

**PERCEIVED BARRIERS INHIBITING FINNISH
CONSUMERS FROM ENGAGING IN SUSTAINABLE
FOOD PURCHASING**

**Jyväskylä University
School of Business and Economics**

Master's Thesis

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Subject: Corporate Environmental Management
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**JYVÄSKYLÄN YLIOPISTO
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ABSTRACT

Author Noora Tiainen	
Title Perceived barriers inhibiting Finnish consumers from engaging in sustainable food purchasing	
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<p>Food production significantly impacts climate change, rising health, and social issues on both individual and societal levels. Dietary shifts have been suggested as a key strategy to improve health, maintain food security, and reduce environmental impacts, especially in developed countries. Consumers play a crucial part in implementing the transit, but today the willingness to act does not turn into action.</p> <p>Research objectives relating to sustainable food consumption, behaviour change, and sustainable diets are formed based on the comprehensive overview of previous literature addressing the barriers on the way of sustainable food purchasing. In cooperation with the Finnish retailing conglomerate Kesko, this Master's Thesis aims to investigate consumers' perceived barriers to more sustainable food purchasing to understand factors creating a gap between attitudes and occurring behaviour. In addition, the thesis examines Finnish consumers' food consumption-related habit improvements. The study has a quantitative approach, and to collect data, an online survey was carried out in the autumn of 2022.</p> <p>Consumers report habits and routines, enjoyment of eating meat and perceived high price as the greatest barriers to shift. However, statistics show values and attitudes play an even more critical part than any reported barrier, and the result suggests that consumers do not recognise their importance for food consumption. The barrier perception was found to be the lowest for those being female, highly educated, young, living in Southern Finland and working on the topic.</p> <p>The importance of consuming sustainable food is acknowledged, but only a third of the respondents have improved their food consumption habits. Increasing the share of plant-based products in the diet and decreasing meat consumption were most often applied habit changes. Consumption of local food products was the most popular sustainability aspect to follow and set targets. However, most consumers did not follow their purchase levels or had not set targets for them in the K-ruoka app. In a nutshell, choosing the strategy that notifies Finns' values, communicates societal acceptance of the habit shift, widens the consumers' knowledge base on sustainability issues, offers economic initiatives, and does this through baby steps might be a comfortable strategy to lower Finnish consumers perceived barriers for sustainable food purchasing.</p>	
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<p>Ruoan tuotannolla on huomattava vaikutus ilmaston muutokseen, ihmisten terveyteen sekä vallitseviin sosiaalisiin haasteisiin niin yksilö- kuin yhteisötasolla. Ruokavalioiden muuttamista on esitetty keskeisenä tekijänä ihmisten terveydentilan kohentamiseksi, ruoan turvallisuuden takaamiseksi sekä ilmastovaikutusten vähentämiseksi erityisesti kehittyneissä maissa. Kuluttajilla on keskeinen rooli muutosten toimeenpanossa. Tällä hetkellä kuluttajien positiiviset asenteet muutosta kohtaan eivät kuitenkaan yletä toiminnan tasolle.</p> <p>Yhteistyössä suomalaisen monialayhtiö Keskon kanssa, tämä pro gradu tutkii suomalaisten kuluttajien kokemia esteitä kestävämmän ruoan ostamiselle. Lisäksi tutkielma selvittää suomalaisten jo tekemiä kestävästä kehitystä edistäviä muutoksia ruoan kuluttamisessa. Tutkimustavoitteet pohjautuvat kattavaan kirjallisuuskatsaukseen kestävän ruoan, ruokavalioiden sekä käyttäytymisen muutokseen ympäriltä. Tutkimuksen luonne on kvantitatiivinen ja se toteutettiin verkkokyselynä syksyllä 2022.</p> <p>Tutkimuksessa kuluttajat arvioivat merkittävimmiksi esteiksi kestävän ruoan ostamiselle: tottumuksen, lihasta nauttimisen sekä koetun korkean hinnan. Aineisto kuitenkin esittää arvot sekä asenteet merkittävämmiksi esteiksi ja on oletettavaa, etteivät kuluttajat tiedosta näiden todellista merkittävyyttä ruokaostoksia tehdessään. Alhaisimmiksi esteet ruokatottumusten muuttamiselle kokivat nuoret, korkeasti koulutetut, Etelä-Suomessa asuvat ja aiheen parissa työskentelevät naiset.</p> <p>Kuluttajat tunnistavat kestävän ruoan kuluttamisen tärkeyden, mutta vain kolmas vastaajista on kehittänyt ruokatottumuksiaan kestävämpään suuntaan. Vallitsevimmat muutokset olivat kasvipohjaisten tuotteiden käytön lisääminen ja lihatuotteiden käytön vähentäminen. K-ruoka applikaatiossa useinten seurattiin kotimaisten tuotteiden kuluusta ja tälle myös asetettiin terveellisyttä ja ympäristöjälkeä useammin tavoitetaso, vaikakaan suurin osa kuluttajista ei seurannut ostamiensa tuotteiden kestävyystasoa. Yhteenvetona voidaan todeta, että strategia, joka huomioi suomalaisten arvot, luo sosiaalisesti hyväksyvän ilmapiirin muutokselle, laajentaa kuluttajien tietämystä kestävästä päätöksistä, tarjoaa taloudellisia kannustimia, voi pienin askelin toteutettuna madaltaa esteitä ruokatottumuksien muuttamiseksi.</p>	
Asiasanat kestävä ruoka, esteet, kuluttaminen, kuluttajat, käyttäytymisen muutos	
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1 INTRODUCTION

This Master's Thesis investigates the perceived barriers and socio-demographic aspects inhibiting consumers from engaging in long-term sustainable food consumption. The thesis starts with the assumption that the food we consume impacts substantially multiple systems around us, then addresses the consumers' part to these factors and finally outlines why research for making sustainable food consumption convenient is needed. After that, the research aims and objectives of the present study are justified, and the structure of the thesis is shared.

1.1 Background

Food production must deal with the impact of climate change, rising health and social costs on both individual and societal levels and increasingly challenging land-use conflicts (e.g. FAO & WHO, 2019; IPCC, 2019; Ministry of Agriculture and Forestry of Finland, 2021; Reisch, Eberle & Lorek, 2013). Producing and consuming food are the greatest contributors to global warming in Europe (OurWorldInData, 2019; Salonen, Siirilä & Valtonen, 2018). Food is responsible for 26% of global GHG emissions (OurWorldInData, 2019) and over one-third of the consumer's footprint consists of food consumption (MTT report, 2013). The Finnish Environmental Institute has calculated that the consumed food composes one-fifth of the average Finnish carbon footprint (SYKE, 2023). It is an outstanding share of our carbon footprint, and the Ministry of Agriculture and Forestry of Finland (2021) has drafted a program to decrease Finns' diets' climate impact and to improve the health and social effects of diets.

Human health and planetary health are interconnected at a deep level (JYU.Wisdom community, 2021). Now public health systems in developed countries are under pressure to prevent noncommunicable diseases such as obesity, diabetes and cancer, which all threaten long-term health (WHO, 2021). Dietary shifts have been suggested as an essential strategy to improve health, maintain food security and reduce environmental impacts, especially in developed countries (Candy et al., 2019). Different diets create different amounts of carbon and waste and use different amounts of land, which affects biodiversity. Consumed diets also affect people's health differently, and choosing between domestic and transported products, there are different kinds of social impacts in addition to environmental impacts. (e.g. Candy et al., 2019; FAO & WHO, 2019; IPCC, 2019; Ministry of Agriculture and Forestry of Finland, 2021.)

Different stakeholders together can solve the problems our present food system is causing. One important stakeholder group is consumers. (FAO & WHO, 2019; IPCC, 2019; Ministry of Agriculture and Forestry of Finland, 2021.) The most efficient ways to improve affluent societies' health and decrease the

environmental impact are by reducing the consumption of meat and dairy products. At the same time, simultaneously favour organic fruits and vegetables and avoid goods transported by air. ((Candy et al., 2019; IPCC, 2019; Ministry of Agriculture and Forestry of Finland, 2021; Reisch et al., 2013.) These acts should be complemented by decreasing processed food consumption and keeping portion sizes at a minimum (WHO, 2021). Engaging consumers in transit happens through clear dietary guidelines and vigorous campaigning (WHO, 2021). These need to be developed in cooperation with different fields' professionals (WHO, 2021) as a holistic approach and behavioural change are needed (Salonen & Åhlberg, 2013; Vinnari & Vinnari, 2014).

More consumers report willingness to take sustainability actions than actually end up acting (Corrin & Papadopoulos, 2017). Consumers are generally suggested to be individuals which look for easiness and convenience. We tend to stick to existing habits, and lowering the barriers to change is necessary. (Gifford et al., 2017; Higgs, 2015.) Consumers need support and easy ways to do better, as when there is an easy way, they make better decisions (Graça, Oliveira & Calheiros, 2015b; Ingenbleek, 2014). This study will focus on finding the obstacles which occur while making everyday food purchases and suggest ways to lower these obstacles in the future. Purchasing food is such an everyday task that it should be as effortless as breathing so that one would do it constantly. As plenty of barriers still exist (e.g. Brons & Oosterveer, 2017; Haider et al., 2022; Higgs, 2015; Ran et al., 2022;) to making sustainable food purchasing easy as breathing, the first step to tackling these obstacles is to identify them (Vinnari & Vinnari, 2014). Then one can start looking for solutions.

To discover Finnish consumers' perceived barriers to engaging in sustainable food purchasing, previous research focusing on sustainable diets (e.g. Ahmed et al., 2019; de Boer et al., 2017; FAO & WHO, 2019; Rosenfeld, 2018;), sustainable food shopping (e.g. Aschemann-Witzel & Zielke, 2017; Li & Kallas, 2021) and food behaviour change (e.g. Brons & Oosterveer, 2017; Graça et al., 2015; Higgs, 2015; Vinnari & Vinnari, 2014) was reviewed. While covering the existing theory, the overall view of the phenomena was discovered: Do consumers recognise the need for sustainable food, and are they willing to act in more sustainable ways? If consumers recognise the need for sustainable food consumption, why do most of them not turn this intention into action? To answer these questions, I cooperated with KESKO, a Finnish retailing conglomerate which maintains a food consumption-focused application called K-ruoka. The application has an attribute that calculates individual consumers' groceries' domestic, carbon and health levels and shows them as figures. In the app, there is a possibility to set goals to reach healthier, environmentally friendlier and more domestic-focused outcomes with one's groceries. KESKO has a customer pool consisting of volunteers for executing surveys. The pool was utilised to conclude a survey to investigate consumers' perceived barriers to sustainable food purchasing, how consumers have already improved their food consumption habits and whether they

have utilised K-ruoka app's features for improving their food consumption towards a more sustainable one. The survey was based on the theories, discussion, conclusions, and surveys of the previous research (especially; Fehér, Gazdecki, Véha, Szakály & Szakály, 2020; Lourenco, Nunes-Galbes, Borgheresi, Cezarino, Martins & Liboni, 2022; Pohjolainen Vinnari & Jokinen, 2015; Haider, Essl, Zulka & Schindler, 2022; Salonen, Fredriksson, Järvinen, Korteniemi & Danielsson 2018; Gleim, Smith, Andrews & Cronin, 2013) focusing on researching Finnish consumers' perceived barriers to more sustainable everyday food shopping. The survey was built after concluding a comprehensive overview of previous literature addressing the barriers to sustainable food purchasing.

1.2 Justification and aims of the study

The thesis topic was formulated in cooperation with Kesko, beginning with the need to understand the most efficient ways to support Finnish consumers' sustainable food purchasing. Kesko, the Finnish retailer company, provided the purpose and I as a researcher, motivated by the background reviewed above, began approaching the topic by interviewing Kesko's contact person to identify the state of existing knowledge of the company. From there, I developed the research aim by concluding a preliminary literature review to understand where to start to further the understanding of supporting Finnish consumers' sustainable food consumption. The findings are relevant for governmental organisations such as the Ministry of Agriculture and Forestry of Finland that aim to influence consumers' dietary choices, as well as for businesses such as Kesko that operate in the food industry and are taking action to support consumers' sustainable food consumption.

Multiple studies (e.g. Gleim et al., 2013; Fehér et al., 2020; Haider et al., 2022; Lourenco et al., 2022; Pohjolainen et al., 2015; Salonen et al., 2018) have been conducted in Europe and other parts of the world to understand why the majority of consumers do not shift to more sustainable diets, but there is little to no previous research in the Finnish context. Previous studies (e.g. Gleim et al., 2013; Fehér et al., 2020; Haider et al., 2022; Lourenco et al., 2022; Pohjolainen et al., 2015; Salonen et al., 2018) report slightly differing obstacles for the dietary shifts and suggest different ways to support transit. Different contexts bound aspects such as food culture, geographic location and cultural habits affect the outcomes (FAO & WHO, 2019; Vinnari & Vinnari, 2014). To build optimised practical implementations, it is essential to understand context-related barriers. While understanding the main barriers is possible to create efficient, focused and understood-based strategies to support the shift towards more sustainable food consumption behaviour. (Lea et al., 2006b; Middelkamp, 2018; Vinnari & Vinnari, 2014.) This route provided an understanding that we first need to examine barriers inhibiting Finnish consumers from engaging in sustainable food consumption. These barriers need to be studied to fill an identified research gap in the literature.

Based on the crucial need to understand factors creating a gap between attitudes and occurring behaviour, the research aims of the present study formulated to be (A1) to investigate and further understand Finnish consumers' barriers inhibiting them from engaging in sustainable food purchasing and (A2) exploring the food consumption-related habit improvements of Finnish consumers. The research aims are both divided into two research objectives. The first research aim is divided into objectives RO1) to examine the major self-reported barriers to purchasing sustainable food and RO2) to discover the correlations between reported barriers and different types of respondents. The first objective defines the main perceived barriers of the Finnish consumers as the found literature has not examined barriers in the Finnish context and acknowledging the barriers is a critical starting point for lowering the right barriers. The second objective continues furthering the understanding of whether certain socio-demographical traits in Finland create barriers to sustainable food consumption.

The second research aim is split into RO3) to discover the relations between different types of respondents and self-reported sustainability habit changes in food consumption and RO4) to examine the relationship between demographics and following and setting sustainable food consumption targets. The third objective seeks to broaden an understanding of consumers willing and unwilling to improve their sustainable food consumption habits. Understanding consumer types in this area gives valuable knowledge about which kind of consumer groups to approach and how to support consumers' habit shifts. The fourth objective seeks to study which kind of consumers utilise and are interested in the K-ruoka app's feature to follow and set targets for the different aspects of sustainable food purchasing. The knowledge in this area helps further develop an app that supports sustainable food purchasing improvement for consumers. In a nutshell, the research aims and objectives of the study are the following:

A1: to investigate and further understand Finnish consumers' barriers inhibiting them from engaging in sustainable food purchasing through two main objectives:

- *RO1: to examine the major self-reported barriers to purchasing sustainable food; and*
- *RO2: to discover the correlations between reported barriers and different types of respondents.*

A2: to explore the food consumption-related habit improvements of Finnish consumers through two main following main objectives:

- *RO3) to discover the relations between different types of respondents and self-reported sustainability habit changes in food consumption; and*
- *RO4) to examine the relationship between demographics and following and setting sustainable food consumption targets.*

1.3 Structure of the thesis

This Master's Thesis consists of six sections, and the study is structured in the following way: The introduction chapter is followed by two theory sections; where the first one focuses on defining sustainable food basing on the previous literature while notifying the traits used in the K-ruoka app, and the second theory chapter overviews the previous literature summarising the found barriers for individuals sustainable food consumption. The primary focus in the second theory chapter is given to the three most often appeared barriers in this study: familiarity preferring, perceived high price and the enjoyment of meat-eating. The theory part is followed by the data and methodology chapter that presents the research approach and data collection methods: a quantitative approach utilising the methods of an online survey. The fifth section presents the results and analyses of the results. The sixth and final chapter discusses the main findings addressing the point and ways to lower barriers to consumers' sustainable food consumption, considers the study's limitations and makes suggestions for future research. Finally, the questionnaire is presented in the appendixes.

2 SUSTAINABLE FOOD AND FOOD CONSUMPTION

This study aims to understand what keeps consumers from engaging in sustainable food purchasing, and chapter three will examine barriers inhibiting consumers from purchasing sustainable food based on the literature review. Initially, sustainable food is defined based on the literature to understand what is discussed. At the same time, a sustainable diet is being discussed. Diets cannot be separated from sustainable food consumption as diets guide food consumption, and food availability guides diet construction. (Reisch et al., 2013.) Sustainable food is discussed especially in the manners of environmental, socio-cultural, and health aspects.

2.1 Defining sustainable food

The definition of sustainable food contains the same central ideas as sustainability itself. Sustainable food meets basic needs while securing the same needs for future generations via protecting the Earth's resources and minimizing pollution and waste. (Ulvila, 2018.) The most basic definitions of sustainable food consumption consider the social, economic and environmental impacts of food production and consumption while fulfilling consumer' wants and needs (Vermeir, I., & Verbeke, W. 2006). Sustainable food is a holistic term that considers nutritional recommendations, the safety and accessibility of the food, the environmental cost of food production and consumption, and the adaptability to the local social, cultural, and economic contexts. Sustainable food should not threaten the needs of others but respect biodiversity and ecosystems. (FAO & WHO, 2019; Sabaté & Soret, 2014.)

Calculations show that plant-based diets in comparison to diets rich in animal products use fewer natural resources, damage less environment (Sabaté & Soret, 2014) and are better for human health (Montagnese et al., 2015; Ruokavirasto, 2014). Food systems are the product of our history, religious, social, cultural, and economic context. Food forms diets that are not only nutrient and fuel-described dietary goals, but a way of life and something that shapes and is shaped by how food is produced, procured, distributed, marketed, chosen, prepared, and consumed. (Ahmed, Downs & Fanzo, 2019; FAO & WHO, 2019). Sustainable and healthy diets combine all the dimensions of sustainability to minimise unintentional consequences so that today's generations can fulfil their needs in the ways that future generations have the same possibility (FAO & WHO, 2019; Sabaté & Soret, 2014). The comprehensiveness of food consumption makes social and economic aspects tied in the discussion around sustainable food as well as environmental friendliness and healthiness of the food.

2.1.1 Environmentally sustainable food

Environmentally sustainable food notices different elements of environmental impact that food consumption and production causes. Primarily these include GHG emissions, water consumption and pollution, biodiversity loss, land use, and soil degradation, and eutrophication. The food system releases approximately one third of global GHGs, and these GHG emissions are primarily caused by livestock farming, the use of synthetic pesticides and mineral fertilizers, transportation, food processing and packaging, and cooling, and cooking. Households' environmental impact results mostly from the handling and preparing food including energy needed in storage, cooking and dishwashing. (Ahmed et al., 2019; IPCC, 2019; OurWorldInData, 2019; Reisch et al., 2013.) Also, food choice is relevant as animal-source foods have higher environmental impacts per calorie or grams of food produced than most plant-based foods (FAO & WHO, 2019; OurWorldInData, 2019; Sabaté & Soret, 2014). For instance, reducing meat and meat product consumption can reduce GHGs while remaining nutritionally adequate. Global adoption of a low-meat diet that meets nutritional recommendations is estimated to reduce diet-related GHGs by almost 50% and premature mortality by nearly 20%. (FAO & WHO, 2019.) Dairy products cause the second most considerable GHG emissions (Reisch et al., 2013).

Food production consumes most of the world's freshwater, 70% (IPCC, 2019). In some developing countries, for up to 90% of usage (Reisch et al., 2013). Producing some foods demand more water than others. For example, in Spain, the Mediterranean diet (plant-based with a moderate level of animal-sourced foods) has been shown to use 33% less water during food production in comparison to healthy diets that contain meat. (FAO & WHO, 2019.) Agriculture is also one of the main polluters of water bodies (OurWorldInData, 2019; Reisch et al., 2013). That is mainly due to the appropriation of nitrates from the soil and the use of pesticides. Fertilizers and nitrous oxide emissions from livestock breeding instead cause the majority of the water eutrophication. (Reisch et al., 2013.)

Lastly, food production has the highest negative impact on biodiversity compared to other fields. This is due to agrochemicals associated with intensive farming, land use, and modification, and sometimes the replacement of local varieties of domestic plants with high-yield or exotic alternatives. (FAO & WHO, 2019; IPCC, 2019.) Agriculture uses the land for plant farming and pasture. Especially the growing population and demand for animal products require high land usage. Agriculture is responsible for 80% of global deforestation (IPCC, 2019).

