FACULTEIT ECONOMIE EN BEDRIJFSKUNDE

CONSUMERS' HEALTH AND SUSTAINABILITY PERCEPTIONS OF EXOTIC VS. LOCAL SUPERFOODS AND THEIR PURCHASING BEHAVIOR

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Foreword

As part of fulfilling my degree of Master of Science in Business Economics (Marketing) at Ghent University, this thesis investigates the differences in health and sustainability perceptions of consumers between exotic (as compared to Europe) and local (to Europe) superfoods and whether these perceptions lead to different purchasing behaviors. The reason why I was interested in this topic was because I have always been interested in food in general. I try to follow a healthy lifestyle as much as possible myself and over the years I noticed that in almost every recipe for making a healthy dish there were a lot of exotic foods on the ingredient list such as avocado, chia seeds and quinoa. It especially came under my attention due to social media with the so-called açai-bowls and avocado toasts since I follow a lot of food influencers. Therefore, it was interesting for me to dive deeper in this topic in order to find out where this hype came from and why these foods received so many credits for being very good for your health. At the same time, sustainability within the food consumption is also a very hot topic nowadays. There have been so many scandals with mass manufacturers of meat for instance that people now search for alternatives. So, it was also interesting to see how sustainable consumers perceive these superfoods to be.

I want to especially thank my supervisor Daria Altenburg in guiding me throughout this process and my closest friends and family for keeping me motivated to successfully complete my master thesis.

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1. Introduction

Over the years, the use of the term superfood has increased in popularity, mainly in Western cultures such as Europe and the USA. Between 2011 and 2015, there was a global increase of 202% of new food and drink products containing labels such as “superfood”, “superfruit”, and “supergrain”, and it is still growing (Mintel, 2016). The term made its first appearance in the 1980s and is now used as a label for food items that are “rich in compounds and that are considered beneficial to a person’s health” (Butterworth, Davis, Bishop, Reyna, & Rhodes, 2020, p. 46). Despite this general labelling, there is currently no widely accepted definition of superfoods. Although definitions of the word ‘superfood’ exist, there are not any regulations in place to determine what can and what cannot be a superfood, such as the exact nutrient thresholds a food should have. As a result, there is not a definitive list containing the foods that are considered as a superfood and thus it is always subject to change. Additionally, there is not any scientific evidence demonstrating that they are superior to other kinds of healthy foods. Nevertheless, many marketers of particular healthy foods today market them as superfoods. By performing a media analysis, Butterworth et al. (2020) found that there were 217 foods that could be classified as a superfood and these foods were linked to 71 health benefits. However, most of these foods that are labelled as super, are not new. They have existed for a very long time, but often have been produced on a local scale with little or no technological intervention by indigenous people in remote locations (Magrach & Sanz, 2019). Thus, superfoods are often associated with nutritional values, natural qualities, and exotic origins (Loyer, 2016). Today, these foods coming from exotic places outside Europe (EU) have become global commodities that are wanted all over the world. Furthermore, social media has played a big part in promoting this trend (Howatson, 2017). Indeed, there has been quite a hype on Instagram, for example, promoting things such as açai bowls and chia puddings. This common portrayal of exotic foods as superfoods might suggest that consumers will be more likely to identify exotic superfoods (e.g., açai berries, chia seeds, goji berries, and avocado) as superfoods than the local alternatives (e.g., blueberries, kale, and broccoli) which have similar nutritional values. If this is the case, then it can be hypothesized that these exotic superfoods might also be more likely to be associated with other properties assigned to superfoods, such as healthy and natural. As a result, it might be that exotic superfoods will be

perceived healthier and more sustainable compared to the local alternatives, even though the local equivalents have more or less the same nutritional values, and even though in reality exotic superfoods tend to be less sustainable due to their need of more intensive agricultural production practices in terms of processing, packaging, and distribution (Magrach & Sanz, 2020). This in turn leads to for example the increase in greenhouse gas emissions and other concerns such as water depletion and soil degradation (Magrach & Sanz, 2020). Today, promoting healthy diets that at the same time minimize the environmental impacts on consumption is very desirable. Therefore, it is interesting to see whether and how these consumer perceptions differ among exotic and local superfoods and to also see whether this has an effect on food choice.

Thus, this research aims to provide an answer to the following question: Do health and sustainability perceptions differ between exotic superfoods and their local equivalents, and do these perceptions incite different purchasing behaviors? Analyzing this research question is relevant for several reasons. First, this paper tries to contribute to the limited amount of literature that is currently available about superfoods in general. Second, it helps to understand consumer's perceptions in terms of health and sustainability and how it drives their purchasing behaviors, which can be relevant for producers and retailers of superfoods for marketing purposes, but also for governmental agencies to make appropriate regulations. Third, rather than looking at superfoods in general, this paper further divides superfoods in two categories, namely local and exotic, each having their own social, economic and environmental caveats, which might incite different purchasing behaviors. For instance, if exotic superfoods are perceived as more sustainable, then consumers might favor these foods over local ones at the point of purchase. Fourth, by including consumer's sustainability perceptions, this paper contributes to the very limited amount of literature in the domain of superfoods that is currently available in terms of sustainability as compared to health, which is currently becoming a big issue. The model that will be used to analyze consumer perceptions and their purchasing behavior is the Total Food Quality Model. Attributes such as search-, experience-, and credence attributes, attitudes, beliefs, and familiarity, socio-demographics, and lastly social influences form important determinants in influencing quality perceptions of the food product and thus also the consumer's purchasing behavior (Sabbe, 2009).

The remainder of this research is structured as follows. First, it provides an overview of the relevant literature. Second, the methodology will be explained, and the results will be interpreted. Third, the results will be discussed followed by a conclusion, the contribution to the research, the limitations, and suggestions for future research.

2. Literature review

2.1 Definitions and background of superfoods

In the 1980s, the term superfoods gained attention for the first time and has become increasingly popular today in Western cultures mostly in Europe and the USA. Currently, there is no unique or universally accepted definition of this term yet. According to the Cambridge Dictionary (n.d.), a superfood is "a food that is considered to be very good for your health". The Oxford Learner's Dictionaries (n.d.) on the other hand defines a superfood as "a type of food that some people think is very good for you and helps to prevent disease". Thus, some definitions highlight disease prevention, while others focus on the improvements of health in general, and others name more specific nutrients in their definitions. In the end, the term can be defined as a food that (supposedly) benefits the consumer's health in one way or another. This paper will define a superfood as "a food that is rich in compounds and is considered beneficial to a person's health" (Butterworth, Davis, Bishop, Reyna, & Rhodes, 2020, p. 46). Each superfood has its own specific compounds that are beneficial for the human body, but superfoods' most important compounds are that they are meant to be rich in vitamins, minerals, antioxidants, and fatty acids, among others (Proestos, 2018). Most importantly, there is currently not an agreement from scientific and regulatory bodies that explains what exactly makes a superfood and what foods can thus be described as such. For example, there is no definition that quantifies the exact nutrients or health benefits a food needs to provide in order to be termed a superfood.

Furthermore, this paper distinguishes between exotic and local (super) foods. Various meanings can be attached to local foods, and by reviewing various definitions Eriksen (2013) came to the conclusion that local foods could be defined according to three domains of proximity, namely geographical, relational, and values. Geographical proximity refers to a food that is produced, retailed, consumed, and/or distributed within a certain distance in terms of food miles (the distance that food travels from where it is made or produced to where it is being sold to or reaches the consumer), or within a specific area, community, place, or geographical boundary. Relational proximity refers to the relations between the various actors in the supply chain such as producers, distributors, retailers, and consumers who are reconnected through different production and distribution practices such as farmers markets and farm shops. Values of proximity refers to actors that associate local food with values such as place of origin, traceability, freshness, and quality. Exotic foods on the other hand can be defined as foods that originate from a distant foreign country. This research compares the local and exotic superfoods from a European perspective, so everything that comes far away from Europe is considered exotic.

