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Consumers' Willingness to Pay for Environmental Benefits of Organic Food

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Abstract

Conventional food production practices contribute significantly to climate change and raise concerns about human health and environmental impacts. Organic farming, a less resource intensive alternative, has gained popularity in the last years, but its environmental sustainability varies. Understanding consumer preferences and the factors driving their consumption of organic food, their willingness to pay premium prices for organic food as well as the extra amount for organic food with additional environmental benefits is crucial for promoting sustainable farming practices. Therefore, it is the focus of this dissertation. It combines qualitative and quantitative methods by conducting semi-structured interviews and a survey, respectively.

The results demonstrate that consumers are motivated by both personal factors as well as environmental concerns when purchasing organic food. Most survey respondents expressed a willingness to pay an extra for organic food with added environmental benefits, indicating their recognition of the positive value associated with organic production methods that incorporate more environmentally friendly practices. Statistical analysis reveals that while gender and income level do not significantly predict willingness to pay for organic food, income level is associated with willingness to pay extra for organic food with added environmental benefits. However, specific consumers characteristics influencing willingness to pay remain inconclusive.

Other findings in this study highlight the growing demand for sustainable practices in the food and organic food industry. Consumers' preferences extend beyond health benefits, reflecting increased awareness of the environmental impact of conventional agriculture. Businesses and policymakers can utilize these insights to promote sustainable food choices and contribute to the development of a bio-based economy.

Keywords: Environment, Organic Food, Environmental Sustainability, Willingness to Pay

Resumo

As práticas convencionais de produção de alimentos contribuem significativamente para as alterações climáticas e suscitam preocupações quanto ao impacto que têm na saúde humana e no ambiente. A agricultura biológica, uma alternativa menos intensiva em recursos, tem ganho popularidade nos últimos anos, mas a sua sustentabilidade ambiental varia. Compreender as preferências dos consumidores e os fatores que os impulsionam a consumir comida biológica, bem como sua predisposição para pagar preços mais altos por esses alimentos e um valor adicional por produtos biológicos com benefícios ambientais adicionais é crucial para promover práticas sustentáveis e é o foco do estudo presente nesta dissertação, combinando métodos qualitativos e quantitativos, tendo por base entrevistas semiestruturadas e um questionário, respetivamente.

Os resultados demonstram que os consumidores são motivados para a compra de comida biológica tanto por fatores pessoais quanto por preocupações ambientais. A maioria das pessoas que responderam ao questionário expressou predisposição para pagar mais por alimentos biológicos com benefícios ambientais adicionais, reconhecendo um valor positivo dos métodos de produção biológica que incorporam práticas mais amigas do meio ambiente. A análise estatística revela que o género e rendimento não são preditores significativos da predisposição para pagar por alimentos biológicos, enquanto o nível de rendimento está associado à predisposição para pagar um extra por alimentos biológicos com benefícios ambientais adicionais. No entanto, as características específicas dos consumidores que influenciam a sua predisposição para pagar permanecem inconclusivas.

Outras descobertas deste estudo destacam a crescente procura por práticas sustentáveis na indústria alimentar e de comida biológica. As preferências dos consumidores vão para lá dos benefícios para a saúde, refletindo uma maior consciencialização do impacto ambiental da agricultura convencional. Empresas e legisladores podem utilizar essas informações para promover escolhas alimentares ambientalmente sustentáveis e contribuir para o desenvolvimento de uma economia baseada em recursos naturais.

Palavras-chave: Ambiente, Comida Biológica, Sustentabilidade Ambiental, Predisposição para Pagar

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List of Abbreviations

CAP: Common Agricultural Policy of the European Union

EU: European Union

FAO: Food and Agriculture Organization of the United Nations

FiBL: Forschungsinstitut für biologischen Landbau – Research Institute of Organic Agriculture, Switzerland

GMOs: Genetically Modified Organisms

Horizon 2020: Research and Innovation Programme of the European Union, running from 2014 to 2020

Horizon Europe: Research and Innovation Programme of the European Union, running from 2021

IFOAM - Organics International: Formerly International Federation of Organic Agriculture Movements (IFOAM)

OF: Organic Food

PV: Perceived Value

U.S.: United States

USDA: United States Department of Agriculture

WTP: Willingness to Pay

1. Introduction

Conventional food production is a major contributor to climate change and responsible for around one-thirds of the worlds' greenhouse gas emissions (Clark et al., 2020; Rumaningsih et al., 2022). Agriculture plays a vital role in sustaining human existence, having been practiced for many years with, back then considered, environmentally friendly practices. However, due to the increasing global population and the resulting need to feed more people, agricultural practices have evolved in ways that have intensified their environmental impact. As of 2018, conventional agriculture was said to make 98.9% of the world's food (Tal, 2018) - meaning that most types of food are produced with the use of mineral fertilizers and synthetic pesticides, the prevalent form of agriculture present in the European Union (EU) (Mie et al., 2017). Considering that the world is expecting to feed 9.7 billion people in 2050 according to the United Nations (United Nations, 2019), at a global level, conventional agriculture can be a more socially sustainable approach, than chemical-free agriculture as it can allow to meet the needs of that projected world population, while using 30% less land than organic production, a farming system that avoids the use of synthetic fertilizers, pesticides and additives and relies on natural methods such as crop rotations, organic waste, and biological pest control (Browne et al., 2000), would require to feed the entire planet (Tal, 2018). However, current agriculture practices combined with the growth in people's purchase power can be highly environmentally unsustainable in the near future, by placing big pressure on land and the resources needed (Tricase et al., 2018). Resource-intensive agriculture drives deforestation, water scarcity, soil depletion and high levels of greenhouse gas emissions (FAO, 2017). Therefore, it is important to start measuring and taking care of the impact this growth in agriculture and food production has on human health, resource depletion and the environment. There is an increase in awareness of the safety of consuming food that is conventionally produced, regarding human health and environmental impact (Adamchak, 2022). Demand for greener products, namely organic products is increasing because people are starting to perceive organic products as more nutritious and safer than their conventional counterparts (Giampieri et al., 2022). Organic farming was pioneered in the early 1900's with the goal of increasing soil health and biodiversity. As organic farming been growing over time, regulations have been framed and implemented using certifications that were created to ensure that the production process follows certain guidelines of organic food production.

However, these regulations themselves have been also changing overtime with changes in demand and according to what people are looking for. Societies are facing worsening environmental, social, and economic challenges, especially climate change – To this a bio-based economy offers a solution by promoting environmentally sustainable development through the production and consumption of bio-products (Tricase et al., 2018).

Nowadays, while organic food is being seen as a better alternative to non-organic food for the environment, the majority of consumers still seem to view it positively primarily for the health benefits it brings them (Vigar et al., 2019). The aim of this dissertation therefore is to understand the characteristics and behavior of consumers who purchase organic food better - What are the factors influencing consumers' willingness to pay for organic food ? Who are the ones willing to pay extra for organic food products with additional environmental benefits compared to their current willingness to pay for general organic food products?

2. Literature Review

For centuries human civilizations have adopted different types of diets, being due to religious beliefs, physical performance, geography, cultural and social factors. However, in the recent years, reasons such as health considerations, focus on body weight, appearance, lifestyle (. et al., 2021), concerns regarding animal welfare, food safety, sustainability (Eyinade et al., 2021), and environmental friendliness, along with marketing and media communications popularizing different way of eating have been influencing the types of diets people adopt. In 1923 Russel Wilder defined the concept of 'Ketogenic diet' (Kalra et al., 2018), being followed in the recent years by other Low Carbohydrate diets, Paleo, "Gluten-Free", Plant-Based, Organic diets, among others. Organic diet has been adopted since the early 20th century, but the organic sector has been experiencing a steady increase in demand and sales from the late 20th century on, driven by heightened environmental consciousness and concerns regarding the health effects of consuming Genetically Modified Organisms (GMO) crops and pesticides (Adamchak, 2022), increased interest and awareness of food quality, increase "conventionalization" of the organic industry and promotion of organic standards (Hemmerling et al., 2015). Nowadays, the global food system contributes grandly to the global greenhouse gas emissions and therefore it is one of the main responsible for climate change (Rumaningsih et al., 2022). These emissions arise not only from agricultural production but also from various other stages such as transportation, energy use, packaging, management of residues and other industry activities within the food system (Chiriacò et al., 2022). Understanding and addressing these emissions is fundamental to promoting a more environmentally sustainable future, which can be done in various ways, one of them being by raising awareness for food consumption.

This literature review will place greater emphasis on the organic diet matter, examining the characteristics of organic production, consumer behavior trends, underlying motivations for purchasing organic food in the recent years, and emphasizes some environmental considerations. While exploring later various sustainable approaches to food production, it is crucial to first gain an understanding of the current agricultural practices in place.

2.1. Conventional agriculture

Nowadays, most types of food are produced with the use of mineral fertilizers and synthetic pesticides, the prevalent form of agriculture present in the European Union (EU) (Mie et al., 2017), but the use of chemicals in agriculture is very recent. In the early 19th century, the world witnessed remarkable technological advancements in agriculture, completely transforming rural landscapes and the lifestyles of rural communities (Dabbert et al., 2003). The first chemical fertilizer was invented (superphosphate) (Russel & Williams, 1977), fungicides were created using sulfur compounds, while arsenical were employed to manage insects that attack fruits and vegetables (Council, 1993). In 1861 the K fertilizer industry started in Germany, the first synthetic N fertilizer was made in 1903 (Russel & Williams, 1977), and the development of hundreds of thousands of formulated pesticides has been happening since the 1980s (Pelosi et al., 2021). Economic incentives prompted the substitution of manual labor with machinery, chemical fertilizers provided a convenient means to enhance soil fertility, chemical pesticides allowed crop protection and resulted in simplified agricultural practices, where regular pesticide applications took precedence over non-chemical preventive measures previously taken (Dabbert et al., 2003). These chemical fertilizers and synthetic pesticides are being used to increase crop production, eradicate vectors involved in the transmission of diseases and keep food and grains properly stored by killing or controlling pests such as insects, weeds and fungi (Manfo et al., 2020). After James Watson and Francis Crick model of DNA in 1953, the first Genetically Modified Organisms (GMOs) consumer product was approved in 1982 by FDA (US Food & Drug Administration) and in 1994 a 'GMO tomato' was available for sale and proved to be "as safe as traditionally bred tomatoes" (*Science and History of GMOs and Other Food Modification Processes*, 2022). GMOs can be used in agriculture to develop plants resistant to insects, what reduces the need for spray pesticides, and that are resistant to specific weed killers, which allows farmers to have more options for weed control (*Agricultural Biotechnology*, 2022).

In the literature, the term 'conventional agriculture' has been referring to the type of production that is non-organically certified and based on synthetic fertilizers, herbicides (Pimentel et al., 2005), pesticides which frequently results in the presence of residues in the consumable part of the crop (Eyinade et al., 2021), and can sometimes include growth hormones and GMOs, but also with different meanings: it can be used as a reference to compare alternative types of agriculture, being it conservation, no-till and organic agriculture, and it can have

implicit or explicit negative associations of being unsustainable and environmentally destructive (Sumberg & Giller, 2022).

According to Tal, at a global level, conventional agriculture can be a more socially sustainable approach than chemical-free agriculture as it can allow to meet the needs of the projected world population of nine billion in 2050, while using 30% less land than organic production would require to feed the entire planet (Tal, 2018). However, current agriculture practices can be highly environmentally unsustainable in the long term. Resource-intensive agriculture drives deforestation, water scarcity, soil depletion and high level of greenhouse gas emissions (FAO, 2017). The primary cause of biodiversity decline is unsustainable agricultures, also responsible for soil contaminations, jeopardizing rural livelihoods, endangering food and nutrition security and also contributing to global warming (IFOAM, n.d.). Nowadays, the global food system contributes grandly to the global greenhouse gas emissions and therefore it is one of the main responsible for climate change (Clark et al., 2020). These emissions arise not only from agricultural production but also from various other stages such as transportation, energy use, packaging, management of residues and other industry activities within the food system (Chiriacò et al., 2022). Understanding and addressing these emissions is fundamental to promote a more environmentally sustainable future, and that can be done in various ways, one of them being raising awareness for sustainable food consumption (Ranganathan & Waite, 2016). In the purview of this thesis, the term 'conventional agriculture' will refer to agricultural production systems that commonly utilize chemical fertilizers, pesticides and/or GMOs. It serves as a broad categorization encompassing various conventional farming methods prevalent in the industry.

2.2. Organic food origin and organic agriculture

In the early 1900s the concept of organic agriculture raised, being pioneered by the English botanist Sir Albert Howard CIE (Companion of the Indian Empire) along with Rudolf Stainer, an Austrian spiritualist, Franklin Hiram King, American inventor, and others who believed that a better farming system would be created if animal manures, cover crops, crop rotation and biologically based pest controls were used (Adamchak, 2022). The original idea of organic farming was to have good soil management practices to maintain the fertility of the soil (the core concept of organic philosophy), and composting by returning "to the soil what was removed from it through harvest" (Seufert et al., 2017), pursuing the so called

"Rule of Return", but also it also had a real focus on people, the workers of the land, and emphasized local and regional production and consumption (Moore-Colyer, 2002).

Although organic farming concept existed for over 80 years (Stolze & Lampkin, 2009) the organic food market started to expand and gaining significant attention from consumers, policy-makers, environmentalist in the 1970s/1980s, due to the increasing population's concerns regarding post-war agricultural practices, their own health and the environment due to the exposure to pesticides, antibiotics, and hormones, and the introduction of policies supporting agri-environmental initiatives, including organic farming (Seufert et al., 2017; Stolze & Lampkin, 2009).

Production and consumption increased over the decades, and with that, official standards were established to define organic produce, the implementation of Council Regulation (EEC) No. 2092/91 in 1993 provided a crucial foundation for subsequent market and policy developments (Stolze & Lampkin, 2009), and grant aid for organic agriculture was introduce in the EU (Dr Paul Brassley, 2018). There was the need to implement regulations and have clear standards for the organic production to follow. Those regulations define prohibited activities, substances and required activities to be taken (Seufert et al., 2017). Currently by definition "organic production is an overall system of farm management and food production that combines best environmental practices, a high level of biodiversity, the preservation of natural resources and the application of high animal welfare standards" (European Parliament, 2018). IFOAM (International Federation of Organic Agriculture Movements) defines Organic Agriculture as "a production system that sustains the health of soils, ecosystems, and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic Agriculture combines tradition, innovation, and science to benefit the shared environment and promote fair relationships and good quality of life for all involved" (IFOAM General Assembly, 2008).