An important aspect of environmentally sustainable food is the consideration of wasteful food systems and food loss (IPCC, 2019; Sabaté & Soret, 2014). One-third of all food produced is either lost or wasted. Today's global food market plays a remarkable role here as it demands transportation and storage of goods. Long-distance transportation and storage periods need future planning, and food quality is not always guaranteed. Poor success in optimising the number of needed food leads to retailers and consumers buying more food than they

can use. (IPCC, 2019.) Additional ways to reduce the food system's environmental impact are the reduction of food waste and transportation (FAO & WHO, 2019; Reisch et al., 2013; Sabaté & Soret, 2014).

Notifying all the mentioned aspects, it can be summarised that environmentally sustainable food has low environmental pressure and impact, and supports the preservation of biodiversity and planetary health. This means food produced nearby with clean energy, fresh, seasonal, and minimally processed, mainly plant-based and organically farmed food. (Ahmed et al., 2019.)

2.1.2 Healthy food

Healthy food supports functioning and physical, mental, and social well-being at all life stages for present and future generations. In addition, healthy food prevents malnutrition, such as undernutrition or overweight, and reduces the risk of diet-related chronic diseases. (FAO & WHO, 2019; Ahmed et al., 2019.) The risk of malnutrition still exists even in western countries, especially among the poor, the elderly, and the sick, but in the affluent world, weight gain ranks among the most considerable risk for premature deaths and disabilities, and it is also trending in the wrong direction (WHO, 2019). Healthy, sustainable food that prevents these risks is based on a great variety of unprocessed or minimally processed foods (Ahmed et al., 2019; FAO & WHO, 2019).

Initially, healthy food is safe food. Unsafe food contains unwanted substances such as pathogenic substances, contaminants, and toxic substances like heavy metals in food products, causing health risks (FAO & WHO, 2019; Reisch et al., 2013). The most severe food-safety issue in Europe is food-borne illness from food poisoning and poor hygiene. However, it is also presented that overly hygienic circumstances might be why more food allergies have been reported over recent years. (DEFRA, 2008.)

Strategies to promote a healthy diet include the development of food-based dietary guidelines (Montagnese et al., 2015). Recommendations are based on research, and they notify the nutritional demand of the whole human life and different kinds of diets. Recommendations alter over time as a way of living and state of health varies, and new research knowledge of consumed foods impacts is gained. National and international organisations such as Ruokavirasto and WHO have created their recommendations for healthy food which promotes sustainable well-being. The entirety is what matters when considering a healthy diet, and this contains healthy dietary patterns that are healthy and simultaneously meet personal cultural and traditional preferences (Ahmed et al., 2019).

Though, nutritional key points are similar all over Europe despite dietary patterns resulting from geographic conditions or cultural heritages. The main focus is to consume sufficient amounts of grains, vegetables, and fruits and moderate intake of fats, sugars, meats, caloric beverages, and salt. (Montagnese et al., 2015.) Finnish food safety authority Ruokavirasto (2014) defines a health-supporting diet consisting mainly of plant kingdom items such as berries, fruits, legumes, and whole grain products. In addition, it includes fish, peanuts and seeds,

and fat-free or low-in fat dairy products. This kind of diet is shown to prevent weight gain, type 2 diabetes, cardiovascular disease, high blood pressure, and certain cancers. Conversely, Ruokavirasto (2014) recommends avoiding meat-eating (especially red meat), groceries with few vitamins, minerals, or low fibre, and high in sugar, saturated fat, and salt. Dietary changes towards more plant-based foods and fewer animal products are associated with remarkable health benefits. Compared with reference scenarios, reduction of animal products decreased diet-related mortality 6-10% in 2050. (Springmann et al., 2016). Plant focused diets also promote environmental friendliness as it has smaller footprint compared animal-product central diets (FAO & WHO, 2019; Springmann et al., 2016).

2.1.3 Socio-culturally sustainable food

Socio-cultural (economic and social) aspects are separately present in our daily food consumption, impacting how the food system and habits occur. Individuals make daily multiple food choices that are affected by economic and social factors such as food cost and affordability, livelihood, and social environment. Socio-cultural sustainable food is culturally acceptable food in the local communities. This kind of food follows shared practices and food choice values and is accessible, affordable, and desirable. Socially sustainable food respects local culture, culinary practices, knowledge and consumption patterns, and values on how food is sourced, produced, and consumed. (FAO & WHO, 2019; Ahmed et al., 2019.) Chiles and Fitzgerald (2017) state that the cultural aspect is essential concerning the consumption of farmed animal products while evaluating sustainability. The cultural aspect is important because animal products, especially meat, play a role in constructing our perspective on our culture and ourselves.

People eat what they can afford and have time to prepare, so socio-cultural food is affordable in time and money (Ahmed et al., 2019). Food production, acquisition, preparation, cooking, and disposal are gender-specific tasks, and this way, sustainable food considers gender-related impacts, especially the time that buying and preparing food takes. When considering money, nutritious foods are more expensive than energy-dense foods and poverty constraints access to healthy foods. (FAO & WHO, 2019.) Ethical aspects are also part of sustainable food consumption. Vinnari and Vinnari (2014) remind that it has previously been proposed that sustainability can be examined with the help of a triangle comprising economic, environmental, and ethical spheres, with the ethical sphere perhaps incorporating animal welfare or animal rights issues.

2.1.4 Unsustainable food choices

Reisch et al.'s (2013) overview shows that agreeing on the definition of sustainable food remains complex, but research and policy seem to agree on the main drivers of unsustainability. The paper states that today's unsustainability arises from the industrialisation and globalisation of agriculture and food processing,

the shift toward increased use of animal protein (Reisch et al., 2013; Sabaté & Soret, 2014), the increasingly processed food products, the growing inequality between rich and poor, and the paradoxical lack of food security amid an abundance of food. These trends cause a situation where sustainability problems such as negative climate impacts, increasingly challenging land-use conflicts, rising health and social costs on both individual and societal levels are expected to be more severe in the future. (Reisch et al., 2013.)

Unsustainable food can be considered bad for human health, the environment, and animals and discourages local food production. Unhealthy food causes diseases such as high blood pressure. Unecological food causes harm to nature and animals and destroys the environment's natural ecosystem. Unsocially sustainable food harms local food producers' livelihood and living surroundings. (FAO & WHO, 2019; Reisch et al., 2013; Vinnari & Vinnari, 2014.) De Schutter, Bruckner, and Giljum (2015) summarise ways how to avoid unsustainable food consumption in Europa in the following steps: (i) raise the share of vegetables, pulses, grains, and fruits; (ii) reduce meat and dairy products substantially; and (iii) prefer organic products over conventionally produced ones. The most remarkable singular act is the reduction of animal product consumption (Sabaté & Soret, 2014). Also, it is essential to reduce food waste, consume products seasonally and regionally, and reduce transport routes from the point of sale to the home. The same aspects may be considered worldwide while acknowledging the differences that geographical location and farming conditions cause. (e.g. De Schutter et al., 2015; FAO & WHO, 2019; Reisch et al., 2013; Sabaté & Soret, 2014.)

3 BARRIERS INHIBITING CONSUMERS FROM ENGAGING IN SUSTAINABLE FOOD PURCHASING

This chapter briefly reviews the multitude of barriers identified in the research literature. After the review, the focus is deepened to the obstacles central to this study: habits and routines, the perceived high price of sustainable products, and the importance of meat as a part of the diet.

3.1 Literature review of barriers

During the 21st century, research has emerged in increasing volumes to investigate barriers to sustainable food consumption to understand better the public's limited engagement with it. Barriers constitute multiple dimensions holistically covering all human beings thinking, social structures, and ideologies always to the existing food cultures and denial of the needed transition. Table 1 summarises multiple barriers identified in the literature for the sustainable food consumption shift. Barriers presented in the table are grouped under dimensions according to the themes that emerged: cognitive and psychological, losses and limitations, and social and cultural dimensions. For narrowing focus, not all barriers are examined in detail, and instead, the present study focuses on habits and routines, economic aspects, and the habit of meat eating. However, barriers in Table 1 are presented briefly to create a comprehensive understanding of the barriers inhibiting individuals from engaging in sustainable food consumption. Multiple found studies discuss barriers widely, including different dimensions, and some reviewed studies focus on more specific areas, such as motives and burdens of vegetarianism. The main points of the reviewed studies are presented in the order of relevance, starting with the main findings of the reviews. This is followed by studies focusing on more specific barriers.

Papers of Fehér et al. (2020), Lourenco et al. (2022), Pohjolainen et al., (2015), Haider et al. (2022), Salonen et al. (2018), Gifford et al., (2017), Vinnari and Vinnari (2014) and Gleim et al. (2013) together give an overall look on obstacles consumers have for consuming sustainable food. Studies (Gifford et al., 2017; Gleim et al., 2013; Haider et al., 2022; Salonen et al., 2018; Vinnari & Vinnari, 2014) holistically focusing on sustainable consumption and sustainable food consumption discussed more impact of awareness and knowledge compared to papers with plant-based diet focus. Haider et al.'s (2022) findings on Austrian consumers' barriers to consuming more sustainable food emphasise the importance of

awareness raising, product information and increasing the supply of sustainable products to lower barriers and support healthy and environmentally friendly food consumption. Haider et al. (2022) highlight that awareness of and affinity to conservation issues is a major factor in food purchase decisions. Individuals more interested in nature conservation issues are more likely to be aware of their diets' impacts on biodiversity.

Similarly, to Haider et al.'s (2022) results, Gleim et al.'s (2013) study of barriers to green consumption revealed that product information helped to overcome consumers' perceptions that they lacked expertise regarding green products. Simple verbal information resulted in higher purchase intentions than numerical information. However, Gleim et al. (2013) concluded that over all other factors, the price was a key inhibitor of whether customers would buy green products or not. Interestingly, Salonen et al. (2018) found that Finns are conscious of climate change, the matter of their food choices and willing to improve their behaviour, but it has not caused sustainability diets to become mainstream. Whether consumers have estimated their awareness level properly, the results do not suggest the need for awareness raising which is contradictory to the suggestions of Gleim et al., (2013) and Haider et al. (2022). Instead, Salonen et al. (2018) discuss the lack of habit as the main barrier. In summary, it seems that the focus of the holistically approaching studies and context impacted the outcome.

Papers focusing on the consumption of plant-based diets (Fehér et al., 2020; Lea and Worsley (2003a); Lourenco et al., 2022; Pohjolainen et al., 2015) agree that enjoyment of eating meat and inconvenience are great barriers to the conversion to more sustainable diets. Little has changed as Lea and Worsley's (2003a) older study in Australia resulted same perceived barriers to adopting a vegetarian diet as the newer research: enjoyment of meat eating and the unwillingness to alter eating habits. Fehér et al. (2020) review shows that international and Hungarian literature presents enjoyment of eating meat, health considerations and inconvenience as major obstacles to the conversion to a plant-based diet. Lourenco et al.'s (2022) paper discuss psychological barriers to sustainable dietary patterns and reports that the main perceived barriers to adopting a plant-based diet are the enjoyment of meat eating and lack of information about plant-based diets. Because of these, meat remains a usual option and the easiest to prepare. Pohjolainen et al., (2015) analysed the barriers perceived by consumers to plant-based diets and found barriers to be meat enjoyment, eating routines, health conceptions and difficulties in preparing plant-based food. Pohjolainen et al. (2015) found these barriers to correlate strongly, and there are distinct socio-demographics, especially regarding meat consumption barrier perception. The barrier perception was found to be stronger for those being male, young, living

in rural areas, having a family with children, low education, valuation of traditions, wealth and high meat consumption and lacking vegetarian family member or friend. Ten years earlier, Lea and Worsley (2006b) found sex, and education differences being present in more than a quarter of the barrier items, which suggests little improvement.

Pohjolainen et al.'s (2015) findings are supported by Smiglak-Krajewska and Wojciechowska-Solis (2021) and Schösler et al.'s (2012) papers. Smiglak-Krajewska & Wojciechowska-Solis (2021) and Schösler et al.'s (2012) focus on motives, barriers and pathways to replacing animal protein with vegetable protein. Smiglak-Krajewska and Wojciechowska-Solis (2021) report that women often consider pulses a good alternative to meat products, but both Smiglak-Krajewska and Wojciechowska-Solis (2021) and Schösler et al.'s (2012) found that, despite the gender, skills to prepare tasty plant-based meals is one of the most critical barriers preventing conversion. Schösler et al. (2012) supplement this by notifying the lack of familiarity with meat substitutes.

Studies such as Graça, Calheiros, and Oliveira (2015a), Brons and Oosterveer (2017), Corrin and Papadopoulos (2017), Povey, Wellens, and Conner (2001), Ruby (2012), Edwards (2013), Fiddes (1991), Forestell and Nezlek (2018), Hirschler (2011), Kildal and Syse (2017) and Twine (2014) continue deepening the understanding of motives, pathways and barriers for plant-based diets. Corrin and Papadopoulos (2017), Graça et al. (2015a) and Povey, Wellens and Conner (2001) focus on understanding perceptions of vegetarian and plant-based diets. Corrin and Papadopoulos (2017) indicate positive attitudes towards vegetarian diets but also many barriers to consuming plant-based diets, such as health concerns, an unwillingness to make dietary changes, and the enjoyment of meat-eating. Graça et al. (2015a) studied the willingness to adopt a more plant-based diet. Their results indicate that higher meat attachment indicates a lower willingness to alter eating habits. Instead, Povey et al. (2001) resulted that most respondents displayed positive attitudes and beliefs towards their diets and negative ones towards a diet that differed most from their own. Subjective norms, attitudes, and perceived behavioural control particularly predicted an intention to follow each diet as predicted based on the *Theory of Planned Behaviour*. Brons and Oosterveer (2017) address access to sustainable food from a practice theories perspective. Findings propose that access to sustainable food is not determined by individual attitudes or financial means alone but rather by a complex mix of multiple social practices.

Higgs (2015), Ruby (2012), Kildal and Syse (2017), Buchs, Hinton and Smith (2015), Edwards (2013), Forestell and Nezlek (2018), Lea and Worsley

(2001), and Romo and Donovan-Kicken (2012) studied social aspects of consuming a plant-based diet and all studies reported adverse social aspects or obstacles being linked to consuming plant-based diet, which indicates that social structures do not support vegetarian diets. Results underline the meaningfulness of social and cultural factors of food and present systems to allow women to be more receptive to diet shift. Higgs' (2015) review examines why people follow social eating norms and the factors that moderate norm following. Higgs (2015) highlights that norm following is an adaptive behaviour; norms yield information about safe food, and social norms affect behaviour because they are associated with social judgments. Forestell and Nezelek (2018) researched whether vegetarians and omnivores differ in their personality traits and found vegetarians and semi-vegetarians to be more open to new experiences, more neurotic, and more depressed than omnivores. They did not find conscientiousness or agreeableness to vary between respondents.

Transforming culture is slow and it seems that the same associations after decades maintain. O'Doherty and Holm (1999) give an overview of gender preference differences for certain foods and types of meals. The review summarises that women have overall healthier and more sustainable food consumption habits compared to men. Fiddes (1991) addresses in his book how meat is linked to humans' identity and discusses aspects such as how meat is associated with a higher status and how plant-based food is identified as more feminine compared to meat, found more masculine. Ruby's (2012) review of empirical investigations of the practices and beliefs associated with vegetarianism summarises that meat and masculinity go hand in hand in many cultures and, among other aspects, maintain the meat-eating culture. Kildal and Syse's (2017) findings of Norwegian soldiers' reactions and attitudes toward Norwegian Armed Force's decision to reduce meat consumption in military mess halls support an existing link between meat and masculinity. The research found critical barriers, including soldiers' association of meat with protein, masculinity, and comfort, preventing the implementation of meat reduction.

It is not easy to go against the mainstream. Buchs et al. (2015) focus on the role of emotions in climate change engagement initiatives and present that needed lifestyle shifts might involve multiple negative emotions such as fear, grief, anxiety, guilt, loss, and helplessness. Choosing the path less travelled and choosing a minority food culture as a vegetarian/vegan, may cause complicated feelings such as worry, loneliness, and fear (Edwards, 2013) and social support is vital (Lea and Worsley, 2001). Lea and Worsley's (2001) study resulted that essential predictors of meat consumption were perceived difficulties with vegetarian diets, the number of vegetarian significant others, and beliefs about meat.

Romo and Donovan-Kicken (2012) present difficult emotions occurring from communicative dilemmas such as presentational challenges (e.g. being true to yourself yet fitting in, talking about a vegetarian lifestyle without judging others) which vegetarians face.

Despite the obstacles, some consumers manage and are willing to maintain sustainable diets. Studies (de Boer et al., 2017; Rosenfeld, 2018; Hirschler, 2011; Lea and Worsley, 2003b; Lea, Crawford & Worsley, 2006a; Verain et al., 2012) discussing the motivations of eating plant-based present ethical and health reasons as the highest motivators for following the diet. de Boer et al.'s (2017) samples show that low and medium meat-eaters were motivated by health reasons to eat meat and also to moderate meat eating, and they also wanted to vary their meals. The vegetarians justified their abstinence from eating meat for taste- and animal-welfare-related reasons. Rosenfeld (2018) provides an overview of recent research on the psychology of vegetarianism. The majority of vegetarians report ethical rather than health motivations. Instead, omnivores exhibit the most negative attitudes toward vegetarians driven by animal rights and the most positive attitudes towards health-oriented vegetarians. (Rosenfeld, 2018.) Hirschler (2011) interviewed thirty-two vegans to explore their motivations for becoming vegan and found similar reasoning to Rosenfeld (2018). The vegan participants summed a vegan diet to increase physical, eudaemonic, and spiritual well-being but also analysed that people have the habit of eating and preparing meals including meat, and the shift to a vegan diet might seem too demanding and inconvenient.

Lea and Worsley (2003b) agree with Hirschler (2011) as they concluded vegetarians and semi-vegetarians find health issues relatively more critical, while non-vegetarians find knowledge and convenience as the most important factors when considering plant-based diets. The study predicts that non-vegetarians would require information on preparing quick and easy plant-based meals to obtain some of the diet's health benefits. Lea et al. (2006a) conducted a mail survey to examine consumers' readiness to transform to a plant-based diet. The survey showed that the change stage correlated with perceived barriers and benefits of plant-based diets. Those who maintained a plant-based diet had the highest scores for benefits associated with plant-based diets, whereas those in the pre-contemplation stage did not recognise those benefits. (Lea et al. 2006a.) Verain et al.'s (2012) review complements other studies' suggestions that consumers maintaining a sustainable diet share similar lifestyles and values toward sustainable food. Results suggest that perceived value for money indicated sustainable food consumption in the manner that the most price-conscious segment scores aver-

age in organic consumption when instead, the health-conscious segment emphasised the value for money.

Previous research examines widely the matter of economic aspects of purchasing sustainable food. The most relevant studies discussing economical barriers were Aschemann-Witzel and Zielke (2017), Ran et al. (2022), Hoek et al. (2017), Yamoah and Acquaye (2019), Cecchini, Torquati and Chiorri (2018), Gerini et al. (2016), Salonen and Åhlberg (2013), de Boer et al. (2017) and Ingenbleek (2014). While examining these studies together, it seems that consumers perceive sustainable products as too expensive, as the result of undervaluing sustainability as willing consumers can afford sustainable food shopping despite their income level.

Studies by Aschemann-Witzel and Zielke (2017), Ran et al. (2022), Yamoah and Acquaye (2019) and Ingenbleek (2014) display perceived higher price as a major barrier to consumers' sustainable food purchasing. Aschemann-Witzel and Zielke's (2017) review research from 2000 to 2014 on the role of perceived price, income, willingness to pay, price knowledge, and reactions to price changes in organic food. Their findings show that the price is a primary perceived barrier to purchasing organic food and that price sensitivity is higher for occasional or non-organic consumers. Ran et al. (2022) identify critical factors influencing people's capability, opportunity, and motivation to make more environmentally sustainable choices related to sustainable food shopping and agree with the barriers of Aschemann-Witzel and Zielke's (2017) review. Results present price and time as the main obstacles and quality, health, locality, animal welfare, and convenience as the primary motivational factors. Yamoah and Acquaye (2019) run into the same barriers as they examine the attitude-behaviour gap for sustainable food consumption. They present that even though the attitudes towards sustainable products are positive, market share remains small as there still exist remarkable inhibitors such as premium pricing, availability of the products, and variety to overcome.

Cecchini et al. (2018) and Gerini et al. (2016) present that highly aware and engaged consumers are willing to pay a premium price but the majority of the consumers are not. Cecchini et al. (2018) investigate consumers' willingness to pay for sustainable food and agricultural products. The outcomes show that consumers with high awareness and familiarity with environmentally linked products are willing to pay a premium. For ethical certification, consumers were unwilling to pay the premium. Gerini et al. (2016) explore the preferences for various types of premium eggs (animal welfare) between three consumer groups. The findings showed that the segment purchasing the most organic food is willing to pay a significant premium. However, most consumers who buy organic

products only occasionally are unwilling to pay the premium. Premium-paying customers remain a minority and there is a demand to lower the perceived high price. Ingenbleek (2014) identifies price strategies for sustainable products which minimise competitive disadvantage as the disadvantage is an obstacle for sustainable food products' market share to grow.