The term superfood is a very broad concept and thus it can include a lot of different types of food and many marketers today market them as such. Indeed, Butterworth et al. (2020) found by analyzing various media such as magazines, newspapers, and online content that there were 217 food types that could be classified as a superfood and that these superfoods were linked to 71 health benefits. Examples of superfoods were mostly fruits and vegetables, such as broccoli, blueberries, and kale, but it also included other food categories such as grains, animal proteins, spices or herbs, dairy products, beverages, nuts, seeds, beans, and oil (Butterworth et al., 2020). As for health benefits, examples were to prevent cancer, diabetes, cardiovascular diseases, sleep problems, and Alzheimer, among many others (Butterworth et al., 2020). Thus, these foods also have some medicinal values (Loyer, 2016). Other examples of superfoods that are more from an exotic origin as compared to Europe are quinoa, açai, chia, avocado, amaranth, coconuts, and goji berries (Magrach & Sanz, 2020; Meyerding, Kürzdörfer & Gassler, 2018). However, there are also some foods that are considered to have health benefits, but that are not necessarily healthy, such as dark chocolate and wine (Butterworth et al., 2020; MacGregor, Petersen & Parker, 2018). Thus, the list of superfoods,

although there does not exist an official one, seems endless and one explanation for that could be that the term superfood does not relate to the product itself but to the nutritional values the product contains, such as antioxidants, and omega-3 acids (MacGregor et al., 2018). In that sense, almost every food product containing some high nutritional values, either healthy or unhealthy, could be classified as a superfood.

Furthermore, not only are superfoods being considered nutritional and healthy, but they are also associated with being natural, exotic, and superior to other foods. A study by Loyer (2016) defined superfoods in terms of three characteristics. First, they have nutritional qualities that are superior to other foods. Second, they have been produced with little or even no technical intervention, meaning that they are produced in a natural way. Third, they are associated with indigenous people and traditional production practices oftentimes in remote locations (far away from Europe).

One of the major factors that have had an influence on consumers' health perception of superfoods is the role of social media (Howatson, 2017), which are free to access and cannot be easily verified (Delicato, Salvatore & Conto, 2019), as well as the media in general. MacGregor, et al. (2018) found that the media portrays superfoods as having health and anti-aging benefits, and that it promotes youth and beauty. To reinforce their statements the media use special techniques such as promissory statements, a distinct language that uses the personal pronouns "you" and "your" to stress the consumers' responsibility for their own health and well-being, and lastly use scientific references such as experts and celebrities to legitimize their claims. However, little scientific evidence exists to support such claims (MacGregor et al., 2018).

Besides the (social) media, this popularity for superfoods can also be attributed to the increasing obesity rates all around the world, consumers' mistrust in the industrialized production processes of foods, greater consumer awareness for nutrition and health, the increase of people's life-expectancy, and to consumers' ever-changing demand due to continuously changing lifestyles and eating habits, such as "all natural", "free-from", and "no added" (Graeff-Hönninger & Khajehei, 2019). As a result, food producers and manufacturers

that want to develop new food products have to focus on sustainable food handling, health benefits of consuming the food product, and dietary habits, such as “gluten-free”, “vegetarian”, “low-carb”, and “vegan” (Graeff-Hönninger & Khajehei, 2019).

In sum, since superfoods are associated with exotic origins, which was one of the defining associations according to Loyer (2016), it can be argued that exotic superfoods might also be more readily associated with other qualities commonly ascribed to superfoods such as superior nutritional values that are advantageous for health, and natural qualities with limited or no technical intervention. This means that exotic superfoods might be perceived as healthier and more sustainable. As a result, consumers might favor exotic superfoods over local ones. However, as will be explained further, in reality local foods are as healthy as exotic foods and are often more sustainable. Understanding consumers’ perceptions and their purchase behaviors has the potential to provide governmental agencies with a better understanding and thus find appropriate interventions to increase awareness among those consumers who falsely perceive exotic superfoods to be healthier and more sustainable of the benefits of consuming local alternatives.

2.2 The Total Food Quality Model

One tool that helps in determining consumer perceptions and food choices is the Total Food Quality Model (Sabbe, 2009, see appendix A), which has been considered as being the most suitable framework for analyzing the processes behind the food choices of consumers (Sabbe, 2009). This model states that consumers use different attributes, namely, search-, experience-, and credence attributes, as well as attitudes, beliefs, and familiarity, socio-demographics, and social influences to form expectations about the quality of a food product, which in turn will lead to the decision to either buy the product or not and which product to choose (Sabbe, 2009). Search attributes are attributes that can be recognized before the purchase, such as the appearance, the price, the freshness, the firmness, the size, the color, the smell, the packaging, convenience (e.g., to prepare), and the brand of a product. Experience attributes, as the name describes it, can only be determined by experiencing the food product, such as the taste and the texture. Credence attributes cannot be easily identified because they are based on credibility and trust, which cannot be easily validated, such as health and

sustainability. These are usually communicated through the use of labels to inform consumers. Socio-demographics include factors such as age, gender, and the level of income. Lastly, consumers can also be socially influenced by for instance their family and friends.

Of particular relevance to this study are credence attributes, as the previous section discussed that superfoods are often associated with different attributes that cannot be easily verified such as health, nutritional values, or natural properties. A number of studies have investigated the influence of certain credence attributes on willingness to pay (WTP). For instance, according to Khan, Khanal, Lim, Jan, and Shah (2018), 93,5% of the consumers were willing to pay price premiums for pesticide-free fruits, with 35% willing to pay 16-20% higher prices as compared to the conventional prices. Additionally, Boccaletti and Nardella (2000) found that consumers who were highly concerned with the health risks from pesticides were willing to pay 20% more above the regular prices for pesticide-free fresh fruit and vegetables. Next, by analyzing the consumers' WTP for functional foods, Szakály, Kovács, Pető, Huszka, and Kiss (2019) found that the more consumers believe of the health benefits of these foods, the more positive their attitudes towards these foods become, and thus would also be willing to pay more. Furthermore, Migliore, Borrello, Lombardi, and Schifani (2018) found that the environmental concern is an important factor when consumers choose natural food products and that 68% of consumers were willing to pay a price premium for these natural foods. Gil, Gracia, and Sánchez (2000) also came to the conclusion that potential and actual consumers of organic foods were willing to pay between 15 and 25% more as compared to what they were willing to pay for conventional products. Lastly, Nandi, Bokelmann, Gowdru, and Dias (2017) showed that 90% of the consumers were willing to pay a premium for organic vegetables with 48% willing to pay a premium between 10 and 15%, and with 20% willing to pay a premium between 15 and 25%. Thus, if people perceive exotic superfoods to be healthier and more sustainable than local superfoods, then it can be assumed that people would pay more for these foods.

2.3 Consumer perceptions and purchasing behaviors of superfoods

2.3.1 Exotic foods

It seems that consumers perceive exotic superfoods to be healthy and nutritive. According to Sabbe (2009), consumers believe that tropical fruits are nutritious, healthy, good in taste, attractive, and special. By investigating the preferences and attitudes towards açai-based products among North American consumers, Menezes, Deliza, Chan and Guinard (2011) found that consumers knew açai was good for their health, nutritive, and full of vitamins, minerals, and antioxidants. Rojas-Rivas, Espinoza-Ortega, Thomé-Ortiz, Moctezuma-Pérez and Cuffia (2019) found by studying consumers' perceptions and consumption motives towards amaranth in Mexico that eight categories could reflect their perception towards amaranth, namely health and well-being, functionality, mitigation of hunger, nutritional components, nutrition, feeding (consumed to meet instant needs for food), traditional food, and energy. By analyzing consumer preferences for superfood ingredients for different types of bread in the German market, Meyerding, et al. (2018) found that consumers value bread with superfood ingredients such as linseed or chia because it serves a functional purpose, although the type of the bread was the most important factor for choosing a bread and different consumer segments value different superfood ingredients.