According to EU's regulation, an organic product can only be considered as such if it follows the regulations throughout all stages of the supply chain, being it production, processing, and distribution (The European Parliament and the Council of the European Union, 2018). Organic farming practices forbid the usage of ionizing radiation, mineral nitrogen fertilizers, chemical pesticides, GMOs, hormones, and place strict limits on livestock antibiotics (to only when its necessary for animal health), usage of external inputs and usage of non-renewable resources. It also shell involve multiannual crop rotation, cultivation of nitrogen fixing plants and other green manure crops to restore the fertility of the soil and ensure the integrity of

organic production throughout all the stages of the supply chain (production, processing and distribution of food and feed). Regarding processed food, at least 95% of its agricultural-origin ingredients must be organic. Livestock production shall be raised in a free-range and open-air environment with tailored animal husbandry practices, avoiding livestock suffering, pain or distress. It is also encouraged in organic regulations the choice of breeds with a high degree of genetic diversity, ability to adapt to local conditions and resistant to diseases, short distribution channels and local production and the preservation of rare and native breeds in danger of extinction and overstocking shall be prevented. (European Parliament, 2018). Among many other rules, organic farming shall guarantee that the use of chemical pesticides, genetically modified organisms (GMO's) and synthetic fertilizers are banned, the implementation on livestock antibiotics has strict limits, livestock is raised in a free-range and open-air environment, and that at least 95% of agricultural-origin ingredients of processed food are organic (European Parliament, 2018). The previously mentioned reflects EU's regulations, however, according to Seufert, there are no significant differences in regulations among countries, but some can be mentioned such as the use of antibiotics, which are completely banned of organic agriculture in the US and Australian regulations (Seufert et al., 2017).

Only if regulations are met, the products can be certified and therefore present the organic logo. The EU organic logo (Figure 1) identifies products that have been certified as organic by an authorized control authority or body.

Figure 1 - The EU organic logo

More than 61% of Europeans are aware of this logo, a number higher than 'Fairtrade', the 'protected geographical indication' and the 'protected designation of origin' logos (European Commission, 2018). There are also other governmental organic logos in countries such as Germany, Czech Republic and Denmark which have some slightly different requirements to be implemented depending on the country (Janssen & Hamm, 2011). In the US, the USDA organic logo was implemented with the creation of the National Organic Program (NOP) in 2002 (Kiesel & Villas-Boas, 2007). The expanding organic sector and increasing importance of international trade in organic products have resulted in a complex landscape of competing

labels, diverse private and public standards, and European regulations within the field of organic certification (Stolze & Lampkin, 2009).

In today's policy landscape, with climate change, food security, and economic challenges at the forefront, there is a need for adaptable policies. Consumers nowadays view organic food as healthy, of high quality, and safe and are willing to pay more for it. However, although organic consumers are environmentally conscious, their motivation is primarily self-oriented, focusing less on environmental, social concerns and animal welfare and more on egocentric values like their own health, and the taste and freshness of food (Hamzaoui-Essoussi & Zahaf, 2012). Modifying the concept of organic farming is a challenge for policymakers as it has been developed by producers and consumers themselves. Stakeholders' involvement and respect for their contributions is crucial in shaping organic farming policies, even though they are increasingly controlled by public institutions(Stolze & Lampkin, 2009).

2.3. Benefits and downsides of organic food

Although pesticide concentration levels in conventionally produced food are regulated (Vigar et al., 2019) both in the EU and in the US, several non-approved pesticides and chemical substances have been detected in monitored food samples, as reported by the European Food Safety Authority ((EFSA) et al., 2020; Authority, 2018) and the US Department of Agriculture (United States Department of Agriculture, 2022) what increases the uncertainty regarding how the presence of pesticides, even if residual, may impact human health.

As mentioned in the previous topic, most people seem to search for organic food because they perceive it as healthier, safer and kinder to the environment than the food that is conventionally grown (Stephanie Watson, 2012; Vigar et al., 2019). Studies have been showing that organic foods have indeed lower levels of toxic metabolites, being it synthetic fertilizers, heavy metals, and pesticides residues, as well as a potential reduction in exposure to antibiotic-resistant bacteria (Stephanie Watson, 2012; Vigar et al., 2019), which is one possible explanation for the reported anticancer effect of organic food (Johansson et al., 2014). Moreover, the consumption of organic food has been usually linked through observational research to reduced urinary pesticide metabolites, and positive health impacts such as reduced incidence of metabolic syndrome, high BMI, non-Hodgkin lymphoma, infertility, birth defects, allergic sensitization, otitis media and pre-eclampsia (Vigar et al., 2019). It has also been found to contain higher levels of phosphorus, phenolic compounds in fruits and vegetables,

and omega-3 fatty acids in dairy, while having lower levels of nitrogen, cadmium in cereal crops and fungal toxins (Mie et al., 2017). However, clinical trials as well as research conducted on humans have been producing limited positive results to prove those benefits clearly and there is insufficient evidence to make a definitive statement on the long term health benefits of organic dietary intake (Johansson et al., 2014), given the potential influence of healthier lifestyles and healthier overall dietary practices, higher levels of physical activity and lower levels of overweight and obesity observed in organic food consumers, whom often tend to have more vegetarian diets, choose more vegetables, fruits and wholegrain products (Mie et al., 2017; Vigar et al., 2019).

Moreover, organic agriculture can provide many benefits to the environment and to animal welfare (Seufert et al., 2017). This includes long-term sustainability of agro-ecosystems, better soil building practices that promote soil flora and fauna, increased biodiversity, improved water infiltration, and decreased risk of groundwater pollution. In addition, organic agriculture can reduce the use of non-renewable energy required to produce agrochemicals and increases carbon sequestration in the soil, thereby mitigating the greenhouse effect and global warming. As a result, organic agriculture can create a less polluting agricultural system (European Commission, 2018; Food and Agriculture Organization, n.d.-a). It is also mentioned that organic farming provides improved animal welfare and reduced antimicrobial use through its specific practices according to the EU's regulations such as increased space allowance, permanent outdoor access and stricter management of antimicrobial use (European Commission, 2018).

However, nowadays, the pioneers' concerns with soil management, people and local production and consumption are not the main principles expressed in organic regulations. Given the focus on climate change, there are different views on which farming systems are more effective in reducing greenhouse gas emissions, some see organic farming as an opportunity to minimize fossil energy inputs, decrease nitrous oxide emissions from nitrogen fertilizers and promote soil carbon sequestration, but others see its weakness of reduced productivity and reliance on livestock. Moreover, other environmental concerns must be considered, there is the need to consider the focus on food security as a challenge for organic farming due to its lower yields, mainly in industrialized farming contexts, and it is important to question the utilization of current production (Stolze & Lampkin, 2009). Regulations usually tend to put more attention on the usage of 'natural' substances (of animal or plant origin) than in 'natural' processes and, such as the usage of crop and animal species with high resistance to

pests and diseases, implementing crop rotations and cover crops for nutrient management, among others. Regulations also don't consider the entire supply chain process. Carbon emissions arise not only from agricultural production but also from various other stages such as transportation, energy use, packaging, management of residues and other industry activities within the food system (Chiriacò et al., 2022). While 'Natural' processes are often recommended and encouraged, they are not typically mandatory o subject to strict regulation(Seufert et al., 2017).

2.4. Characteristics and factors driving organic food purchase

With the increase of intensive production and large quantities of chemical fertilizers, insecticides and pesticides being used in agriculture, leading to health hazards and environmental issues, people have been looking for healthier and more environmentally friendly products, being organic one of them (Popa et al., 2019; Sangkumchaliang & Huang, 2012), but there are many factors driving consumers to consider organic food intake in their diets.

Consumer behavior is a complex process that involves making choices based on preferences, social, psychological and cultural factors, and recognizing and finding ways to solve needs (Madichie, 2009; Panitapu, 2013). The overall consumer behavior starts with prepurchase, goes pass by the effective purchase and ends with the post purchase behavior. In this regard it is important, mainly for marketeers, to understand these aspects of consumer behavior namely how consumer attitudes towards products are developed and influenced, what factors consumers consider when comparing products before purchasing, situational factors that affect purchase decisions and what factors determine whether a consumers will be satisfied enough to repeat the purchase (Madichie, 2009). To better understand organic food consumers' behavior and why people are currently buying organic food more often, the literature gives emphasis to the factors driving consumers' purchase of organic food and how they perceive it. The primary motivations for people to consume organic food appears to be their personal health concerns (Dangi et al., 2020; Eberle et al., 2022; European Commission, 2018; Eyinade et al., 2021; Irandoust, 2016; Nordin & Ruslan, 2022) due to reduced pesticide exposure (Eyinade et al., 2021) and assumptions that organic food improves human health (Johansson et al., 2014) and is more nutritious than non-organic food (Katt & Meixner, 2020).

Other than perceived health benefits and better nutritional value of organic food, sustainability, heightened environmental awareness (Eyinade et al., 2021; Lee et al., 2020), increase demand for higher quality food products (Eberle et al., 2022; Irandoust, 2016) and cultural dimensions such as collectivism (Roseira et al., 2022) are also factors driving the purchase of organic food. The perception that locally grown produce is more environmentally friendly and of more quality (Bosona & Gebresenbet, 2018) is noted by Ditlevsen research where it is also mentioned consumers concerns about the amount of pesticides used in fruits and vegetables, making them view organic options as more environmentally friendly due to lower levels of chemical exposure (Ditlevsen et al., 2020). For some individuals, the freshness and taste of organic food are also important factors that influence the purchase of organic food (Nagy-Pércsi & Fogarassy, 2019) as organic food is often perceived as fresher and tastier than conventional options (Chiciudean et al., 2019). The purchase of organic food is also influenced by factors related to food safety, certification, labelling, and trust in regulation. Consumers that are more aware of labels, concerned about food safety and green washing risk (Dangi et al., 2020) are more likely to purchase organic food (Wong & Tzeng, 2021). Organic food must be certified by authorities, and this certification and organic labelling can increase consumer trust in the naturalness and safety of organic products, by reducing information asymmetry (Dangi et al., 2020). Moreover, organic consumers express a higher degree of trust in organic food production compared to conventional food production, having a significant impact on their willingness to pay (Ditlevsen et al., 2020; Lang & Rodrigues, 2022). Organic food consumers are usually health and environmentally conscious and likely to be concerned about other ethical issues related to food such as animal welfare and ethical trading (Harper & Makatouni, 2002; Nguyen & Truong, 2021). According to (Bosona & Gebresenbet, 2018), female consumers show stronger attitudes towards organic food, likely because women typically take on the primary responsibility for grocery shopping in many households resulting in them often possessing a greater level of knowledge about nutrition and food safety (Yiridoe et al., 2005). Age is also a characteristic influencing motivations to buy organic products, with younger people being more motivated to buy organic, due to greater awareness of health and sustainability (Feil et al., 2020) yet, parents with children also tend to have positive attitudes towards organic food, as they view it as a way to encourage healthier habits for their children, and viewing organic consumption as healthier (Feil et al., 2020; Giampieri et al., 2022). The level of education of consumers is also a characteristic that has been studied in relation to organic food consumption. While lack of knowledge about

organic food can have a negative effect on the willingness to consume it (Eberle et al., 2022), and (Ditlevsen et al., 2020) found that consumers of organic food consumers of organic food tend to have higher education levels, (Feil et al., 2020) found that perceptions about organic food are not necessarily related to education levels. Income is another aspect that influences consumption of organic food. Organic food consumptions is "income elastic" (Irandoust, 2016), and consumers are typically willing to pay a price premium for organic products (Katt & Meixner, 2020).

2.5. Price, Value and consumers' Willingness to Pay for organic food

Certified organic food is, by norm, more expensive than its conventional counterparts, which has to do with many factors: organic farming is more costly because it has lower output for a high labor input, demand is higher than supply, it is harder to have economies of scales, considering the diversification among producers, the prices also have to compensate the rotational periods to build soil fertility, which has low financial returns, higher standards for animal welfare, among others (Food and Agriculture Organization, n.d.-b).

In 2013 a study said that premium of organic food compared to conventional food can range from 10-50% depending on the product, season and retailer (Reisch et al., 2013), however in 2020, a study that analyzed prices of 57 products in Poland found that price premiums can range from 34.3% to 323.9%, and that the average premium exceeded 161% (Pawlewicz, 2020). Generally, consumers are prepared to pay a premium for organic food, mainly due to health and environmental perceived benefits (Katt & Meixner, 2020) even though price can also be a barrier for organic food consumption, which would probably be higher if the prices were lowered (Chiciudean et al., 2019; Dangi et al., 2020). However, according to Seufert, in North America, Europe and India, the input costs are lower than the costs of labor, meaning that with the premium prices charged organic farming can even be more profitable than conventional farming" (Seufert et al., 2017).

The perceived value a product has can be defined as the evaluation between the benefits a consumer receives from the product bought compared to what they give up, being it price or time (Lim et al., 2014). (Kotler, Philip, Keller, 2012) discuss in their book "Marketing Management" the importance of consumer perceived value (CVP), referring to the customers' perception of the benefits received from a product relative to its cost. They suggest that a company can increase the perceived value of its products by improving its quality, adding

features, or lowering its price (Kotler, Philip, Keller, 2012). Price and value are two different concepts, according to Warren Buffet "Price is what you pay; value is what you get" (Town, 2018), meaning price is quantifiable (Umaithanu & Mathew, 2022) and value the perceived worth of benefits (Smith & Nagle, 1995). The 'perceived value' concept extends beyond monetary considerations and also includes non-monetary costs, such as search and transaction costs, time spent during purchase and social incentives influenced by socioeconomic statis and cultural factors (Rumaningsih et al., 2022). Willingness to Pay (WTP) can be defined as "the maximum price a buyer accepts to pay for a given number of goods or services" (Katt & Meixner, 2020) and the value perceived in those goods. WTP can be influenced by many factors such as knowledge and awareness about organic products (so that an individual can clearly differentiate and understand price differences between two alternative products). Furthermore, consumers' willingness to pay for organic food is influenced more by its perceived value, such as health benefits, taste, and freshness, than by its price. In (Aryal et al., 2009) study, the average premium for organic food was around 30% compared to non-organic food. The study also found that consumers who usually buy organic food are more concerned about food safety than price. The cost of organic food is seen as an investment in good health, so consumers are willing to pay higher prices for organic food considering the potential health benefits (Aryal et al., 2009), but according to (Nafees et al., 2021) there is an inverse relationship between consumers' attitude towards organic food and their intention to buy it, meaning that consumers who buy organic food for health reasons have a stronger affinity for it, while those who buy it for environmental reasons are less price sensitive and more likely to purchase it (Nafees et al., 2021). According to (Katt & Meixner, 2020), the shopping environment, including the type of store at which consumers purchase organic products, can also influence their WTP for organic food and, on this matter, organic food consumers tend to prefer organic markets, followed by special organic stores and retail chains (Nagy-Pércsi & Fogarassy, 2019). In Dangi's study was found that the availability and assortment of organic food is generally not a limiting factor for most consumers, with only light organic consumers finding it less convenient compared to conventional food (Dangi et al., 2020).