TABLE 1 Literature review summary of barriers to purchasing sustainable food

Dimension	Barrier	Sources
Cognitive & Psychological	Lack of expertise	Corrin & Papadopoulos (2017); Gifford et al. (2017); Haider et al. (2022); Lourenco et al. (2022); Gleim et al. (2013); Ran et al. (2022); Lea & Worsley (2001) & (2003a) & (2003b); Lea et al. (2006b); Povey et al. (2001); Schösler et al. (2012); Smiglak-Krajewska & Wojciechowska-Solis (2021); Vinnari & Vinnari (2014)
	Health concerns	Candy et al. (2019); Corrin & Papadopoulos (2017); Edwards (2013); Fehér et al. (2020); Forestell & Nezelek (2018); Lea & Worsley (2001) & (2003a); Lea et al. (2006a); Smiglak-Krajewska & Wojciechowska-Solis (2021); Szabó et al. (2016); Vinnari & Vinnari (2014)
	Unawareness of environmental impacts of food	Gifford et al. (2017); Haider et al. (2022); Verain et al. (2012); Vinnari & Vinnari (2014)
	Uncertainty towards pro-environmental behaviour and right actions	Gifford et al. (2017); Gleim et al. (2013); Ran et al. (2022)
	Skepticism towards environmental information and labels	Gifford et al. (2017); Gleim et al. (2013); Ran et al. (2022)
	Lack of perceived behavioural control	Gifford et al. (2017); Vinnari & Vinnari (2014)

	Denial/Apathy	Gifford et al. (2017); Gleim et al. (2013); Hirschler (2011); Vinnari & Vinnari (2014)
	Tokenism	Gifford et al. (2017)
Social & Cultural	Social norms	Brons & Oosterveer (2017); de Boer et al. (2017); Dawes (1980); Edwards (2013); Gallimore (2015); Gifford et al. (2017); Graça et al. (2015a); Hirschler (2011); Hoek et al. (2017); Kildal & Syse (2017); Lea et al. (2006b); Lea & Worsley (2001) & (2003a); Lourenco et al. (2022); Pohjolainen et al. (2015); Romo & Donovan-Kicken (2012); Rosenfeld (2018); Ruby (2012); Salonen & Åhlberg (2013); Szabó et al. (2016); Twine (2014); Vinnari & Vinnari (2014)
	Cultural identity	Fiddes (1991); Kildal & Syse (2017); Lea et al. (2006b); Lea & Worsley (2003b); O'Doherty & Holm (1999); Ruby (2012); Schösler et al. (2012); Vinnari & Vinnari (2014)
	Social comparison	Dawes (1980); Gifford et al. (2017); Higgs (2015)
	Habits and routines	Buchs et al. (2015); Brons & Oosterveer (2017); Corrin & Papadopoulos (2017); Dawes (1980); Edwards (2013); Fehér et al. (2020); Gifford et al. (2017); Gleim et al. (2013); Graca et al. (2015b); Higgs (2015); Hoek et al. (2017) Lea & Worsley (2003a); Lea et al. (2006a); Lourenco et al. (2022); Pohjolainen et al. (2015); Povey et al. (2001); Ran et al. (2022); Salonen et al. (2018); Schösler et al. (2012); Smiglak-Krajewska & Wojciechowska-Solis (2021); Salonen et al. (2018); Vinnari & Vinnari (2014)

	Current institutional structures	Dawes (1980); Gifford et al. (2017); Salonen et al. (2018)
	Capitalism as a dominating political worldview	Gifford et al. (2017); Vinnari & Vinnari (2014)
Losses & Limitations	Perceived high price	Aschemann-Witzel & Zielke (2017); Brons & Oosterveer (2017); Cecchini et al. (2018); ; Fehér et al. (2020); Gerini et al. (2016); Hoek et al. (2017); Ingenbleek (2014); Lea et al. 2006a; Ran et al. (2022); Salonen et al. (2018); Verain et al. (2012); Yamoah & Acquaye (2019)
	Belief in low prices	Gifford et al. (2017); Vinnari & Vinnari (2014)
	Perceived risks: functional, physical, financial, temporal, social and psychological	Dawes (1980); Fehér et al. (2020); Gifford et al. (2017); Gleim et al. (2013); Haider et al. (2022)
	Perceived lack of time	Brons & Oosterveer (2017); Gleim et al. (2013); Gifford et al. (2017); Haider et al. (2022); Ran et al. (2022)
	Sunk costs	Haider et al. (2022); Lea & Worsley (2001); Lea et al. (2006a) & (2006b)
	Limited options	Gleim et al. (2013); Haider et al. (2022); Lea & Worsley (2001); Lea et al. (2006a) & (2006b); Lourenco et al. (2022); Ran et al. (2022); Salonen et al. (2018)
	Conflicting goals and aspirations	Dawes (1980); Fehér et al. (2020); Gifford et al. (2017)

3.2 Lack of habit

3.2.1 Existing habits and routines: Social and cultural factors

Consumers stick to existing habits and routines as they are often given, and change demands effort and might be scary. Humans are social animals which makes us compare and imitate each other. This has an impact on whether consumers take climate action or not or what kind of food and amounts of food they choose to eat. (Gifford et al., 2017; Higgs, 2015.) *Social norms* set implicit codes of conduct that guide appropriate action (Higgs, 2015). Humans observe each other to ascertain social norms to fit in the crowd (Gifford et al., 2017) and to avoid social judgments (Higgs, 2015). In the case of green consumerism, challenging motivational conflicts may be involved. As if the responsible act is not a social norm, the social payoff to each consumer's defective behaviour is higher than the payoff for cooperative behaviour. (Dawes 1980, p. 170.)

Descriptive norms are what individuals believe to be typical behaviour based on their observations; prescriptive norms are what individuals are told to represent accepted behaviours (Gifford et al., 2017) and hedonic evaluation of foods (Higgs, 2015). For example, in Western countries, current social norms and culture value meat as the "main" part of the dish and the tastiest protein-intake option. That supports meat consumption as humans choose to eat what others eat to conform to norms and avoid seclusion. (Vinnari & Vinnari, 2014.) It is proposed that eating norms are followed because they contribute information about safe foods and facilities for food sharing (Higgs, 2015). For example, the majority restrict their meat consumption in India, and over 30% of Indian adults describe themselves as vegetarians (Pew Research Center, 2021; Shridhar et al., 2014).

Human beings' social nature leads to a *social comparison* where we evaluate whether we should absorb the same action or drop the action as the other person does (Gifford et al., 2017). Norm following is more likely when there is uncertainty about correct behaviour and greater shared identity with the norm referent group (Higgs, 2015). When the social comparison is taken a step further, humans not only compare actions but also *perceive inequity*. If powerful nations, organisations, or persons do not take action, consumers may ask why they should modify their behaviour. Our social character has the power to forward sustainable action when we have the motivation and revert when we feel unjust. Individuals are likely to choose not to engage in sustainable actions if their significant others, family, friends, or other nations are not engaged. (Gifford et al., 2017.) In Twine's (2014) and Hirschler's (2011) studies, participants reported early challenge of going vegan was defending their decision and found that their diet was a source of conflict, particularly with family members.

Social norms are critical predictors of eating behaviours (Ball, Jeffrey, Abbot, McNaughton & Crawford, 2010). Food choices are linked to social relationships as food decisions consist of and mould the interaction with our social net-

works and socio-cultural environments (Sobal, Bisogni & Jastran, 2014). Therefore, it can be considered a powerful barrier to dietary change if the shift causes a variety of adverse experiences and stress in the social context, as reported in the case of vegetarians (Edwards, 2013; Romo & Donovan-Kicken, 2012; Rosenfeld, 2018). Adverse experiences have sometimes led vegetarians even to reconfigure their social networks (Chuter, 2018).

The existing system status quo is justified as people tend to defend their position (Gifford et al., 2017). Given that the majority of people globally are omnivores, it is not surprising that omnivores may feel cognitive dissonance about the morality of their meat consumption while interacting with vegetarians or vegans, for example. This may cause situations where people with different diet choices, such as vegetarians, have concerns about expressing their dietary choices if they do not want to come out as judgmental or being stereotyped (Edwards, 2013; Romo & Donovan-Kicken, 2012). Having to hide one's true self in fear of conflict results in anxiety (Rosenfeld, 2018).

Povey et al. (2001) found that in the UK, most consumers had positive attitudes and beliefs about their own diets and negative ones about other diets. That caused a situation in which consumers had positive intentions only for following their own diet. The study also concluded that individuals were more likely to consider a vegetarian diet if they identified themselves strongly as healthy eaters. Lea, Crawford, and Worsley (2006b) conducted research in Australia to study the different stages of consuming a vegetarian diet. Most of the respondents (58%) were in the pre-contemplation stages of consuming a vegetarian diet, and the rest were in the preparation (14%) or maintenance stages (28%). The study reports that most of the barriers to a vegetarian diet were consistent across different stages, but benefits such as health, weight, ethical, convenience and well-being were all recognised in the maintenance stage but not in the pre-contemplation stage. Corrin and Papadopoulos' (2017) paper reports that interest in vegetarianism is on the rise, and vegetarian diets are perceived positively and healthy amongst the general population, which provides opportunities for health promoters. Though the perceived barriers, such as the enjoyment of meat-eating, convenience, and lack of information, surpass perceived benefits such as health, well-being, environmental and ethical benefits. The majority of the studied population is just in the pre-contemplative stage of consuming a vegetarian diet, and they will likely only adopt differences if these are similar to their own diet. (Corrin & Papadopoulos, 2017.)

While turning the focus toward the Finnish population, in overall, Finns have so far been moving further away from sustainability instead of moving towards it in total. A comprehensive approach and behavioural change are needed. For this the role of non-formal and formal education is crucial when developing attitudes and values of citizens towards a more sustainable lifestyle. However, a society's greatest barriers to sustainable daily living are contextual barriers. (Salonen & Ahlberg, 2013.) Social structures consist of political, religious, and other belief systems that affect individuals' everyday lives and can create substantial

obstacles to environmental behaviour change (Gifford et al., 2017; Vinnari & Vinnari, 2014). For example, Vinnari and Vinnari (2014) state that current institutional structures empower consumers to eat meat. Governmental diet guidance involving meat as a protein source in the plate model can be given as an example. Social structures can be affected through smart regulation, which is very much needed as it is a remarkably faster way toward a sustainable society than the progress of changing citizens' values and attitudes through education (Salonen & Ahlberg, 2013). This shift is already occurring and visible in some places, such as in Finnish university restaurants where more sustainable eating models are promoted and encouraged (Semmarestaurants, 2020).

Very much-needed lifestyle changes might involve difficult emotions such as fear, grief, anxiety, guilt, loss, and helplessness (Buchs et al., 2015). Several valuable perspectives, such as health and well-being, effectiveness, and convenience, could be utilised to face these challenging psychological obstacles. Finns are practical, and they combine saving money and tackling climate change by applying smart technology and reducing waste. Finns are interested in the origin of materials and favour domestic food and products to support the local economy and employment rate. (Salonen et al., 2018.) Sustainable actions are apparent as the actions above benefit the local community. For example, organic vegetables that are produced locally promote public health, maintain biodiversity and service, establish global food security (Salonen, Fredriksson, Järvinen, Korteniemi & Danielsson, 2014), and reduces the carbon footprint of logistics (Weber & Matthews, 2008).

3.2.2 Re-orienting habits and routines

It is possible to develop tailored options for habit change considering food consumption. Individuals' motivation and behaviour can be affected if a variety of different factors affecting these are well understood. Initially, there are no fast-line solutions or programs. (Middelkamp, 2018; Vinnari & Vinnari, 2014.) Due to the desired transition's scale, modifications must be supplied with short-, medium-, and long-term perspectives. Eating habits are an essential part of our identities which makes large-scale transits take a long time. (Vinnari & Vinnari, 2014.) Second, it is important to know the factors to consider while preparing support for individuals (Middelkamp, 2018; Vinnari & Vinnari, 2014.)

Changing a central behaviour holds at least six kinds of negative consequences. Humans generally avoid risk, and risk-averse behaviour can create resistance to behaviour change. These perceived risks are functional risk, physical risk, financial risk, temporal risk, social risk, and psychological risk. (Gifford et al., 2017.) *Functional risk* asks whether the modification will work as wanted and the concern of whether the plant-based diet fits the person. *Physical risk* asks whether there is a perceived danger to self or family, such as malnutrition. (Gifford et al., 2017.) *Financial risk* occurs as sustainable food might be more expensive or demands investing in new equipment, and there is no insurance that

the transformation is worth the investment (Gifford et al., 2017; Vinnari & Vinnari, 2014). *Temporal risk* considers the time spent planning and figuring out new behaviour. If it does not work out, valuable time is wasted. *Social risk* arises as others notice our choices leaving us fragile to judgment and abandonment. If becoming vegetarian offends the change-maker's co-workers, will they still respect the changer? (Gifford et al., 2017; Vinnari & Vinnari, 2014.) All the previous risks can cause *psychological risk*. Making uncertain sustainable choices may cause stress and risk self-esteem in addition to social loss. (Gifford et al., 2017.)

Ajzen's (1985) *Theory of planned behaviour* is among the most successful ones in predicting and explaining a wide range of healthy behaviours and intentions. It shares similar traits with other widely used behaviour change theories. The theory expects that the stronger the intention to engage in a behaviour, the more likely its performance should be. The intention is affected by attitudes towards behaviour, subjective norms and perceived behavioural control. Everyone reveals a different aspect of behaviour, and each can help to point out where attempts to alter behaviour can be put into use. This theory recognizes that most of our behaviour is not entirely under our control. The key component of the theory, perceived behavioural control, focuses on the attention to the impact of psychologically interesting perceived control instead of actual control. (Ajzen, 1991.) This theory describes perceived control as an individual's belief in their capability to begin specific behaviour. Perceived behaviour control is a sum of perceived barriers and lack of them, and those can be, for instance, money and time. Theory gives insights into potential limitations for behaviour that a person experiences and offers an explanation of why aims do not always predict occurring behaviour. Unlike attitude or subjective norms, perceived behavioural control might also directly predict behaviour. (Middelkamp, 2018.)

Common for behaviour change theories, such as the theory of planned behaviour, is their socio-cognitive nature. Humans are expected to be rational beings in control of their own behaviour. In fact, humans' rationality is still widely questioned, and evidence shows that we follow instincts and intuition more often than we usually realize. Our brains are almost the same as when they evolved thousands of years ago, even though our surroundings have changed. Instead of nowadays distant and complex problems, our brains are used to focusing on ad-hoc concerns, such as immediate risks, exploitation of nearby resources, and the present and looking for convenience. For our brains, delayed impacts are not top-of-mind. (Middelkamp, 2018; Gifford et al., 2017.) These aspects explain why everyday behaviour may conflict with long-term targets and, in the long term, unhealthy or unsustainable behaviour might be chosen simply because of its convenience. Gifford et al. (2017) also state that the lack of perceived behavioural control seems to lead to situations in which many individuals believe that they can do nothing about climate change, a global problem. Without a sense of self-efficacy, motivation for action is low.

Vinnari and Vinnari (2014) state that broad conceptual frameworks need to be further developed to suit the contexts in which they are used to achieve

desired progress toward more sustainable food consumption. Their paper introduces a fundamental transition management framework for moving towards plant-based diets. The process begins with considering five dimensions of sustainability in relation to food consumption: cultural, social, economic, environmental, and animal protection objectives. In the attempt to decrease the consumption of animal-originated foodstuffs, the relevant sustainability dimensions involve the cultural dimension that has the objectives of upholding cultural identities, and socio-cultural norms and traditions; the social dimension that includes the objectives of improving human health, participation, empowerment, and social cohesion; the economic dimension that comprises the objectives of equity, efficiency, and development; the environmental dimension that involves objectives including the preservation of the ecosystem's carrying capacity, biodiversity, and ability to address global issues; and, finally, a dimension relating to animal protection, which includes objectives aimed at animal welfare and/or animal rights.

Concerning these sustainability dimensions, Vinnari and Vinnari (2014) suggest a five-step process for sustainability transitions. This process begins by identifying objectives and obstacles preventing the transition from occurring in relation to sustainability dimensions. The process continues by listing options and their opportunities and threats. Any action can have several outcomes, and to optimize a successful transition, it is important to evaluate the pros and cons of different approaches. Finally, outcomes are evaluated, and the process is started for improvement. These five steps provide a process in which identifying the relevant dimensions of sustainability and related objectives forms the foundation for strategic, tactical, and operational governance activities. A successful strategy will likely be one containing mix of measures increasing societal and cultural acceptance, creating economic incentives, and information widening consumers' knowledge base on environmental and animal issues. (Vinnari & Vinnari, 2014.)

In the case of meat consumption, Corrin and Papadopoulos (2017) and Pohjolainen et al. (2015) suggest that reducing overall meat consumption could be more successful than eliminating it completely. Both papers also suggest that instead of promoting the more sustainable vegetarian diet's benefits, focusing on eliminating the perceived barriers of moving towards a more plant-based diet may bring better results. Promoters can utilize knowledge of socio-demographic factors to eliminate the perceived barriers and to make the sustainable vegetarian diet more approachable by strengthening the link between diet and positively associated health outcomes when attempting to alter individuals' behaviour. (Corrin & Papadopoulos, 2017.) Pohjolainen et al. (2015) suggest that one practical implication could be an increase in the availability of vegetarian foods in public cafeterias or school canteens, as a decrease in meat consumption frequency is strongly correlated with the alleviation of the barrier perception.

There are myriad ways of acting green, and few ecologically minded consumers decide to do everything right but rather choose the options fitting with

their life choices. The majority of green consumers have selective motives and do what they perceive to be their fair share of the things they know and acknowledge as doable environment-friendly behaviour. (Moisander, 2007.) Moisander (2007) states that, in principle, two different types of consumption goals motivate environmentally concerned consumption: the *individual* objectives of the consumer and *collective* long-term environmental protection-related objectives of the society, and many consumers are taking at least some pro-environmental actions. However, Gifford et al. (2017) brought out the idea that present actions may be merely tokenism, as some actions are easy to adopt but have little impact on the bigger picture. This may lead to the conclusion that as one has already done something; they have done their part. Sometimes if some mitigation has been completed, the gain is diminished or eliminated by following actions. This rebound effect occurs, for example, if a person decreases the purchasing of processed food and instead buys more foreign fruits, they mitigate the positive environmental impacts. (Gifford et al., 2017.)

3.3 The role of price for sustainable food shopping

Several studies (e.g., Brons & Oosterveer, 2017; Buder & Hamm, 2011; Pack, 2006) have shown that food consumption preferences are complex and cannot be explained by singular aspects such as monetary aspects alone. The popular opinion finds sustainable food products' prices unfair in comparison to mainstream alternatives as the sustainable ones cost more (Hoek et al., 2017; Ingenbleek, 2014; Yamoah & Acquaye, 2019.). However, income is not a barrier to buying sustainable food, even for the lowest income groups, whether the consumer is willing to prioritize sustainable products (Brons & Oosterveer, 2017). The majority's unwillingness to buy premium for sustainable products causes a situation where price strategies are needed to grow the market of sustainable food products.

3.3.1 The impact of income

Most studies do not report a relationship between income and sustainable food consumption. For example, Buder and Hamm (2011) showed that socioeconomic factors such as income hardly play a role in buying organic food. This is supported by Visschers et al. (2009), who found that both the product price and household income do not influence the purchase of organic food. Brons and Oosterveer's (2017) findings show that even the lowest income groups (students) under the poverty line in France can afford sustainable food. Participants reported that finances matter but that limited resources are not insurmountable in finding access to sustainable food. Consumers find their ways, as Haider et al.'s (2022) findings report that even if an individual's income does not vary, but the meat becomes more expensive, only 18% of the respondents stated that they would reduce their meat consumption.

Pack (2006) stated that it is not factors such as income, age, and gender that have consequential effects on people's diet, but in comparison, the educational level matters more. Education is seen as the most vital and compelling because it is essential for understanding health and environmental-related information. Brons and Oosterveer (2017) suggest that rather than focusing on practitioners' resourcefulness, research should open to include trade-offs between buying sustainable food and other practices, such as budgetary priorities, habits, and the adaptation of cooking preferences.