These findings illustrate that consumers' most prominent attitudes and beliefs towards exotic superfoods are that they are healthy and nutritive. Furthermore, since there is a current trend towards healthy eating and searching for variety by buying new and exotic food products, consumers have a positive general attitude towards tropical fruit consumption, although superfoods are not a regular purchase (Sabbe, 2009). Additionally, the major drivers for purchasing such exotic superfoods are pleasure-seeking and hedonism since people perceive it as special in terms of taste, attractiveness, shape, and color (Sabbe, 2009). Indeed, Howatson (2017) also found that consumers emphasize the hedonic experience and symbolic value that comes along with superfoods, stressing the importance of non-materialistic aspects of superfoods, such as the use of vibrant colors, white plate ware and natural crockery, ingredients, colorful garnishing and background stories in digital images.

Although consumers tend to have a positive attitude towards the consumption of exotic superfoods, several barriers exist. First of all, the intention to purchase an exotic superfood strongly depends on how familiar the consumer is with the food product in terms of knowledge (e.g., to prepare) and experience with it (e.g., past consumption) (Sabbe, 2009). Second, the prices of exotic superfoods are perceived to be high, which results in a low intention to buy (Sabbe, 2009). Furthermore, Butterworth et al. (2020) argue that since exotic superfoods are expensive, people consume such foods in order to socially distinct themselves. To illustrate, the ability to buy exotic and expensive superfoods, which are often less attainable than local superfoods, can be a sign of prestige while local foods, which are more attainable and less expensive, are available for everyone to eat and as a consequence are considered more democratic. Thus, exotic superfoods are more likely to be bought by consumers with a relatively high level of income.

While the purpose of this paper is to analyze the impact of perceived health and perceived sustainability on the purchase behavior of the consumer, the above research demonstrated that there are also some important influences of hedonic qualities (e.g., taste), familiarity, and price on consumption behavior. Therefore, these variables will also be considered in the research design even though they are not central to the research question.

Literature about superfoods and consumer perceptions with regard to all the aspects of sustainability, namely social, economic, and environmental sustainability is currently lacking. Instead, literature about superfoods' health benefits is dominating. To illustrate, Butterworth, et al. (2020), observed that only 8% out of all the reviewed articles discussed the natural environment. This might suggest that sustainability issues with regard to superfoods are not much of a concern yet although there is some awareness. As a result, more research into sustainability perceptions is needed and as the demand for superfoods is growing due to its health benefits, especially for exotic ones, it is important to understand the sustainability issues that are currently arising with the consumption of exotic superfoods, which have important consequences.

A recent study showing the environmental and social consequences of superfoods world-wide was carried out by Magrach and Sanz (2020). According to these authors, the superfoods they discuss have been produced for millennia by indigenous people in remote locations (far away from the developed countries where it is demanded) with traditional practices and the experience to do so with little impact for the environment. However, they have now become global commodities and with such an increase in demand, other production practices are needed to cope with it, leading to more intensive agricultural production practices. This in turn leads to important social and environmental consequences, because they need to be processed, packaged, and distributed all across the world, which leads to an increase in greenhouse gas emissions. Other important environmental concerns are water depletion, soil degradation, negative impacts for biodiversity, and increasing land conversion within natural habitats (Magrach & Sanz, 2020). As the case for the production of quinoa in Peru shows, farming practices are being transformed and the cultivation areas are growing day by day. To illustrate, crop rotations have been traditionally practiced but have now been reduced and some areas that were being used for other domestic products of Peru for the local population are now used for the production of quinoa (Bedoya-Perales, Pumi, Talamini & Padula, 2018). A similar case exists with the production of quinoa in Southern Bolivia, where areas that once where characterized by natural vegetation are being transformed into deserts due to the production of quinoa (Jacobsen, 2011). Problems with the production of other superfoods, such as açai and avocados also become apparent. Many native forest areas are making room for the production of açai (Weinstein & Moegenburg, 2004). The increase in the production of avocados requires high amounts of water, promotes illegal avocado farming leading to uncontrolled deforestation, and leads to less availability for the local population. Moreover, large agribusinesses are buying out and dominating many of the farmers (Sommaruga & Eldridge, 2020). Lastly, exotic superfoods such as açai, chia seeds, and maca root which were originally produced in Latin America are now facing tremendous competition from other countries such as China who want to profit from the demand and as a result, farmers might be losing their competitive advantage and so the production becomes less profitable for them (Peña-Lévano, Adams, & Burney, n.d.).

In sum, even though today these exotic superfoods have important social and economic consequences, consumers may still perceive exotic superfoods to be more sustainable due to the reputation it has of being produced in a natural way**.** Additionally, the combination of consumers' lack of awareness of these issues and their desire to follow a healthy lifestyle, might keep the demand for these exotic superfoods high and as a result might raise these sustainability issues even further.

2.3.2 Local foods

According to Feldmann and Hamm (2015), local foods were mostly associated with better quality and taste. Chambers, Lobb, Butler, Harvey, and Traill (2007) also showed that consumers perceived local foods to be of higher quality in terms of freshness, and that they had better taste. Similarly, Conner, Colasanti, Ross and Smalley (2010) showed that one of the main factors for shopping at a farmer's market was that the products were perceived as being of top quality. Furthermore, a study by Fricz, Ittzés, Ózsvári, Szakos, and Kasza (2020) showed that local food products were perceived as more natural and delicious as compared to being perceived as more environmentally friendly. Thus, local foods are less associated with health, nutrition, and environmentally friendliness, which stands in contrast to what might be associated with exotic superfoods.

Although local foods are less associated with health and nutrition, it is important to note that the local superfoods often have similar nutritional values as the exotic superfoods, and both local and exotic superfoods have their own specific amount of vitamins, antioxidants, minerals, and other nutrients that are good for your health (see Appendix B). Additionally, even though local foods might not be easily associated with environmentally friendliness, local foods are usually more sustainable than the exotic ones. To illustrate, some benefits of buying local foods are that it reduces food miles and pollution, supports local businesses, suppliers, retailers and communities, improves animal welfare, lowers supplier exploitation, and provides chemical-free food, among others (Megicks, Memery & Angell, 2012). Similarly, La Trobe (2001) showed that shopping at a local farmer's market reduces the distance a food needs to travel in order to reach a consumer, and thus reduces pollution. Furthermore, they also showed that less additives and preservatives are being used, which are often used in

order to keep the foods fresh during long travel distances, that local farmers receive better wages, and that poor working conditions or exploitation are more easily traceable (La Trobe, 2001). Moreover, the water and carbon footprints tend to be lower for local foods as compared to the exotic ones (see Appendix B).

However, despite these benefits, major barriers exist that prevent consumers to buy local. For instance, going to a farmer's market tends to be perceived as a leisure activity, time consuming, inconvenient, costly, and having a lack of availability as compared to going to a supermarket (McEachern, Warnaby, Carrigan & Szmigin, 2010). Indeed, as Chambers et al. (2007) showed, people perceive local foods as rather expensive and it is not purchased on a regular basis due to time and opportunity constraints as well as a having a limited choice.

Lastly, a current problem within the consumption of local and other more sustainable foods is that there is a gap between consumers' attitudes and their behavioral intentions and to close this gap consumers should be involved more, and perceived consumer effectiveness, certainty, social norms, and perceived availability should be raised in order to improve more sustainable and ethical food consumption (Vermeir & Verbeke, 2006). Feldmann and Hamm (2015) also explained the importance of information seeking and knowledge of the benefits of local foods that eventually leads to more favorable purchase behaviors. However, this is still not a guarantee as Carrigan and Attalla (2001) explained, even if consumers are aware, it does not necessarily mean that people are going to favor more ethical and socially responsible companies over those who are not. On the contrary, as the authors state, they seem to find reasons to justify their own behavior.

2.4 Hypothesis formation

In sum, superfoods are generally associated with being natural, nutritional and exotic. Since exotic is one of these main associations, it can be hypothesized that exotic superfoods would also be more readily associated with the other two qualities, namely, nutrition (health) and sustainability (natural). Furthermore, local foods tend to be less associated with health and sustainability. Concerning people's purchasing behaviors in terms of willingness to pay, they might be willing to pay a higher price for exotic superfoods because of their special and

attractive character and because previous research has found that consumers were ready to pay more for foods they perceived as healthy and natural. Lastly, if exotic superfoods are perceived as healthier and more sustainable, then consumers might be more likely to choose these foods when given a choice. Thus, the following can be hypothesized:

Hypothesis 1: Exotic superfoods will be perceived as being healthier than local superfoods.

Hypothesis 2: Exotic superfoods will be perceived as being more sustainable than local superfoods.

Hypothesis 3: Consumers will be willing to pay more for exotic superfoods than local superfoods.

Hypothesis 4: Consumers will be more likely to choose exotic superfoods than local superfoods because they are perceived as healthier and more sustainable.

3. Methodology

3.1 Objective pilot test

As was discussed earlier, perceived taste, familiarity, and price are important influences in food choice. For this reason, a pre-test was first carried out in an attempt to select a stimuli set that is as equally matched on these variables as possible, or, if matching is not possible, in order to confirm whether the differences on these variables are significant and may thus propose confounding influences that need to be considered in the choice task.

3.2 Sample pilot test

To collect respondents for the pre-test, convenience sampling was used as this is the fastest and easiest way to reach respondents within a limited time frame. Everybody that was at least 18 years of age was allowed to fill in the survey which was distributed online for one week between February 27, 2021 and March 6, 2021. A total of 40 responses were recorded for the pre-test. A final sample of *N* = 30 was retained for analysis due to partial completions. The sample consisted of 19 (63.3%) women and 11 (36.7%) men, with an average age of 28 (*M* = 27.8, *SD* = 9.39) years old (20 to 49). The highest degree of education most respondents had received or were currently following was a bachelor's degree (43.3%). The majority of the respondents (40.0%) had a net income of less than €1.000 per month and live in an urban area (50.0%).

3.3 Measurements pilot test

For the pre-test, 23 superfoods were selected as stimuli (strawberry, blackberry, cherry, raspberry, goji berries, açai berries, dragon fruit, pomegranate, jackfruit, spinach, kale, carrots, broccoli, beetroot, seaweed, sweet potato, avocado, edamame beans, oats, spelt, barley, chia, and quinoa. Note that 'avocado' was classed as a vegetable, despite botanically being a fruit, due to the way in which it is commonly used in the culinary industry). They could be classified along three categories, namely, fruits, vegetables, and grains or seeds. Each category contained foods of exotic and local origin (see appendix C). These superfoods were selected because they were the most often mentioned in the literature, and on blogs, and other articles on the internet when looking for a list with superfoods. The pre-test included a question where respondents had to rate each stimulus on a 7-point Likert scale from very local (to Europe) to very exotic (compared to Europe). Respondents also had to rate each stimulus on taste from very unpleasant to very pleasant with the option "not applicable" in case they had never tasted it, on price from very cheap to very expensive, and on familiarity from very unfamiliar to very familiar on a 7-point Likert scale. Lastly, some demographic questions were asked, such as the respondent's gender, age, level of income and degree, and the type of community they lived in.

3.4 Results pilot test

To pick the final stimuli set, a descriptive analysis was done first to look at the mean rating for each stimulus in terms of taste, price, and familiarity. For each superfood category, the local and exotic foods that had similar means or where the difference between the means of the local foods and the exotic foods were as little as possible were chosen. In the end, 16 stimuli were kept for further analysis (strawberry, cherry, raspberry, goji berries, açai berries, pomegranate, spinach, carrots, broccoli, seaweed, avocado, edamame beans, oats, spelt, chia, and quinoa) (see appendix D). These were also partly chosen because both the local and exotic superfoods contained more or less the same nutritional values and the social and ecological footprint was worse for the exotic superfoods (see appendix B). Next, for each superfood category, a mean score for locality, a mean score for taste, a mean score for price, and a mean score for familiarity was calculated across the chosen local as well as the chosen exotic superfoods. These mean scores were then compared using a paired samples t-test.

The paired samples t-test confirmed that the local fruits (M = 2.41, SD = 1.04) were perceived as significantly more local compared to the exotic fruits (M = 5.73, SD = 0.86); $t(29) = -12.50$, $p < .001$. Similarly, the local vegetables (M = 1.96, SD = 0.90) were perceived as significantly more local compared to the exotic vegetables (M = 5.13, SD = 0.82); $t(29) = -15.49$, $p < .001$. Finally, local grains (M = 2.60, SD = 0.87) were perceived as significantly more local compared to the exotic grains (M = 5.03, SD = 1.11); $t(29) = -9.87$, $p < .001$.

For the fruits, there was a significant difference between the perceived taste of local fruits (M = 6.22, SD = 1.03) and exotic fruits (M = 5.32, SD = 1.26); $t(28) = 3.60$, $p < .001$, between the perceived price of local fruits (M = 4.57, SD = 1.07) and exotic fruits (M = 5.20, SD = 0.88); $t(29) = -2.73$, $p = 0.011$, and between the perceived familiarity with local fruits (M = 6.46, SD = 0.65) and exotic fruits (M = 4.10, SD = 1.56); $t(29) = 8.04$, $p < .001$.

For the vegetables, there was not a significant difference in the perceived taste between local vegetables (M = 5.94, SD = 0.80) and exotic vegetables (M = 5.42, SD = 1.22); $t(29) = 2.10$, $p = 0.045$. However, there was a significant difference between the perceived price of local vegetables (M = 2.29, SD = 0.75) and exotic vegetables (M = 4.78, SD = 0.83); $t(29) = -11.05$, $p < .001$, and between the perceived familiarity with local vegetables (M = 6.77, SD = 0.46) and exotic vegetables (M = 5.04, SD = 1.43); $t(29) = 6.38$, $p < .001$.

For the grains/seeds, there was not a significant difference in perceived taste between local grains/seeds (M = 5.07, SD = 0.88) and exotic grains/seeds (M = 4.89, SD = 1.29); $t(27) = 0.72$, $p = 0.476$, and between perceived familiarity with local grains/seeds (M = 5.08, SD = 1.45) and exotic grains/seeds (M = 4.63, SD = 1.83); $t(29) = 1.73$, $p = 0.095$. There was, however, a significant difference in the perceived price between local grains/seeds (M = 2.95, SD = 1.02) and exotic grains/seeds (M = 4.67, SD = 1.02); $t(29) = -6.97$, $p < .001$. Thus, the pre-test revealed that there were significant differences between the local and exotic fruits, vegetables, and grains or seeds in terms of taste, price, and familiarity, indicating that these differences should be considered when predicting choice, as these factors can have an important influence on choice behavior, as previously outlined.

3.5 Objective main survey

In order to answer the research question, an online based survey was used to record consumers' perceptions of health and sustainability, and their purchasing behavior in terms of their willingness to pay and a choice task with regard to local and exotic superfoods.

3.6 Sample main survey

For this research, convenience sampling was also used for the same reason as why it was used for the pre-test. Again, everybody that was at least 18 years of age was allowed to fill in the survey which was distributed online for a period of three weeks between April 13, 2021 and May 5, 2021. A total of 237 responses were recorded for the survey. A final sample of N = 152 was retained for analysis due to partial completions. The sample consisted of 113 (74.3%) women and 39 (25.7%) men, with an average age of 26 (M = 25.86, SD = 8.27) years old (19 to 62). The highest degree of education most respondents had received or are currently following was a bachelor's degree (40.1%) or a master's degree (44.7%). The majority of the respondents (59.9%) have a net income of less than €1.000 per month and live in an urban area (60.5%).

3.7 Measurements main survey

The main survey consisted of seven main parts (see appendix E). First, health perception was measured by four items (e.g., *contain a lot of vitamins and minerals*) based on a study by Steptoe, Pollard and Wardle (1995) on a 7-point Likert scale (1 = strongly disagree; 7 = strongly agree). Second, the perception of sustainability was measured by seven items (e.g., *have been prepared in an environmentally friendly way*), which were based on the studies by Lindeman and Väänänen (2000), and Verain, Onwezen, Sijtsema and Dagevos (2016) on a 7-point Likert scale (1 = strongly disagree; 7 = strongly agree). Although sustainability is a broad concept, this research focused on the environmental and social aspects of sustainability as these seem to be the most prominent caveats of increasing superfood consumption and production. The same one-item rating questions for taste, price, and familiarity which were included in the pre-test were also included again in the main survey. Purchase behavior was measured in terms of willingness to pay (WTP) and a choice task. As for WTP, respondents were asked how much they were willing to pay for 250g for each stimulus with the use of a slide bar that ranged between 0 and 15 euros. For the choice task, a simple selection task was performed. For each category (fruits, vegetables, and grains/seeds), the respondent had to pick two to three stimuli out of that category that they would buy. Lastly, the same demographic questions from the pre-test were also asked again.

3.8 Results main survey

3.8.1 Health perception

For each stimulus, a health score was calculated as the mean of the four health scale items (Cronbach's alpha = .91, see Appendix F for item level estimations). These health scores were then averaged across the items belonging into the respective categories in order to obtain aggregated health scores for local and exotic fruits, vegetables, and grains/seeds. By means of a paired samples t-test, these health scores were used to see whether there was a significant difference between consumer's health perceptions for local and exotic superfoods across the three different categories. For the fruits category, there was not a significant difference in health perception between the local fruits (M = 5.38, SD = 0.86) and the exotic

fruits (*M* = 5.33, *SD* = 0.79); *t*(151) = 0.91, *p* = .363. For the vegetables there was a significant difference in health perception between the local vegetables (*M* = 6.05, *SD* = 0.62) and the exotic vegetables (*M* = 5.23, *SD* = 0.71); *t*(151) = 14.37, *p* < .001. On average the local vegetables were perceived as healthier than the exotic vegetables. Lastly, for grains or seeds, there was a significant difference in health perception between the local grains or seeds (*M* = 4.98, *SD* = 0.80) and the exotic grains or seeds (*M* = 5.24, *SD* = 0.92); *t*(151) = -3,77, *p* < .001, and on average the exotic grains or seeds were perceived as healthier as compared to the local alternatives. Thus, there was no clear support for H1, which stated that exotic superfoods would be perceived as healthier than local superfoods.

3.8.2 Sustainability perception

The same analysis approach as for the health perception was done for the perceptions of sustainability. For each stimulus, a sustainability score was calculated as the mean of the seven sustainability scale items (Cronbach's alpha = .94, see Appendix G for item level estimations). These scores were again combined for each category in order to obtain one sustainability score for local and exotic fruits, vegetables, and grains/seeds, which were then tested with a paired samples t-test to see if there was a significant difference in sustainability perceptions. For the fruits category, there was a significant difference in sustainability perceptions between the local fruits (*M* = 4.57, *SD* = 0.82) and the exotic fruits (*M* = 4.23, *SD* = 0.76); *t*(151) = 5.13, *p* < .001. Local fruits were perceived as more sustainable compared to exotic fruits. For the vegetable category, there was a significant difference in sustainability perceptions between the local vegetables (*M* = 4.89, *SD* = 0.81) and the exotic vegetables (*M* = 3.96, *SD* = 0.83); *t*(151) = 13.61, *p* < .001. Again, local vegetables were perceived as significantly more sustainable than the exotic vegetables. Lastly, there was also a significant difference in sustainability perceptions between the local grains/seeds (*M* = 4.58, *SD* = 0.88) and the exotic grains/seeds (*M* = 4.17, *SD* = 0.96); *t*(151) = 5.94, *p* < .001. Again, the local grains/seeds were perceived as more sustainable compared to the exotic ones. Thus, H2, which posed that exotic superfoods will be perceived as more sustainable than the exotic superfoods, was not supported.

3.8.3 Willingness to pay (WTP)

For each category, a mean score was calculated for the exotic superfoods as well as for the local alternatives, and by means of a paired samples t-test, it was tested whether there was a significant difference in WTP. For the fruits category, there was a significant difference in WTP for the local fruits (M = 2.80, SD = 1.25) and the exotic fruits (M = 2.51, SD = 1.16); $t(151) = 3.85$, $p < .001$, whereby WTP was higher for local compared to exotic fruits. For the vegetable category, there was a significant difference in WTP for the local vegetables (M = 1.82, SD = 1.41) and the exotic vegetables (M = 2.54, SD = 1.42); $t(151) = -9.04$, $p < .001$. As opposed to the fruits, however, respondents indicated higher WTP for exotic compared to local vegetables. Lastly, for the grains/seeds category, there was a significant difference in WTP for the local grains/seeds (M = 1.97, SD = 1.44) and exotic grains/seeds (M = 2.49, SD = 1.55); $t(151) = -6.76$, $p < .001$. Again, there was a higher WTP for the exotic grains/seeds as compared to the local alternatives. Thus, H3, which stated that consumers are willing to pay more for exotic superfoods than the local alternatives, was partially supported.

3.8.4 Choice task

For each superfood category, a linear regression was performed to investigate the impact of the health and sustainability perceptions of the local and exotic superfoods on the consumer's choice for local and exotic superfoods. As the pretest suggested that the stimuli differed on perceived price, taste, and familiarity, these variables for both local and exotic superfoods were also included in the model as control variables. The dependent variable choice was calculated as a difference score. For each respondent, these choice variables were summed up to get the total amount of local and exotic superfoods the respondent picked. The difference score was then calculated by extracting the total amount of the local superfoods from the total amount of the exotic superfoods picked. Thus, choice was regressed on local and exotic health, sustainability, taste, price, and familiarity. All predictors were entered into the model simultaneously.

For the fruits category, the model explained 22% of the variance in the choice for local and exotic fruits and predicted significantly better than the null model $F(10, 131) = 3.75$, $p < .001$. As expected, some controlling variables significantly predicted the choice of local versus exotic fruits, namely perceived taste of local fruits, $\beta = -0.21$, $p = 0.028$, perceived taste of exotic fruits, $\beta = 0.26$, $p = 0.003$, and familiarity with exotic fruits, $\beta = 0.20$, $p = 0.026$. Most importantly, however, perceived health of local fruits, $\beta = -0.25$, $p = 0.019$ and perceived health of exotic fruits, $\beta = 0.27$, $p = 0.013$ also significantly predicted the choice of local versus exotic fruits. However, perceived sustainability was not a significant predictor of fruit choice.

For the vegetable category, the model explained 21% of the variance in the choice for local and exotic vegetables and predicted significantly better than the null model $F(10,141) = 3.76$, $p < .001$. Again, as expected, some controlling variables significantly predicted the choice of local versus exotic vegetables, namely perceived taste of local vegetables, $\beta = -0.37$, $p < .001$, perceived taste of exotic vegetables $\beta = 0.17$, $p = 0.074$, and familiarity with exotic vegetables, $\beta = 0.22$, $p = 0.018$. However, neither perceived health nor perceived sustainability significantly predicted the choice of vegetables.

Lastly, for the category of the grains/seeds, the model explained 45% of the variance in the choice for local and exotic grains/seeds and predicted significantly better than the null model $F(10,133) = 10.71$, $p < .001$. Once more, some controlling variables significantly predicted the choice of the grains/seeds, namely perceived taste of local grains/seeds, $\beta = -0.29$, $p < .001$, perceived taste of exotic grains/seeds, $\beta = 0.29$, $p < .001$, familiarity with local grains/seeds, $\beta = -0.39$, $p < .001$, and familiarity with exotic grains/seeds, $\beta = 0.25$, $p = 0.003$. But most importantly, perceived health of exotic grains/seeds, $\beta = 0.19$, $p = 0.037$ significantly predicted choice. Perceived sustainability on the other hand did not have a significant impact on choice.

4. Discussion

Results for the differences in health perceptions between exotic and local superfoods were mixed across the three superfood categories. First, the exotic and local fruits were perceived as equally healthy as there was not a significant difference. Second, there was a significant difference in health perception between the local and exotic vegetables, but the local alternatives were perceived as healthier. Only the exotic grains/seeds were perceived as healthier as compared to the local alternatives and demonstrated a significant difference with the local grains/seeds. Therefore, it can be concluded that it strongly depends on the food category of whether the exotic superfoods are perceived as healthier as compared to the local alternatives. A possible explanation for these mixed results could be due to social media. Not only might exotic grains or seeds have been heavily promoted on social media as superfoods, but also local vegetables such as spinach might have gained more attention from food influencers. Thus, this might explain why exotic grains or seeds and local vegetables were perceived as healthier compared to their counterparts, but this requires more research in the future.

As for sustainability, there were significant differences in perceptions across all superfood categories. However, in contrast to what was expected, the local fruits, vegetables, and grains/seeds were perceived as more sustainable. This might suggest that there was some awareness among the participants of the issues in terms of sustainability with the exotic superfoods. Literature has shown that younger people are less concerned with sustainability (Carrigan & Attalla, 2001; Radzyminska & Jakubowska, 2018). However, since this research mostly included younger respondents, it might suggest that there is a change going on, namely that the younger population is becoming more aware and concerned with sustainability.

Next, there were also significant differences for the willingness to pay across the three superfood categories. Although the consumers were willing to pay more for exotic vegetables and grains/seeds, they were not willing to pay more for exotic fruits. According to the literature, exotic superfoods are perceived as special in terms of taste and attractiveness (Sabbe, 2009), and therefore people might be willing to pay more. A possible explanation for

not willing to pay more for the exotic fruits could be that people were not very familiar with it. Indeed, the data showed that people were rather familiar with local fruits, but were neither familiar nor unfamiliar with exotic fruits. So, if people are less familiar with the exotic fruits, then they might not be able to evaluate these exotic fruits in terms of taste and attractiveness, and thus, they might not be willing to pay more. Furthermore, it was shown that if consumers believe a food was healthy and sustainable, they were willing to pay more (Boccaletti & Nardella, 2000; Gil et al., 2000; Khan et al., 2018; Migliore et al., 2018; Nand et al., 2017, and Szakály et al., 2019). While local vegetables were perceived as healthier and more sustainable, consumers were still willing to pay more for exotic vegetables, so consumers are willing to pay more for other reasons than health and sustainability. A reason could be that they are more special. Next, people were willing to pay more for exotic grains/seeds, mostly because they were perceived as healthy, but not sustainable. Lastly, the local fruits were perceived as equally healthy as the exotic ones, and as more sustainable, which might also explain why consumers were not willing to pay more for exotic fruits.

Lastly, in the choice task, on average participants chose more local fruits, vegetables, and grains/seeds than the exotic ones. After controlling for other predictors, the decision on whether to choose local or exotic fruits was predicted by how healthy the local and exotic fruits were perceived. Similarly, the decision on whether to choose local or exotic grains/seeds was determined by how healthy the exotic grains/seeds were perceived. However, the decision on whether to choose local or exotic vegetables was not predicted by health or sustainability perceptions. Interestingly, although the local fruits, vegetables, and grains/seeds were perceived as more sustainable, the perceived sustainability of both local and exotic fruits, vegetables, and grains/seeds did not have a significant impact on choice. This is in line with the literature saying that there is a gap between people's attitudes and their actual behavior (Carrigan & Attalla, 2001; Vermeir & Verbeke, 2006). Perceived health had an impact on choice for the fruits and the grains/seeds. Thus, one could say that in general perceived health is more important than perceived sustainability in food choice. Nevertheless, other important factors that determined choice seemed to be taste and familiarity and more specifically the familiarity with exotic superfoods. Indeed, as was explained in the literature review, unfamiliarity is the biggest barrier for purchasing exotic foods (Sabbe, 2009).

4.1 Contribution and implications for practice

This research contributes to the existing literature in the following ways. First, although there have been some attempts to analyze consumer perceptions for some superfoods, those analyses were mostly based on one superfood. For instance, Menezes et al. (2011) analyzed consumers' attitudes and acceptance towards açai products, and Rojas-Rivas et al. (2019) tried to investigate consumers' perception towards amaranth. Also, research on consumer perceptions of superfoods in general were very limited. This research extended it by analyzing superfoods at the group level by including a larger set of superfoods across multiple food categories. These superfoods were also divided into local and exotic superfoods as they differ greatly in their impact on sustainability but have similar nutritional values and health qualities. Since sustainability issues with exotic superfoods have been on the rise lately (Magrach & Sanz, 2020), it was interesting to analyze consumers' sustainability perceptions because that was also currently lacking in literature. Second, choice behavior was also investigated in order to see if health and sustainability had an impact on the decision for buying local or exotic superfoods and how much they would be willing to pay in euros.

The results have some important implications for practice as well. Although local and exotic fruits were perceived as equally healthy and local vegetables were perceived as healthier compared to the exotic ones, the exotic grains/seeds were perceived as healthier than their local alternatives. Governmental agencies should thus communicate to consumers that neither the local superfood nor the exotic superfood is healthier than the other, but that they have similar nutritional values and that they are all healthy in their own way as they almost all contain important vitamins, antioxidants, fibers and so on. Furthermore, health perceptions tended to have a significant impact on food choice. So, it is even more important to stress the fact that both local and exotic superfoods are healthy. As for the producers and marketers of exotic superfoods, they can charge higher prices for their products as consumers were on average willing to pay higher prices (except for exotic fruits) and price did not significantly predict the choice of local vs. exotic superfoods. Also, the producers of exotic superfoods should aim at improving their sustainability because local superfoods were perceived as more sustainable.

4.2 Limitations and suggestions for future research

This research does not come without its limitations. The first limitation relates to the way the sampling was done. Convenience sampling was used because it was a fast and easy way to reach respondents within a limited timeframe. However, the disadvantage is that it can often lead to a highly homogenized and specific sample. The majority of the respondents were in their twenties, had on average a low level of income, had either a bachelor or a master's degree, and lived in an urban area. Therefore, these results are not generalizable to everyone. A suggestion for future research would be to make sure to include multiple respondents from different age categories, with different levels of income, and with different backgrounds that are equally represented.

Another problem in this case was that older people often did not master the English language to complete the survey, which might explain the high rate of partial completions. Also, another explanation for the high rate of partial completions might be that consumers were not familiar with some of the foods, so a possibility is to target consumers that are health conscious in the future as they will probably have more knowledge about superfoods. It could also be interesting to only target consumers that frequently buy superfoods since a recent study by Lucas, Costa and Brunner (2021) showed that consumers of superfoods strongly believe in the health benefits they provide, are knowledgeable about nutrition, are not concerned about eating food that is not traditional and not easily accessible, and have a great interest for organic and natural ingredients.

Furthermore, since there were some significant differences between the categories of the fruits, vegetables, and grains/seeds, a suggestion for future research could be to analyze each category separately with larger stimuli sets. Next, more research is needed in order to determine what exactly makes a food a superfood since that part of the definition was lacking. A last suggestion for future research could be to examine the influence of social media trends on consumers' perceptions of superfoods as some local superfoods might have received more attention recently.

4.3 Conclusion

As an answer to the research question “Do health and sustainability perceptions differ between exotic superfoods and their local equivalents, and do these perceptions incite different purchasing behaviors?”, the following can be concluded. Health and sustainability perceptions significantly differ between the local and exotic superfoods, except that local and exotic fruits were perceived as equally healthy. Although it was argued that exotic superfoods were perceived as being healthier and more sustainable than their local alternatives, it could only be concluded that the exotic grains/seeds were perceived healthier. As for purchase behaviors, consumers were willing to pay more for exotic vegetables and exotic grains/seeds, but not for exotic fruits. Lastly, the most important finding concerning purchase behavior is that perceived sustainability did not have an impact on the decision on whether to choose between local and exotic superfoods. Even though most of these results were in contrast to what was expected, they are quite encouraging because it might suggest that consumers are more aware than often argued.

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Appendix A

The Total Food Quality Model

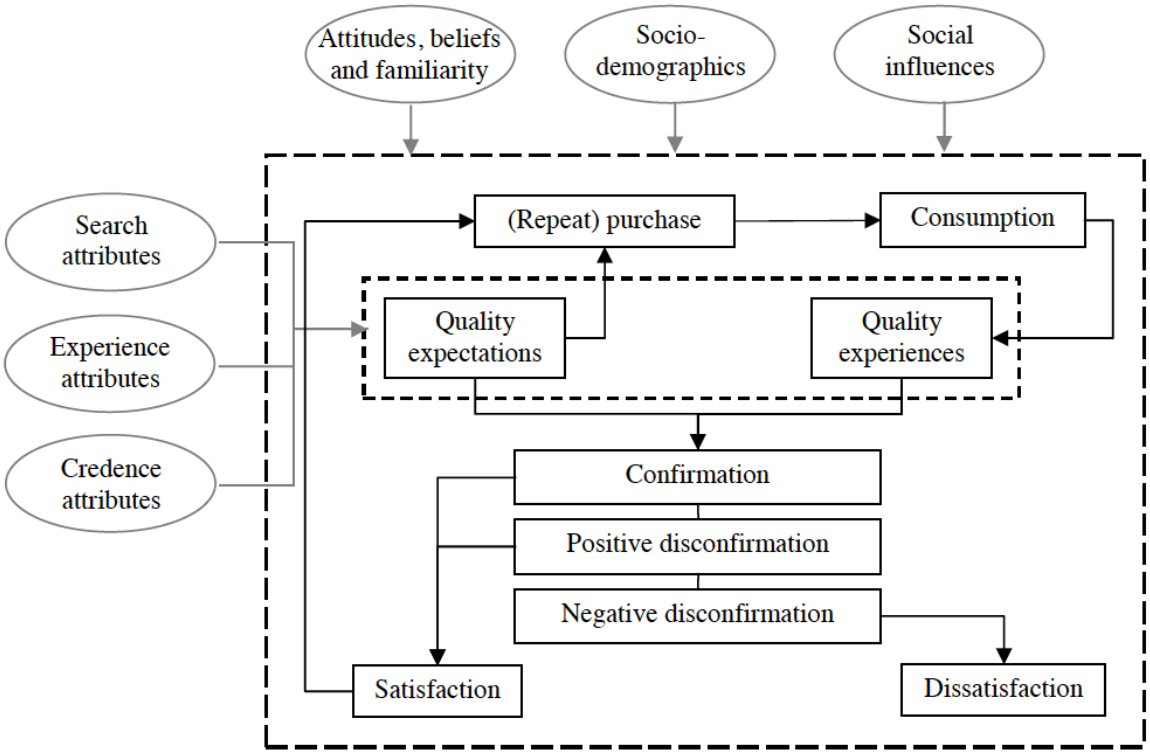

Figure 1: Conceptual framework of the Total Food Quality Model by Sabbe S. (2009).

Appendix B

Nutritional values of the stimuli

Superfood (100g)	Energy	Proteins	Carbohydrates	Sugars	Fat	Fibers
Strawberry	36 kcal	0,8 g	6,5 g	5,4 g	0,4 g	2,0 g
Cherry	58 kcal	1,2 g	8,5 g	6,8 g	1,0 g	5,2 g
Blackberry	54 kcal	0,5 g	12,0 g	11,5 g	0,1 g	1,5 g
Raspberry	48 kcal	1,2 g	7,5 g	5,2 g	0,5 g	4,2 g
Goji berries (dried)	349 kcal	14 g	77 g	46 g	0,4 g	13 g
Açai berries (powder)	700 kcal	10 g	40 g	0 g	50 g	30 g
Dragon fruit	264 kcal	3,6 g	82 g	82 g	0 g	1,8 g
Pomegranate	85 kcal	1,0 g	17,5 g	12,0 g	0,7 g	2,5 g
Jackfruit	95 kcal	1,7 g	23 g	19 g	0,6 g	1,5 g
Spinach	15 kcal	2,5 g	0,6 g	0,4 g	0,3 g	2,0 g
Kale	51 kcal	4,3 g	5,5 g	0 g	0,9 g	2,0 g
Carrots	33 kcal	1,0 g	5,2 g	4,9 g	0,2 g	3,4 g
Broccoli	29 kcal	3,3 g	2,0 g	1,5 g	0,2 g	3,5 g
Beetroot	43 kcal	2,0 g	7,0 g	6,0 g	0,2 g	2,9 g
Seaweed	86 kcal	7,5 g	10,5 g	/	1,2 g	1,5 g
Sweet potato	106 kcal	1,3 g	17 g	5,5 g	4,3 g	2,4 g
Avocado	188 kcal	2,6 g	1,5 g	1,4 g	18,1 g	6,4 g
Edamame beans (frozen)	121 kcal	12 g	8,9 g	2,2 g	5,2 g	5,2 g
Oats	374 kcal	12,6 g	61,5 g	1,2 g	7,1 g	5,6 g
Spelt	356 kcal	12,2 g	65,8 g	/	2,6 g	10,5 g
Barley	333 kcal	11,0 g	59,5 g	1,5g	2,1 g	15,0 g
Chia seed	472 kcal	19,8 g	12,0 g	/	30,7 g	34,4 g
Quinoa	372 kcal	15,2 g	60,6 g	1,5 g	6,5 g	5,3g

Table 1: Nutritional values per 100g of the stimuli retrieved from voedingswaardetable.nl (2021) and nutritionvalue.org (2021)

Nutritional claims of the stimuli

Superfood	Nutritional claims
Strawberry	High in Vitamin C, potassium, folic acid, fiber, quercetin, kaempferol, and anthocyanins and contain vitamin A, magnesium, phosphorous, selenium, calcium, iron, and protein
Cherry	High in antioxidants, contain fiber, vitamin C, carotenoids, and anthocyanins
Blackberry	High in vitamin C, fiber, rich in antioxidants
Raspberry	High in antioxidants, vitamin C and K, and manganese
Goji berries	High in fiber, protein, iron, copper, selenium, vitamin A and C and antioxidants
Açai berries	High in antioxidants, healthy fats and fiber
Dragon fruit	High in vitamin C, antioxidants, and iron
Pomegranate	Rich in fiber, vitamins, minerals, bioactive plant compounds and antioxidants
Jackfruit	Contains almost every vitamin and mineral, and has a good number of fibers
Spinach	High in vitamin A, C, and K, beta-carotene, calcium, folate, manganese, iron, and magnesium
Kale	High in fiber, antioxidants, calcium, vitamin C and K, and iron
Carrots	High in beta-carotene, fiber, vitamin K, and antioxidants
Broccoli	High in vitamin K and C, folic acid, potassium, and fiber
Beetroot	Low in calories, and great source of fibers, folate, and vitamin C
Seaweed	Great source of protein, vitamin C, and calcium, and has a high mineral content with anti-viral, anti-bacterial, and anti-inflammatory properties
Sweet potato	High in fiber, vitamin A, D, and C, vitamin B5, B3, and B6, and manganese, magnesium and copper
Avocado	High in vitamins C, E, K, and B6, and riboflavin, niacin, folate, pantothenic acid, magnesium, potassium and healthy fats
Edamame beans	High in protein, folate, vitamin K, fiber, and provides all amino acids necessary
Oats	High in fiber, protein, vitamins, minerals, and antioxidants
Spelt	High in carbohydrates, dietary fiber, iron, magnesium, phosphorous, zinc, and vitamin B3
Barley	High in fiber, molybdenum, manganese and selenium, and contains copper, vitamin B1, chromium, phosphorus, magnesium and niacin
Chia seeds	High in omega-3 fatty acids, rich in antioxidants, fiber, iron, and calcium
Quinoa	High in antioxidants, protein, fiber, magnesium, B vitamins, iron, potassium, calcium, phosphorus, vitamin E, and contains the essential amino acids

Table 2: Nutritional claims retrieved from healabel.com (2021)

Water and carbon footprint and other issues of the stimuli

Superfood	Water footprint in liters to produce 1kg	Carbon footprint in kg CO2e to produce 1kg	Other significant issues
Strawberry	347	0.27	None
Cherry	1,411	0,78	None
Blackberry	962	0.28	None
Raspberry	413	0.27	None
Goji berries	967	Unknown, but far away transit is major factor when calculating carbon footprints	None, but it comes from faraway places (healabel.com)
Açai berries	967	Unknown, but far away transit is major factor when calculating carbon footprints	Land use change, native forest areas making room for açai production, low profits for farmers due to competition (Peña-Lévano, Adams, & Burney, n.d.; Weinstein & Moegenburg, 2004)
Dragon fruit	967	0.9	None
Pomegranate	962	0.45	None
Jackfruit	967	0.9	None
Spinach	292	0.34	None
Kale	322	1.6	None
Carrots	195	0.11	None
Broccoli	285	2.0	None
Beetroot	132	0.05	None
Seaweed	Unknown	Unknown	None so far, but it mostly comes from faraway places (healabel.com)
Sweet Potato	383	0.43	None
Avocado	1,981	0.9	Water depletion, land use change, uncontrolled deforestation, illegal farming, large agribusinesses dominating small farmers (Sommaruga & Eldridge, 2020)
Edamame beans	2,145	2.0	Deforestation in the Amazon area (healabel.com)
Oats	2,536	0.31	None

Spelt	1,644	1.8	None
Barley	1423	3.8	None
Chia seeds	Unknown	Unknown	Low profits for farmers due to competition (Weinstein & Moegenburg, 2004)
Quinoa	Unknown	Unknown	Land use change, loss of traditional varieties, changing farming practices, cultivation areas of domestic products from the country of origin are being replaced (Bedoya-Perales, Pumi, Talamini & Padula, 2018; Jacobsen, 2011).

Table 3: Water and carbon footprint retrieved from healabel.com (2021) and other issues based on literature review

Appendix C

Chosen stimuli pre-test

	Local superfoods	**Exotic superfoods**
Fruits	- Strawberry - Blackberry - Cherry - Raspberry	- Goji berries - Açai berries - Dragon fruit - Pomegranate - Jackfruit
Vegetables	- Spinach - Kale - Carrots - Broccoli - Beetroot	- Seaweed - Sweet potato - Avocado - Edamame beans
Grains/seeds	- Oats - Spelt - Barley	- Chia - Quinoa

Table 4: Chosen stimuli pre-test along three categories of superfoods

Appendix D

Chosen stimuli main survey

	Local superfoods	**Exotic superfoods**
Fruits	- Strawberry - Cherry - Raspberry	- Goji berries - Açai berries - Pomegranate
Vegetables	- Spinach - Carrots - Broccoli	- Seaweed - Edamame beans - Avocado
Grains/seeds	- Oats - Spelt	- Chia - Quinoa

Table 5: Chosen stimuli main survey along three categories of superfoods

Appendix E

Measurements of the main survey

Health perception	Four items (contain a lot of vitamins and minerals, keep me healthy, are nutritious, are good for my skin/teeth/hair/nails) on 7-point Likert scale ranging from strongly disagree to strongly agree
Sustainability perception	Seven items (have been prepared in an environmentally friendly way, have been produced in a way which has not shaken the balance of nature, are packaged in an environmentally friendly way, have been produced in a humane way, have been produced without child labor, have been produced without exploitation, are fair trade) on a 7-point Likert scale ranging from strongly disagree to strongly agree
Price	One item rating for each stimulus based on a 7-point Likert scale ranging from very cheap to very expensive
Familiarity	One item rating for each stimulus based on a 7-point Likert scale ranging from very unfamiliar to very familiar
Taste	One item rating for each stimulus based on a 7-point Likert scale ranging from very unpleasant to very pleasant with the option “not applicable” in case the respondent has never tasted it
Willingness to Pay (WTP)	Respondents had to indicate their WTP for each stimulus if they were to purchase 250g of these stimuli on the basis of a slide bar that ranged between 0 and 15 euros
Choice task	A simple selection task was performed. For each superfood category (fruits, vegetables, grains/seeds), the respondent was asked to pick two to three superfoods of that specific category they would purchase
Demographics	Gender, age, income, degree, community (urban, suburban, rural)

Table 6: Measurements of the main survey

Appendix F

Cronbach's alpha health scale

Variable	Number of items	Cronbach's alpha
Health strawberry	4	0,874
Health cherry	4	0,899
Health raspberry	4	0,886
Health goji berries	4	0,920
Health açai berries	4	0,917
Health pomegranate	4	0,863
Health spinach	4	0,814
Health carrot	4	0,847
Health broccoli	4	0,770
Health seaweed	4	0,881
Health avocado	4	0,846
Health beans	4	0,919
Health oats	4	0,864
Health spelt	4	0,844
Health chia	4	0,899
Health quinoa	4	0,871

Table 7: Cronbach's alpha health scale

Appendix G

Cronbach's alpha sustainability scale

Variable	Number of items	Cronbach's alpha
Sustainability strawberry	7	0,873
Sustainability cherry	7	0,887
Sustainability raspberry	7	0,850
Sustainability goji berries	7	0,921
Sustainability açai berries	7	0,914
Sustainability pomegranate	7	0,873
Sustainability spinach	7	0,865
Sustainability carrot	7	0,880
Sustainability broccoli	7	0,843
Sustainability seaweed	7	0,894
Sustainability avocado	7	0,913
Sustainability edamame beans	7	0,927
Sustainability oats	7	0,914
Sustainability spelt	7	0,920
Sustainability chia	7	0,936
Sustainability quinoa	7	0,918

Table 8: Cronbach's alpha sustainability scale