with the following statements?
Totally disagree – disagree – neither – agree – totally agree
Facilitating conditions

- I find it difficult to judge the quality of fish (reverse-scaled)
- I can make many different meals with fish.
- When I buy fish, the chance to make a bad choice is big (reverse-scaled)
- Fish is easily available for me.
- Fish is difficult to prepare (reverse-scaled)
- When I buy fish, I never know whether I make a good choice (reverse-scaled)

Past experience

- I am familiar with eating fish.
- I have much experience in buying fish.
- I know a lot of fish species that can be prepared.
- I have much knowledge about fish.
- I am well informed about fish.
- I am familiar with preparing fish.
- Eating fish is part of my eating habits.

The perceived power of each control factor to facilitate or inhibit the performance of the behaviour:

To what degree do you find the following aspects important when making a fish choice?

Totally unimportant – unimportant – neither – important – very important

Facilitating conditions

Items:

Easiness of judging the quality – Number of different meals that you can make – Chance to make a bad choice – Availability – Easiness to prepare – Making a good choice at purchase.