3.3.2 Perceived unfair price

Price has a determinant role affecting decision of which food we decide to purchase (Hoek, Pearson, James, Lawrence & Friel, 2017; Yamoah & Acquaye, 2019). Popular opinion holds that the price of a mainstream product is fairer relative to a sustainable alternative because the latter costs more (Hoek et al., 2017; Ingenbleek, 2014; Yamoah & Acquaye, 2019). Two reviews (Aschemann-Witzel & Zielke, 2017; Cecchini et al., 2018) indicate consumers' willingness to pay more for sustainable products. Despite positive attitudes toward sustainable food, most consumers do not see the value of sustainable food products to find the motivation to turn intentions into action (Yamoah & Acquaye, 2019). Dominating political worldview belief in capitalism demands an ever-growing economy to the detriment of exploitation of natural and human resources. This economic model leads to maximal consumption, which involves excellence and efficiency in industries, including food production ensuring low consumer prices. (Gifford et al., 2017; Vinnari & Vinnari, 2014.) Hoek et al.'s (2017) review of sustainable product price sensitivity displays that consumers generally emphasise economic aspects over social and environmental aspects while purchasing food. In the case of meat, the product itself had the highest importance in the choice between standard product beef and healthy and sustainable alternative kangaroo despite the price advantage of the kangaroo.

Hoek et al.'s (2017) study about actions advancing consumers' choices for healthier and environmentally sustainable food reports that the particularly decreased price of sustainable alternatives had the most significant effect on shifting consumer choices. This initiative overran, for example, logos and labels. The closer the substitutes are, the easier it is to utilise measures to shift consumers' choices toward sustainable options. (Hoek et al., 2017.) In the study, the price was followed by taste, familiarity, and convenience, as also concluded in Yamoah and Acquaye's (2019) study that found past purchases proved to be a major promoter of purchase behaviour. Yamoah and Acquaye (2019) state that relying on the goodwill of consumers to buy premium for sustainable prices does not seem considered, but rather research and food policy attention is demanded to encourage sustainable food shopping.

3.3.3 Marketing strategies for lowering the barrier

Verain et al.'s (2012) review of green consumerism segments concluded that socio-demographic variables have limited utility for profiling environmentally conscious consumers. Gender, age, and education were the most frequently comprised socio-demographic variables, but the results were ambiguous. Along with this, values have been found to alter when the sustainable food segment changes (Gazdecki, Gorynska-Goldmann, Kiss & Szakály, 2021; Hoek et al., 2017; Verain et al., 2012). What has been found to be useful for segmenting are lifestyle variables such as attitudes and concerns towards nature and (organic) food (Verain et al., 2012). Studies report that even though consumers may report positive attitudes toward sustainable products, such as organic products, they may be reluctant to pay higher prices for them (Gerini et al., 2016; Yamoah & Acquaye, 2019). Verain et al.'s (2012) review findings suggest that there would be two types of price-sensitive consumers: those who value green behaviour but the price might be a barrier and those who are careless towards the environment. Verain et al. (2012) discuss that price might also be a barrier to green purchases. However, it is possible at the same time that price-oriented consumers are careless about the environment. The segmentation review concluded that reasonable access to information and ad-hoc occurring notifications of ethnocentrism and localism could be success factors in promoting sustainable product market growth (Gazdecki et al., 2021).

Too often, sustainable products experience a competitive disadvantage compared to mainstream products as they cover ecological and social costs that competitors leave for future generations (Ingenbleek, 2014). Ingenbleek (2014) identified mechanisms to minimise this efficiency disadvantage. The first mechanism is cost-based pricing combined with price fairness, increasing willingness to pay through perceptions of quality and/or price. Another mechanism is price stability, in which costs are compensated for by scale and/or learning effects. Cost-based pricing answers situations when the sustainable price is always higher than the mainstream one, which is found "unfair". The answer is to communicate to the consumer that the higher price is the fair price, and the price of the mainstream product is unfair. (Ingenbleek, 2014.) This works for products that reach relatively high sustainability standards, such as fair-trade products, and target highly involved consumers (Ingenbleek, 2014; Yamoah & Acquaye, 2019). The key determinant of the second mechanism is differentiation. Another mechanism for minimising disadvantages is creating stable pricing. Stabilising prices is done by improving sustainability without increasing prices. This strategy suits best for larger companies as in this strategy, any costs for sustainability are covered by improving the supply chain and reducing costs through scale advantages. (Ingenbleek, 2014.)

3.4 Meat-eating

Reducing meat consumption and production are identified as one of the critical components of transiting the food system toward sustainability, as high meat consumption correlates with many public health and environmental problems (Godfray et al., 2018; Pohjolainen et al., 2015). Meat is a good source of energy and some essential nutrients such as protein, iron, zinc, and vitamin B12. However, it is possible to secure a decent intake of these nutrients from sources other than meat if there is a wide variety of other foods available and consumed (Godfray et al., 2018). In addition, various national and international organisations recommend limiting meat consumption to maintain good health. For instance, the World Cancer Research Fund suggests consuming less than 500g of meat a week, and some bodies recommend even lower amounts (WCRF, 2017).

Overconsumption of meat and mainly processed meat products are studied to correlate with different chronic diseases and cancers. The World Health Organization's International Agency for Research on Cancer (IARC) has classified processed meat as carcinogenic to humans as its association with colorectal cancer, and red meat is classified as probably carcinogenic for the same reason. If reported associations with red meat are causal, then diets high in red meat could be responsible for 50,000 annual cancer deaths worldwide. (IARC, 2015.) Szabó, Erdélyi, Kisbenedek et al.'s (2016) review suggests that a plant-based diet provides long-term sustainable solutions for healthcare challenges. The paper discusses proof that minimising the intake of animal origins and replacing them with plant-based ones has positive effects on cancer patients and that an adequately compiled plant-based diet could prevent cardiovascular and metabolic diseases from developing due to obesity. Further, using antibiotics in the animal food production industry has caused concerns over future antibiotic resistance, which would cause major health problems for humans (Godfray et al., 2018). Reduction of animal production would most probably lead to a reduction of antibiotics and prevent future health problems.

From an environmental perspective, livestock account globally for up to 15% of anthropogenic emissions (Gerber et al., 2013). Meat produces more emission per unit of energy in comparison to plant-based foods, as energy is lost at each trophic level when crops are used for animal feed instead of humans (Godfray et al., 2018). Beef is estimated to have the highest carbon-intensive of all food products. It is estimated to be ten times more carbon intensive than fish and three times more than chicken or pork. (Salo, Nissinen, Mattinen & Manninen, 2016; Weber & Matthews, 2008.) A high-meat diet is estimated to be four times more emission-causing than a vegan diet. Calculations show that a standard meat-based diet in Finland produces 1.5 tonnes of CO₂, a vegetarian diet 0.9 tonnes, and a vegan diet 0.5 tonnes. (Carlsson-Kanayama, Ekstrom & Shanahan, 2003.) In Finland, transit to a vegan diet would reduce agricultural emissions by 48% and overall food system emissions by 34% compared to the average Finnish diet

(Risku-Norja, Kurppa, & Helenius, 2009). All in all, reducing animal-based foods and, most importantly, producing red meat in human diets serves holistic ecological and health benefits for humans and the planet. (Godfray et al., 2018; Springmann et al., 2016).

3.4.1 The enjoyment of meat-eating

The barrier presented most often in previous studies while discussing adopting a vegetarian diet is the enjoyment of meat-eating (e.g. Graça et al., 2015a; Pohjolainen et al., 2015; Lea et al., 2006b; Lea & Worsley, 2001; Lea & Worsley, 2003a). Despite the popular opinion that vegetarianism has become a more common choice in recent years, the Natural Resource Institute Finland data (2000-2021) presents that overall meat consumption has increased in the last two decades (Figure 1). Figure 1 also shows that the consumption of red meat has decreased, and the consumption of poultry products has increased, which estimates that overall adverse health and environmental impacts have decreased.

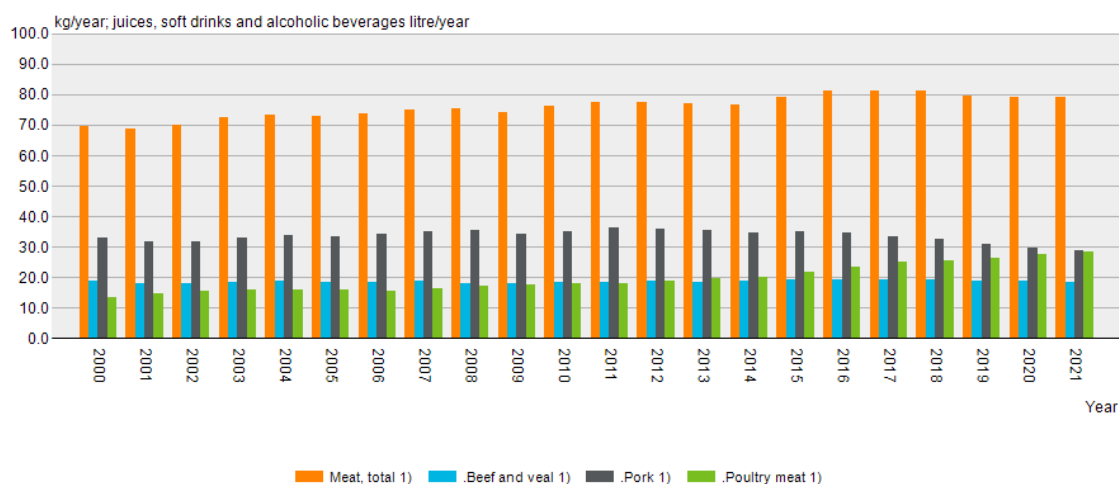


FIGURE 1 Per capita meat consumption in Finland between 2000 to 2021

Research studying meat-eating and plant-based diets are well-covered topics. Previous studies report that for many consumers, perceived barriers to adopting a plant-based diet outweigh the perceived benefits, making them resistant to eating less meat (Corrin & Papadopoulos, 2017). Lourenco et al. (2022) report that respondents recognised sustainable eating behaviours as highly relevant, but practical actions are still a considerable challenge.

Common barriers to adopting a more plant-based diet have been found to include the enjoyment of eating meat, health concerns about meat avoidance, eating routines, perceived difficulties in preparing vegetarian foods, lack of knowledge about plant-based dieting and meal preparation, and viewpoint that plant-based dieting is incongruent with central facets of one's identity (e.g. Corrin & Papadopoulos, 2017; de Boer, Schösler & Aiking, 2017; Ensaff et al., 2015;

Mullee et al., 2017; Pohjolainen et al., 2015; Lourenco et al., 2022). Other reported barriers include concern that a vegetarian diet would lack variety, concern that a vegetarian diet would not be satiating, living with people who eat meat, and concern about inconveniences when eating at restaurants or as a guest at someone else's home (de Boer et al., 2017; Gallimore, 2015; Kildal & Syse, 2017).

Multiple studies suggest that perceived barriers to adopting a plant-based diet may be particularly strong among individuals who have a combination of certain demographic traits. Studies have reported stronger barriers on individuals who are male, live in rural areas, have low educational attainment, value traditions and wealth, lack vegetarian family members or friends, eat meat frequently, and exhibit emotional attachments to meat (Graça et al., 2015a; Kildal & Syse, 2017; Pohjolainen et al., 2015). Lea et al. (2006b) studies also found that the main perceived barrier to adopting a plant-based diet was a lack of information about plant-based diets (42% agreement). This caused an outcome that non-university-educated and older people were less willing to change their current eating pattern university educated and younger respondents (Lea et al., 2006b).

Research shows evidence that in conventional western diets the centrality of meat is often linked with a higher status in comparison to other food products (Fiddes, 1991; Schösler et al., 2012). Meat is also characterised as a more masculine food while greens are found to be more feminine (O'Doherty & Holm, 1999; Fiddes, 1991; Schösler et al., 2012). Affecting these beliefs and promoting more plant-based diets within positive associations may help the promotion of plant-based diets. Lourenco et al. (2022) discuss that transforming consumers' cultural habits is a hindrance to the adoption of sustainable diets, and the transformation of such normative habits is an immense challenge that demands further studies. They state that transit needs both producers and the plant-based food industry to promote the plant-based approach.

3.4.2 Reduction of meat-eating

Let us look at the reasons that motivate consumers to follow a vegetarian diet. Consumers generally report mixed motivations, and their motivations alter over time. (Ruby, 2012.) Most common motivations include concerns about animals, health, the environment and religion. Also, many vegetarian reports that they find meat-eating disgusting. More studies report ethical rather than health motivations to be running force not to eat meat. (e.g. de Boer et al., 2017; Ruby, 2012.) When health is a motivational subject, general wellness and weight maintenance are the most common motivations. In Lea et al.'s (2006b) study, the majority of respondents perceived health benefits related to a plant-based diet, and these respondents perceived barriers as relatively low. The main benefits associated with plant-based diets were found to be health benefits, particularly decreased saturated fat intake (79% agreement), increased fibre intake (76%), and disease prevention (70%). Demographics showed that age, sex, and education differences regarding benefits were apparent, but sex differences were more emphasised

than age or education differences. (Lea et al. 2006b.) In another study, Lea et al. (2006a) reported that those who were in the maintaining stage of plant-based diet associated diet's benefit factors align with well-being, weight, health, convenience, and finances in comparison to those in earlier stages of diet change, which did not. One maintaining the plant-based diet reported eating more fruits, vegetables, nuts, seeds, whole-meal bread and cooked cereals.

Graça et al. (2015b) studied to understand the willingness to adopt a more plant-based diet and described three distinct profiles to highlight the importance of designing tailored initiatives when encouraging transit towards a more plant-based diet. For example, encouraging more attached consumers to reduce meat-eating may restrain their actions. Vinnari and Vinnari (2014) propose that to avoid triggering defence or loss-aversion mechanisms in the case of more attached consumers, more indirect approaches, such as facilitating structural changes that make plant-based meals more accessible and increasingly mainstream. Graça et al. (2015b) state that more research is needed to understand how to empower these consumers to make sustained and lasting modifications in their eating habits. This includes an increased understanding of consumers' perspectives about meat consumption and the issues underpinning a transition towards a more plant-based diet. Recent findings point that these may include volitional factors such as perceived behavioural control, changing deep-rooted habits and beliefs about potential health benefits and challenges (e.g., Zur & Klöckner, 2014), but also ideological concerns such as dominance ideologies and resistance to cultural change (e.g., Dhont & Hodson, 2014). For instance, most vegetarians report eating meat occasionally. Among women and men, men view meat as a more essential part of a proper diet. (e.g. de Boer et al., 2017; Ruby, 2012.) When former vegetarians return eating meat, it is most often because vegetarianism seemed burdensome, inconvenient, and too expensive (Menzies & Sheeshka, 2012). Moreover, former vegetarians may be particularly likely to give up their vegetarianism during a major life change, such as moving, starting a new job, or getting married (Menzies & Sheeshka, 2012). Factors that may promote successful maintenance of vegetarianism over time include changing one's diet gradually rather than abruptly, as well as joining a social group centred on vegetarianism (Haverstock & Forgays, 2012; Jabs, Devine & Sobal, 1998).

4 DATA AND METHODOLOGY

In this chapter, a chosen study method is opened and reasoned. This is followed by the justification of the chosen research approach, a description of the survey design, data collection, and executed analyses. Also, ethical considerations are given in this chapter before moving to the results of the study.

4.1 Research approach: a quantitative study

The decision of the research approach is based on the nature of the research problem, particular design, and research methods of the study (Creswell & Creswell, 2018). The research method chosen for this study is a quantitative approach. The quantitative approach was chosen because the study's aim is to get a further understanding of the barriers inhibiting Finnish individuals from engaging in sustainable food purchasing. According to Creswell and Creswell (2018), a quantitative approach is commonly used for this kind of research where objective theories are tested by examining the relationship among variables in comparison, for example, to a qualitative approach that focuses on deepening the knowledge around the chosen topic.

Research designs are types of inquiry within chosen approaches that provide structure for procedures in a research design (Creswell & Creswell, 2018). Studying barriers to sustainable food purchasing has an empirical orientation as the research setup is less interested in what something should be like rather than how things behave in the real world. Answering empirical research questions needs observation and empirical data. (Stockemer, 2019.) This makes quantitative research suitable for an empirically oriented study as the study reaches for a general understanding of what kind of barriers most Finnish individuals experience while making sustainable food purchasing decisions.

The research design maintained in this study is survey research. Survey research uses standardised procedures to gather data from individuals (Stockemer, 2019) methodically. The survey form used for this research is a cross-sectional survey, which means that data was collected from multiple respondents at a single point in time. These kinds of surveys are used for describing phenomena, while multiple times executed longitudinal surveys are used for explaining phenomena. (Valli & Aarnos, 2018.)

The choice of research methods depends on the type of collected data collected and how it will be interpreted (Creswell & Creswell, 2018). In this study, the type of gathered information is pre-determined and quantifiable to be analysed statistically. The data were collected on an online survey form that measures attitudes using the 7-point Likert scale, and information was analysed

using a variety of statistical procedures. Online surveys have multiple advantages, including cost-efficiency, skipping the input state of data and avoiding possible mistakes of this state. (Valli & Aarnos, 2018.)

4.2 Survey design

Valli and Aarnos (2018) recommend building a survey based it on the existing theory. However, there is not always an already existing suitable pre-tested instrument which would meet the current needs, and researchers must create one by themselves. A comprehensive literature review was executed for this research before starting the survey drafting. Literature review offered the terms and previously used methods, and question formulations were utilised while creating a survey for this specific study to examine barriers keeping consumers from engaging in sustainable food purchasing. Questions were logically grouped, ordered, and structured from general to specific, impersonal to personal and easy to challenging to make it easy for participants to respond (Stockemer, 2019). The number of questions was limited as much as possible while maintaining the necessary amount to capture the dependent and independent variables.

The first section of the survey asked for socio-demographic characteristics of participants: age, sex, size of household, education level, yearly income, region of residence and familiarity with the topic. Demographic characteristics were based on Pohjolainen et al. (2015) and Haider et al. 's (2022) survey base. These multiple-choice questions worked as warm-up questions at the beginning of the survey and served as explanatory variables (Valli & Aarnos, 2018). For example, in this study, gender is studied in relation to occurring behaviour barriers which is discussed in the result part.

The second section of the survey is the largest part including 51 statements that participants answered on the 7-point Likert scale. Likert scales are used to measure attitudes or opinions. The scale expects that the intensity of the experience is linear and assumes that attitudes can be measured. (Stockemer, 2019.) Statements were based on the literature review and especially in Fehér et al. (2020), Lourenco et al. (2022), Pohjolainen et al. (2015), Haider et al. (2022), Salonen et al. (2018) and Gleim et al.'s (2013) survey bases. The section focuses on researching how remarkable participants find certain factors and views in decision-making about buying sustainable food. At the beginning of the section, the aim of the study is opened, and sustainable food is defined to ensure that participants have a similar understanding of the term.

Statements were grouped into nine segments which each have 5-8 statements. In addition, the statements were grouped according to their focus thematics: knowledge, social, economic, inner motivation, the habit of consuming meat products, attitudes, health, values and impact on the world. The survey tool did not support the function but it would be recommended to have an open comment

at the end of the questionnaire so that participants would have retained an opportunity to tell what has affected their decision-making while buying sustainable food.

The first statement group was created to study respondents' knowledge level about sustainable food and how it affected their sustainable food purchasing. The second social statement group was formed to research whether participants find that their close ones and expectation of other consumer's actions while purchasing food affect their behaviour, and this followed with all the statement groups. Furthermore, statement groups were combined further for the result analyses, which is discussed in the Results chapter.

The third and final section asks whether the participant has shifted their food consumption habits to more sustainable ones and, if yes, which ways and whether they use the K-ruoka app to keep track of that. Eleven statements asking for habit change were based on the Finnish Environment Institution's report of the ways Finnish individuals can decrease their carbon footprints (Salo & Nissinen, 2017). This part also included the possibility to leave an open comment to share made adjustments. The aim of the section was informed to participants at the beginning of the section. In the name of research, the aim was to collect data to see whether relations between demographics and behaviours change or target setting and following occur.

The first survey draft was discussed with the supervisor and modified based on the feedback. The second version of the survey was checked with the supervisor, and five outsiders read it through to check understandability and terminology was polished with Kesko to check the language to fit their policy to get the final version to the survey pool.

4.3 Data collection and analyses

4.3.1 Data collection

Data was collected in autumn 2022 between the 12th and 15th of September. The questionnaire-type survey used for data collection was executed via Kesko's survey pool. There Kesko has customers that have volunteered to participate in Kesko's surveys. Participants who received the survey had an opportunity to participate in the lottery of a few gift cards, but answering the survey was not necessary for lottery participation. The survey was based on stratified samples as stratified samples are used when it is wanted to ensure that the sample includes diverse kinds of elements of the basic set (Valli & Aarnos, 2018). It was important to try to have an equal number of participants who do not use the K-ruoka app and those who use it to get data from both food shoppers. That gives insight into whether the use of the app has had significance in shopping habits.

4.3.2 Software and data preparation

A comprehensive software IBM SPSS Statistics version 26 was used to analyse data. The software allows data analysis, data management and graphic presentation. (Stockemer, 2019.) As the survey was executed via Kesko's online platform, the received data was delivered in SPSS Statistics format. Even though online platform use eliminates manual typos, data were checked to ensure that all questionnaire particles were included and that the data was in the proper form. Finally, relevant composite variables were created without adjusting the original data.