2.6. Trends in the Organic and Sustainable Farming Sector

Among the various types of organic food available in the market, certain products stand out as preferred choices among consumers. Organic eggs emerge as a popular choice among consumers, with the highest market share in France, Switzerland and Sweden while fruits and vegetables take the lead in Germany, Sweden, Austria and Switzerland (Bostan et al., 2019). In the world, in 2021, fruits and vegetables dominated the market (Organic Food Market Size, Trends, Share, Growth, Report 2030, 2022) and the highest per capita consumption of organic food came from Denmark and Switzerland, with an average purchase of, respectively, around 425 and 384 euros per person (The Leading 10 Countries with the Highest Organic Food per Capita Consumption in 2021, 2023). In 2018, retail sales of organic food were €40.6 billion in the US, followed by €10.6 billion in Germany, €9.1 billion in France and €8.1 billion in China (European Parliament, 2018), and in 2021 organic food sales reached more than 125 billion euros ("The World of Organic Agriculture Statistics and Emerging Trends 2023," 2023). The expansion of organic certified land has been notable (European Parliament, 2018) and is anticipated to continue globally, with developing countries primarily exporting to the US, Germany and France and accounting for over 80% of organic producers (Johansson et al., 2014). While economic growth and stability is the main objective of organic food, concerns arise regarding security related to this growth which means benefits of organic consumption will have to be more explicit, better advertised, and regulations should be adequate to ensure producers are supported in order to maintain sustainability, food development and environmental protection (Bostan et al., 2019). Organic sales experienced a rapid growth during the COVID-19 pandemic, likely due to increased consumer focus on health, greater consumption of food at home, and potential shortages in conventional food (European Commission, 2018; The World of Organic Agriculture Statistics and Emerging Trends 2022, 2022). Although health concerns are the primary motivation for consumers to seek organic food, other topics such as environment, animal welfare, and social factors appear to have less influence on regulations (Seufert et al., 2017).

Organic Farming has received significant support from the EU through funding research and innovation (R&D) projects, especially under the Horizon 2020 framework program. Those projects addressed challenges of organic farming, like organic crop breeding, replacement and phase out contentious inputs, crop diversification, plant health, sustainable husbandry systems, foster the adoption of cost-efficient and environmentally safe technologies

and tools and promoted exchange of knowledge among scientists and farmers. CORE Organic - "Coordination of European Transnational Research in Organic Food and Farming Systems" - is another programme also supported by the EU, addressing parts of organic agriculture, like soil fertility and weed management. This support in R&D was further increased under the Horizon Europe (2021-2027), in line with the Farm to Fork and Biodiversity strategies, which aim to enhance organic and sustainable farming and establish a sustainable food system by addressing environmental impact, climate change, biodiversity loss, food security and affordability (Eduardo Cuoco, 2022; Farm to Fork Strategy, n.d.). It is part of the European Green Deal, which aims to achieve clime neutrality by 2050 and promote a fair, prosperous, and competitive EU society and set a target of at least 25% of EU's agricultural land under organic farming by 2030, which the new Action Plan on the Development of Organic Production aims to achieve (*European Green Deal*, 2022; *Organic Action Plan*, n.d.). The particular role of organic industry in areas like soil biodiversity and soil carbon will also be analysed in the EU Mission called 'A Soil Deal for Europe' (European Commission, 2018), which goal is to lead the transition towards healthy soils by establishing 100 living labs and lighthouses by 2030 (EU Mission: A Soil Deal for Europe, n.d.). Research projects on organic farming are required to involve the Operational Groups of the European Innovation Partnership for Agriculture Productivity and Sustainability (EIP-AGRI) as much as possible, to strengthen the links between the Horizon Europe programme and the Common Agricultural Policy (CAP), and must contribute to the objective of promoting agricultural innovation that is resource-efficient, productive, low in emissions, climate-friendly, and resilient, while operating in harmony with natural resources (European Commission, 2018).

In the present, the world of food production has witnessed the emergence of diverse and increasingly sustainable approaches and concepts, regardless of whether they fall under the organic category or not, and those can - and often are - interrelated. Some of them are defined next:

Regenerative Agriculture – Is proposed as one solution towards sustainable food systems, by involving organic farming methods and emphasizing resilience, self-renewal and optimized resource management and contributing to restore soil health and fertility, promoting nutrient cycling, and increased water percolation and retention, biodiversity and carbon sequestration which can help mitigate climate change (Rhodes, 2017; Schreefel et al., 2020; White, 2020).

Permaculture – It is a holistic approach to agriculture that seeks to create self-sustaining food systems in harmony with nature, minimizing environmental impact. It involves consciously designing landscapes to mimic natural patterns and relationships, providing abundant food, fiber, and energy while caring for the Earth and prioritizing human well-being (Rhodes, 2017).

Biodynamic Agriculture – It is a form of agriculture that incorporates organic methods but also integrates holistic and spiritual principles to promote soil vitality, health, fertility, enliven ecosystems and support sustainable farming practices. In this farming method, special herbal preparations are applied at specific times to enhance cosmic and ethereal forces that influence plant and animal growth (Pigott, 2021).

Hydroponics – Is the practice of growing crops without soil by providing them with nutrient-rich solutions in water and offers advantages such as space efficiency, precise control over nutrients, water and aeration, and high production potential (Khan et al., 2021).

Agroforestry - Is an agricultural practice that can enhance biodiversity and diversifies production components, including trees, crops, and livestock. It mimics natural woody perennial ecosystems, enhances soil health, and improves soil quality through interactions between different components. Agroforestry systems can offer benefits such as higher yields, carbon sequestration, nutrient availability, and soil biota enhancement (Fahad et al., 2022).

3. Materials and Methods

3.1. Research Goal and Method

Research Goal

In regulation, 'natural' processes are often just recommended and encouraged, not strictly regulated or even mandated. For example, EU regulations on organic farming mention "the use of processes that do not harm the environment, human health, plant health, or animal health and welfare" and "the responsible use of energy and natural resources, such as water, soil, organic matter and air", but do not stipulate strict measures to ensure it. According to (Dangi et al., 2020), and as seen in the literature, personal values are typically the most compelling reasons for individuals to choose organic food. People are more influenced by self-centered factors such as health, personal security, and well-being than by altruistic factors such as environmental and social concerns, or animal welfare. This suggests that the organic food market is driven by the perceived advantages of organic food as a healthier alternative (Dangi et al., 2020). Moreover, organic production fails to account for other factors that contribute to environmental impacts, including packaging, processing and food miles, factors necessary to determine the ecological footprint of a product (Mamouni Limnios et al., 2016). Even though the literature mentions environmental concerns as one of the reasons for people to buy organic food, people seem to be more triggered by personal benefits, be it health, taste, nutrition, and personal well-being, than external benefits such as environmental concerns, animal welfare, soil and water health, biodiversity or a lower ecological footprint (Hamzaoui-Essoussi & Zahaf, 2012). However, organic food consumers might be willing to pay a price premium for certain environment benefiting characteristics of the product. The aim of this research is to understand if they are willing to pay an even higher price for organic food with increased environmental benefits and the factors that would make them do so, as well as to build more knowledge about organic food consumers behavior and which are the most important factors of organic food driving its consumption and willingness to pay for it.

Method

This research employed a mixed method approach, which by definition combines quantitative and qualitative research methods, either concurrently or sequentially (Venkatesh et al.,

2013), to collect data and achieve a comprehensive and balanced understanding of a research topic, resulting in informative and reliable findings (Johnson et al., 2007). A mixed method can incorporate qualitative data collection, such as interviews, and a quantitative data collection approach, such as surveys (Venkatesh et al., 2013), which was exactly the case of this research. The data collection occurred sequentially, meaning that findings from one approach influenced the other (Venkatesh et al., 2013). Initially, a Semi-Structured Interview was conducted, to understand the overall behavior of organic food consumers, what drives and stops them from purchasing organic food and the risks perceived in conventional food consumption. Subsequently, a survey was administered to a larger sample of organic food consumers, aimed at gathering structured data to facilitate quantitative and statistical analysis about people's opinions, attitudes, behaviors and experiences regarding organic food consumption.

3.2. Qualitative Research - Semi-Structured Interviews

Semi-structured interviews are a form of qualitative research method, open-ended and one-to-one, that follow a pre-designed guide of questions to cover different topics that the interviewer wants to address, but don't limit the approach of different topics that the interviewee may mention. The interviewer is supposed to encourage the interviewee to share its values, attitudes, and beliefs, and to ask follow-up questions and delve deeper into the interviewee's answers (Ahlin, 2019).

Overall, semi-structured interviews are useful for exploring complex topics, as they allow the interviewer to gather deep insights from rich narratives (Venkatesh et al., 2013). They are also helpful in identifying patterns and themes that may emerge from the interviewee's responses. Semi-structured interviews provide a balance between structure and flexibility, allowing the interviewer to collect meaningful data while also giving the interviewee the freedom to express themselves in their own words.

Structure

Following these action lines, the semi-structured interview conducted in the beginning of the study allowed the opportunity to acknowledge unknown information from the very beginning which will be taken into consideration in further research.

First, an extensive review of the literature was conducted to gain a deeper understanding of the pertinent questions that needed to be addressed. Second, a guide of questions was structured as seen in Table 1:

1.	How would you define the concept of "Organic Food"?
2.	For how long do you buy organic food?
3.	How often do you buy organic food?
4.	Do you exclusively buy organic?
a.	If not, what stops you from buying it more often?
5.	What type of organic food do you buy?
6.	Are there other factors that make you decide the products to buy organic?
7.	What makes you buy organic food?
8.	What risks do you perceive in the consumption of conventional/non-organic food?
9.	What is your eating behavior in other environments such as restaurants/family meals…?
10.	Is there something else you would like to add related to this topic?

Table 1 - Interviews' Guide

To gather the right people to interview (organic food consumers willing to be interviewed), a survey was conducted, people were contacted through word-of-mouth, and a visit to an organic store and restaurant took place.

The interviews were conducted within a time frame of no longer than thirty minutes and questions were not always presented in the exact order of the script but were formulated in a simple and straightforward manner, avoiding any leading questions that could potentially introduce bias. Interviewees were informed of their right to privacy and recording of interviews was only conducted with explicit consent. Participants were also reminded that there were no right or wrong answers and were encouraged to speak at length on any related topic, in order to obtain maximum accuracy and detail. Due to constraints of time and conditions, not all questions could be asked during interviews conducted at the organic food store. A total of sixteen individuals were interviewed, with fourteen interviews being conducted in Portuguese and two in English. Of these respondents, one individual resided in Romania, another in Germany, another one in Switzerland, two in the United Kingdom, and the remaining resided in Portugal.

Analysis

The information was analyzed in the following way:

1. Storage of data in audio files and notes, taken during and after each interview.
2. Transcription of data into word files
3. Data summary per question (plus extra topics addressed) in an Excel file (with the necessary translations to English)
4. Encoding of data per question - In Table 2 you can see an example of how data was summarized per topic (in that case, the types of organic food the interviewees buy more often) and how data was encoded.

Interviewee Number #	Age	Gender	Occupation	Location	Types of organic food bought more often	Fruits	Vegetables	Bread	Tofu	Milk	Yoghurt
#1	29	Male	Football Player / Student	Portugal	Fruits Vegetables Bread	X	X	X			
#2	23	Male	Management Consultant	Germany	Tofu Milk Yogurth Flour Vegetables		X		X	X	X
#3	32	Male	Informatical Engineer	UK	Vegetables Meat Breakfast cereals		X				

Table 2 - Example of the method for summary and codification of data into variables

5. Pattern identification (Table 3)

	Bread	Tofu	Milk	Flour	Grains and Cereals	Pasta	Yogurt	Breakfast Cereals	Meat	Fruits	Vegetables
Frequency	1	1	1	1	1	1	2	2	3	5	9

Table 3 - Example of the method for patter identification

6. Results collection (**Error! Reference source not found.**):

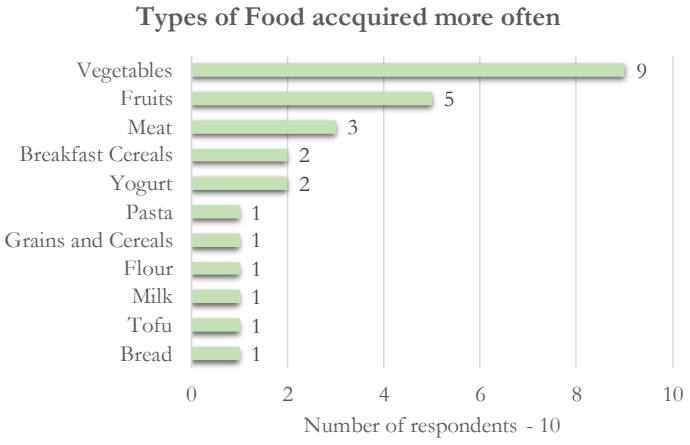

Figure 2 - Example of results collection

3.3. Quantitative Research - Survey

A survey is an approach to data collection that is systematic and placed on a sample from a specified larger population (Schwarz et al., 1999). It is a quantitative method that can help researchers gather data on different aspects from many participants (Venkatesh et al., 2013). In the present research, the survey was conducted on Qualtrics platform, in Portuguese and English, allowing to target a broader audience of organic food consumers. The sample was selected through a convenience sampling technique, which according to (Malhotra & Birks, 2007) can be used in exploratory research for generating new ideas, gaining insights into the variables of interest, and formulating hypotheses for further investigation. The survey was disseminated through social network platforms (Facebook, Instagram, LinkedIn, Twitter, WhatsApp, and Reddit), and direct approach. The content of the survey was validated before being sent to a broader audience, by a group of people of different ages, education levels and different frequencies of organic food consumption, in order to identify potential problems. The pre-test allowed the reformulation of various questions from the original questionnaire to better suit the research goal, make questions clearer and allow respondents to better understand what is asked. It used simple and unbiased wording to allow the respondents to understand the questions easily, and most questions were mandatory to ensure full completion of the questionnaire. The survey was then held online and offline through the channels mentioned above.

Structure

The survey consisted of 5 parts: The first was an exclusion question, that excluded all people that never consume organic food. In the second section, regarding organic food consumption, the frequency of organic purchase for different types of food (e.g., vegetables, fruits, meat…), the frequency of organic food purchase in relation to the total of food purchases, the frequency for eating organic food in restaurants and the average spending in organic as well as in non-organic food, in euros per month were asked. The third section, which was about the factors that make people buy organic food and their willingness to pay for some benefits of organic food, questioned the respondents on the characteristics they find essential for organic food and organic production, the average premium they are already willing to pay for organic food as well as the premium they would be willing to pay on top of that for some

added benefits that organic production could either have or already has sometimes, namely: usage of biodynamic practices; usage of regenerative farming; support of farmers well-being and organic farming communities; smaller ecological footprint; promotion of ecological landscape restoration; and eco-friendly packaging. In the fourth section, which consisted in asking the impact of organic production to the consumer, it was asked consumers perspective of the impact that some factors, prevenient from conventional food production, have in both their own health as well as in the environment, and those factors were: usage of chemicals, carbon emissions, and biodiversity decrease. Additionally, still in section 4, it was questioned consumers perspective on the future impact that organic food consumption can have on both their physical and psychological health and well-being. Finally, in the fifth section demographic data was collected, such as age, gender, education level, occupation, monthly income, household, and country of residency. The full structure of the survey can be found in the attachments.

Analysis

Data was finally analyzed in IBM SPSS Statistics software, version 29, by using univariate and multivariate techniques, in the present case, a linear regression was conducted. While bivariate techniques can analyze each variable in isolation, multivariate techniques explore the interconnections between two or more phenomena simultaneously, by assessing the strength of relationships (correlations or covariances, for example) among these phenomena, and are well-suited for analysing data in situations where multiple measurements are available for each element, and the variables are examined together (Malhotra & Birks, 2007). Cross-tabulations were employed to simultaneously describe multiple variables, producing tables that illustrate the combined distribution of two or more variables with a limited number of categories or distinct values. To test the statistical significance of the observed associations in a crosstabulation, Pearson chi-square tests were performed, and to evaluate the variations in average values of a dependent variable across two or more populations affected by controlled independent variables, an analysis of variance (ANOVA) was employed as a statistical test (Malhotra & Birks, 2007). To ensure the homoscedasticity principle of ANOVA, Levene's test were conducted and, when the principles of homoscedasticity and normality were not met, Kruskal-Wallis H tests, a non-parametric version of ANOVA test, were performed.

4. Results

4.1. Qualitative research – Semi-Structured Interviews

4.1.1. Sample Characteristics

The sixteen interviewees were frequent organic food consumers, aged from 18 to 48 years old with a mean age of 32 years old. Ten were female and six males, and the majority consumed organic food for more than 4 years. Table 4 reflects the demographics more clearly:

Number #	Age	Gender	Occupation	Location	
#1	29	Male	Football Player and Student	Portugal	
#2	23	Male	Management Consultant	Germany	
#3.1	32	Male	Engineer	United Kingdom	**Joint Interview**
#3.2	32	Female	Biotechnologist	United Kingdom	
#4	25	Female	Student and hospital employee	Portugal	
#5	32	Female	Doctor	Switzerland	
#6	32	Female	Food Engineer	Portugal	
#7	26	Male	Naturopath	Portugal	
#8	23	Female	Student	Romania	
#9	18	Female	Student	Portugal	
#10.1	42	Male	Owner of Organic Store&Restaurant	Portugal	**Organic Food Store & Restaurant**
#10.2	42	Male	Cook in the Organic Store&Restaurant	Portugal	
#10.3	47	Female	ND	Portugal	
#10.4	48	Female	ND	Portugal	
#10.5	40	Female	ND	Portugal	
#10.6	37	Female	ND	Portugal	

Table 4 - Sample demographics

4.1.2. Analysis of the Answers

Out of 14 people who answered the question "How would you define the concept of "Organic Food"?", 12 people emphasized the absence of chemical inputs in its production (pesticides, hormones, fertilizers, fungicides, antibiotics, and herbicides), 4 mentioned 'natural production', while 3 defined it as 'healthier' than conventional food.

The 3 main reasons that made people start to buy organic food are health concerns (personal and/or health problems detected in relatives), growing up, or living close to an environment where local and organic production is common, and acquiring knowledge about food and nutrition. All the interviewees mentioned health as a reason to buy and/or consume organic food, and the two other reasons mentioned with more frequency are the absence of chemicals, mainly pesticides, and the different and better taste organic food has in comparison to conventionally produced food. Many other reasons were mentioned, both as a trigger to start buying organic food and to keep buying it repeatedly. They are presented in Table 5 alongside a classification and the number of people who mentioned each topic during the interviews.

Classification	Triggers for people to start buying and/or to buy Organic Food (OF)	Nº of people mentioning the respective reasons
Personal factors	Concerns about the own and/or family's health	16
Personal and/or environmental factors	Less or no chemicals used in OF production*	6
Personal factors	Better taste and texture of OF	6
Personal factors	Learning about food and nutrition	5
Environmental factors	Concerns about sustainability**	4
Personal factors	Better quality of OF	4
Personal factors	Habit of eating homegrown 'organically' produced food	4
Environmental factors	Concerns about Animal Welfare	3
Environmental factors	Naturalness of OF	3
Social factors	More trust in organic food regulations	3
Social factors	Country of residence has a strong 'organic food culture'	3
Personal factors	Having kids	2
Social factors	Influence from a 3rd party (family or the media)	2
Environmental factors	Reduced industrial production in OF production	1
Environmental factors	Avoiding food waste	1
Personal factors	Consuming O.F. helps to improve sports performance	1
Personal factors	Joy of growing its own food	1
Personal factors	Own control over the food bought	1
Personal factors	Better nutritional value of OF	1
Personal factors	Earning enough income to afford OF prices	1
Social factors	Convenience and accessibility of organic food and OF stores	1

*'chemicals' being pesticides, hormones, fertilizers, fungicides, antibiotics, herbicides, etc.

**The following reasons for buying organic food for sustainability reasons were mentioned: Regenerative Agriculture; Care with the planet and the soil, increasing biodiversity; The usage of less energy for food transport; O.F. is better for the environment.

Table 5 - Classification of factors influencing organic food purchases

These factors were classified by understanding the motivation that is behind each of them from the context where it was mentioned in each interview as well as from the logic that can be presumed. From what can be seen above, the factors were classified essentially as social, personal and environmental.

Environmental factors - These are factors related to the impact that food production has on the environment, such as the use of chemicals, industrial production, animal welfare, and waste reduction. People who are concerned about the environmental impact of food production are more likely to choose organic food because it is often produced using more sustainable, 'natural', and environmentally friendly practices.

Social factors - These are factors related to social norms, cultural traditions, and influences from family, media, or peers. For example, the prevalence of organic food culture in a particular country or region can influence people's attitudes and choices towards organic food. Additionally, social factors such as trust in regulations, convenience of access, and preference for locally produced food can also play a role in people's decision to buy organic food.

Personal factors - These are factors related to individual preferences and beliefs, such as taste, texture, quality, nutritional value, and health benefits. Personal factors also include individual circumstances such as income level, the presence of children, and the joy of growing one's food. People who prioritize their family's and own health, as well as those who have personal preferences for the taste and quality of food, can be more likely to choose organic food.

Personal and environmental factors - This category is unique because it reflects the absence or reduction of chemicals in the organic farming process, which can be important for people concerned about the impact of chemicals both on their health and/or the environment.

As seen in the following graphic (Figure 3), it is noticeable the prevalent motivation for people to consume organic food – personal factors – is in line with (Li et al., 2019) who say that people who prioritize preserving their households tend to purchase more organic food, being aligned with their personal objectives.

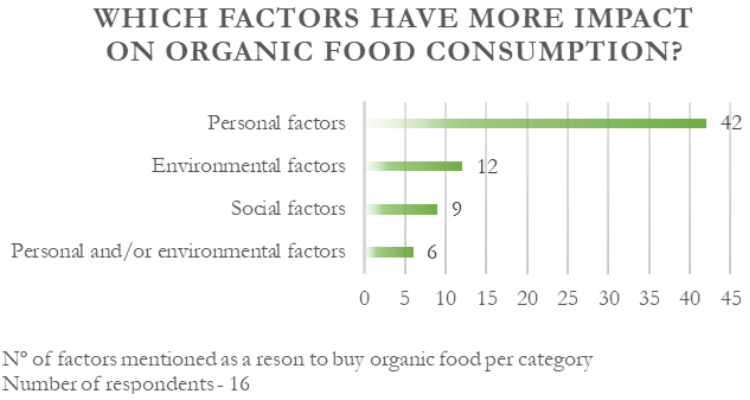

Figure 3 - Factors with more impact on organic food consumption

However, from 14 answers, only one person mentioned the fact of being an exclusive organic food consumer, meaning not consuming conventionally produced food at all. This means the other 13 people, despite being frequent organic food consumers, do consume non-organic food for various reasons - primarily (from 12 answers) because of the higher prices, lack of accessibility relative to conventional food products in normal supermarkets and the lack of accessibility in terms of location of organic stores - considering that from the 14 answers, 11 people buy organic food in supermarkets, 5 buy in both supermarkets and organic food stores and only 3 exclusively buy food in organic food stores.

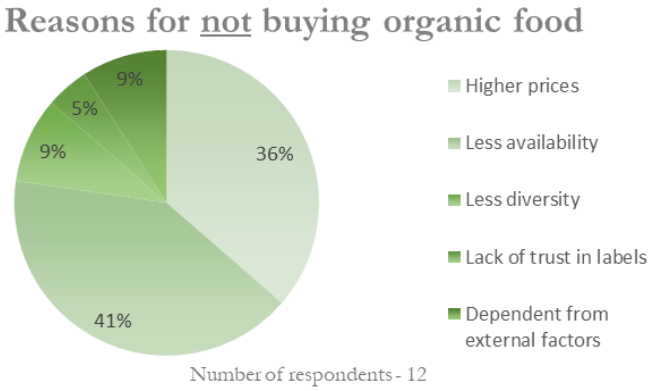

Figure 4 - Reasons for not buying organic food

The type of organic food that people buy most frequently, 9 out of 10, is vegetables, followed by fruits.

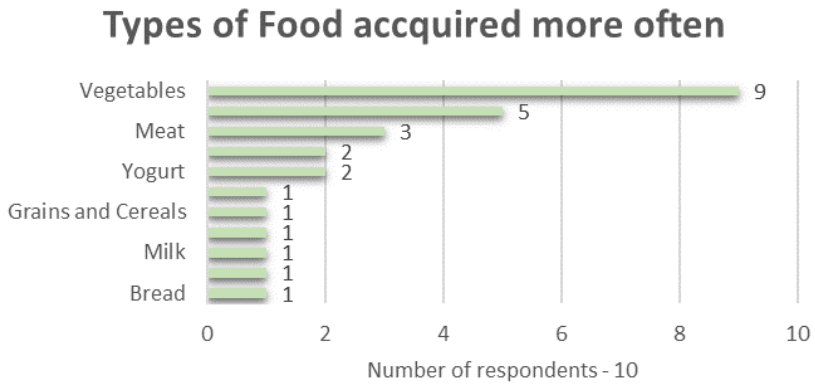

Figure 5 - Types of organic food acquired more often

From 10 answers, no one always goes to organic food restaurants and/or takes into consideration organic food consumption when others are cooking (in family or friends' dinners, for example). 8 people say they don't really have that concern, 4 that usually try to find restaurants with better quality and 3 that restaurants with organic food are not easy to find. What is also worth mentioning are the risks that people perceive in conventional food (14 out of 15 answers), being it mainly risks for human health, and the presence of chemicals, mainly pesticides.

4.2. Quantitative research – Survey

The conducted survey got a total of 296 responses of which only 186 were analyzed. 110 responses were excluded because they did not pass the exclusion question, either because they were not organic food consumers, or they were professionals in the field of research and therefore had to be excluded to not bias the data. The sample of 186 included 63 male, 123 females.

4.2.1. Demographic Profile

The demographic profile of the respondents is displayed in detail in Table 6.

Variable		Sample	%
Total Responses		186	100
Gender	Male	63	33,9
	Female	123	66,1
Age	Minimum	17	

	Maximum	63	
	Mean	31,44	
	Median	26	
Highest level of **education** (completed or in progress)	Primary School	0	0
	Secondary School	14	7,5
	High School	10	5,4
	Bachelor's degree	83	44,6
	Master's degree	72	38,7
	PhD	7	3,8
Occupation	Student	63	33,9
	Working Student	31	16,7
	Employer	4	2,2
	Employee	76	40,9
	Self-employed	8	4,3
	Unemployed	3	1,6
	Retired	1	0,5
Net Personal monthly **Income**	< 1000€	78	41,9
	1000€ - 1500€	56	30,1
	1501€ - 2000€	14	7,5
	2001€ - 2500€	12	6,5
	> 2500€	26	14
Country of Residence	Portugal	122	65,6
	Germany	24	12,9
	United Kingdom	10	5,4
	Spain	1	0,5
	Other	29	15,6

Table 6 - Demographic profile

4.2.2. Descriptive Analysis

As people that don't buy organic food were excluded in the first question from answering the rest of the questionary, all the 186 answers referred to in this study came from people that buy organic food, with moderate to high frequency. However, the frequency of organic food purchases is almost evenly distributed among categories of purchase. When the frequency of organic food purchases were questioned, it was found that 43 people buy it every time they buy groceries, 46 people buy most of the times they buy groceries, 43 people buy organic food half the times they buy groceries and only 5 people don't know, as we can see in Figure 6.