4.3.3 Methods of analyses

In the result part is reported: frequency distribution, measures of central tendency, measures of variability, measures of internal consistency and measures of association. Frequency distribution is often the first information survey developers start with (Johnson & Morgan, 2016; Karjaluoto, 2007). It is useful for simple categorical variables, which do not have too many categories, and it also reveals whether all the response scales on each item are used (Johnson & Morgan, 2016; Stockemer, 2019). A frequency distribution helps to determine certain measures of central tendency such as median, mean and an insight into how varied the data is. The median (*Mdn*) is the middle value in the order of values, and the mean (*M*) refers to the arithmetic mean, which is the average value of the distribution (Johnson & Morgan, 2016). Karjaluoto (2007) suggests reporting the median for nominal and ordinal scale variables and presents that it is common in social sciences to also report the mean for scale variables. It is common to report all three for the interval- and ratio-level variables (Karjaluoto, 2007). Measures of variability are used to give information about how similar or different the data is. In this study for this is used the most commonly reported measure of variability: standard deviation (*SD*) (Johnson & Morgan, 2016). Standard deviation describes the average distance the response values have from the mean (Karjaluoto, 2007). The *SD* is large if there is high volatility in the data and low if the data is closely clustered around the mean. The smaller the *SD* the more securely the sample mean matches the population mean. (Stockemer, 2019.) Internal consistency measures scale reliability, and it indicates whether the items in the scale measure the same concept; in other words, it measures the consistency of the questionnaire. With Likert-type items, internal consistency is generally measured by Cronbach's alpha (α). (Johnson & Morgan, 2016.) The applied measures of association are introduced next.

Measures of association are used to investigate whether a relationship exists between variables, in other words, whether two variables correlate with each other (Johnson & Morgan, 2016). The main statistical technique used in the study was a bivariate correlation. Correlation coefficients, also called Pearson correlation, are used to quantify these relationships. The Pearson correlation assumes that the relationship between variables is linear or that the rates of change are

constant across the scale. It is proper for two interval- or ratio-level variables and is often included in most statistical software packages (Johnson & Morgan, 2016), as it also is in SPSS. At the same time, Pearson correlation expresses the strength and direction of the relationship between two variables (Stockemer, 2019). The sign of correlation coefficients informs the direction of the relationship and can take any value from -1 to +1. Positive ones indicate that as the values of one variable increase, the values of the other variable increase, too. Instead, negative correlation coefficients indicate that when the values of one variable increase, the values of the other variable decrease. The closer the -1 or +1, the stronger the association is. (Johnson & Morgan, 2016.) Pearson correlations are usually denoted with the letter r , and the measure of them varies (Stockemer, 2019):

weak correlation = $(-) 0.3 < r < (-) 0.45$

medium correlation = $(-) 0.45 < r < (-) 0.6$

strong correlation = $r < (-) 0.6$

The correlation output in SPSS gives the significance or alpha level (p) for each correlation which informs whether two variables correlate. If a significant p -value is < 0.05 , two variables correlate, and the closer the p -value is to 0.00, the surer the correlation between the two variables is. (Stockemer, 2019.) SPSS has testing options for one-tailed and two-tailed significance (2-tailed sig.). Two-tailed significance is often used when there is uncertainty about the anticipated direction of the relationships (Karjaluoto, 2007), and it was used to determine possible correlations.

A chi-square test (C) and a Kruskal-Wallis test were also used for analysing relations. A chi-square test is required to test the association between nominal variables and a Kruskal-Wallis test relation between a nominal variable and with three or more categories and a continuous variable. (Pallant, 2016.) The value of the chi-square test can be anything between 0 and infinite. The guidance for significance is that values smaller than 0.05 are significant, and values smaller than 0.001 are highly noteworthy. (Karjaluoto, 2007.)

4.4 Research ethics

Research has its own ethics, whose purpose is to conduct objective and qualitative studies. The key issue for ethical research in social sciences is informed consent (Byrne, 2017). In this study, the survey form included a paragraph which introduced the aim of the study and informed the confidentiality of participation. Participation was voluntary and anonymous; this way, participants had the opportunity to agree to participate in research as good research ethics demand (Byrne, 2017).

While considering research ethics, researcher bias is essential to cover, even though research can never be entirely free of them. Byrne (2017) discusses two kinds of research biases. First, deliberate bias occurs when research is intentionally set up in such a way as to produce a particular result. This must be considered while completing the literature review so that research will not slip toward a positive conclusion when it is not justified. In addition to deliberate bias, unconscious bias needs to be avoided while carrying out the research itself. The bias occurs when the researcher unintentionally works in a way that generates a particular research outcome. One method to avoid bias in research is to make potential biases explicit to others and consider them in designing, carrying out and interpreting the research (Byrne, 2017).

Finally, this thesis is attempted to report with accuracy that allows replication of the study as ideally in the field of study others should be able to replicate the same study (Stockemer, 2019). The author has cited, phrased, and referenced the original sources to deliver credits to whom they belong.

5 RESULTS AND ANALYSIS

The main aim of the study was to identify the barriers inhibiting Finnish consumers from engaging in sustainable food purchasing through four research objectives: RO1) to examine the major self-reported barriers to purchasing sustainable food; RO2) to discover the correlations between reported barriers and different types of respondents; RO3) to discover the relations between different types of respondents and self-reported sustainability habit changes in food consumption; and RO4) to examine the relationship between demographics and following and setting sustainable food consumption targets. This chapter presents the relevant information of the collected data and the results from data analysis. The chapter has three main parts. The first one reviews descriptive statistics, in the second part, variables are examined in relation to one another, and the third one discusses whether the proposed hypotheses are supported.

5.1.1 Frequencies and response distributions

Socio-demographics. The survey yielded a total of 654 responses, and 653 were analysed. One of the responses was deleted as all sections were unanswered. The sample has approximately equal numbers of female (n= 339) and male (n= 310) participants (Table 2). In addition, two participants chose the option “other”, and two chose not to share the information. To simplify analyses, only the two biggest groups, women and men, were involved while studying relations.

TABLE 2 Frequency statistics for gender

		Gender:	
		Frequency	Percent
Valid	Woman	339	51,9
	Man	310	47,5
	Other	2	,3
	I don't want to say	2	,3
	Total	653	100,0

The second measured socio-demographic was the age group that the participant belongs to. Figure 2 shows the age distribution of participants. The majority of respondents were over 60, with 38 % representation from all respondents. Age group 46-60 covered 35.5 % of the respondents, group 31-45 had 19.1 % of the respondents, and 18-31 had the last 7.2 %. The third measured socio-demographic was household size (Table 3). Most respondents (53.6%) live with two or three people, and the second most in a single household (35.4%). The rest of the respondents were part of an over 4-person household (10.8%). The fourth requested socio-demographic was education level (Figure 3). Only 9,3% of respondents had primary level education. The rest of the respondents had secondary (42.3%) or tertiary education (47.9%).

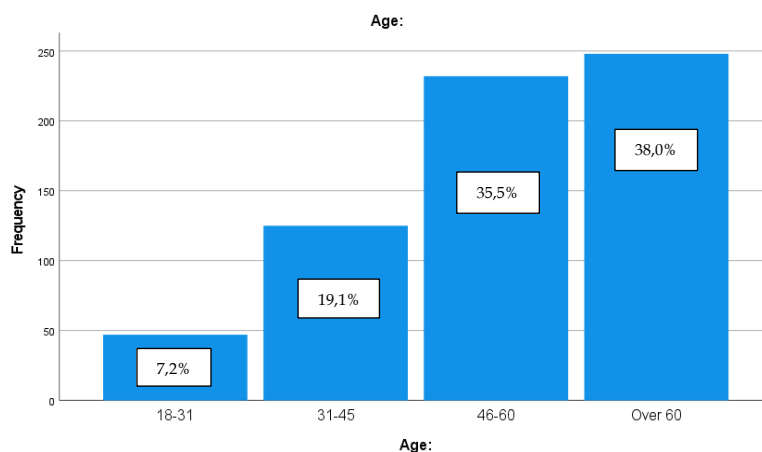


FIGURE 2 Frequencies with percentages for age groups

Table 3 Frequency statistics for household size

Size of household:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	231	35,4	35,5	35,5
	2-3	350	53,6	53,8	89,2
	4-5	67	10,3	10,3	99,5
	Over 5	3	,5	,5	100,0
	Total	651	99,7	100,0	
Missing	System	2	,3		
Total		653	100,0		

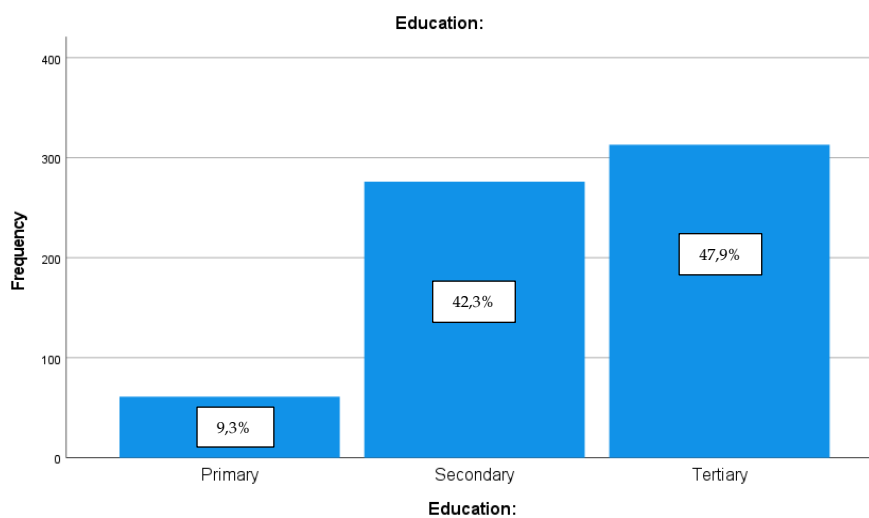


FIGURE 3 Frequencies with percentages for education level

The fifth measured socio-demographic was the yearly income rate. Figure 4 presents the distribution between survey participants. The most prominent respondent group (21.0%) wanted to keep their income rate private. Among those who shared the information, the biggest income group (20.5%) earned 30 000 to 45 000 euros annually. The second largest group (19.3%) was those earning 15 000 to 30 000 euros per year, and the third biggest group (13.6%) was those earning annually under 15 000. The minor income rate groups were 45 000 to 60 000 (12.9%) and over 60 000 (12.7%).

The sixth requested socio-demographic was the region of residence (Figure 5). Most participants (50.1%) are residents of Southern Finland. Approximately one-third of the participants live in Western Finland (30.8%), and the rest of the participants live in Eastern (11.2%) and Northern Finland (7.8%).

The seventh and last requested socio-demographic was participants' familiarity with the topic (Table 4). The most common answer was that the participant follows the topic from time to time (39.5%). The second often participant reported that they rarely deal with the topic (37.7%). The rest of the participants reported that they deal with the topic in every area of their life (11.3%), discover the topic in their spare time (5.4%), their studies are related to the topic (2.3%), work among the topic (1.7%) or something else (2.0%).

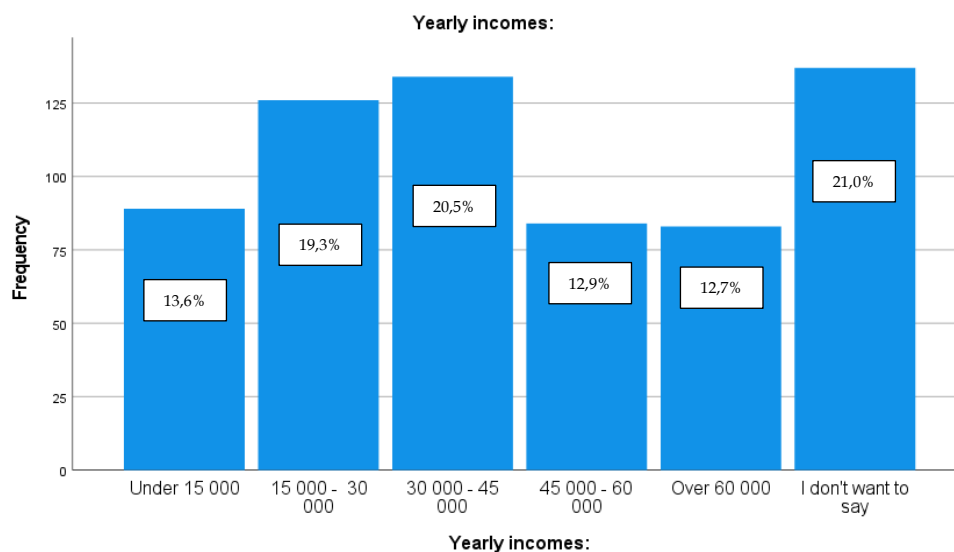


FIGURE 4 Frequencies with percentages for income groups

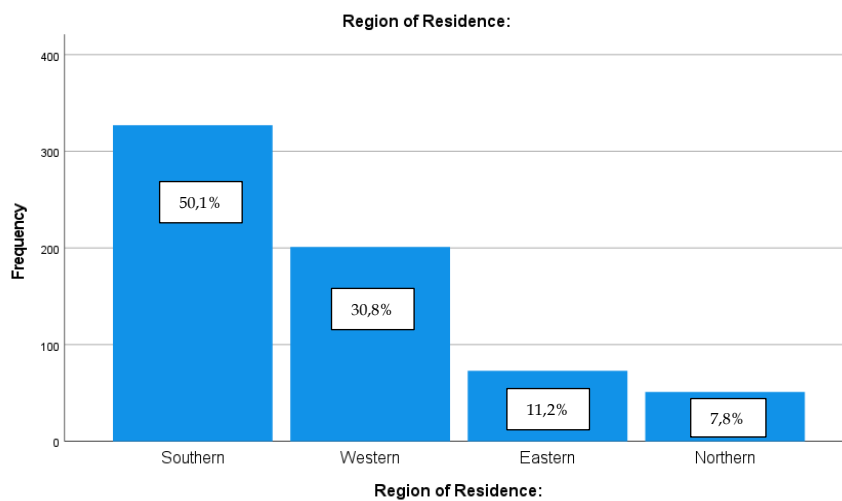


FIGURE 5 Frequencies with percentages for livelihood region

TABLE 4 Statistics for familiarity with the topic

How familiar you are with the themes related to sustainable food consuming?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	I work among the topic	11	1,7	1,7	1,7
	My studies are related to the topic	15	2,3	2,3	4,0
	I discover the topic on my spare time	35	5,4	5,4	9,4
	I follow the topic from time to time	258	39,5	39,6	48,9
	I deal with the topic in every area of my life	74	11,3	11,3	60,3
	I rarely deal with the topic	246	37,7	37,7	98,0
	Something else	13	2,0	2,0	100,0
	Total	652	99,8	100,0	
Missing	System	1	,2		
Total		653	100,0		

Factors affecting sustainable purchasing. Table 5 presents 51 statements that were used to study how remarkable respondents found certain factors while making decisions about purchasing sustainable food. Respondents determined the significance of factors on a scale from 1 (“Completely disagree”) to 7 (“Completely agree”). Table 5 presents the means and standard deviations of each statement in descending order of the means. The statistics show that the main barriers to sustainable food purchasing decision-making are favouring familiar foods and enjoying eating meat. The further most influential barriers were found to be the

perceived higher price of sustainable food compared to conventional food and, overall, the higher price, which does not help save money.

TABLE 5 Factor items with central tendency and variability

Descriptive Statistics			Descriptive Statistics		
	Mean	Std. Deviation		Mean	Std. Deviation
I know how to prepare more sustainable meals	4,5291	1,47298	I prefer foods I'm familiar with	5,1718	1,22491
I know what kind of impact sustainable food purchasing has for my health and environment	4,8438	1,36682	I enjoy eating meat	5,0123	1,82850
I need more information about sustainable food products	4,5684	1,49651	Sustainable food is more expensive than conventional	4,9416	1,29483
I need more information about sustainable diets	4,4456	1,56423	I know what kind of impact sustainable food purchasing has for my health and environment	4,8438	1,36682
I need more information about tasteful and sustainable recipes	4,7101	1,52512	I buy sustainable food to support domestic food production	4,8436	1,49451
My family/partner eats sustainable food	3,8113	1,59963	Sustainable food is too expensive	4,7492	1,38009
My friends buy sustainable food	3,5530	1,39721	I need more information about tasteful and sustainable recipes	4,7101	1,52512
I want my friends know that I purchase sustainable food	3,3241	1,56137	Sustainable produced food has less additives	4,7020	1,35657
I feel guilty if I buy other than sustainable food	3,1963	1,59823	Buying sustainable food is in line with my values	4,6248	1,48772
Few people I know, buy sustainable food	4,4194	1,36242	Buying sustainable food demands more effort	4,5997	1,33632
Others don't buy sustainable food	3,8449	1,28861	I need more information about sustainable food products	4,5684	1,49651
Buying sustainable food is stressful	3,6233	1,41276	I buy sustainable food to avoid negative climate impact and environment pollution	4,5653	1,65296
Sustainable food is too expensive	4,7492	1,38009	I buy sustainable food to decrease my environmental impact	4,5498	1,60025
Sustainable food is more expensive than conventional	4,9416	1,29483	I know how to prepare more sustainable meals	4,5291	1,47298
Buying sustainable food demands more effort	4,5997	1,33632	Sustainable food is important for my well-being	4,5199	1,38942
Preparing sustainable meals takes too much time	3,7703	1,38215	I need more information about sustainable diets	4,4456	1,56423
[Preparing tasteful sustainable meals is more difficult	3,7215	1,45746	I gladly try new sustainable food options	4,4209	1,41784
My store has a limited selection of sustainable food	4,0736	1,20066	Few people I know, buy sustainable food	4,4194	1,36242
I'm not use to buying sustainable food	4,2435	1,60247	Eating sustainable food decreases the risk of chronic diseases	4,3379	1,31714
I'm not interested in buying sustainable food	3,3538	1,72385	Buying sustainable food improves my quality of life	4,2638	1,41997
I don't have enough willpower to buy sustainable food	3,4242	1,53062	I'm not use to buying sustainable food	4,2435	1,60247
I don't have time getting accustomed to buy more sustainable food	3,2940	1,51250	I buy sustainable food to protect animals as individuals and as species	4,2304	1,65828
I'm too overwhelmed to consider my daily food purchases	3,3844	1,65902	I feel I can make an impact while buying sustainable food	4,2113	1,60178
I don't know what I would eat instead of meat	3,6677	1,94198	Eating sustainable food decreases the risk of cancer	4,1902	1,34656
I enjoy eating meat	5,0123	1,82850	I prefer foods I'm familiar with	5,1718	1,22491
Meat is nutritionally necessary for me	4,0521	1,86578	I gladly try new sustainable food options	4,4209	1,41784
I need meat to get enough protein	4,0337	1,83910	Sustainable food has poorer quality than conventional	3,1457	1,32746
I need meat to get all nutrients	3,8606	1,78796	Eating in sustainable manners is boring	3,2899	1,44548
Sustainable food is important for my well-being	4,5199	1,38942	Consuming sustainable food involves negative stereotypes	3,7204	1,42241
Sustainable food is more rich in nutrients than conventional	4,1705	1,28187	Buying sustainable food is in line with my values	4,6248	1,48772
Sustainable produced food has less additives	4,7020	1,35657	Buying sustainable food improves my quality of life	4,2638	1,41997
Eating sustainable food decreases the risk of chronic diseases	4,3379	1,31714	Buying sustainable food brings me joy	4,1836	1,48727
Eating sustainable food decreases the risk of cancer	4,1902	1,34656	Sustainable food is more rich in nutrients than conventional	4,1705	1,28187
I prefer foods I'm familiar with	5,1718	1,22491	I buy sustainable food to protect humankind	4,0800	1,62598
I gladly try new sustainable food options	4,4209	1,41784	My store has a limited selection of sustainable food	4,0736	1,20066
Sustainable food has poorer quality than conventional	3,1457	1,32746	Meat is nutritionally necessary for me	4,0521	1,86578
Eating in sustainable manners is boring	3,2899	1,44548	I need meat to get enough protein	4,0337	1,83910
Consuming sustainable food involves negative stereotypes	3,7204	1,42241	Buying sustainable food is easy for me	3,9816	1,39220
Buying sustainable food is in line with my values	4,6248	1,48772	I need meat to get all nutrients	3,8606	1,78796
Buying sustainable food improves my quality of life	4,2638	1,41997	Others don't buy sustainable food	3,8449	1,28861
Buying sustainable food brings me joy	4,1836	1,48727	My family/partner eats sustainable food	3,8113	1,59963
Buying sustainable food is easy for me	3,9816	1,39220	Preparing sustainable meals takes too much time	3,7703	1,38215
Buying sustainable food saves me money	3,0766	1,30723	[Preparing tasteful sustainable meals is more difficult	3,7215	1,45746
I feel I can make an impact while buying sustainable food	4,2113	1,60178	Consuming sustainable food involves negative stereotypes	3,7204	1,42241
I buy sustainable food to support domestic food production	4,8436	1,49451	I don't know what I would eat instead of meat	3,6677	1,94198
I buy sustainable food to avoid negative climate impact and environment pollution	4,5653	1,65296	Buying sustainable food is stressful	3,6233	1,41276
I buy sustainable food to decrease my environmental impact	4,5498	1,60025	My friends buy sustainable food	3,5530	1,39721
I buy sustainable food to protect animals as individuals and as species	4,2304	1,65828	I don't have enough willpower to buy sustainable food	3,4242	1,53062
I buy sustainable food to protect humankind	4,0800	1,62598	I'm too overwhelmed to consider my daily food purchases	3,3844	1,65902
			I'm not interested in buying sustainable food	3,3538	1,72385
			I want my friends know that I purchase sustainable food	3,3241	1,56137
			I don't have time getting accustomed to buy more sustainable food	3,2940	1,51250
			Eating in sustainable manners is boring	3,2899	1,44548
			I feel guilty if I buy other than sustainable food	3,1963	1,59823
			Sustainable food has poorer quality than conventional	3,1457	1,32746
			Buying sustainable food saves me money	3,0766	1,30723

Items were combined into eleven groups to study their internal consistency: Knowledge, Close and Distant Social Circles, Negative and Positive Attitudes, Meat-eating, Health, Values, Economics and Habit. Habits were further divided into Familiarity preferring and Lack of routine. Grouped items were analysed for reliability and consistency of the questionnaire Cronbach's Alpha showed significance for "Knowledge" ($\alpha = 0.560$), "Close social circle" ($\alpha = 0.781$), "Distant social circle" ($\alpha = 0.713$), "Negative attitudes" ($\alpha = 0.820$), "Positive Attitudes" ($\alpha = 0,831$), "Meat-eating" ($\alpha = 0.900$), "Health" ($\alpha = 0.901$), "Values" ($\alpha = 0.936$) and "Economic" ($\alpha = 0.860$).