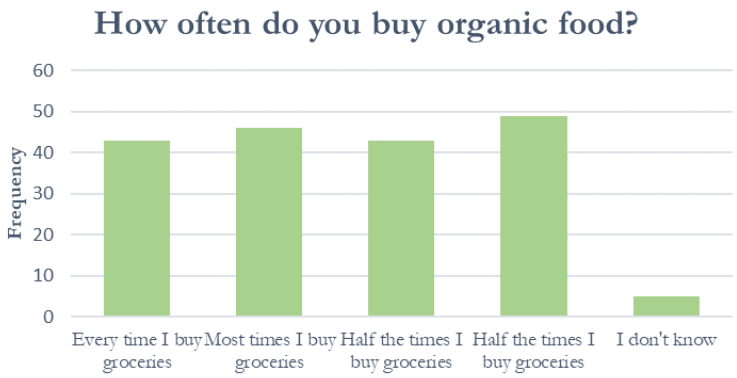

Figure 6 - Frequency of organic food purchases

Regarding how often people consume organic food in restaurants, only 18 people answered that they frequently or always go to organic food restaurants, 80 people go to restaurants occasionally/sometimes and 85 people rarely or never go to organic food restaurants.

To find out more about which types of food people usually buy organic food products, various categories of food products were analyzed regarding how often consumers buy them (always organic, mainly organic, equally organic and non-organic, mainly non-organic, never organic, or simply don't buy that category of products). The frequency of purchase of each category is displayed in Table 7.

Types of food bought	Always or Mainly Organic		Equaly organic and non-		Mainly non-organic or		Don't buy this product		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Vegetables	**76**	40,9%	64	34,4%	46	24,7%	0	0,0%	186	100%
Fruits	**90**	48,4%	48	25,8%	47	25,3%	1	0,5%	186	100%
Bread	41	22,0%	41	22,0%	**95**	51,1%	9	4,8%	186	100%
Drinks (Juices, beer, wine…)	26	14,0%	36	19,4%	**102**	54,8%	22	11,8%	186	100%
Dairy products (milk, yougurt, cheese…)	51	27,4%	41	22,0%	78	41,9%	16	8,6%	186	100%
Plant-based drinks	**70**	37,6%	21	11,3%	34	18,3%	61	32,8%	186	100%
Legumes (chickpeas, lentils…)	**69**	37,1%	42	22,6%	69	37,1%	6	3,2%	186	100%
Sugar, sweeteners, rice, pasta and/or flour	35	18,8%	40	21,5%	**106**	57,0%	5	2,7%	186	100%
Olive oil and/or oil	68	36,6%	45	24,2%	67	36,0%	6	3,2%	186	100%
Eggs	**105**	56,5%	34	18,3%	27	14,5%	20	10,8%	186	100%
Chocolate, cereals, crackers, biscuits, cereal/protein bars and/or toasts	41	22,0%	38	20,4%	**101**	54,3%	6	3,2%	186	100%
Tea	62	33,3%	43	23,1%	57	30,7%	24	12,9%	186	100%
Coffee	37	19,9%	25	13,4%	**91**	48,9%	33	17,7%	186	100%
Plant-based alternatives to meat (tofu, seitan, tempeh, vegetable burguers…)	66	35,5%	25	13,4%	35	18,8%	60	32,3%	186	100%
Fresh meat	58	31,2%	33	17,7%	63	33,9%	32	17,2%	186	100%
Frozen meat	22	11,8%	27	14,5%	55	29,6%	82	44,1%	186	100%
Fresh fish	46	24,7%	38	20,4%	54	29,0%	48	25,8%	186	100%
Frozen fish	25	13,4%	32	17,2%	73	39,3%	56	30,1%	186	100%
Ready meals	19	10,2%	25	13,4%	81	43,6%	61	32,8%	186	100%

Table 7 - Types of food purchased

The Top 5 types/category types of food that people buy always or mainly organic are Eggs, Fruits, Vegetables, Plant-based drinks, and legumes (such as chickpeas, lentils, etc.) and the Top 5 types/category types of food that people buy mainly non-organic or never organic are 'Sugar, sweeteners, rice, pasta and/or flour', Drinks (such as juices, beer, wine, etc), 'Chocolate, cereals, crackers, biscuits, cereal/protein bars and/or toasts', Bread and Coffee.

It was also asked which of the following characteristics of organic food or production are essential, indifferent, or not essential in the consumers' perspective which can be seen in Table 8.

Characteristics of organic food and production	Essential		Indifferent		Not Essential		Total	
that are or would be essential to the respondent	Freq.	%	Freq.	%	Freq.	%	Freq.	%
No use synthetic chemical pesticides and fertilizers	163	87,63%	18	9,68%	4	2,15%	185	99,46%
Is certified and well regulated	138	74,19%	33	17,74%	13	6,99%	184	98,92%
Farmed without the use of pesticides and fertilizers	147	79,03%	30	16,13%	8	4,30%	185	99,46%
Promote biodiversity	126	67,74%	49	26,34%	11	5,91%	186	100%
Consumes less fossil energy	111	59,68%	53	28,49%	20	10,75%	184	98,92%
It is more nutritious and healthy	144	77,42%	33	17,74%	9	4,84%	186	100%
Uses soil and water conservation techniques	130	69,89%	48	25,81%	7	3,76%	185	99,46%
Respects animal welfare	150	80,65%	25	13,44%	11	5,91%	186	100%
Better taste	116	62,37%	52	27,96%	18	9,68%	186	100%
No use of Genetically Modified Organisms (GMOs)	135	72,58%	26	13,98%	24	12,90%	185	99,46%
Does not allow monocultures	94	50,54%	74	39,78%	18	9,68%	186	100%
It has a low ecological footprint	139	74,73%	35	18,82%	12	6,45%	186	100%

Table 8 - Essential characteristics of organic food and production

It was clear from the answers that all factors are mainly essential for most people but the ones that were considered indifferent or not essential more often were not allowing monocultures (92 answers), consuming less fossil energy (73 answers), having a better taste (70 answers), promoting biodiversity (60 answers) and using soil and water conservation technics (55 answers).

Regarding current consumers' willingness to pay for organic food, they were asked the premium they pay in percentage terms, what is displayed in Table 9.

General	Frequency	Percentage (%)	Valid Pecentage (%)	Cumulative Percentage (%)
< 10%	32	17,2	17,2	17,2
10% - 20%	59	31,7	31,7	48,9
21% - 30%	39	21	21	69,9
31% - 40%	13	7	7	76,9
41% - 50%	14	7,5	7,5	84,4
51% - 60%	10	5,4	5,4	89,8
61% - 70%	1	0,5	0,5	90,3
71% - 80%	6	3,2	3,2	93,5
81% - 90%	3	1,6	1,6	95,2
91% - 100%	5	2,7	2,7	97,8
> 100%	4	2,2	2,2	100
Total	186	100	100	

Table 9 - Willingness to Pay for organic food

Most people (98 answers) already pay 10%-30% premium for organic food but 17.2% are still only willing to pay less than 10% more for the organic food they usually buy.

The main focus of this study was consumers' WTP for organic food with additional environmental benefits and, for that, it also examined consumers' willingness to pay for some environmental and social attributes that can be associated with organic food and production, namely the use of biodynamic practices, which foster a deeper and more holistic connection between the land, animals, plants and humans[1]; regenerative farming practices aimed at restoring soil health and improving biodiversity through natural and sustainable practices[2]; the benefit of supporting the well-being of farmers and the organic farming community[3]; a smaller ecological footprint and a shorter distribution chain for food, considering local production within a 60 kilometer radius and the use of low-emission transportation[4]; ecological landscape restoration to address issues like erosion or fires[5]; and eco-friendly food packaging, made from recycled materials, energy efficient during manufacturing and transportation, and/or biodegradable[6].

You can see in Table 10 how much and how many consumers would be willing to pay for organic food with these specific attributes on top of the Premium they are usually willing to pay for organic food in general:

Willingness to Pay	[1]Biodanamic Practices		[2]Regenerative Agriculture		[3]Farmers Well-Being		[4]Ecological Footprint		[5]Landscape Restoration		[6]Ecological Packaging	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
0%	16	8,60%	13	7,00%	10	5,40%	10	5,40%	19	10,20%	22	11,80%
1% - 10%	64	34,40%	63	33,90%	54	29,00%	63	33,90%	67	36,00%	73	39,20%
11% - 20%	50	26,90%	55	29,60%	54	29,00%	50	26,90%	40	21,50%	46	24,70%
21% - 30%	27	14,50%	31	16,70%	39	21,00%	30	16,10%	27	14,50%	23	12,40%
31% - 40%	13	7,00%	7	3,80%	8	4,30%	11	5,90%	14	7,50%	10	5,40%
41% - 50%	8	4,30%	11	5,90%	12	6,50%	11	5,90%	11	5,90%	4	2,20%
> 50 %	8	4,30%	6	3,20%	9	4,80%	11	5,90%	8	4,30%	8	4,30%
Total	186	100%	186	100%	186	100%	186	100%	186	100%	186	100%

Table 10 - Willingness to Pay for organic food with specific attributes

Table 10 answers a part of the main research question of this dissertation. Most people are willing to pay more for some environmental attributes. In fact, more than 50% of the respondents are willing to pay more than 10% over the premium they already pay for organic food for organic food that uses biodynamic practices, regenerative farming, supports the well-being of farmers and the organic farming community, has a smaller ecological footprint and a shorter distribution chain for food, and promotes ecological landscape restoration. Even though the support of farmers community and farmers well-being do not belong to the added environmental benefits, this was the question with a higher frequency of answers - 122 answers from people with a willingness to pay a premium ranging from 11% to > 50%, against the 106 answers in the same range for biodynamic practices, 110 for regenerative agriculture, 113 for ecological footprint, 100 for landscape restoration and 91 for ecological packaging.

Another topic of research had to do with the perceived impact of chemicals used in conventional farming, carbon emissions and biodiversity decrease resulting from conventional farming, both on consumers themselves, their health, and on the environment.

The results were as follows:

On a scale of 1 (No Impact) to 5 (Extremely Significant Impact):		Mean	Standard deviation	N
how much do you think the **use of chemicals** in non-organic production methods negatively impacts…	**your health**	3,9731	0,96104	186
	the environment	4,414	0,69408	186
how much do you think **carbon emissions** resultant from non-organic farming negatively impacts…	**your health**	3,5914	1,09778	186
	the environment	4,2097	0,87247	186
how much do you think that the **decrease in biodiversity** caused by non-organic farming impacts…	**yourself**	3,4516	1,12	186
	the environment	4,328	0,81537	186

Table 11 - Impact of conventional food characteristics

It is clear that people perceive the use of chemicals, carbon emissions and decrease in biodiversity caused by non-organic farming as more impactful on the environment than on themselves or their health.

The last questions tried to understand to what extent consuming organic food impacts organic food consumers' physical and psychological health and well-being (in comparison to when they consume or used to consume conventional food), and what is their perspective on the impact that organic food consumption will have on their physical and psychological health and well-being as well as on the environment in the long term is. The results are in Table 12, Table 13 and Table 14.

	To what extent does consuming organic food impacts:			
	your **physical**[1] health and well-being		your **psychological**[2] health and well-being	
	Freq.	**%**	**Freq.**	**%**
I don't notice any significant difference in my physical[1]/psychological[2] health and well-being	50	26,90%	42	22,60%
I notice a small improvement in my physical[1]/psychological[2] health and well-being	36	19,40%	43	23,10%
I notice a moderate improvement in my physical[1]/psychological[2] health and well-being	34	18,30%	38	20,40%
I notice a significant improvement in my physical[1]/psychological[2] health and well-being	39	21,00%	42	22,60%
I don't know/ I'm not sure	27	14,50%	21	11,30%
Total	**186**	**100%**	**186**	**100%**

Table 12 - Impact of organic food consumption on the physical and psychological health

		I don't believe at all	I don't really believe it	I'm not sure if I believe it or not	I somewhat believe it	I believe it a lot	**Total**
Do you believe that the consumption of organic food will have an impact on your physical and psychological health and well-being in the long term?	**Freq.**	2	22	24	71	67	186
	%	1,1%	11,8%	12,9%	38,2%	36,0%	100,0%

Table 13 - Impact of organic food consumption on the physical and psychological health in the long term

Even though people don't notice any difference in their physical (26.9%) and psychological (22.6%) health and well-being, 74.2% of the respondents believe that the consumption of organic food will have an impact on their physical and psychological health and well-being in the long term.

Additionally, 82.8% of the respondents somewhat believe or believe a lot that the consumption of organic food will have a positive impact on the environment in the long term.

		I don't believe at all	I don't really believe it	I'm not sure if I believe it or not	I somewhat believe it	I believe it a lot	Total
Do you believe that the consumption of organic food will have a positive impact on the environment in the long term	**Freq.**	1	10	21	49	105	186
	%	0,5%	5,4%	11,3%	26,3%	56,5%	100%

Table 14 - Impact of organic food consumption on the environment in the long term

4.2.3. Exploratory Study

The purpose of the exploratory study was to delve into the existing literature regarding organic food consumption, consumers' willingness to pay (WTP) for organic food and WTP for sustainable and green food products in order to develop a set of hypotheses for empirical testing by conducting a bivariate and multivariate analysis, to mainly understand the characteristic of consumers that are willing to pay higher premiums for organic food and willing to pay extra for additional environmental benefits of organic food, on top of the premium they already pay.

Table 15 summarizes the codifications for each variable under analysis:

FREQ Frequency of Organic Food Purchase when grocery shopping					
	1 - Always	2 - Most times	3 - Half the times	4 - Less than half the times	5 - I don't know
SPENDORG Amount spent in Organic food per month (Euros)					
WTPGeneral Respondent's willingness to pay a premium for organic food					
	1 - Less than 10% premium			7 - Between 61% to 70% premium	
	2 - Between 11 to 20% premium			8 - Between 71% to 80% premium	
	3 - Between 21 to 30% premium			9 - Between 81% to 90% premium	
	4 - Between 31% to 40% premium			10 - Between 91% to 100% premium	
	5 - Between 41% to 50% premium			11 - More than 100% premium	
	6 - Between 51% to 60% premium				

Respondent's willingness to pay a premium on top of the WTPGeneral premium for organic food that additionally:	
WTPBiod	uses biodynamic practices in its production
WTPAR	uses regenerative farming practices in its production
WTPEF	is produced with a smaller ecological footprint and distribution chain
WTPLands	promotes ecological landscape restoration
WTPPack	has eco-friendly packaging
	1 - Not Willing to pay a premium 2 - Between 1% to 10% premium 3 - Between 11% to 20% premium 4 - Between 21% to 30% premium 5 - Between 31% to 40% premium 6 - Between 41% to 50% premium 7 - More than 50% premium
ChemEnv	Respondent's perception of the negative impact of chemicals used in conventional food production in the environment
CarbEnv	Respondent's perception of the negative impact carbon emissions resultant from conventional food production have in the environment
BiodEnv	Respondent's perception of the negative impact that biodiverity decrease resultant from conventional food production have in the environment
	No Impact <-- 1 - 2 - 3 - 4 - 5 --> Extremely significant Impact
EnvLTImp	Respondent's belief in the positive impact of organic food consumption in the environment in the long term
	1 - Does not believe at all 2 - Does not really believe it 3 - Doesn't believe or disbelieve 4 - Somewhat believes 5 - Believes a lot
Age	Age of respondent (years)
Gender	Gender of respondent
	1 -Male 2 - Female
Income	Respondent net personal monthly income
	1 - Less than 750€ 2 - Between 751€ and 1000€ 3 - Between 1001€ and 1250€ 4 - Between 1251€ and 1500€ 5 - Between 1501€ and 2000€ 6 - Between 2001€ and 2500€ 7 - More than 2501€

Table 15- Independent and exploratory variables names and definitions

The model that represents the Hypothesis to be studied can be seen in Figure 7.

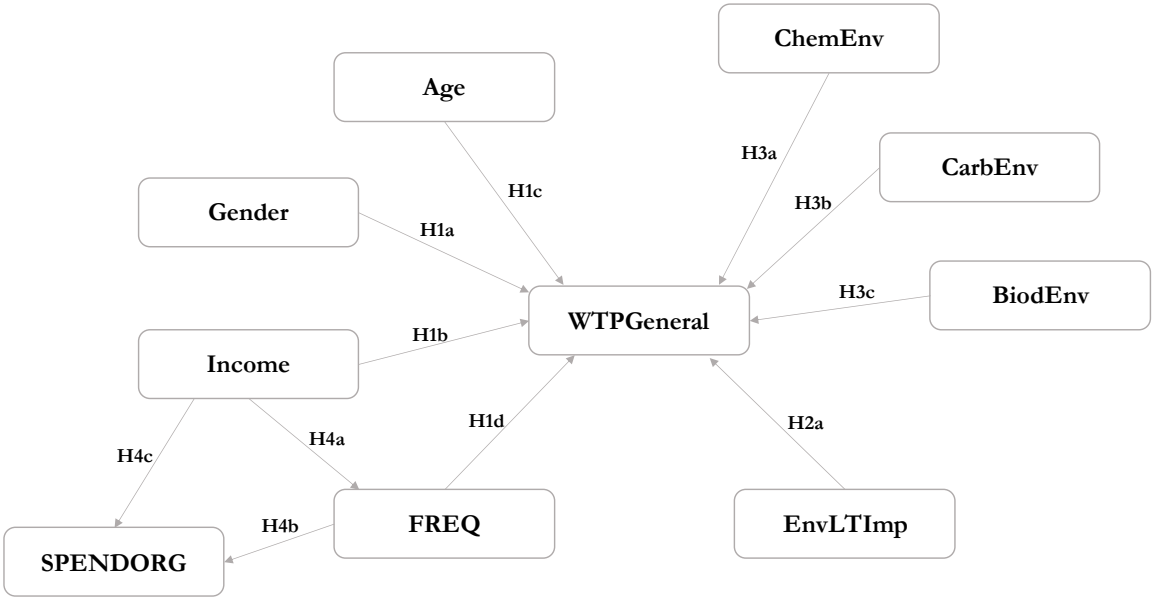

Figure 7 - Hypothesis Model

Table 16 summarizes the hypothesis under study:

H1	Consumers demographics such as gender (a), income level (b) and age (c), and their frequency of organic food purchases (d) influences their willingness to pay premium for organic food.
H2	Consumers belief that organic food consumption will have a positive impact on the environment in the future (a) influences their willingness to pay premium for organic food.
H3	Consumers' perceived negative impact of chemicals usage (a), carbon emissions (b) and biodiversity decrease (c) caused by conventional farming on the environment influences their willingness to pay premium for organic food.
H4	There is a relationship between consumers income level (a), their frequency of organic food purchases (b) and their spendings on organic food (c).

Table 16 - Summary of the hypothesis to test

Bivariate Analysis

To test this hypothesis, significance levels of 0.10, 0.05 and 0.01 were selected, indicating that the results of the statistical tests conducted were deemed statistically significant at a threshold of 10%, 5% or 1% respectively, based on the convention of controlling the Type I error rate at those levels. Type I error occurs when a true null hypothesis is rejected (Malhotra & Birks, 2007).

The existing literature provides mixed and inconclusive findings regarding the influence of demographic factors such as gender, income and age, on consumers' willingness to pay for

and purchase organic food (Hamzaoui-Essoussi & Zahaf, 2012; Krystallis & Chryssochoidis, 2005). However age and gender are said to be important factors that affect consumer's willingness to pay for organic food (Krystallis & Chryssochoidis, 2005). Younger consumers are typically more environmentally concerned and therefore more willing to buy and pay more for organic food products (Hamzaoui-Essoussi & Zahaf, 2012; Marozzo et al., 2023; Wier & Calverley, 2002). Male consumers tend to exhibit a higher willingness to pay than their female counterparts (Krystallis & Chryssochoidis, 2005). Income has also been found to be related to consumers' willingness to pay for organic food with higher income individuals showing a greater willingness to pay (Bhattarai, 2019; Marozzo et al., 2023; Wier & Calverley, 2002). Additionally, frequent organic food consumers have been found to have a higher willingness to pay a premium for organic food compared to those who purchase organic food less frequently (Kim et al., 2018). Based on these findings we propose the following hypothesis (Table 17).

H1	H1a	H1a0	There is no significant difference in the willingness to pay premium for organic food (WTPGeneral) between genders (Gender).
		H1a1	Female consumers (Gender - 2) have a significantly higher willingness to pay premium for organic food (WTPGeneral) compared to male consumers (Gender - 1).
	H1b	H1b0	There is no significant relationship between consumers' income level (Income) and their willingness to pay premium for organic food (WTPGeneral).
		H1b1	Consumers' income level (Income) significantly influences their willingness to pay premium for organic food (WTPGeneral).
	H1c	H1c0	There is no significant relationship between consumers' age (Age) and their willing-ness to pay premium for organic food (WTPGeneral)
		H1c1	Consumers' age (Age) significantly influences their willingness to pay premium for organic food (WTPGeneral).
	H1d	H1d0	There is no significant relationship between consumers' frequency of organic food purchase (FREQ) and their willingness to pay premium for organic food (WTPGeneral).
		H1d1	Consumers' frequency of organic food purchase (FREQ) significantly influences their willingness to pay premium for organic food (WTPGeneral).

Table 17 - Hypothesis 1

To test hypothesis $H1a_1$, $H1b_1$ and $H1d_1$, which involved ordinal variables, chi-square tests were conducted. However, the analysis did not yield statistically significant results for any of the hypothesis ($H1a_1$: p-value = 0.748; $H1a_1$: p-value = 0.186; $H1a_1$: p-value = 0.137). Furthermore, to examine hypothesis $H1c_1$, which explored the relationship between age (a continuous variable) and consumers' willingness to pay a premium for organic food, a t-test was conducted. However, the results also do not indicate a significant relationship between the

variables (p-value = 0.675). Therefore, based on the data from the sample under study, we fail to reject the null hypothesis $H1a_0$, $H1b_0$, $H1c_0$ and $H1d_0$.

Furthermore, the literature suggests that sustainability and environmental awareness play crucial roles in consumers' purchase decisions regarding organic food (Eyinade et al., 2021; Lee et al., 2020) and these factors have been found to have a positive and significant impact on consumers' WTP (Marozzo et al., 2023). According to (Rumaningsih et al., 2022) consumers who prioritize environmental issues are more likely to express a stronger inclination to purchase sustainable organic food compared to those with fewer concerns about the environment. Based on these insights, the following hypothesis (Table 18) is investigated:

H2	**H2a**	**H2a0**	There is no significant relationship between consumers' belief in the future positive impact of organic food consumption on the environment (EnvLTImp) and their willingness to pay premium for organic food (WTPGeneral).
		H2a1	Consumers' belief in the future positive impact of organic food consumption on the environment (EnvLTImp) significantly influences their willingness to pay premium for organic food (WTPGeneral).

Table 18 - Hypothesis 2

To test hypothesis $H2a_1$ a chi-square test was conducted, revealing a significant relationship between variables (p-value < 0,001). This finding leads to the rejection of the null hypothesis $H2a_0$ and supports the acceptance of $H2a_1$. It indicates that consumers' belief in the future positive impact of organic food consumption on the environment significantly influences their wiliness to pay premium for organic food.

Additionally, studies have highlighted perceived risks associated with conventional food production such as usage of chemicals as motivations for consumers to start buying organic food (Ariff, 2014). Concerns about sustainability also contribute to the decision making process (Eyinade et al., 2021). Therefore, the following hypothesis (Table 19) are proposed:

H3	**H3a**	**H3a0**	There is no significant relationship between consumers' perceived negative impact of chemicals used in conventional farming on the environment (ChemEnv) and their willingness to pay premium for organic food (WTPGeneral).
		H3a1	Consumers' perceived negative impact of chemicals used in conventional farming on the environment (ChemEnv) significantly influences their willingness to pay premium for organic food (WTPGeneral).

H3	H3b	H3b0	There is no significant relationship between consumers' perceived negative impact of carbon emissions caused by conventional farming on the environment (CarbEnv) and their willingness to pay premium for organic food (WTPGeneral).
		H3b1	Consumers' perceived negative impact of carbon emissions caused by conventional farming on the environment (CarbEnv) significantly influences their willingness to pay premium for organic food (WTPGeneral).
	H3c	H3c0	There is no significant relationship between consumers' perceived negative impact of biodiversity decrease caused by conventional farming on the environment (BiodEnv) and their willingness to pay premium for organic food (WTPGeneral).
		H3c1	Consumers' perceived negative impact of biodiversity decrease caused by conventional farming on the environment (BiodEnv) significantly influences their willingness to pay premium for organic food (WTPGeneral).

Table 19 - Hypothesis 3

To test hypothesis $H3a_1$, $H3b_1$ and $H3c_1$, chi-square tests were conducted. The results indicate that the null hypothesis $H3a_0$ and $H3c_0$ cannot be rejected ($H3a_0$: p-value = 0.487; $H3c_0$: p-value = 0.982) but H3b0 can be rejected (p-value = 0.010) suggesting the acceptance of H3b1, meaning that consumer's perceived negative impact of carbon emissions caused by conventional farming significantly impact their willingness to pay premium for organic food. Interestingly, the perceived negative impact of chemicals and biodiversity decrease did not show a significant relationship with the willingness to pay for organic food.

Furthermore, income level has been identified as a factor that can affect both the quantity and frequency of organic food purchases (Ariff, 2014; Marozzo et al., 2023). Studies have also reported a positive relationship between consumers' income level, frequency of organic food purchases and their expenditure in organic food products, although finding have been mixed (Kim et al., 2018). Based on these findings, the following hypothesis (Table 20) will be examined:

H4	H4a	H4a0	There is no significant relationship between consumers' income level (Income) and their frequency of organic food purchases (FREQ).
		H4a1	Consumers' income level (Income) significantly influences their frequency of or-ganic food purchases (FREQ).
	H4b	H4b0	There is no significant relationship between consumers' frequency of organic food purchases (FREQ) and their spendings on organic food (SPENDORG).
		H4b1	Consumers' frequency of organic food purchases (FREQ) significantly influences their spendings on organic food (SPENDORG).
	H4c	H4c0	There is no significant relationship between consumers' income level (Income) and their spendings on organic food (SPENDORG).
		H4c1	Consumers' income level (Income) significantly influences their spendings on or-ganic food (SPENDORG).

Table 20 - Hypothesis 4

To test hypothesis $H4a_1$, a chi-square test was conducted, revealing no statistically significant relationship between income level and frequency of organic food purchases (p-value = 0.982). Additionally, to examine the hypothesis $H4b_1$ and $H4c_1$, Kruskal-Wallis H tests, the non-parametric version of ANOVA, were conducted, suggesting the rejection of the null hypothesis $H4b_0$ and $H4c_0$. Therefore, there is a significant relationship between the frequency of organic food purchases and the monthly amount spent on organic food ($H4b_1$: p-value < 0.001), as well as a significant relationship between consumer's income level and the monthly amount spent on organic food ($H4c_1$: p-value < 0.001).

Furthermore, by replacing the variable WTPGeneral in the hypothesis model with variables indicating consumers' willingness to pay for specific environmental benefits added to organic food such as biodynamic practices (WTPBiod), regenerative agriculture practices (WTPAR), lower ecological footprint (WTPEF), promoting landscape restoration (WTPLands) and having ecological packaging (WTPPack) we can gain a deeper understanding of the relationship between these specific benefits (as dependent variables) and the independent variables including gender, age, frequency of organic food consumption (FREQ), income level, consumers' perceived negative impact of chemicals usage (ChemEnv), carbon emissions (CarbEnv) and biodiversity decrease (BiodEnv) caused by conventional farming on the environment, as well as consumers belief regarding the positive future impact of organic food consumption on the environment (EnvLTImp). The table below (Table 21) presents the results of Pearson chi-square tests and t-tests conducted to analyze the relationship between these variables, along with the corresponding p-values, indicating the statistical significance of the relationship between each pair of variables.

	WTP for additional benefits to organic food				
	Biodynamic practices (WTPBiod)	**Regenerative agriculture practices (WTPAR)**	**Lower Ecological footprint (WTPEF)**	**Promotes Landscape restoration (WTPLands)**	**Has an Ecological Packaging (WTPPack)**
Age	0.237	0.174	0.206	0.182	0.175
Gender	0.299	0.574	0.941	0.410	0.481
Income	0.560	0.461	**0.001***	**0.065*****	**0.041****
FREQ	0.532	0.267	**0.005***	0.737	0,576
ChemEnv	**0.006***	0.164	**0.017****	0.729	0.685
CarbEnv	0.116	**0.072*****	**0.087*****	0.338	0.529
BiodEnv	0.563	**0.078*****	0.191	**0.073*****	0.191
EnvLTImp	**0.002***	0.135	0.294	0.301	0.190

* significant at p-value < 0.01

** significant at p-value < 0.05

*** significant at p-value < 0.10

Table 21 - WTP for additional environmental benefits of organic food

The analysis of variance (ANOVA) conducted on the sample indicates that the age of the consumers does not have a significant effect on their willingness to pay for organic food with additional attributes.