Habit-related statements “I prefer eating food I’m familiar with” and “I’m not used to buying sustainable food” did not get high enough Cronbach’s Alpha significance together. Hence, these both showed noteworthy means, they were studied separately. “I prefer eating food I’m familiar with” ($M = 5,17$) was ranked as the highest factor affecting sustainable food purchasing. “I’m not use to buying sustainable food” was found to be slightly meaningful ($M = 4.24$). Further, habit factors are discussed under titles: Familiarity preferring and Lack of routine.

Change of habits, purchase levels’ following and target setting.

Section three focused on studying the habit changes participants have made and whether they had set sustainability targets in the K-ruoka app and followed how they developed. To study the target following and the setting was used three target options that K-ruoka app includes: domestic level, carbon footprint and healthiness level. Eleven items were used to study habit adjustments. Frequency Table 6 shows that 35,8% ($n=234$) reported permanent habit shifts towards the more sustainable direction. Of all participants, 41,8% ($n= 273$) reported not revising their habits, and 22,1% ($n= 144$) did not know.

TABLE 6. Frequency of respondents’ habit change

I have changed my eating habits permanently to be more sustainable					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	234	35,8	35,9	35,9
	No	273	41,8	41,9	77,9
	I don't know	144	22,1	22,1	100,0
	Total	651	99,7	100,0	
Missing	System	2	,3		
Total		653	100,0		

The most commonly made modifications were increasing the share of plant-based products in the diet (76.2%), reduction of meat products consumption (73.6%) and reduction of food waste (70.1%) (Table 7). Consideration of the food’s carbon footprint (15.6%) was the most rarely made change.

Table 7. Frequencies of made habit changes

		Responses		Percent of Cases
		N	Percent	
\$muutos_K20 ^a	I have reduced consumption of dairy products	91	7,3%	39,4%
	I have reduced consumption of meat products	170	13,6%	73,6%
	I have reduced consumption of sugar, salt and/or fat	120	9,6%	51,9%
	I have increased the share of plant-based products in my diet	176	14,1%	76,2%
	I prefer more local food	127	10,1%	55,0%
	I prefer more seasonal food	136	10,9%	58,9%
	I prefer more organic food	80	6,4%	34,6%
	I consider more the footprint of the food I buy	36	2,9%	15,6%
	I have reduced food waste	162	12,9%	70,1%
	I have decreased the size of my portions	70	5,6%	30,3%
	I have decreased my traffic emissions related to food shopping (e.g. closer store, public transportation, cycling or walking instead of car)	84	6,7%	36,4%
Total		1252	100,0%	542,0%

a. Dichotomy group tabulated at value 1.

Participants were asked whether they have followed or set the target for domestic level, healthiness and/or the carbon footprint level of their food purchases. Results show that 19.9% of respondents have followed their sustainability level, and 12,9% have set a target for their sustainability level. Table 8 presents the following purchases domestic level as the most popular act ($n= 115$, 17.6%), which is also what majors have set the target for ($n= 45$, 6.9%). The carbon footprint was followed by 58 (9.0%) respondents and healthiness by 73 (11.2%). Of all respondents, 18 (2.8%) have set a target for carbon footprint level and 21 (3.2%) for healthiness.

TABLE 8. Frequencies for following and setting targets

\$target_following Frequencies				\$setting_target Frequencies					
		Responses		Percent of Cases		Responses		Percent of Cases	
		N	Percent			N	Percent		
\$target_following ^a	I follow my purchases domestic level	115	46,6%	88,5%	\$setting_target ^a	I have set target level for domestic level	45	13,1%	14,6%
	I follow my purchases carbon footprint level	59	23,9%	45,4%		I have set target level for carbon footprint	18	5,2%	5,8%
	I follow my purchases healthiness	73	29,6%	56,2%		I have set target level for healthiness	21	6,1%	6,8%
	Total	247	100,0%	190,0%		I haven't set target level for myself	259	75,5%	83,8%
				Total	343	100,0%	111,0%		

a. Dichotomy group tabulated at value 1.

a. Dichotomy group tabulated at value 1.

5.2 Correlation analyses

Firstly, correlation analyses were executed to discover relationships between demographic items and eleven combined barrier groups affecting sustainable food purchasing. Correlations between demographics and the change in habits followed this. Lastly, demographics were studied with the target following and setting.

5.2.1 Socio-demographics and barriers

Demographics were studied in relation to barriers with Pearson's correlation Independent Sample test and sig. (2-tailed) p-values are introduced. All but the household size significantly related to some of the combined barrier groups.

Gender showed statistical significance ($p < 0.001$) in almost all barrier groups: Knowledge, Close Social Circle, Negative and Positive Attitudes, Meat-eating, Health, and Values. Also, Distant Social Circle and Economic barriers showed significant relation ($p < 0.007$). Women ($n = 339$, $M = 3.63$) informed that close social relations impact their food purchasing decision more than men ($n = 310$, $M = 3.30$). However, men reported that distant social circles ($n = 310$, $M = 4.25$) affect their sustainable food purchasing more than women ($n = 338$, $M = 4.01$). Women find economic ($n = 339$, $M = 3.96$) aspects less relevant for their sustainable food purchasing than men ($n = 310$, $M = 4.186$). Women had more positive attitudes ($n = 339$, $M = 4.28$) comparison to men ($n = 310$, $M = 3.71$) and lower negative attitudes ($n = 339$, $M = 3.25$) than men ($n = 310$, $M = 3.63$). Men found meat-eating ($n = 310$, $M = 4.53$) a rather bigger barrier than women ($n = 339$, $M = 3.78$). Health ($n = 339$, $M = 4.60$) and values ($n = 339$, $M = 4.82$) were outstandingly more important for women than for men (Health, $n = 310$, $M = 4.15$ and Values $n = 310$, $M = 4.03$).

Age showed importance between age groups 18-31 ($n = 47$) and ($n = 248$) over 60-year-olds in Meat-Eating ($p < 0.001$), Health ($p < 0.001$), Values ($p < 0.001$), Positive Attitudes ($p < 0.001$), Negative Attitudes ($p < 0.004$) and Knowledge ($p < 0.042$). Younger ones greatly disagreed with meat-eating's importance ($M = 3.28$) compared to elderlies ($M = 4.25$). Youngsters found healthiness as a more critical aspect ($M = 4.90$) in comparison to elderlies ($M = 4.26$). Younger ones value sustainable food more ($M = 5.16$) than elderlies ($M = 4.24$). Youngsters show a lower negative attitude ($M = 2.97$) and higher positive attitudes ($M = 4.63$) with sustainable food than elderlies (negative, $M = 3.46$ and positive, $M = 3.87$). Younger ones also report having a higher knowledge level ($M = 4.79$) in sustainability food matters than elderlies ($M = 4.53$).

Education presented substance with all barrier groups but Close Social Circle and Health. Relations occurred between primary ($n = 61$) and tertiary ($n = 313$) education levels and with groups: Knowledge ($p < 0.001$), Familiarity preferring ($p < 0.001$), Lack of routine ($p < 0.002$), Economic ($p < 0.002$), Negative Attitudes ($p < 0.004$), Positive Attitudes ($p < 0.049$), Values ($p < 0.01$) and Distant Social Circle ($p < 0.011$). Education had similar effects as age between respondent groups. The lower education level resulted in weaker interest and attitudes towards sustainable food purchasing, as more highly educated respondents informed a stronger interest in sustainable food purchasing. Only habit caused a difference as it showed importance between primary (Familiarity preferring, $M = 5.51$ and Lack of routine, $M = 4.62$) and tertiary level (Familiarity preferring, $M = 4.97$ and Lack of routine, $M = 3.98$).

Region of Residence showed a relation with Negative Attitudes ($p < 0.001$), Familiarity preferring ($p < 0.001$), Lack of routine ($p < 0.05$), Meat-Eating ($p < 0.007$) and Values ($p < 0.030$). These significances occurred between respondents living in Southern ($n = 327$) and Northern ($n = 51$) Finland. Northern region respondents ($M = 3.84$) report having more negative attitudes towards sustainable food purchasing than Southern residents ($M = 3.30$). Meat-eating is found more central in Northern ($M = 4.52$) than Southern ($M = 3.93$) Finland. Southern citizens ($M = 4.55$) reported having more sustainable friendly values than Northern citizens ($M = 4.09$). Southern residents (Familiarity preferring, $M = 5.04$ and H2 $M = 4.07$) informed habits less impactful than northern residents (Familiarity preferring, $M = 5.64$ and Lack of routine $M = 4.71$).

Topic familiarity showed a relation with Values ($p < 0.001$), Close Social Circle ($p < 0.009$), Lack of routine ($p < 0.031$), Economic ($p < 0.033$), Positive Attitudes ($p < 0.004$) and Negative Attitudes ($p < 0.046$). The significance appeared between the ones who worked on the topic ($n = 11$) and those who answered, "Something else" ($n = 13$). One working on the topic ($M = 5.30$) value sustainable food purchasing more than another group ($M = 3.60$). "Something else" -respondents ($M = 3.00$) found close the social circle less meaningful for sustainable food purchasing decision-making than ones working among the topic ($M = 4.17$). Ones working among the topic ($M = 3.36$) reported economic aspects less relevant for the decision-making than "Something else" -respondents ($M = 4.52$). Working among the topic caused notably lower negative attitudes ($M = 2.79$) and higher positive attitudes ($M = 4.85$) in comparison to "Something else" -respondents that showed higher negative attitudes ($M = 3.76$) and lower positive attitudes ($M = 3.49$). Ones working among the topic reported a remarkably lower Lack of routine ($M = 3.45$) in comparison to "something else" ($M = 4.54$).

Yearly incomes showed a relation only with the Familiarity preferring ($p < 0.014$). The relation was discovered between income levels under 15 000 ($M = 5.47$) and those who did not want to say ($M = 5.12$).

5.2.2 Socio-demographics and the change of habits.

Demographics were studied with the change of habit through crosstabulation. Of 653 respondents, 234 (35,8%) reported that they had developed their food purchasing habits towards more sustainable ones. All demographics but household size showed a significant relation with shifting habits. The most complex cross-tabulations are presented along with the data tables.

Gender. While studying habit change in correlation to gender, the Pearson Chi-Square test resulted in a high value (20.170) and sig-value² < .001. In every category presented, more women than men reported that they had modified their purchasing habits to be more sustainable. However, between change-makers, there were not too many notable differences in made adjustments. A greater percentage of women (44.2%) had reduced consumption of dairy products in comparison to men 32.6%. Women also reported preferring more seasonal food (62.3%) than men (53.3%). A grander percentage of men (75.0%) a reported reduction in food waste as the number was 66.7% in the case of women.

Age. While studying habit adaption in correlation to age, the Pearson Chi-Square test resulted in a high value (15.745) and sig-value² < .015. Table 9 shows that age groups had major percentual emphases differences in all habit change categories omitting food waste reduction and increasing the share of plant-based products in the diet. Reduction of food waste and meat consumption was the most common act among change-makers. The consideration of the carbon footprint and reduction of the portion size were the rarest. Differences increased when the age gap between groups grew, and differences were majorly highest between respondents aged 18-31 and over sixty. The youngest respondents had the highest percentages in reducing dairy products (64.0%) and meat consumption (88.0%).

Interestingly, the youngest age group had the lowest percentage (68.0%) in increasing the share of plant-based products in the diet and respondents over 60-years-old had the highest percentage (83.8%). Instead, the youngest ones scored lowest in portion decreasing (8.0%), and sugar/salt/fat reduction (20.0%) and the highest scores went in portion decreasing to respondents 46-60-years-old (40.8%) and in sugar/salt/fat reduction to respondents over 60 (65.0%). In the case of seasonal food favouring, the respondents in the age group 31-45 had the lowest representation (46.3%), and all the other groups had representation over 60%. Instead, this age group had the highest score considering the food's carbon footprint (18.5%) while the age group 46-60 had the lowest (12.7%), and the youngest and oldest scored close to 16%.

TABLE 9. Age and the change of habits

\$Change_of_action ^a			Age				Total
			18-31	31-45	46-60	Over 60	
I have reduced consumption of dairy products	Count		16	28	25	21	90
	% within K1		64,0%	51,9%	35,2%	26,3%	
I have reduced consumption of meat products	Count		22	40	47	60	169
	% within K1		88,0%	74,1%	66,2%	75,0%	
I have reduced consumption of sugar, salt and/or fat	Count		5	28	35	52	120
	% within K1		20,0%	51,9%	49,3%	65,0%	
I have increased the share of plant-based products in my diet	Count		17	41	50	67	175
	% within K1		68,0%	75,9%	70,4%	83,8%	
I prefer more local food	Count		10	23	41	53	127
	% within K1		40,0%	42,6%	57,7%	66,3%	
I prefer more seasonal food	Count		16	25	43	51	135
	% within K1		64,0%	46,3%	60,6%	63,8%	
I prefer more organic food	Count		12	15	28	25	80
	% within K1		48,0%	27,8%	39,4%	31,3%	
I consider more the footprint of the food I buy	Count		4	10	9	13	36
	% within K1		16,0%	18,5%	12,7%	16,3%	
I have reduced food waste	Count		18	38	48	58	162
	% within K1		72,0%	70,4%	67,6%	72,5%	
I have decreased the size of my portions	Count		2	10	29	29	70
	% within K1		8,0%	18,5%	40,8%	36,3%	
I have decreased my traffic emissions related to food shopping (e.g. closer store, public transportation, cycling or walking instead of car)	Count		9	23	25	27	84
	% within K1		36,0%	42,6%	35,2%	33,8%	
Total	Count		25	54	71	80	230

Percentages and totals are based on respondents.

a. Dichotomy group tabulated at value 1.

Education. While studying habit shifts relating to education, the Pearson Chi-Square test resulted in a high value (40.512) and sig-value² < .001. Statics showed that the higher education level resulted more often in improving habits. Of tertiary-educated respondents, 46.3% had improved their habits and the same number for secondary level educated was 28.8%, and for primary levels, 14.8%. Among change-makers, results were not that linear. Table 10 presents that education level impacts whether the respondent has reduced meat consumption or consumption of sugar/salt/fat and prefers now more local, seasonal and/or organic food, considers the carbon footprint of the food and has decreased the size of their portions and traffic emissions related to food shopping.

Primary educated respondents sample reported a higher reduction of sugar/salt/fat consumption (66.7%) than secondary (57.7%) and tertiary (47.6%), and higher preferring of local food (66.7%) than the other two education groups (secondary, 52.6% and tertiary, 55.2%). Also, primary educated ones resulted in considering significantly more food footprint (44.4%) (secondary, 14.1% and tertiary, 14.7%) and have been decreasing their traffic emissions related to food shopping (44.4%) (secondary, 30.8% and tertiary, 39.2%). In comparison to others, secondary educated scored outstandingly higher in food waste reduction (78.2%) (primary, 55.6% and tertiary, 67.1%) and in decreasing size portions (38.5%) (primary, 22.2% and tertiary, 26.6%). Instead, secondary educated scored remarkably lowest in meat product consumption reduction 60.3% (primary, 77.8% and tertiary, 80.4%). Tertiary-educated respondents scored notably higher in preferring

more seasonal food 65.7%, and organic food 39.9%, compared to primary (44.4%, 33.3%) and secondary educated ones (48.7%, 24.4%).

TABLE 10. Education and the change of habits

			Education			Total
			Primary	Secondary	Tertiary	
\$Change_of_action ^a	I have reduced consumption of dairy products	Count	3	30	58	91
		% within K4	33,3%	38,5%	40,6%	
	I have reduced consumption of meat products	Count	7	47	115	169
		% within K4	77,8%	60,3%	80,4%	
	I have reduced consumption of sugar, salt and/or fat	Count	6	45	68	119
		% within K4	66,7%	57,7%	47,6%	
	I have increased the share of plant-based products in my diet	Count	7	56	112	175
		% within K4	77,8%	71,8%	78,3%	
	I prefer more local food	Count	6	41	79	126
		% within K4	66,7%	52,6%	55,2%	
	I prefer more seasonal food	Count	4	38	94	136
		% within K4	44,4%	48,7%	65,7%	
	I prefer more organic food	Count	3	19	57	79
		% within K4	33,3%	24,4%	39,9%	
	I consider more the footprint of the food I buy	Count	4	11	21	36
		% within K4	44,4%	14,1%	14,7%	
	I have reduced food waste	Count	5	61	96	162
		% within K4	55,6%	78,2%	67,1%	
	I have decreased the size of my portions	Count	2	30	38	70
		% within K4	22,2%	38,5%	26,6%	
	I have decreased my traffic emissions related to food shopping (e.g. closer store, public transportation, cycling or walking instead of car)	Count	4	24	56	84
		% within K4	44,4%	30,8%	39,2%	
Total	Count	9	78	143	230	

Percentages and totals are based on respondents.

a. Dichotomy group tabulated at value 1.

Yearly incomes. Habit change in correlation to yearly incomes, resulted in a high value (21.629) and sig-value² < .017 in the Pearson Chi-Square test. Yearly incomes showed complex distribution among respondents as results did not develop linearly either showed to follow simple logic. Table 11 presents that yearly incomes impact whether the respondent has reduced meat consumption, increased the share of plant-based products, prefers more local, seasonal and/or organic food, considers more the carbon footprint nowadays and has decreased the size of their portions.

TABLE 11. Yearly incomes and the change of habits

\$Change_of_action ^a		Yearly incomes					I don't want to say	Total
		Under 15 000	15 000 - 30 000	30 000 - 45 000	45 000 - 60 000	Over 60 000		
I have reduced consumption of dairy products	Count	9	16	16	15	13	22	91
	% within K5	42,9%	50,0%	30,8%	39,5%	35,1%	43,1%	
I have reduced consumption of meat products	Count	13	21	41	22	33	40	170
	% within K5	61,9%	65,6%	78,8%	57,9%	89,2%	78,4%	
I have reduced consumption of sugar, salt and/or fat	Count	10	18	28	19	15	30	120
	% within K5	47,6%	56,3%	53,8%	50,0%	40,5%	58,8%	
I have increased the share of plant-based products in my diet	Count	11	25	36	32	31	41	176
	% within K5	52,4%	78,1%	69,2%	84,2%	83,8%	80,4%	
I prefer more local food	Count	11	17	25	28	21	25	127
	% within K5	52,4%	53,1%	48,1%	73,7%	56,8%	49,0%	
I prefer more seasonal food	Count	14	14	29	20	24	35	136
	% within K5	66,7%	43,8%	55,8%	52,6%	64,9%	68,6%	
I prefer more organic food	Count	8	12	16	17	16	11	80
	% within K5	38,1%	37,5%	30,8%	44,7%	43,2%	21,6%	
I consider more the footprint of the food I buy	Count	6	6	5	6	4	9	36
	% within K5	28,6%	18,8%	9,6%	15,8%	10,8%	17,6%	
I have reduced food waste	Count	14	22	34	29	29	34	162
	% within K5	66,7%	68,8%	65,4%	76,3%	78,4%	66,7%	
I have decreased the size of my portions	Count	4	5	14	15	14	18	70
	% within K5	19,0%	15,6%	26,9%	39,5%	37,8%	35,3%	
I have decreased my traffic emissions related to food shopping (e.g. closer store, public transportation, cycling or walking instead of car)	Count	9	11	14	12	12	26	84
	% within K5	42,9%	34,4%	26,9%	31,6%	32,4%	51,0%	
Total	Count	21	32	52	38	37	51	231

Percentages and totals are based on respondents.

a. Dichotomy group tabulated at value 1.

Region of residence. Habit change in correlation to the region of residence resulted in a high value (19.957) and sig-value² < .003 in the Pearson Chi-Square test. Table 12 presents the results. Respondents living in Southern Finland generally represented the most elevated habit improvements. From southern respondents, 44.3% had reduced consumption of dairy products in comparison to the lowest improvement rate of northern residents (20.0%).

Similarly, 79.3% of southern change-makers had reduced meat products, whereas the percentage was 60% for northern residents. More southern residents had increased their share of plant-based products (80.0%) compared to northern residents 60.0%, but northern residents reported an increase in the preference for local food (80.0%) than southern residents 50.0%. From southern respondents, 45.7% had remarkably decreased traffic emissions in comparison to the lowest-scored western residents 13.0%. Food waste reduction caused the most notable difference between Western (63.0%) and Eastern residents (81.5%).

TABLE 12. Region of residence and the change of habits

			Region of Residence				Total
			Southern	Western	Eastern	Northern	
\$Change_of_action ^a	I have reduced consumption of dairy products	Count	62	20	7	2	91
		% within K6	44,3%	37,0%	25,9%	20,0%	
	I have reduced consumption of meat products	Count	111	35	18	6	170
		% within K6	79,3%	64,8%	66,7%	60,0%	
	I have reduced consumption of sugar, salt and/or fat	Count	79	25	11	5	120
		% within K6	56,4%	46,3%	40,7%	50,0%	
	I have increased the share of plant-based products in my diet	Count	112	39	19	6	176
		% within K6	80,0%	72,2%	70,4%	60,0%	
	I prefer more local food	Count	70	32	17	8	127
		% within K6	50,0%	59,3%	63,0%	80,0%	
	I prefer more seasonal food	Count	88	29	14	5	136
		% within K6	62,9%	53,7%	51,9%	50,0%	
	I prefer more organic food	Count	47	21	9	3	80
		% within K6	33,6%	38,9%	33,3%	30,0%	
	I consider more the footprint of the food I buy	Count	25	7	3	1	36
		% within K6	17,9%	13,0%	11,1%	10,0%	
	I have reduced food waste	Count	99	34	22	7	162
		% within K6	70,7%	63,0%	81,5%	70,0%	
	I have decreased the size of my portions	Count	47	13	7	3	70
		% within K6	33,6%	24,1%	25,9%	30,0%	
	I have decreased my traffic emissions related to food shopping (e.g. closer store, public transportation, cycling or walking instead of car)	Count	64	7	9	4	84
		% within K6	45,7%	13,0%	33,3%	40,0%	
Total	Count	140	54	27	10	231	

Percentages and totals are based on respondents.

a. Dichotomy group tabulated at value 1.

Familiarity with the topic. While studying habit change in correlation to topic familiarity, the Pearson Chi-Square test resulted in a high value (149.736) and $\text{sig-value}^2 < .001$. Familiarity groups had significant percentual differences in habit change categories, including dairy product and traffic emissions reduction, raising the share of plant-based products in the diet (Table 13) and also preferring local, seasonal and organic food caused differences. Ones who had studied the topic (55.6%) or discovered it in their spare time (56.5%) reported more often the reduction of dairy products, especially in comparison to ones who rarely deal with the topic (31.0%). Those who studied the topic had the lowest score (55.6%) in increasing the share of plant-based products in their diet, and the most elevated ranked the group which discovers the topic in their spare time (82.6%). In the case of decreasing traffic emissions, 66.7% of respondents who work on the topic reported the most elevated habit change, primarily in comparison to 31.0% of those who rarely deal with the topic.

Favouring more local food was the percentage-wise most common among ones who work on the topic (100%) and rarest among those who study the topic in their spare time (34.8%). Among those who worked on the topic, 83.3% had

advanced preferring seasonal food. The ones whose studies are related to the topic resulted in a modest improvement (44.4%). Organic food preferring improvement was most common among those who deal with the topic in every area of their lives (50.0%) and rarest among the ones who discover the topic in their spare time (13.0%).

TABLE 13. Topic familiarity and the change of habits

			\$Change_of_action*K7 Crosstabulation							Total
			How familiar you are with the themes related to sustainable food consuming?							
\$Change_of_action ^a			I work among the topic	My studies are related to the topic	I discover the topic on my spare time	I follow the topic from time to time	I deal with the topic in every area of my life	I rarely deal with the topic	Something else	
			I have reduced consumption of dairy products	Count		2	5	13	43	19
% within K7		33,3%		55,6%	56,5%	38,7%	36,5%	31,0%	0,0%	
I have reduced consumption of meat products	Count		4	6	15	81	41	22	1	
	% within K7		66,7%	66,7%	65,2%	73,0%	78,8%	75,9%	100,0%	
I have reduced consumption of sugar, salt and/or fat	Count		3	4	11	58	27	16	1	
	% within K7		50,0%	44,4%	47,8%	52,3%	51,9%	55,2%	100,0%	
I have increased the share of plant-based products in my diet	Count		4	5	19	87	38	22	1	
	% within K7		66,7%	55,6%	82,6%	78,4%	73,1%	75,9%	100,0%	
I prefer more local food	Count		6	4	8	63	34	12	0	
	% within K7		100,0%	44,4%	34,8%	56,8%	65,4%	41,4%	0,0%	
I prefer more seasonal food	Count		5	4	12	61	38	16	0	
	% within K7		83,3%	44,4%	52,2%	55,0%	73,1%	55,2%	0,0%	
I prefer more organic food	Count		2	4	3	36	26	9	0	
	% within K7		33,3%	44,4%	13,0%	32,4%	50,0%	31,0%	0,0%	
I consider more the footprint of the food I buy	Count		2	0	3	17	12	2	0	
	% within K7		33,3%	0,0%	13,0%	15,3%	23,1%	6,9%	0,0%	
I have reduced food waste	Count		6	5	20	78	34	18	1	
	% within K7		100,0%	55,6%	87,0%	70,3%	65,4%	82,1%	100,0%	
I have decreased the size of my portions	Count		2	2	9	35	13	9	0	
	% within K7		33,3%	22,2%	39,1%	31,5%	25,0%	31,0%	0,0%	
I have decreased my traffic emissions related to food shopping (e.g. closer store, public transportation, cycling or walking instead of car)	Count		4	5	10	39	17	9	0	
	% within K7		66,7%	55,6%	43,5%	35,1%	32,7%	31,0%	0,0%	
Total	Count		6	9	23	111	52	29	1	

Percentages and totals are based on respondents.

a. Dichotomy group tabulated at value 1.

5.2.3 Socio-demographics, purchase levels' following and target setting.

Crosstabulation analyses were executed to discover the relations between different types of respondents and self-reported target setting and following. Only gender and topic familiarity showed higher distribution among demographic groups while studying following purchase levels and setting targets. Yearly incomes and region of residence did not show the distribution for target setting, but they did for purchase level following.

Gender. Following purchases' domestic level were most popular and balanced between genders (women $n= 62, 89.9\%$ and men $n= 52, 86.7\%$). Women followed more often carbon footprint level ($n= 39, 56.5\%$) and purchases healthiness ($n= 44, 63.8\%$). Most women and men (almost 84%) reported that they had not set targets. In all but domestic-level target setting, women reported setting and following targets more often than men. In total, 21 women (13.7%) and 24 men (15.5%) had set a target for the domestic level. Only 13 women and 8 men had set the target for healthiness level and even fewer (12 women and 6 men) for carbon footprint level.

Age. Age caused differences in the target following but not significantly in the target setting. In the age group 46 to 60, the following of the domestic level was highest, with 95.2%, including 40 respondents. Following the healthiness level, was most common among the youngest age group ($n= 7, 77.8\%$) and rarest among 46 to 60-years-old ones ($n= 22, 52.4\%$). It occurred that following the carbon footprint of the purchases was most represented in the age group 31 to 45 ($n= 16, 69.6\%$) and rarest among those over 60 ($n= 18, 32.7\%$).

Yearly incomes. Yearly incomes did not show the distribution for target setting, but for purchase level following, it did. Domestic or healthiness levels following were not markedly distributed, but the carbon footprint level following was. Ones earning 15 000 to 30 000 per year followed most rarely ($n= 10, 33.3\%$) their purchases carbon footprint level and ones earning over 45 000 followed it most often ($n= 20, 57.1\%$)

Region of residence. Region of residence did not show the distribution for target setting, but for purchase level following, it did. Domestic or healthiness levels following were not considerably distributed, but the carbon footprint level following was. Ones living in the North followed it most rarely ($n= 2, 22.2$ and ones living in the South followed it most often ($n= 34, 50.0\%$)

Familiarity with the topic. Results showed that the less participants was engaged in the topic the less likely they had set sustainability targets in any category for their food purchases. Those working on the topic, discovering it in their spare time and dealing with it daily reported higher target setting than those who rarely deal with it. Interestingly, the ones whose studies were related to the topic have not set any targets.

Following purchase levels caused more distribution. Diverse groups followed purchases domestic level equally. While looking at carbon footprint following, the ones more engaged in the topic reported significantly higher following numbers. For example, those working on the topic, studying in the topic-related field and discovering it in their spare time resulted in percentages over 80 in comparison to the percentage of ones rarely dealing with the topic ($n=9, 32.1\%$). Healthiness level was poorly followed by ones working on the topic ($n= 1, 20.0\%$) and highly more among those who deal comprehensively ($n= 12, 75.0\%$) with the topic or discover it in their spare time ($n= 7, 63.6\%$) or follows topic time to time ($n= 37, 56.9\%$).

6 DISCUSSION AND CONCLUSIONS

The final section of the thesis contains three parts. The first section addresses the main findings and reflects them in relation to previous literature. Each research aim and objective is discussed in turn. The second section discusses the limitations of the present study. The last section provides relevant recommendations for further research.

6.1 Addressing research aims and key findings

6.1.1 Perceived barriers to sustainable food purchasing

The main aim of this research was to understand further the barriers inhibiting Finnish individuals from engaging in sustainable food purchasing. Even though similar studies (e.g. Aschemann-Witzel & Zielke, 2017; Corrin & Papadopoulos, 2017; Smiglak-Krajewska & Wojciechowska-Solis, 2021) have been conducted in other parts of the world and Europe, reporting slightly differing outcomes, it is essential to understand context-related barriers to build optimised practical implementations. Different contexts bound aspects such as food culture, geographic location and cultural habits can affect outcomes. (Vinnari & Vinnari, 2014.) While understanding the main barriers is possible to create efficient, focused and understood-based strategies to support the shift towards more sustainable food consumption behaviour (Lea et al., 2006b; Vinnari & Vinnari, 2014).

In this survey, Finnish consumers gave the most weight to favouring familiar foods, enjoying meat-eating and perceiving higher prices of sustainable food products. These three dimensions should be considered a primary focus while trying to improve Finnish sustainable food purchasing habits. They can enhance purchasing behaviour most efficiently and create a butterfly effect. In the following sections, each barrier is discussed in detail to consider the reasons behind the barrier and ways to overcome them. In conclusion, it can be summed that choosing the strategy that notifies Finns' values, communicates societal acceptance for the habit shift, widens the consumers' knowledge base on sustainability issues, offers economic initiatives, and does this in small steps might be a comfortable strategy to lower Finnish consumers perceived barriers for sustainable food purchasing. The most approachable target group willing to implement changes is probably young, highly educated women living in Southern Finland and working on the topic.

6.1.1.1. Habits and routines

Habits and routines are understandable limitations for habit change, and their formation consist of multiple aspects. Consumers have forms and patterns for

everyday-life matters to ease the brain's cognitive load. (Middelkamp, 2018; Gifford et al., 2017.) The reviewed literature highlighted the barriers social factors and cultural heritage create affecting our everyday behaviour. Human nature looks for convenience and connection towards each other. (Gifford et al., 2017; Higgs, 2015.) Our social character creates habits and routines that pass over generations. Comprehensive transit in society is needed to support permanent diet shifts (Salonen & Åhlberg, 2013.) These patterns and cultural aspects are not impossible to change, but the more significant the shift, the greater the time it takes (Vinnari & Vinnari, 2014).

Ajzen's (1985) widely utilised Theory of planned behaviour expects intention to affect occurring behaviour and intentions to be affected by attitudes towards the behaviour, subjective norms and perceived behavioural control. To take these matters into account, the most accessible ways literature presents to make a habit and routine shift for individuals is to create ways to connect new habits to existing ones to create a continuum and sustain low-barrier transit (Corrin & Papadopoulos, 2017; Middelkamp, 2018; Pohjolainen et al., 2015). In other words, this means a low-key path of small steps leading to an ideal transition. In daily food consumption, this could mean, for instance, continuing meat consumption but consuming more poultry meat instead of beef. Reducing red meat consumption is an example of successful evolution that Finns have already made, as the Natural Resource Institute Finland data (2000-2021) presents in Figure 1. Steps must be modified to fit the stage of transition readiness of the individual. Small successful steps give accomplishments that support individual's belief in their capability to implement modifications in their daily lives. That is the belief Ajzen (1991) has given attention to instead of just an actual control. The present study suggests that the most approachable groups open for the shift are highly educated young women that live in the south and work on the topic.

Past research shows that multiple barriers over drive habit change (Corrin & Papadopoulos, 2017), and specific transition strategies might only work for some food products, and barriers for different product categories like sweets or dairy products might have to be studied further. More research and evidence are also demanded to understand whether the shift in consumption reaches the stability stage and whether sustainable development can be taken to the following levels, such as decreasing the amount of meat consumption in total. Work to alter consumption patterns is not alone on individuals' shoulders, and studies (Gifford et al., 2017; Salonen & Åhlberg, 2013; Vinnari & Vinnari, 2014) suggest that the quickest way to create behavioural change is through governmental regulation and it is possible that companies can lead the way by affecting the product availability. Policies and structural changes alone would probably lead to resistance as more considerable lifestyle shifts might involve difficult emotions (Buchs et al., 2015).

For Finns supporting local is an essential sustainable value which causes positive feelings (Salonen et al., 2018). Studies (e.g. Corrin & Papadopoulos, 2017; Lea et al., 2006b; Povey et al., 2001) also show that, in general, healthiness is appreciated sustainability aspect in the case of food. Locality and healthiness could

be highlighted at the beginning of the shift to ensure a comfortable beginning. While appreciation of these aspects grows, it could slowly include more food categories under the idea of healthiness and supporting local. Using these aspects as a starting point would be necessary to study how the appreciation of environmental and economic aspects develop to see whether they could be included, or at which point they could be included to expedite the sustainable food consumption transition. Another matter to be utilised, according to Salonen et al. (2018), could be Finns' practicality in combining many saving to climate change tackling by applying innovative technology and waste reduction to sustainable food consumption patterns.

6.1.1.2. Meat-eating

Past literature supports the finding that enjoyment of meat-eating is an enormous barrier to shifting diet towards more sustainable plant-based diets such as vegetarian diets (e.g. Graça et al., 2015a; Pohjolainen et al., 2015; Lea et al., 2006b; Lea & Worsley, 2001; Lea & Worsley, 2003a). The enjoyment of meat-eating can be expected to go hand in hand with habits and routines. Most Western people are used to consuming meat and see it as the central part of their meals (Vinnari & Vinnari, 2014). Vinnari and Vinnari (2014) state that current institutional structures empower consumers to eat meat, and governmental diet guidance involving meat as a protein source in the plate model can be given as an example.

There is a long journey for behaviour change to occur, and small steps towards meat reduction are the key to habit and routine re-formulation (Haverstock & Forgyas, 2012; Jabs et al., 1998; Vinnari & Vinnari, 2014). Changing the idea of meat as the main dish would be pivotal in encouraging sustainable transit as meat products, especially beef, cause many health and environmental problems (Godfray et al., 2018; Pohjolainen et al., 2015). The aspect that survey's respondents are aware of the importance of meat eating and admit that makes the barrier visible and possible to work with.

As Corrin and Papadopoulos (2017) and Pohjolainen et al. (2015) suggest, reducing overall meat consumption could be more successful than eliminating it altogether. This approach does not decline the whole idea of meat-eating but supports the reduction of it without creating anxiety about loss (Buchs et al., 2015; Gifford et al., 2017), which could lead to extensive resistance and even trigger opposite behaviour (Gifford et al., 2017; Vinnari & Vinnari, 2014). Previous studies (Corrin & Papadopoulos, 2017; Lourenco et al., 2022) report that perceived barriers to decreasing meat eating outweigh the benefits and practical implementations to balance the valuation should be further studied.

Multiple studies (Graça et al., 2015a; Kildal & Syse, 2017; Pohjolainen et al., 2015) support the finding of the present study that perceived barriers to adopting a more sustainable plant-based diet may be particularly strong among individuals who have a combination of certain demographic traits: individuals who are male, live in rural areas, have low educational attainment, value traditions and

wealth, lack vegetarian family members or friends, eat meat frequently, and exhibit emotional attachments to meat. These consumers are in the lowest state of willingness to revise. Instead, similarly to the habit and routine evolution, young, highly educated women living in Southern Finland and working on the topic seem to be the most potential target group for the change. Beginning difference-making with the willing part can indirectly spread the positive images also to more reluctant parts (Vinnari & Vinnari, 2014).

Dropping the meat from the diet is often motivated by ethical values that include finding meat-eating disgusting and concerns about animals, health, religion and the environment (e.g. de Boer et al., 2017; Ruby, 2012). When health is the motivational force, the focus is generally on wellness and weight maintenance (Lea et al., 2006b). Found motivational aspects support the idea that ethical and health aspects can be utilised in communication while targeting consumers open to change. For maintaining the transformation, social support is reported to be crucial (Haverstock & Forgays, 2012; Jabs et al., 1998). Opportunities for social support are fundamental for avoiding the burden of social pressure, especially at the beginning when it is expected to be most vital. It needs further investigation to understand how to effectively empower consumers to make sustained and lasting modifications in their eating habits (Graça et al., 2015b).

6.1.1.3. Perceived high price

The present study reports a weak or non-existing relationship between income and sustainable food consumption. Based on previous studies, sustainable products are affordable for even the lowest income groups in Europa, and it seems that anyone willing can afford sustainable food and diet (Brons & Oosterveer, 2017; Buder & Hamm, 2011; Haider et al., 2022; Visschers et al., (2009). The matter that makes sustainable food perceived as expensive seems relative and value-based. As consumers do not find sustainable food worth the money, it becomes expensive compared to conventional food, as the value in choosing sustainable food is not seen in comparison to conventional food (Yamoah & Acquaye, 2019). As consumers do not see the value of sustainable food, a situation occurs where the price is the only mattering aspect. In the battle of prices, when other food traits are invisible, the lower price survives as a winner. (Hoek et al., 2017; Ingenbleek, 2014; Yamoah & Acquaye, 2019.)

Previous literature (Hoek et al., 2017; Ingenbleek, 2014; Yamoah & Acquaye, 2019) suggests making sustainable food equal by price or more desirable in comparison to mainstream to raise its value and make consumers revise their perception towards affordability. In the studies by Hoek et al. (2017) and Yamoah and Acquaye (2019), the price was followed by taste, familiarity and convenience, which could work as differentiation factors for the products with the higher price. Also, instead of focusing on the environmental aspects of food alone, it could be proposed to focus on both healthy and environmentally sustainable food. Combining multiple aspects, such as lowering the price and promoting healthiness and convenience, would be the way to appear superior in comparison to more

unsustainable options. As a cherry on top, good access to information and ad-hoc occurring notifications of ethnocentrism and localism at the right moment could be success factors in promoting sustainable product market growth (Gazdecki et al., 2021).

6.1.2 Socio-demographic factors and relation to barriers

From socio-demographic groups, gender, age, and education showed the most often statistical significance with barrier groups. Household size did not show substantial relation to any given barrier group, which aligns with previous studies (Pack, 2006; Visschers et al., 2009). Even though some of the studies (Gazdecki, Gorynska-Goldmann, Kiss & Szakály, 2021; Hoek et al., 2017; Verain et al., 2012) question the relevance of socio-demographic factors' potentiality to create focus segment groups and instance, Verain et al. (2012) suggest instead utilising life-style variables for segmenting; it might be that they cannot be utilised isolated but as a combination of socio-demographic groups. The present study results are similar to Vinnari and Vinnari's (2014) results that young, highly educated, and female consumers would have lower barriers to engaging in sustainable food purchasing habits. Multiple combined socio-demographic groups may predict certain kinds of values and habit preferences.

While studying barriers in relation to socio-demographics, values, attitudes, meat-eating and habits showed a relation for most of the demographics. *Values* showed significance with all demographics but income and household. Values were remarkably more crucial for women than men, younger than older respondents, those working on the topic and living in the south, and those with a higher education level. Similarly, to values, *attitudes* correlated with all demographics but income and household. Also, results between demographic groups align with values. Women, young, highly educated, those working on the topic and southern residents had better attitudes towards sustainable food purchasing and lower negative attitudes. Verain et al.'s (2012) study supports the idea that personality traits such as values create differences that could be useful while segmenting green consumers.

Interestingly *meat-eating* showed a relation with all the others but education, topic familiarity and annual income, two aspects which indicate the knowledge level of the consumer, and income which could estimate the capability of consuming sustainable food. The results of this study disagree with multiple studies (Gerini et al., 2016; Pack, 2006; Salonen & Åhlberg, 2013; Verain et al., 2012; Yamoah & Acquaye, 2019) that suggest education and increasing knowledge rate as the most promising tools for promoting sustainable behaviour change. Still, it might be possible that meat is too central to our cultural identity, and an increase in knowledge could have an influence on other food product categories but not that notably for meat consumption. Some other factors, for example, the taste of substitutes or skills of preparing plant-based meals, could have a higher impact on meat consumption. Instead, the lack of income's relation to meat eating was well in line with previous research as it has not been reported

to find a connection between income level and sustainable food consumption (e.g. Brons & Oosterveer, 2017; Buder & Hamm, 2011; Haider et al., 2022; Visschers et al., 2009).

Habits showed significance with all but gender and age, which predicts the importance of the habits apart from gender or age. Familiarity preferring was the only factor showing a relation with annual income, especially with income levels under 15 000 ($M = 5.47$) and those who did not want to say ($M = 5.12$). One explanation for low-income level consumers' unwillingness to diverge from buying familiar products might be the risk of financial costs whether the new product does not please the buyer. Taste samples could be a way to reach this consumer group to lower the risk of waste. Habits' relation to education and topic familiarity showed that higher education and topic familiarity positively lowered perceived barriers to sustainable food shopping.

Meat eating and habits were at the top of perceived barriers among consumers, but values and attitudes were not ranked as important as correlation analyses would let understand. Consumers may not be capable of recognising the consequence of their values and attitudes during food purchasing. Sustainable food is likely perceived to have a high price as it is not appreciated among the majority. Also, the matter of economic barriers correlated with gender, education, and topic. As Pack (2006) states, being highly educated and working on the topic would mean a capacity to understand health and environmental-related information to make connections for understanding the value of sustainable products.

Studying socio-demographics with barrier factors showed that women report seeing higher value in sustainable food purchasing almost in all aspects compared to men. Men find distant social circles affecting decision-making more than women, and women find close social circles more crucial. A comparison of age groups in the barriers confirmed that youngsters have more positive sight-seeing in sustainable food purchasing than elderlies. A higher education level, living in Southern Finland and working among the topic produced similar results to younger ages but in fewer barrier groups. Household size did not result in a substantial impact on decision-making. In a nutshell, the data suggests that the most willing survey participants to execute sustainable food purchasing are highly educated women, who work on the topic, live in Southern Finland, and belong to the age group from 18 to 31.

6.1.3 Taken habit change, purchase level following and target setting

The survey participants reported that they acknowledge the impact of sustainable food on the environment and health. Still, in general, barriers are greater than motivation for habit change. Of all participants, 36% reported permanent improvement towards sustainable food consumption on one or multiple of the eleven aspects. The most often made modifications were increasing the part of plant-based products in the diet and decreasing meat consumption. Decreasing

the amount of food waste was the third often made permanent improvement. Only 15.6% of permanent habit changers had decreased their traffic emissions related to food shopping.

The enjoyment of eating meat was a high barrier to sustainable food purchasing. At the same time, increasing the part of plant-based products in the diet and decreasing meat-eating were the most made habit improvements, which give mixed signals. The explanation could be that the change-makers are different respondents than those who value meat-eating. Studying the relationship between barriers and habit change could further understand the motivations leading to chosen habit changes. Also, understanding the motives of non-habit changers and identifying their grandest barriers would lead to answers on how to increase the number of consumers developing their habits towards sustainable food consumption.

Correlation analyses between socio-demographics and habit changing caused complex results. Results indicate that it might be challenging to create socio-demographic-based segments to identify the most potential habit changers. Verain et al. (2012) present that lifestyle variables such as attitudes and concerns towards nature and food are helpful for segmenting. Though instead of segmenting, focusing on lowering main barriers might be more straightforward and results seen widely in different socio-demographic groups.

Some generalisation can be constructed, and overall, women reported habit improvement more often in every area in comparison to men, which creates an expectation that women are more receptive to adapting sustainable food consumption habits into their daily lives. Respondents had most often reduced consumption of meat products and increased the share of plant-based products in their diet. Previous literature points out (Kildal & Syse, 2017; Ruby, 2012) that men find meat-eating more critical for their identity and norm following is more likely when there is a greater shared identity with the norm referent group (Higgs, 2015). The idea of giving up masculinely identified meat-eating can be one barrier for most men to develop their eating habits towards more sustainable ones. Associating sustainable eating with giving up meat strengthens the barrier, and it is important to emphasise small steps instead of radical ones (Middelkamp, 2018). Decreasing the amount of meat in the diet means more sustainable food consumption. Small decreases in the majority cause a greater impact in total than the total refusal of small groups alone. Between change-makers, results were balanced in different categories no matter the sex, which may inform that change-makers share the values and attitudes towards holistic habit transition.

The most notable differences between age groups occurred between the youngest and the oldest. The differences were not linear, but generally, it can be said that older ones' habit changes focused on health improvement and supporting local food consumption. Younger ones presented more interest in habit changes such as the reduction of animal products which improve environmental sustainability and health. These differences between age groups could be ex-

plained by the alters in educational focus, and differing emphasises around sustainability issues that have occurred in the last decades while curriculum has been updated and as climate change and health issues related to food have been visible in the media. Pack (2006) addresses education as essential for understanding health and environmental-related information. The results of the present study highlighted the meaning of education as, in general, ones with tertiary education level and more engaged in the topic reported more often advancement of the habits. These respondents have a higher understanding of the impacts of their habit changes and, most assumably, more sustainable-oriented values and attitudes (Lea et al., 2006b). Also, those living in the South reported more frequently the improvement of their habits, and in the South, the educational level is higher nationwide (SVT, 2020).

The last analyses were about following purchase levels and setting targets for them and how these correlated with socio-demographics. The most popular way to consume sustainable food was to favour local food production. It was also the most popular sustainability aspect for participants to follow (n=115, 17.6%) in the K-ruoka app and have a target for (n= 45, 6.9%). The popularity of favouring local food among Finns is supported by Salonen et al. (2018), and findings strengthen domesticity as a familiar starting point for behaviour following and advancement.

Only gender and topic familiarity showed higher distribution among demographic groups while studying purchase levels' following and target setting. Women and men followed and set the target equally for the domestic level of their purchases, but women followed and set targets more often for healthiness and carbon footprint. On average, those more familiar with the topic were following and setting targets for their purchase levels more often. The higher engagement of women and the respondents familiar with the topic resonates with previous studies (e.g. Povey, 2001; Ruby, 2012). Respondents in the age group 46 to 60-years-old followed most often their purchases' domestic level, the youngest their healthiness level and respondents 31 to 45-years-old their carbon footprint level. Differences between age groups might mainly evolve from lifestyle differences and differences in curriculum and media's focus. Ones living in the South followed significantly more (n=24, 50.0%) their purchases' carbon footprint level in comparison to northern residents (n=2, 22.2%), which might be the outcome of the higher educational level (SVT, 2020) and better opportunities to choose other options such as public transportation over private driving (infoFinland.fi, 2023).

Before being able to utilise the K-ruoka app's function to support sustainable decision-making properly would be paramount to understand how consumers would get engaged to use the function or whether there is another way to reach them. Overall, the percentage of ones following their purchase levels (19.9%) and target setting (12.9%) were relatively low, and it can be considered whether it is the best possible way to reach consumers to promote and support sustainable food purchasing. Potential options could be studying the most used

functions of the app and utilising these for implementing sustainability-promoting traits or as implementing traits demand effort and time; for now, it could be easier to reach consumers in the grocery store context and focus on lowering barriers there.

6.2 Limitations of the study

This chapter evaluates the present study and discusses its limitations in matters of research sample and chosen methods. Initially, the survey yielded a great number of responses, and the sample was mainly large enough to generalise results for all survey sections. Only the last section, which deals with the target following and setting, concluded the relatively small number of responses in some parts. In these parts, the generalisation of the results might be different from reality. The number of participants under age 31 and primarily educated ones are on the borderline while considering the inferring of the results. A specific study conducted focusing on these demographic groups could be needed.

Secondly, there might exist barriers that were ignored in this study. The survey provides intriguing insights into self-reported barriers, but as humans are illogical, more objective studies are needed to understand how results unite with objective behaviour data. For example, objective data can be collected from consumer data collected through memberships. While considering the survey formulation for better results, the researcher would reformulate the survey base so that questions 9 and 10 would be combined to allow all participants to see the habit change options before concluding whether they have made one. The possible habit transitions towards more sustainable food consumption were not determined beforehand, which might result from the situation that not all respondents have recognised the existing habit changes.

6.3 Suggestions for future research

The study directs towards several possible paths for future research. Initially, this study could be repeated with the objective data to understand and study differences between consumers' perceptions and objectively found factors. It is reasonable to consider adding variables such as lifestyle and attitude-related ones. As the majority of the survey participants were over 46 years old, the broader range of younger participants could impact the results.

It would also be interesting to further study which barriers correlated with made shifts. Another interesting aspect would be studying the starting point and made adaptations to understand how and in which volumes consumers have made modifications. It would also be interesting to study objective data about habit change to see what consumers have estimated to be enough noteworthy shift to

consider it a permanent habit shift and whether some consumers have improved their habits without acknowledging it by themselves.

Furthermore, additional prospects could be considered for future study. In the case of main perceived barriers, favouring familiarity, the enjoyment of meat-eating and perceived high price, research should open to study trade-offs such as budgeting priorities involved while buying sustainable food. Also, previous literature (e.g. Corrin & Papadopoulos, 2017; Lea et al., 2006b; Povey et al., 2001) indicates health factors to be more approachable for consumers than ecological aspects while promoting sustainable food purchasing. Much of the study still seems to focus on food's environmental aspects. As healthiness seems to be a meaningful aspect for consumers, it is reasoned to suggest further studies to figure out whether healthiness would be a more receivable promoter towards sustainable food consumption compared to more distantly found environmental friendliness. When the existing barriers and supportive factors are recognised is vital to execute experimental studies to get evidence of the most efficient ways to support consumers engaging in change.

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APPENDIX 1

Survey

Kysely kestävän ruoan ostamisesta

Tervetuloa vastaamaan kyselyyn, joka on osa tutkimusta, jolla selvitetään suomalaisten tapoja ostaa kestävän kehityksen mukaista ruokaa. Täyttämällä kyselyn autat kerryttämään aineistoa, joka on merkittävä osa toteutettavaa tutkimusta. Tutkimus toteutetaan yhteistyössä pro graduun työstävän Noora Tiaisen kanssa. Kiitos arvokkaasta panoksestasi tutkimuksen eteen! Vastaamiseen kuluu aikaa noin 5–10 minuuttia.

- Kyselyyn vastataan nimettömästi ja kyselyvastaukset käsitellään luottamuksellisesti. Kyselyn analysoinnissa voidaan vastauksia tarkastella taustatietojen mahdollistamien vastaajaryhmien avulla, mutta yksittäistä vastaajaa tai hänen mielipidettään ei voida raportoinnissa tunnistaa.
- Arviointiprosessissa on otettu huomioon EU:n tietosuojasetuksen vaatimukset henkilötietojen käsittelystä. [Henkilötietoja käsitellään Jyväskylän yliopiston tietosuojailmoituksen mukaisesti.](#)

Parhain terveisin
KESKO / Noora Tiainen

Osio 1/3

1. Ikä:
18-31, 31-45, 46-60, Yli 60
2. Sukupuoli:
Nainen, Mies, Muu, En tahdo sanoa
3. Samassa taloudessa asuvien henkilöiden määrä:
1, 2-3, 4-5, yli 5
4. Korkein koulutuksen taso: Peruskoulu, Toinen aste, Kolmas aste
5. Vuositulot: alle 15 000, 15 000–30 000, 30 000–45 000, 45 000–60 000, yli 60 000, en halua sanoa
6. Asuinalue: Etelä-Suomi, Länsi-Suomi, Itä-Suomi, Pohjois-Suomi
7. Kuinka tuttuja kestävään kulutukseen liittyvät ruokateemat ovat sinulle?
 Työskentelen aiheen parissa

- Koulutukseni liittyy tähän
- Harrastan aihetta vapaa-ajallani
- Seuraan aihetta satunnaisesti vapaa-ajallani
- Käsittelem aihetta kokonaisvaltaisesti elämässäni
- En juuri käsittele aihetta
- Jokin muu

Osio 2/3

Kyselyn tarkoitus on auttaa ymmärtämään paremmin tekijöitä, jotka tekevät kestävän ruoan ostamisesta helppoa tai vaikeaa. Kestävällä ruoalla (sustainable food) tarkoitetaan ruokaa, joka on samanaikaisesti hyväksi ihmisen terveydelle, ympäristölle, eläimille sekä ruoantuotannolle. Terveellinen ruoka tukee päivittäistä hyvinvointia ja sillä on myönteisiä terveysvaikutuksia. Ympäristöystävällinen ruoka minimoi mahdolliset ruoantuotannosta luonnolle ja eläimille syntyvät haitat ja pyrkii tukemaan luonnon monimuotoisuutta. Kestävä ruoka tukee paikallista ruokatuotantoa, -kulttuuria ja elinoloja.

8. Kuinka merkittäviä seuraavat tekijät ja näkemykset ovat olleet tehdessäsi päätöksiä koskien kestävän ruoan ostamista? 1 – Täysin eri mieltä; 2 – Eri mieltä; 3 – Osittain eri mieltä; 4 – Ei samaa eikä eri mieltä; 5 – Osittain samaa mieltä; 6 – Samaa mieltä 7 – Täysin samaa mieltä

- Tietoni kestävästä ruoasta on riittävällä tasolla
- Tiedän, kuinka valmistaa kestävämpiä aterioita
- Tiedän, mikä vaikutus kestävän ruoan ostamisella on terveyteeni sekä ympäristööni
- Tarvitsen lisää tietoa kestävästä ruokatuotteista
- Tarvitsen lisää tietoa kestävästä ruokavaliosta
- Tarvitsen lisää tietoa maistuvista kestävästä resepteistä

- Perheenjäseneni/kumppanini syö kestävästä ruokaa
- Ystäväni ostavat kestävästä ruokaa
- Haluan ystäväni tietävän, että ostan kestävästä ruokaa
- Tunnen syyllisyyttä ostaessani muuta kuin kestävästä ruokaa
- Harvat tuntemani ihmiset ostavat kestävästä ruokaa
- Muut eivät osta kestävästä ruokaa

- Kestävän ruoan ostaminen on stressaavaa
- Kestävä ruoka on liian kallista
- Kestävä ruoka on tavanomaista kalliimpaa
- Kestävän ruoan ostaminen vaatii enemmän vaivaa
- Kestävien aterioiden valmistaminen vie liikaa aikaa

- Maistuvien kestävien aterioiden valmistaminen on vaikeampaa
- Kaupassani on rajallinen valikoima kestävää ruokaa

- En ole tottunut ostamaan kestävää ruokaa
- En ole kiinnostunut ostamaan kestävää ruokaa
- Minulla ei ole riittävästi tahdonvoimaa ostaa kestävää ruokaa
- Minulla ei ole aikaa totuttautua ostamaan kestävämpää ruokaa
- Olen liian kuormittunut miettiäkseni päivittäisiä ruokaostoksiani

- En tiedä mitä söisin lihan tilalla
- Nautin lihan syömisestä
- Liha on minulle ravitsemuksellisesti välttämätöntä
- Tarvitsen lihaa saadakseni tarpeeksi proteiinia
- Tarvitsen lihaa saadakseni kaikki ravintoaineet

- Suosin ruokia, jotka tunnen entuudestaan
- Kokeilen mielelläni uusia kestäviä ruokavaihtoehtoja
- Kestävä ruoka on laadultaan tavanomaista huonompaa
- Kestävästi syöminen on tylsää
- Kestävän ruoan kuluttamiseen liittyy negatiivisia stereotypioita

- Kestävä ruoka on tärkeää hyvinvoinnilleni
- Kestävä ruoka on tavanomaista ravintorikkaampaa
- Kestävästi tuotetussa ruoassa on vähemmän lisäaineita
- Kestävän ruoan syöminen vähentää kroonisten sairauksien riskiä
- Kestävän ruoan syöminen vähentää syövän riskiä

- Kestävän ruoan ostaminen on arvojeni mukaista
- Kestävän ruoan ostaminen parantaa elämänlaatuani
- Kestävän ruoan ostaminen tuo minulle iloa
- Kestävän ruoan ostaminen on minulle helppoa
- Kestävää ruokaa ostamalla säästän rahaa

- Koen voivani vaikuttaa asioihin ostamalla kestävää ruokaa
- Ostan kestävää ruokaa tukeakseni kotimaista ruokatuotantoa
- Ostan kestävää ruokaa hillitäkseni ilmastonmuutosta ja ympäristön saastumista
- Ostan kestävää ruokaa alentaakseni ympäristövaikutustani
- Ostan kestävää ruokaa suojellakseni yksittäisiä eläimiä sekä yleisesti eläinlajeja
- Ostan kestävää ruokaa suojellakseni ihmiskuntaa
- Jokin muu tekijä, joka on vaikuttanut päätökseeni ostaa kestävää ruokaa

Osio 3/3

K-ruoka sovelluksessa voit seurata ostostesi kotimaisuusastetta, ympäristötasoa sekä terveystasoa. Tässä osiossa keskitymme sovelluksen ominaisuuteen, jonka avulla voit asettaa tavoitteita ympäristötason, kotimaisuusasteen ja terveystason nostamiseksi.

9. Olen muuttanut ruokaostostottumuksiani pysyvästi kestävämpään suuntaan.
 Kyllä En En tiedä
10. Kyllä → Olen tehnyt seuraavan muutoksen: (Voit valita useamman vaihtoehdon.)
- Olen vähentänyt maitotuotteiden kulutusta
 - Olen vähentänyt lihan kulutusta
 - Olen vähentänyt sokerin, suolan ja/ tai rasvan kulutusta
 - Olen lisännyt kasvisvalmisteiden määrää ruokavaliossani
 - Suosin aiempaa enemmän lähiruokaa
 - Suosin aiempaa enemmän sesonkituotteita
 - Suosin aiempaa enemmän luomutuotteita
 - Seuraan aiempaa enemmän ostamieni tuotteiden hiilijalanjälkeä
 - Olen vähentänyt ruokahävikin määrää
 - Olen pienentänyt annoskokojani
 - Olen vähentänyt ostoksilla käymisestä syntyviä liikennepäästöjä (esim. lyhyempi kauppamatka, julkiset, pyörä tai kävely auton sijaan)
 - Jokin muu, mikä?
11. Käytän K-ruoka sovellusta:
 Kyllä En
12. Kyllä → Käytän K-ruoka sovellusta: (Voit valita useamman vaihtoehdon.)
- Seuraan ostosteni kotimaisuustasoa
 - Seuraan ostosteni ilmastotasoa
 - Seuraan ostosteni terveellisyystasoa
 - Käytän K-ruoka sovellusta johonkin muuhun, mihin?
13. Olen asettanut K-ruoka sovelluksessa tavoitetason: (Voit valita useamman vaihtoehdon.)
- Kotimaisuustasolle
 - Ilmastotasolle
 - Terveellisyydelle
 - En ole asettanut tavoitetasoa → kysely päättyy
14. Saavutin asettamani tason:
 Kyllä, Kotimaisuustasolle Ilmastotasolle Terveellisyydelle
 En
 En tiedä
15. Olen säilynyt saavuttamallani tasolla:
 Kyllä, Kotimaisuustasolla Ilmastotasolla Terveellisyydessä

- En
- En tiedä