Furthermore, the Pearson chi-square tests indicate no significant relationship between gender and willingness to pay for organic food with additional environmental benefits. However, an association was found between consumers' income and their willingness to pay for organic food with a lower ecological footprint (p-value = 0.001 at a 1% level of significance), organic food that promotes landscape restoration (p-value = 0.065 at a 10% level of significance) and has an ecological packaging (p-value = 0.041 at a 5% level of significance). Frequency of organic food purchases is also related to consumers WTP for organic food that additionally has a lower ecological footprint (p-value = 0.005 at a 1% level of significance). Consumers' perceived negative impact of chemicals usage in conventional farming on the environment (ChemEnv) had a significant relationship with their WTP for organic food with biodynamic practices (p-value = 0.006 at a 1% level of significance), and a lower ecological footprint (p-value = 0.017 at a 5% level of significance). Additionally, consumers' perceived negative impact of carbon emissions in conventional farming on the environment (CarbEnv) showed a significant relationship with consumers WTP for organic food with regenerative farming practices (p-value = 0.072 at a 10% level of significance) and a lower ecological footprint (p-value = 0.087 at a 10% level of significance). Moreover, consumers' perceived negative impact of biodiversity decrease caused by conventional farming on the environment (BiodEnv) had a significant relationship with their WTP for organic food with regenerative farming practices (p-value = 0.078 at a 10% level of significance) and the promotion of landscape restoration (p-value = 0.073 at a 10% level of significance). Interestingly, among all the variables related to consumers' WTP for added environmental benefits, only the relationship between consumers belief regarding the positive future impact of organic food consumption on the environment (EnvLTImp) and their willingness to pay for organic food with biodynamic farming practices was found to be significant (p-value = 0.002 at a 1% level of significance).

Multivariate Analysis

Based on the hypothesis model presented in Figure 7 and the hypothesis presented in Table 17Table 18Table 19Table 20, a multivariate analysis was conducted using linear regression. The hypothesis are presented again in Table 22.

H1a1	Female consumers (Gender - 2) have a significantly higher willingness to pay premium for organic food (WTPGeneral) compared to male consumers (Gender - 1).
H1b1	Consumers' income level (Income) significantly influences their willingness to pay premium for organic food (WTPGeneral).
H1c1	Consumers' age (Age) significantly influences their willingness to pay premium for organic food (WTPGeneral).
H1d1	Consumers' frequency of organic food purchase (FREQ) significantly influences their willingness to pay premium for organic food (WTPGeneral).
H2a1	Consumers' belief in the future positive impact of organic food consumption on the environment (EnvLTImp) significantly influences their willingness to pay premium for organic food (WTPGeneral).
H3a1	Consumers' perceived negative impact of chemicals used in conventional farming on the environment (ChemEnv) significantly influences their willingness to pay premium for organic food (WTPGeneral).
H3b1	Consumers' perceived negative impact of carbon emissions caused by conventional farming on the environment (CarbEnv) significantly influences their willingness to pay premium for organic food (WTPGeneral).
H3c1	Consumers' perceived negative impact of biodiversity decrease caused by conventional farming on the environment (BiodEnv) significantly influences their willingness to pay premium for organic food (WTPGeneral).

Table 22 - Hypothesis for Linear Regression

The aim was to examine the effects of demographic variables, perceptions, and attitudes (independent variables) on consumers' willingness to pay a premium for organic food (dependent variable). The independent variables included age (Age), gender (Gender), income level (Income), frequency of organic food purchases (FREQ), consumers' perceived negative impact of chemicals usage (ChemEnv), carbon emissions (CarbEnv) and biodiversity decrease (BiodEnv) caused by conventional farming on the environment, as well as consumers belief regarding the positive future impact of organic food consumption on the environment (EnvLTImp).

The overall model significantly predict consumers' willingness to pay a premium for organic food, $F(8, 177) = 4.408$, p- value < 0.001. The $R^2 = 0.166$ depicts that the model explains 16.6% of the variance in WTPGeneral, indicating that 16,6% change in Consumers' willingness to pay a premium for organic food can be accounted for by the predictors set as independent variables.

Among the independent variables, gender, income level and consumers' perceived negative impact of chemicals usage in conventional farming (ChemEnv) were not found to be statistically significant predictors of consumers' willingness to pay higher premiums for organic food. However, age was found to be a statistically significant predictor (p-value < 0.10), showing a negative relationship. This suggests that younger consumers are more willing to

pay higher premiums for organic food. Frequency of organic food purchases was also a statistically significant predictor (p-value < 0.01), with a negative relationship, indicating that consumers who buy organic food less regularly are more willing to pay higher premiums for organic food. The belief that organic food consumption will have a positive impact on the environment (EnvLTImp) was also a statistically significant predictor (p-value < 0.01), with a negative relationship, suggesting that consumers who have lower belief in the positive impact are more willing to pay higher premiums, which is an unexpected finding. The perception of a less negative impact of carbon emissions caused by conventional farming on the environment (CarbEnv) was found to be a statistically significant predictor (p-value < 0.05) with a negative relationship, indicating that consumers who perceive a lower negative impact are more willing to pay higher premiums, which is counterintuitive. Finally, the perceptions of a more negative impact of biodiversity decrease caused by conventional farming on the environment (BiodEnv) was found to be a statistically significant predictor (p-value < 0.01), with a positive relationship, indicating that consumers' who perceive a more negative impact are more willing to pay higher premiums, which aligns with expectations.

Table 23 shows the summary of the findings.

Hypothesis	Regresion Weights	B	t	p-value	Results
H1a1	Gender --> WTPGeneral	-0.141	-0.378	0.706	Not accepted
H1b1	Income --> WTPGeneral	-0.122	-0.889	0.375	Not accepted
H1c1	Age --> WTPGeneral	-0.026	-1.662	0.098	Accepted***
H1d1	FREQ --> WTPGeneral	-0.628	-4.273	<0.001	Accepted*
H2a1	EnvLTIpm --> WTPGeneral	-0.581	-2.808	0.006	Accepted*
H3a1	ChemEnv --> WTPGeneral	-0.134	-0.444	0.658	Not accepted
H3b1	CarbEnv --> WTPGeneral	-0.467	-2.116	0.036	Accepted**
H3c1	BiodEnv --> WTPGeneral	0.745	2.892	0.004	Accepted*
R^2	0,166				
F (8, 177)	4.408				

* significant at p-value < 0.01
** significant at p-value < 0.05
*** significant at p-value < 0.10

Table 23 - Results of Linear Regression

5. Discussion

The qualitative method employed in this study, which involved conducting interviews with organic food consumers, aligns with the existing literature in uncovering key drivers behind organic food purchases, such as personal factors like health benefits, quality, taste and income level. However, the survey results indicate that organic food consumers are also concerned about the impact that conventional food production can have on the environment and demonstrate a willingness to pay an additional price on top of the existing premium for organic food, specifically for the inclusion of environmental benefits. The interviews identified factors like convenience, availability, and higher prices as obstacles to regular organic food purchases, and the survey findings reveal that not everyone consistently buys organic food, as 76.9% of the survey respondents do not do so every time they go grocery shopping. IFOAM established four principles for organic agriculture being health of the soil, plants, humans and the planet, ecology of systems and cycles in order to sustain them, fairness of common environment and life opportunities and care for the environment, health and well-being of current and future generations (IFOAM, 2020). The topics researched in the current study's survey were in line with these principles. However, the effectiveness of organic farming in reducing climate impact compared to conventional agriculture is a topic of ongoing debate. Clear indicators of climate and environmental sustainability are needed to inform food system stakeholders and promote a transition towards sustainable food production and consumption. The carbon footprint is a widely used indicator that measures the contribution of food to climate change through greenhouse gas emission (Chiriacò et al., 2022) and one of the factors analyzed in the survey held regarding this study.

What motivates and discourages organic food consumption?

During the interviews it was noticeable that people have a basic understanding of organic food and production. The factors that motivate them to purchase organic food, align with those in the literature (Chiciudean et al., 2019; Dangi et al., 2020; Eyinade et al., 2021; Nguyen & Truong, 2021), such as the absence of pesticides and synthetic chemical fertilizers, certifications and regulations, health and nutritional benefits, animal welfare and taste. In general, those were deemed essential characteristics of organic food and organic production by survey respondents.

There were some reasons discussed in the interviews as to why people choose to start buying organic food, namely health concerns, tradition to produce food at home, certifications, and regulations, among others, and some risks perceived in conventional food consumption were also discussed being it health concerns, presence of chemicals the negative impact in the environment. The survey asked consumers if they noticed any differences in their physical and psychological health and well-being from consuming organic food. Although roughly 46% of the respondents currently do not perceive significant differences or only notice slight improvements, they believe that organic food consumption will have a positive long-term impact not only on their physical and psychological health and well-being (74.2% of the respondents), but also on the environment (82.8% of the respondents).

Regarding obstacles to purchasing organic food more frequently, the interviews identified higher prices, limited availability and diversity, and lack of trust in labels. The survey findings may support these factors, as the majority of respondents (76.9%) do not buy organic food every time they go grocery shopping. However, 98% of the respondents are willing to pay extra for at least one additional environmental benefit, suggesting that price may not be the primary reason stopping consumers from buying organic food. Those factors can also justify the reason for people to buy some types of organic food, such as eggs, fruits, vegetables, plant-based drinks, and legumes more frequently than others like sugar, sweeteners, rice, pasta, flour, drinks, chocolate, cereals, crackers, biscuits, cereal/protein bars or toasts, bread and coffee, probably because of its availability and price, factors broadly mentioned in the literature (Malissiova et al., 2022; Nagy-Pércsi & Fogarassy, 2019; Rana & Paul, 2017).

While personal factors were found to be more influential in organic food purchases during the interviews, survey results indicate that consumers are increasingly aware of the risks and impact chemicals usage in conventional food production, not only in their own health but mainly in the environment. Similar awareness was observed regarding carbon emissions and the decline of biodiversity resulting from conventional agriculture.

In terms of dining out, the interviewed organic food consumers mentioned that they rarely consumer organic food at restaurants due to limited availability and social influence favoring restaurants without organic options. However, while in the interviews a few individuals mentioned occasional visits to organic food restaurants, typically with their families, the survey revealed that 11.3% of the respondents already consider going to organic food restaurants often or always, indicating a growing interest in organic dining experiences.

Willingness To Pay (WTP)

(Hemmerling et al., 2015) while studying various studies regarding organic food found that consumers' WTP for organic food in general and in specific product categories is between 5 to 30%. Other studies found that this premium can go up to 40% more than conventional food prices (Malissiova et al., 2022). In the present study, the premium people are willing to pay for organic food situates in the scale of 10% - 30% premium with 52.7% of the respondents answering in this range. (Krystallis & Chryssochoidis, 2005) claims that an indication of the rise in environmentally conscious consumer behavior is the growing population of individuals who are willing to pay a higher price for products that are environmentally friendly. In fact, in the conducted study it was found that most survey respondents are willing to pay extra for organic food that has additional environmental benefits.

The bivariate analysis suggests that demographic factors such as gender, income, and age may not significantly influence consumers' willingness to pay for organic food in this study. However, consumers' belief in the positive impact of organic food on the environment and their concerns about carbon emissions from conventional farming were found to significantly impact their willingness to pay a premium. Furthermore, income level and frequency of organic food purchases were positively related to the amount spent on organic food.

On the other hand, the multivariate analysis revealed different findings. When the model is analysed together with a linear regression the findings suggest that age, frequency of organic food purchases, belief in the positive impact of organic food in the environment in the long term, and perceptions of carbon emissions and biodiversity decrease caused by conventional farming on the environment, impact consumers' willingness to pay a premium for organic food but gender and income do not have an impact on the dependent variable. However, the direction of some of the relationships identified are unexpected and warrant further investigation.

Additionally, when specific environmental benefits were considered, income level emerged as a significant factor influencing consumers 'preferences and willingness to pay for organic food with some added environmental benefits, while gender and age did not play a significant role, suggesting that these demographic factors may not be strong determinants of consumers preferences in this context.

Additionally, it was found out that organic food consumers are willing to pay a premium of 1% - 20% (60.8% of the answers) on top of the premium of 10% - 30% (52.7% of the answers) they already pay for organic food, for the attribute of ecological footprint reduction,

meaning that they would pay more for organic food that was locally produced within a radius of up to 60 kilometers to the place where it is purchased and was transported using means of transport with lower greenhouse gas emissions. According to (Mamouni Limnios et al., 2016), consumers preferences lean towards local products and the location of production plays a significant role in influencing the WTP for products with a lower ecological footprint. Notwithstanding the environmental focus of organic food, there is often insufficient consideration given to food packaging despite its significant contribution to pollution (Santos et al., 2021). The WTP for organic food with a sustainable packaging was also subject of study with 63.9% of the respondents willing to pay 1% - 20% and 17.8% of respondents answering they would pay a premium in the range of 21% - 50% for organic food with eco-friendly packaging (e.g., made from recycled materials; energy efficient during manufacturing and transportation, biodegradable, etc.). It is still worth noting that 82.8% of the respondents somewhat believe or believe a lot that the consumption of organic food will have a positive impact on the environment in the long term which can be a reason for them to buy organic food and be willing to pay a premium for environmentally friendly attributes of organic food.

Several movements are currently underway to promote a more environmentally friendly food chain worldwide. One initiative is the Eco-Score (Figure 8), designed to raise consumer awareness about the impact of their food choices (Présentation - Eco-Score, n.d.). Additionally, the Foundation Earth ecolabel that certifies the "eco-impact" of food products (Earth, n.d.), while the Institute of Grocery Distribution (IGD) in the UK conducted trials for environmental labels (IGD, 2022). These and other initiatives encompass various production types, including organic food, which can also be included in the certifications, labels, and studies.

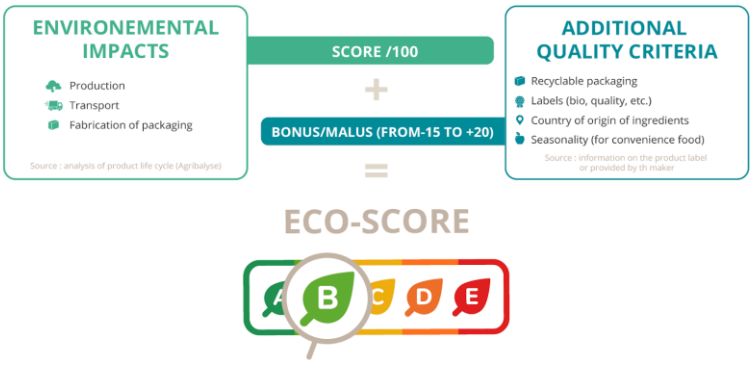

Figure 8 - Eco-Score (*Présentation - Eco-Score*, n.d.)

6. Conclusion

This dissertation provides insight into the motivations and disincentives behind organic food consumption. One significant finding of this study is the consumers' willingness to pay for added environmental benefits to organic food. The qualitative and quantitative methodology suggest that consumers are not only motivated to buy organic food by personal factors, such as health benefits, quality, and taste of food, but also express a genuine concern for the environmental impact of conventional food production. The majority of survey respondents indicated a willingness to pay a premium for at least one additional environmental benefit in organic food. This finding suggests that consumers perceive value in supporting organic production methods that have a positive impact in the environment and that price may not be the main barrier to purchasing organic food as consumers express a willingness to pay a premium for the environmental benefits on top of the premium the already pay for organic food. The statistical analysis conducted does not provide conclusive evidence regarding the specific consumer characteristics that can predict their willingness to pay a premium for organic food or an extra amount for organic food with additional environmental benefits. However, it suggests that gender and income level are not significant predictors of consumers' willingness to pay for organic food. Nevertheless, there is a relationship between income levels and consumers' willingness to pay for organic food with added environmental benefits. Overall, consumers value organic food for personal and environmental reasons, indicating a growing demand for sustainable practices in the food and organic food industry.

6.1. Theoretical and Practical Implications

From a management perspective this study provides insights for policymakers, retailers, and producers in the organic food industry. There is an opportunity to capitalize on consumers' willingness to pay for added environmental benefits by highlighting and promoting organic food products that demonstrate sustainability credentials and targeting the individuals higher propensity to pay extra for the environmental benefits of organic food such as regenerative agriculture, lower ecological footprint, ecological packaging, among others. This can be achieved through clear labeling, transparent communication and partnerships with organic farmers and producers who prioritize ecological responsibility. To address the barriers to organic food consumption such as price, availability, and trust in labels, policymakers and

industry stakeholders can work collaboratively to expand the market for organic products, improve availability and diversity of organic options and enhance consumers' confidence in organic food certifications. It would be important to increase the media coverage in raising awareness about ecological deterioration caused by food production. By increasing media attention on this issue, consumers can become more conscious of the environmental impact of their food choices, thereby encouraging them to consider sustainable options, such as organic food combined with the awareness of the impact of the organic food available.

From a research perspective, the study identifies several areas for further investigation. It suggests exploring further the predictors for consumers' willingness to pay extra for the environmental benefits of organic food, the reason why not all organic food consumers are willing to pay more for the environmental benefits that can be associated with organic food (because they already pay a high price, or because they consider that they are already paying for those benefits, or simply are only willing to pay for the core of organic production and not so much for environmental benefits, for example), and studying additional benefits that could influence consumer behavior and the factors influencing their purchases. Conducting a survey among people that do and do not consume organic food could provide valuable insights into the impact of environmental benefits on consumer choices. Moreover, the study suggests exploring the impact of availability, convenience, and local purchasing on organic food consumption as well as the need to investigate the reasons behind the limited consumption of organic food restaurants, which can be related to the lack of offer in most cases. Finally, the study calls for further research on the effectiveness of eco-labelling and its influence on consumer choices. Understanding how eco-labeling affects consumers' perceptions and purchase decisions can help guide marketing strategies and communication efforts.

6.2. Limitations

It is important to acknowledge some limitations of the study. The sample used was diverse and not specific to a particular location, which could introduce biases considering variations in knowledge and regulations across countries regarding organic food, organic food production and certifications. Furthermore, the study employed multiple methodologies and covered various topics, indicating a need for more focused research on specific areas to provide more comprehensive insights. Moreover, the existing literature does not consistently agree on the factors driving organic food purchases, highlighting the importance of conducting

focused analyses on specific factors rather than attempting to address all potential factors simultaneously. By narrowing down the number of possible factors under investigation and conducting research on a larger scale, more accurate responses and predictions can be obtained.

Overall, this study's findings contribute to our understanding of consumer behavior and preferences in the organic food market. By recognizing and responding to consumers' willingness to pay for organic food and some added environmental benefits, the organic food industry can advance its commitment to sustainability, promote responsible consumption, and contribute to a healthier future for both individuals and the planet.

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8. Attachments

8.1. Survey

Section 1

Q1 - Do you buy organic food? (If usually it is not you buying groceries, please answer as the person that buys groceries for you)

No (1)

Yes

Go To: End of the Survey if Q1 = 1

Section 2

Q1 - What types of organic food do you usually buy? Please indicate the quantity of each type of organic food you usually buy, monthly, and in relation to the total amount you usually buy of the same product.

	Always organic	Mainly organic	Equally organic and non-organic	Mainly non-organic	Never organic	I don't buy this product
Vegetables	o	o	o	o	o	o
Fruits	o	o	o	o	o	o
Bread	o	o	o	o	o	o
(Juices, Beer, Wine...)	o	o	o	o	o	o
Dairy products (milk, yogurt, cheese...)	o	o	o	o	o	o
lant-based drinks	o	o	o	o	o	o
Legumes (beans, chickpeas, lentils...)	o	o	o	o	o	o
Sugar, sweeteners, rice, pasta and/or flour	o	o	o	o	o	o
ive oil and/or Oil	o	o	o	o	o	o
Eggs	o	o	o	o	o	o
Chocolate, cereals, crackers, biscuits, cereal/protein bars.	o	o	o	o	o	o
Tea	o	o	o	o	o	o
Coffee	o	o	o	o	o	o

	Always organic	Mainly organic	Equally organic and non-organic	Mainly non-organic	Never organic	I don't buy this product
Plant-based alternatives to meat (tofu, seitan, tempeh, vegetable burgers...)	o	o	o	o	o	o
Fresh meat	o	o	o	o	o	o
Frozen meat	o	o	o	o	o	o
Fresh fish	o	o	o	o	o	o
Frozen fish	o	o	o	o	o	o
Ready meals	o	o	o	o	o	o

Q2 - How often do you buy organic food?

- o Every time I buy groceries
- o Most times I buy groceries
- o Half the times I buy groceries
- o Less than half the times I buy groceries
- o I don't know

Q3 - How often do you eat organic food in restaurants?

Considering the number of times you go to a restaurant

- o Never
- o Rarely
- o Occasionally
- o Sometimes
- o Frequently
- o Always

Q4 - How much do you spend on average and in euros, in **organic** food per month?

Note: Write only numbers

Q5 - How much do you spend on average and in euros, in **non-organic** food per month?

Note: Write only numbers

Section 3

Q1 - Regarding organic food and production, what characteristics are or would be essential for you?

(Compared to conventional (non-organic) production practices)

	Essential	Indifferent	Not Essential
No use synthetic chemical pesticides and fertilizers	O	O	O
No use of Genetically Modified Organisms (GMOs)	O	O	O
Promote biodiversity	O	O	O
Does not allow monocultures	O	O	O
Respects animal welfare	O	O	O
Uses soil and water conservation techniques	O	O	O
It is more nutritious and healthy	O	O	O
Farmed without the use of pesticides and fertilizers	O	O	O
It has a low ecological footprint	O	O	O
Consumes less fossil energy	O	O	O
Is certified and well regulated	O	O	O
Better taste	O	O	O

Q2 - In general, how much more (price/cost in percentage), are you willing to pay for organic food, compared to non-organic food?

- O < 10%
- O 10% - 20%
- O 21% - 30%
- O 31% - 40%
- O 41% - 50%
- O 51% - 60%
- O 61% - 70%
- O 71% - 80%
- O 81% - 90%
- O 91% - 100%
- O > 100% (more than twice the price)

Q2.1 - In **addition to what you answered in the first question of this page**, how much **more** would you be willing to pay for organic food that, **additionally**, uses **biodynamic practices in its production**?

(By promoting a deeper and more holistic connection between the land, animals, plants, and humans)

- O 0%
- O 1% - 10%
- O 11% - 20%
- O 21% - 30%
- O 31% - 40%
- O 41% - 50%
- O > 50%

Q2.2 - **In addition to what you answered in the first question of this page,** how much **more** would you be willing to pay for organic food that, **additionally**, uses **regenerative farming** practices in its production?

(Agricultural production method focused on restoring soil health and improving biodiversity through natural and sustainable practices)

- O 0%
- O 1% - 10%
- O 11% - 20%
- O 21% - 30%
- O 31% - 40%
- O 41% - 50%
- O > 50%

Q2.3 - In **addition to what you answered in the first question of this page**, how much **more** would you be willing to pay for organic food that, **additionally**, was produced by supporting the **well-being of farmers and the organic farming community**?

- O 0%
- O 1% - 10%
- O 11% - 20%
- O 21% - 30%
- O 31% - 40%

- 41% - 50%
- > 50%

Q2.3 - **In addition to what you answered in the first question of this page,** how much **more** would you be willing to pay for organic food that, **additionally**, produced with a **smaller ecological footprint** and distribution chain?
(Local production or produced within a radius of up to 60Km, and using means of transport with lower greenhouse gas emissions)

- 0%
- 1% - 10%
- 11% - 20%
- 21% - 30%
- 31% - 40%
- 41% - 50%
- > 50%

Q2.5 - **In addition to what you answered in the first question of this page,** how much **more** would you be willing to pay for organic food that, **additionally**, promotes **ecological landscape restoration**?
(From erosion or fires, for example)

- 0%
- 1% - 10%
- 11% - 20%
- 21% - 30%
- 31% - 40%
- 41% - 50%
- > 50%

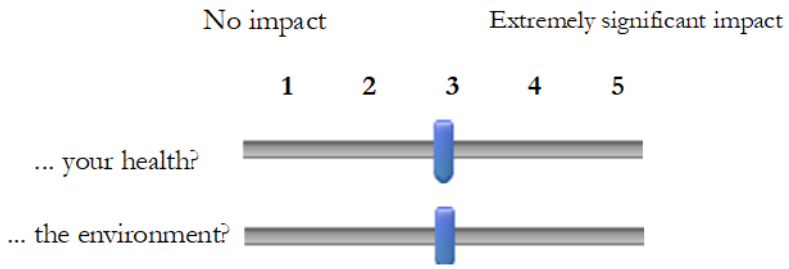
Q2.6 - **In addition to what you answered in the first question of this page,** how much **more** would you be willing to pay for organic food that, **additionally**, has **eco-friendly packaging**?
(e.g., made from recycled materials; energy efficient during manufacturing and transportation, biodegradable…)

- 0%
- 1% - 10%
- 11% - 20%
- 21% - 30%
- 31% - 40%
- 41% - 50%
- > 50%

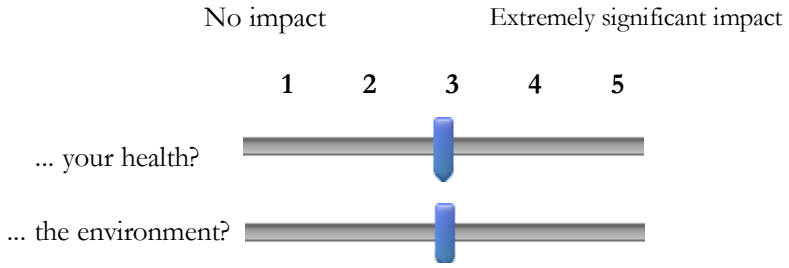
Section 4

Q1 - On a scale of 1-5, how much do you think the use of **chemicals** in conventional (non-organic) production methods negatively impacts…

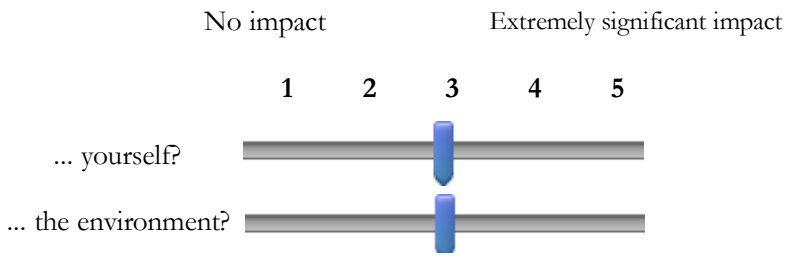
Consider "chemicals" as pesticides, fertilizers, herbicides, hormones, antibiotics...



Q2 - On a scale of 1-5, how much do you think **carbon emissions** resultant from **non-**organic farming negatively impacts…



Q3 - On a scale of 1-5, how much do you think that the decrease in **biodiversity** caused by non-organic farming impacts…



Q4 - To what extent does consuming organic food impact your **physical** health and well-being (compared to when you consume / used to consume non-organic food)?

- I don't notice any significant difference in my physical health and well-being
- I notice a small improvement in my physical health and well-being
- I notice a moderate improvement in my physical health and well-being
- I notice a significant improvement in my physical health and well-being
- I don't know/ I'm not sure

Q5 - To what extent does consuming organic food impact your **psychological** health and well-being (compared to when you consume / used to consume non-organic food)?

- I don't notice any significant difference in my psychological health and well-being
- I notice a small improvement in my psychological health and well-being
- I notice a moderate improvement in my psychological health and well-being
- I notice a significant improvement in my psychological health and well-being
- I don't know/ I'm not sure

Q6 - Do you believe that the consumption of organic food will have an impact on your physical and psychological health and well-being in the long term?

- I don't believe at all
- I don't really believe it
- I'm not sure if I believe it or not
- I somewhat believe it
- I believe it a lot

Q7 - Do you believe that the consumption of organic food will have a positive impact on the environment in the long term?

- I don't believe at all
- I don't really believe it
- I'm not sure if I believe it or not
- I somewhat believe it
- I believe it a lot

Section 5

Q1 - What is your age?

Q2 - What is the gender you identify with?

- Male
- Female

Q3 - What is your highest level of Education?
Note: Completed or in progress

- Primary School
- Secondary School
- High School
- Bachelor's degree
- Master's degree
- PhD

Q4 - What is your current occupation?

- Student
- Working student
- Employer
- Employee
- Self-employed
- Unemployed
- Retired

Q5 - What is your professional area of studies or work (if applicable)?

Q6 - What is your net personal monthly income?

- Less than 1000€
- 1001€ - 1500€
- 1501€ - 2000€
- 2001€ - 2500€
- More than 2500€

Q7 - In which country do you live in?

- Portugal
- Germany
- United Kingdom
- Spain
- Other - Specify: