



Department  
of Business and Management

Course of Advanced Marketing Management

# The fight against food waste: an empirical study on the antecedents of the primary grocery shoppers' rejection of suboptimal food

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## **ABSTRACT**

Food waste is one of the many problems society is generating in this 21<sup>st</sup> century. According to the WFP (World Food Program), one third of food produced for human consumption is wasted every year. This amounts to about 1.3 billion tons per year. Furthermore, all food produced but never eaten would be sufficient to feed two billion people, twice the number of people that suffer hunger around the world.

One of the reasons contributing to food waste is the rejection of suboptimal food also called “ugly food”. These are products that are visually not appealing and that are perceived as of lesser value than other items of the same kind by the consumers. According to the United Nations’ Food and Agriculture Organization (FAO), 25 to 30 per cent of carrots do not make it to supermarket shelves because of physical or aesthetic defects. “Ugly fruits and vegetables that do not meet the ‘standards’ in shape, colour and size are likely screened out throughout the supply chain on farms, during processing, distribution, storage, in retail stores and food service operations, even though they are perfectly delicious and nutritious” said Kadoorie farm’s agriculture officer, Queenie Shum. Marketers have the obligation to contribute to the reduction of this problem through targeted marketing actions.

In the first chapter of this thesis, the grocery industry and its recent trends will be analyzed. Then the food waste problem will be conceptualized along with some of the marketing actions realized on the market to reduce food waste. In the second chapter of this thesis, the current literature on ugly food will be investigated mainly exploring barriers and motivators of the consumption of suboptimal food and proposed marketing actions. In the third and last chapter, an empirical study will be carried out, in order to analyze the antecedents of the rejection of ugly food. From the findings a reflection on the possible marketing actions will be conceptualized.

# Chapter 1

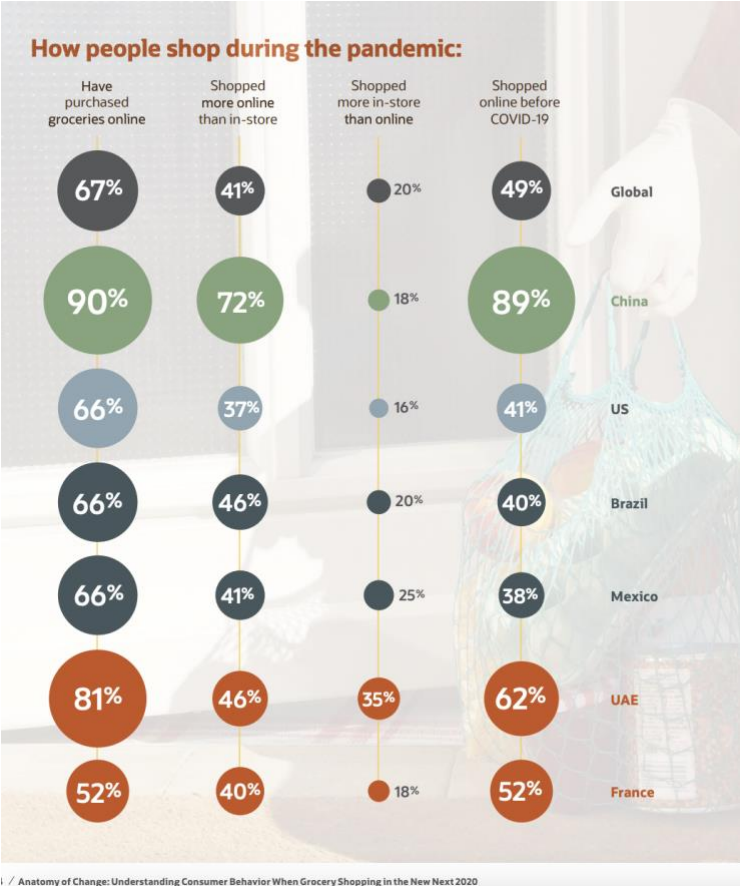
## Contextualization of the food waste problem

### 1.1 The grocery industry and recent trends

During the past two decades, grocery has shifted from an industry dominated by small grocers serving local markets to multinational retailers present in international markets. The grocery industry is a competitive environment where many players are active. In the last five years it grown exponentially thanks to a stronger economy. Over the next five years, industry revenue will continue to increase as the economy recovers after the pandemic. Another driver of the success of this industry is the fact that now consumers tend to live more in urban cities and purchase less from smaller retailers or grow their own products. This business did not suffer the effects of the Covid-19 pandemic, in fact revenue increased significantly in 2020 as a result of retailers being able to stay open during lockdowns and people buying more food than usual. Furthermore, the smart working has helped raising the revenues of the industry, people stayed more at home and needed more food.

The pandemic although it did not impact the revenues of the industry accelerated many of the trends the industry was already seeing. For example, the market became more **volatile** with the shift in shopping of many consumers who turned to grocery delivery and pickup. Over the five years to 2026, industry operators are expected to experience heightened competition from online operators. Over the five years to 2021, many supermarket operators shifted to **omnichannel offerings** to remain competitive with e-tailers, such as Amazon.com Inc. (Amazon). This trend is expected to continue over the next five years, as overall e-commerce sales are expected to rise, indicating a continued shift toward virtual shopping. Notably, 51% of respondents to an Oracle study said that they had rarely or never shopped online for groceries before the pandemic began. Despite being able to shop in-store, 61% of consumers reported making grocery purchases online during the pandemic. Of these, 41% of consumers reported shopping

online more often than in-store prior to the pandemic, and 20% shopped in-store more frequently than online<sup>1</sup>.



**Graph 1**

*Source: Understanding Consumer Behavior when grocery shopping in the new next 2020 (2021). Oracle retail, Anatomy of change*

**Merger and acquisition activity** is expected to continue as large operators seek to increase their economies of scale and expand their geographic reach, due to increased competition and high market saturation<sup>2</sup>. Agility and adaptability have become critical to the sustainability of grocery businesses.

<sup>1</sup> Understanding Consumer Behavior when grocery shopping in the new next 2020 (2021). Oracle retail, Anatomy of change  
<sup>2</sup> Diment, D. (2021) *Supermarket & Grocery Stores in the US*. IBIS World

**New delivery models:** Consumers drive the creation and adoption of new grocery delivery models to mirror their retail and service consumption. New delivery models such as BOPIS, curbside pickup, and direct-to-door continue to grow in popularity, reflecting a change in consumer behavior and, consumer experience with these new delivery models drives loyalty. One to two-day delivery is becoming more common, often setting delivery expectations. Inaccurate delivery estimates negatively impact loyalty and continued patronage. As subscription services and direct-to-consumer models expand, grocers are reimagining brick and mortars to maximize their real estate investments to support new consumption models.

**Shifting demographics** are anticipated to significantly influence the industry over the next five years. Millennials have emerged as the most populous generation in the United States. As this age group's level of disposable income rises, industry operators are expected to increasingly cater their services to attract these individuals. Millennials are typically characterized as being health-conscious and value-driven. The shopping experience continues to be a significant driver of consumer preference. The checkout speed remains a priority for 71% of consumers and knowledgeable staff (57%). In addition, consumers shopping in stores during the pandemic had new expectations for the shopping experience from all retailers.

During the pandemic, many consumers turned to **new brands** when their favorite items went out of stock. A Grocery Retail Consumer Report conducted by Untold Insights and Oracle showed that 86% of U.S. customers explored store-owned brands/private labels during the inventory shortages of the pandemic. Also, interesting to note that consumers in UAE (93%) and China (90%) were the most adventurous in trying new private brands, while Germany (63%) and France (67%) were less reluctant to explore them. Furthermore, interesting to note that consumers in UAE (93%) and China (90%) were the most adventurous in trying new private brands, while Germany (63%) and France

(67%) were less reluctant to explore them<sup>3</sup>. The rising popularity of **private label** products suggests that grocery retailers will compete on the strength of brand loyalty.

Nonetheless, with the increase of super-centers retailers and the consequent decrease of local grocers a major problem arose: food waste. Would you go into a supermarket, buy three shopping bags of food, and then immediately throw one away? Statistically, that's what's happening to our food today. One third of all the food that is produced for human consumption is wasted. There are three main definition of food waste. The Food and Agriculture Organization (FAO) defines food waste as wholesome edible material intended for human consumption, arising at any point in the food supply chain that is instead discarded, lost, degraded, or consumed by pests<sup>4</sup>. Secondly, Stuart adds to the FAO's definition, by stating that food waste should also include edible material that is intentionally fed to animals or is a by-product of food processing diverted away from the human food chain.<sup>5</sup> Finally, Smil suggests that food waste covers the definitions above, but adds over-nutrition, the gap between the energy value of consumed food per capita and the energy value of food needed per capita.<sup>6</sup> When we waste food, we waste all the resources that go into producing and transporting the food, such as land, water and fuel use, without gaining any of the benefits of feeding people. When food ends up in landfill it also contributes to greenhouse gas emissions (food waste generates 8%-10% of global greenhouse gas emissions, it emits more greenhouse gases than all single countries except China and the US). The highest carbon footprint of wastage occurs at the consumption phase (37% of total), whereas consumption only accounts for 22% of total food wastage. This is because one kilogram of food that is wasted further along the supply chain will have a higher carbon intensity impact than at earlier stages.<sup>7</sup> Food waste has, indeed, a negative impact on the environment 96% of wasted food is left to decompose in landfills, resulting in the release of methane, a greenhouse gas that traps

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<sup>3</sup> Understanding Consumer Behavior when grocery shopping in the new next 2020 (2021). Oracle retail, Anatomy of change

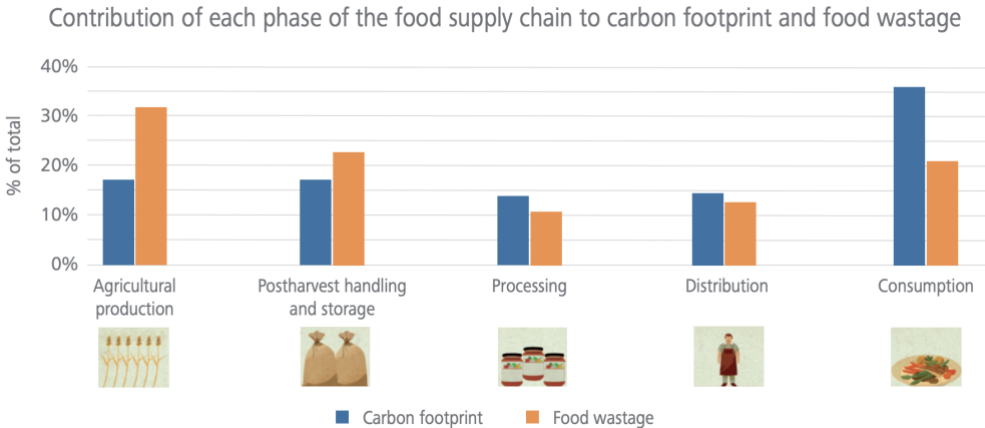
<sup>4</sup> Food loss prevention in perishable crops. FAO. Rome: bulletin, no. 43. FAO Statistic division (1981)

<sup>5</sup> Stuart T. (2009). Waste. Uncovering the global food scandal. Penguin Books, London

<sup>6</sup> Smil V. (2004). Improving efficiency and reducing waste in our food system. Environ. Sci

<sup>7</sup> *Food Wastage Footprint & Climate change*. Food and Agriculture Organization of the United Nations. (2015)

solar radiation and contributes to climate change.<sup>8</sup> In the EU, around 88 million tonnes of food waste are generated annually with associated costs estimated at 143 billion euros<sup>9</sup>. While an estimated 20% of the total food produced is lost or wasted, 33 million people cannot afford a quality meal every second day<sup>10</sup>.

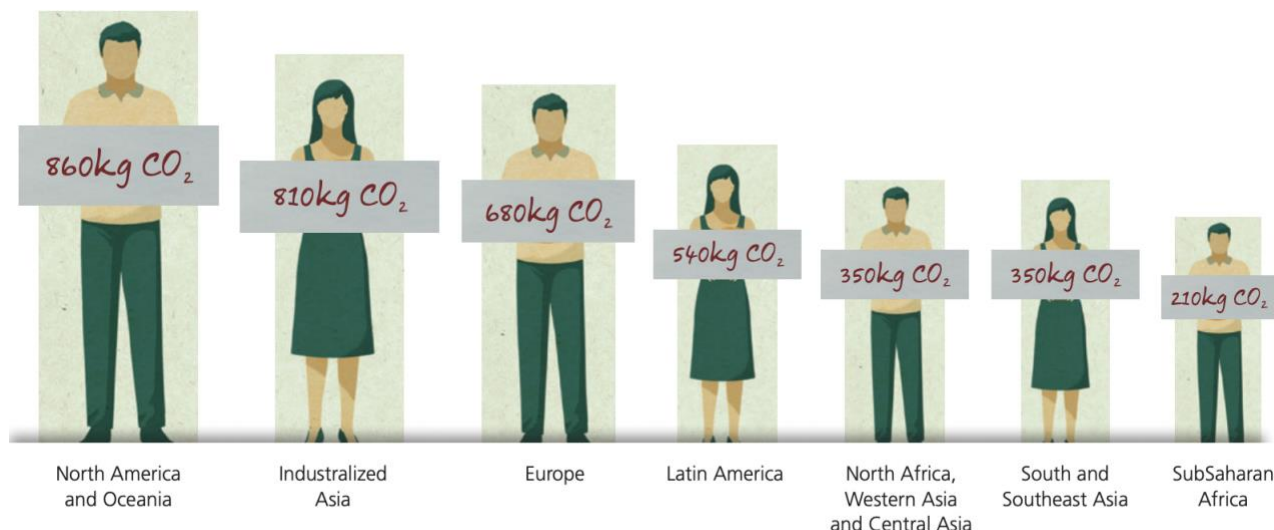


**Graph 2** Source: FAO, *Food wastage footprint & climate change, 2015*

On a global average, per capita food wastage footprint on climate in high income countries is more than double that of low-income countries, due to wasteful food distribution and consumption patterns in high income countries. In developing countries, most of the food losses occur in the first stages of the FSC<sup>11</sup>. This is due to poor harvesting technologies, lack of transport and poor storage in combination with extreme climatic conditions. In developed countries food waste during the consumption stage accounts for over 40% of the total food losses and waste in the FSC.<sup>12</sup>

<sup>8</sup> Environmental Protection Agency 2017  
<sup>9</sup> Stenmarck A., Jensen C., Quested T., Moates G. (2016). Estimates of European food waste levels. *FUSIONS*  
<sup>10</sup> Eurostat, 2018  
<sup>11</sup> Gustavsson J., Cederberg C., Sonesson U., Van Otterdijk R., Meyback A. (2011). Global Food Losses and Food waste. Extern, Causes and Prevention  
<sup>12</sup> Ibidem





Source: FAO, *Food wastage footprint & climate change, 2015*

In developing countries, the most significant losses are due primarily to limits in the cultivation and harvesting, the lack of food-chain infrastructure, transportation, and investment in technologies;<sup>13</sup> while in developed countries, surplus food generation, along with consumer behavior, are the main causes.<sup>14</sup> The 2030 Agenda for Sustainable Development reflects the increased global awareness of the problem. One of the United Nations target for 2030 is “**Responsible consumption and production**” (12). “Achieving this target has the potential to contribute to several dimensions of the 2030 Agenda, such as eradicating food insecurity and hunger, improving sustainable water management, addressing climate change, and improving sustainability of both marine and terrestrial ecosystems” (FAO).

According to FAO, there is a difference between Food loss and food waste. Food loss is the decrease in the quantity or quality of food resulting from decisions and actions by food suppliers in the chain, excluding retailers, food service providers and consumers. Empirically, it refers to any food that is discarded, incinerated or otherwise disposed of along the food supply chain from harvest/slaughter/catch up to, but excluding, the retail

<sup>13</sup> Godfray, H. C., Beddington, J. R., Crute, I. R., Haddad, L., Lawrence, D., Muir, J. F., Pretty, J., Robinson, S., Thomas, S. M., & Toulmin, C. (2010). Food security: The challenge of feeding 9 billion people. *Science*

<sup>14</sup> Buzby, J. C., & Hyman, J. (2012). Total and per capita value of food loss in the United States. *Food Policy*

level, and does not re-enter in any other productive utilization, such as feed or seed. Food waste refers to the decrease in the quantity or quality of food resulting from decisions and actions by retailers, food service providers and consumers. Food is wasted in many ways:

- Fresh produce that deviates from what is considered optimal, for example in terms of shape, size and color, is often removed from the supply chain during sorting operations.
- Foods that are close to, at or beyond the “best-before” date are often discarded by retailers and consumers.
- Large quantities of wholesome edible food are often unused or left over and discarded from household kitchens and eating establishments.

On one issue everyone can agree on: food waste is real problem nowadays and marketers need to play their part in contributing to solve this problem. Large amounts of products get thrown away everyday due to the failure of selling aesthetically unattractive products. An unattractive produce is that which has a significant natural aesthetic deviation in shape and/or color from prototypical produce but has no damage or disease that could affect safety, taste, or nutrition.<sup>15</sup> Consumers, in fact, expect that the products they buy look good all year round, a demand that is impossible to fulfill.

According to the U.S. Department of Agriculture (USDA) in the US alone, \$15.4 billion of edible produces get thrown away each year. Farmers discard up to 30% of produce simply because they do not consider it “pretty enough” for retail sale.<sup>16</sup> A carrot, for example, often faces many obstacles before even getting to a supermarket. It must pass the rigid requirements that supermarkets have for their fruits and vegetables. Sometimes, carrots must go through photographic sensor machines that analyze them for aesthetic

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<sup>15</sup> Hooge, I. E. de, Oostindjer, M., Aschemann-Witzel, J., Normann, A., Loose, S. M., & Almli, V. L. (2016, September 30). *This apple is too ugly for me!: Consumer preferences for suboptimal food products in the supermarket and at home.*

<sup>16</sup> Berkenkamp, JoAnne, Nennich, Terry (2015), “Beyond Beauty: The Opportunities and Challenges of Cosmetically Imperfect Produce,” Report No. 1: Survey Results from Minnesota Produce Growers

defects. If they are slightly bent, not bright orange, have a blemish or are broken, they are moved into the pile intended for livestock feed even though they are still fit for human consumption. In total about 25-30% of carrots, don't make it to the grocery store because of physical or aesthetic defects.<sup>17</sup>

Several studies of consumer psychology show that people tend to attribute a “beauty premium” to attractive individuals and objects and penalize unattractive produce with an “ugliness penalty”. Studies have also shown that unattractive individuals are perceived as less intelligent and less sociable than attractive individuals.<sup>18</sup> There is a common stereotype “what is beautiful is good”, such that attractive individuals are evaluated as more intelligent, socially skilled, ethical, and occupationally competent.<sup>19</sup> In a business paper, that will be further analyzed in the next chapter, published by Mookerjee and colleagues at British Columbia university states: “We show that consumers saddle unattractive produce with an “ugliness penalty” that negatively affects expectations of the produce’s key attributes—particularly tastiness—and thus affects purchase intentions. Further, while price discounts can motivate consumers to purchase unattractive produce, we show that “ugly” labeling is most effective when associated with a moderate price discount, because large discounts in conjunction with the “ugly” label send conflicting signals regarding the quality of the produce”.<sup>20</sup>

More than 82 million people go hungry every day, while the world as a whole wastes or loses 1/3 of what is produced. In the case of fruits and vegetables, almost half (45%) is wasted. In our world of increasing extreme weather events and changes in climate, saving ugly fruit isn't only an issue of ethics, it is a question of resources. We, as marketers, must act to encourage the sale of these products.

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<sup>17</sup> *Beauty and taste are one the inside*. Food and Agriculture Organization of the United Nations. (2018)

<sup>18</sup> JH., G. A. M. L. (n.d.). *Stereotype directionality and attractiveness stereotyping: Is Beauty good or is ugly bad?* Social cognition

<sup>19</sup> Dion, Karen, Berscheid, Ellen, Walster, Elaine (1972), “What Is Beautiful Is Good,” *Journal of Personality and Social Psychology*

<sup>20</sup> Mookerjee, S. (S., Cornil, Y., & Hoegg, J. A. (2021). From waste to taste: How “ugly” labels can increase purchase of unattractive produce. *Journal of Marketing*

## 1.2 The food waste issue

The global population is quickly growing, urbanizing, and becoming wealthier, leading to a diversification of dietary patterns and an increase in demand for land, resources, and greenhouse gas intensive foods, such as meat and dairy. It is estimated that continuing population and consumption growth worldwide will lead to an increase in the global demand for food for at least 40 more years, leading to intensified use of natural resources, especially land, water, and energy.<sup>21</sup> These difficulties are exacerbated by the world's changing environmental conditions which cause food production to be unpredictable and increasingly difficult globally (Garnett, 2014). It is becoming clear that the many negative environmental effects of food systems must be minimized to ensure enough food is available to feed the world's growing population in a sustainable way (Tilman et al., 2001). Shifting toward more sustainable food systems is both essential and urgent, and actions are needed throughout food systems on moderating demand, producing more food, improving governance, and reducing waste.<sup>22</sup> Even though food waste is a popular topic currently very little food wasted is recovered.

The main drivers of food waste are modernization of food system, industrialization, economic growth, urbanization, globalization, cultural factors (such as attitudes, eating habits, personal preferences, values etc.), socio-demographic factors (es. Aging population), policies driving food waste generation. At the retail and institutional levels, food is generally wasted due to choices regarding quantities of available food and visual qualities of food. Specific causes include (1) un-purchased specialty holiday food; (2) damaged packaging; (3) damaged or inadequately prepared items; (4) overstocking or over preparation of food; (5) routine kitchen preparation waste; and (6) out-grading/quality control.<sup>23</sup> As previously mentioned, many grocers discard food in order

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<sup>21</sup> Godfray, H. C., Beddington, J. R., Crute, I. R., Haddad, L., Lawrence, D., Muir, J. F., Pretty, J., Robinson, S., Thomas, S. M., & Toulmin, C. (2010). Food security: The challenge of feeding 9 billion people. *Science*

<sup>22</sup> Garnett, T. (2014). Three Perspectives on Sustainable Food Security: Efficiency, demand restraint, food system transformation. what role for life cycle assessment? *Journal of Cleaner Production*

<sup>23</sup> Buzby, J. C., & Hyman, J. (2012). Total and per capita value of food loss in the United States. *Food Policy*

to respect visual standards such as shape, color and size. Buzby et al. (2015) found that in U.S. supermarkets, the percentage of fresh produce delivered to U.S. supermarkets that was not sold for any reason ranged from 2.2 (sweet corn) to 62.9 (turnip greens) percent; the range for fruits was smaller, ranging from 4.1 (bananas) to 43.1 (papaya) percent. These differences may be attributed to packaging differences, susceptibility to damage, and the public's knowledge and familiarity with certain foods.<sup>24</sup>

Food waste being, if it was a country, the third-largest polluting country in the world has got a lot of attention. Many brands were created in order to reduce food waste around the world. For example, in the US, the label on a bottle of the cold-pressed juice Wtrmln Wtr does not mention food waste, but the problem was the inspiration for the company, which launched six years ago. When the founders learned that hundreds of millions of pounds of watermelon stayed in fields to rot because the fruit was judged too unattractive for sale in supermarkets, they decided to create a product that could help avoid that waste. The juice is now available nationally, and the company is growing 30% year-over-year. Just like Wtrmln Etr many startups are on the market with innovative products that give to the food wasted a second life.

In Europe a major player is Too good to go, an app which allows you to save unsold food of restaurants, bars, bakeries, and supermarkets by buying at a reduced price the leftovers. You simply purchase a box of product with a couple of euros and pick up your box at your favorite food retailer available. Via the app, a so-called 'magic box' can be bought, because the buyer does not know in advance which food products are in the 'magic box'. After purchasing the 'magic box', it has to be picked up by the consumer who made the purchase, often within a defined time slot to assure food quality. In this way, the local entrepreneur is supported and generates less food waste and will possibly get new customers. The "Too Good To Go" app is available in 13 European countries and has been downloaded 15 million times. This app was especially successful with the Millennials generation, which currently have a lower income and are more

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<sup>24</sup> Ibidem

environmentally conscious. Too good to go is this popular thanks to a different marketing approach, different from other sustainable platforms which were only targeting the niche of sustainable aware consumers. Too good to go targets a broader public regardless of their consciousness. “Problematization” mechanism is what Too Good To Go’s marketing work does to problematize the practice of food waste, highlighting the issue, and its sustainability impacts using marketing communication of environmental and sustainability knowledge and increasing consumers’ affection towards these impacts. Then, “offering a solution”, is analyzed as Too Good To Go offering itself as a solution to this problem through marketing work, but also surrounding itself with a sustainability image, enhancing consumers’ trust and attitude to the business. Moreover, Too Good To Go makes consumers responsible, including them as part of this solution, through their engagement with the new sustainable practice that Too Good To Go offers and empowering them reframing the value of food waste as something “worth to fight for”.<sup>25</sup>



*Source: Too good to go Google play*

There are multiple organizations involved in this food waste industry. The main international organization involved in food waste reduction is *FAO*, The Food and Agriculture Organization of the United Nations founded in 1945 and with an HQ in

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<sup>25</sup> Giménez H.C. (2019). Normalizing sustainable consumption: How marketing is used to fight food waste. Lund University Thesis

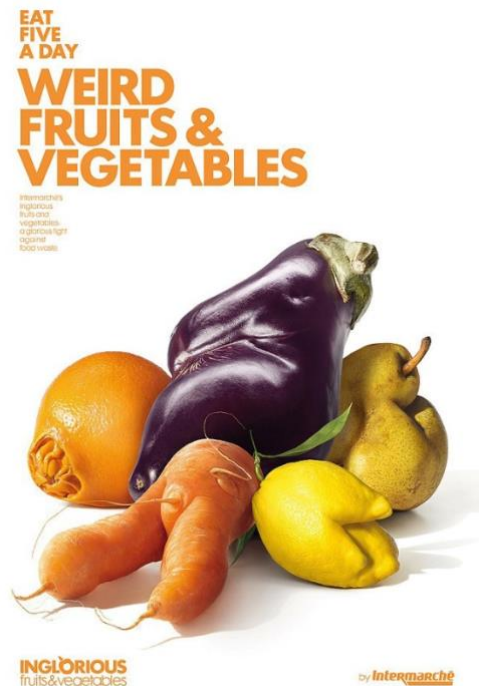
Rome, with field offices around the world. The European Union and the EU countries are committed to meeting Sustainable Development Goals adopted in September 2015, which targets to reduce per capita food waste at the retail and consumer level by 2030. According to the latest estimation made by FUSIONS 70% of food waste in Europe comes from these two sections. In order to achieve these goals, the EU Platform on Food Losses and Food waste was established in 2016. Its main objective is to define measures to prevent food waste, share best practices and evaluate the progress made over time. The European Union as part of its “Farm to fork Strategy’s action plan” will propose legally binding targets for food waste reduction by 2023. These targets will be the baseline for EU countries to monitor their food waste levels. In 2015, the European Commission organized the international conference “Fight Food waste, Feed the planet” in the context of the 2015 Milan Expo, which centered on the theme of global food and nutrition challenges.

In France, it is worth mentioning the awareness campaign of Intermarché “Inglorious fruits and vegetables”, and the recent regulation that compels all supermarkets with a sales area exceeding 400 m<sup>2</sup> to establish agreements with charities with the purpose of donating them the unsold food. In Italy as well, a law dealing with food waste redistribution initiatives at different stages of the chain has been released in 2016. In Italy there are also different start-ups involved. The 2 most popular ones are:

- **Last minute market**, from 2022 is part of the European platform on food losses and food waste. Last Minute Market is a social enterprise, Spin Off of the University of Bologna, founded in 1998 as a research initiative. Today, is an entrepreneurial society working at Italian national level, developing local projects aimed at the prevention of waste. LMM was created to assist companies in recovering surplus food, turning waste into a resource. The services that they offer are recovery of surpluses, data analysis, training and communications. Their

main partners are Barilla, MasterChef Italia, Despar supermarkets, Gruppo Hera, Granarolo, Carrefour, Sky and many more.<sup>26</sup>

- **Food for soul**, is a cultural project founded by Chef Massimo Bottura and Lara Gilmore to shine light on the invisible potential of people, places, and food. Through their programs, they build strategic alliances and resources that can create a safety network of systems that allow communities to be responsive to the social, cultural, ecological, and economic changes they face.<sup>27</sup>



Source: Intermarché marketing campaign

<sup>26</sup> Lastminutemarket website

<sup>27</sup> Food for soul website



### 1.3 Marketing actions to reduce food waste

As mentioned already one third of food destined for human consumption is wasted globally, and much of the food waste comes from high-income or developed countries is caused by poor marketing practices, consumer behavior, and consumption patterns. That is why marketing has a strong potential to influence consumer behavior regarding food waste reduction in households and at the retail level. Despite the availability of highly efficient farming practices, better transport, storage, and processing facilities, consumerism, and mass marketing lead to major food wastage.<sup>28</sup> At the consumer level, inadequate purchase planning and expiring best-before dates cause large amounts of waste, along with quality, aesthetic, or appearance standards.<sup>29</sup>

Marketing in this context can act in different stages, for example in **distribution**. Worldwide many initiatives aim at the reduction and recuperation of food products that can no longer be sold but are still edible. This means that food retailers' partner with charitable groups to redistribute food that would otherwise go uneaten. For example, in America there is the Feeding America national food banks' network that coordinates the distribution of edible food and grocery across the United States. Another common practice in reducing food waste is new retailing concepts like too good to go, mentioned before. Consumers expect a wide range of products to be available in retail stores and for store shelves to be well filled when shopping.<sup>30</sup>

However, large quantities of food products on display and a wide range of products in supply lead to a higher food waste, since continually replenished supplies increases the likelihood of some of them reaching the sell-by date before being sold and thus wasted.<sup>31</sup> Additionally, retailers could remove food products at the store that are duplicative with

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<sup>28</sup> Finn, S. (2013). Valuing our food: Minimizing waste and optimizing resources: The scope and significance of the global food waste problem. Pennsylvania, USA: University of Pennsylvania Scholarly Commons

<sup>29</sup> Parfitt, J., Barthel, M., & Macnaughton, S. (2010). Food waste within food supply chains: Quantification and potential for change to 2050. *Philosophical Transactions of the Royal Society*

<sup>30</sup> Stuart T. (2009). *Waste. Uncovering the global food scandal*. Penguin Books, London

<sup>31</sup> Ibidem

the existing assortment offer or delete products that consumers perceive as interchangeable or substitutive of the current assortment.<sup>32</sup>

Marketing can also influence with the **communication**. Most consumers are unaware of the food waste problem. Through awareness campaigns it can influence consumer behavior. “In this vein, one initiative was developed by Sainsbury’s and Morrison’s—UK grocery retailers—that created waste reduction campaigns, highlighting the food waste issue among consumers who might otherwise be uninformed, reaching customers through in-store displays, brochures, and websites that contain information on storage and shelf lives of food products. Moreover, governments and organizations have developed initiatives to change the way people view their food, to appreciate the waste that takes place, and to discourage wasteful practices. Some interesting initiatives are the Food Waste Reduction Alliance in the United States, the Waste and Resource Action Program (WRAP) in the UK, the Retailers’ Environmental Action Program (REAP) in the EU, the awareness campaign “Stop Wasting Food” in Denmark, or the “This is Rubbish” campaign in UK”.<sup>33</sup> Also, education campaigns can help for example the “Love food, Haste waste” UK campaign with helpful guidelines in waste reduction through in-store waste reduction initiatives, interactive events, cooking demonstrations, and recipe sharing. Another action in the communication context is the use of social marketing. **Social marketing** employs commercial marketing strategies to try to solve social problems and to effect voluntary behavior change. An important aspect of social marketing is *message framing*, which is the tone or valence in which the information related to the behavior is conveyed.

At the **production** level marketing can help as well. For example, regarding reduced portion sizes at restaurants or caterings. Since 1970s the portions of food have been increasing constantly. It is common to believe the bigger the size the higher the value.

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<sup>32</sup> Lebersorger, S., & Schneider, F. (2014). Food loss rates at the food retail, influencing factors and reasons as a basis for waste prevention measures. *Waste Management*

<sup>33</sup> Calvo-Porrá, C., Medín, A. F., & Losada-López, C. (2016). Can marketing help in tackling food waste?: Proposals in developed countries. *Journal of Food Products Marketing*

In the first place, restaurants could use small serving bowls, which should be filled only as requested by customers, adapting the portion sizes to their customer needs.<sup>34</sup> Second, many restaurants serve buffets at fixed prices, encouraging customers to fill their plates with more food than they can actually eat;<sup>35</sup> however, food waste could be reduced by serving food in measured portions, rather than in a buffet.<sup>36</sup> Another interesting initiative is to remove “all-you-can-eat” restaurants and replace them with “pay-by-weight” restaurants, where the weight of the food plate determines the cost of the meal.<sup>37</sup> Additionally, restaurants should encourage consumers to take leftovers home for later consumption, offering their customers to pack up their extra food. Finally, another marketing action is not using of meals for presentation purposes only.<sup>38</sup>

Marketing can also contribute in the “Ugly food movement”. As we will see in the following chapters the main objective of this movement is to reduce food waste for products that would normally be rejected for their visual appearance. Food retailers are currently marketing ugly food not using the word ugly to describe the produce. Initiatives have been developed by the French retailer Intermarché that uses the term *inglorious* to name the ugly produce; the UK retailer Asda promotes “wonky fresh produce”; Woolworths in Australia released the “Odd Bunch” campaign saving 16 thousands tons of produce in one year; Canada’s retailer Loblaws promoted its “naturally imperfect range.” At the same time, Rewe Group in Germany offers “nonconformist produce,” and Edeka (Germany) also launched the “Nobody is perfect” produce. Furthermore, the German catering company Culinary Misfits uses only ugly produce for cooking. Finally, the UK food retailer Harris Farms with its “Imperfect Picks” campaign was able to save 2 million kilos of food.

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<sup>34</sup> Betz, A., Buchli, J., Göbel, C., & Müller, C. (2015). Food waste in the Swiss food service industry: Magnitude and potential for reduction. *Waste Management*

<sup>35</sup> Stuart T. (2009). *Waste. Uncovering the global food scandal*. Penguin Books, London

<sup>36</sup> Halloran, A., Clement, J., Kornum, N., Bucarariu, C., & Magid, J. (2014). Addressing food waste reduction in Denmark. *Food Policy*

<sup>37</sup> Lipinski, B., Hanson, C., Lomax, J., Kitinoja, L., Waite, R., & Searchinger, T. (2013). Reducing food loss and waste. Working Paper, World Resources Institute, Washington, DC

<sup>38</sup> Betz et al., 2015 Ibidem

Consequently, the “ugly food movement” could potentially create a market where grocery retailers are able to set very low prices for subjectively imperfect produce, while being an enormous chance for retailers to differentiate themselves.<sup>39</sup> Another action could be the development of new products. Other marketing actions that help to tackle food waste are related to developing new products. One initiative is carried out in Denmark, by which restaurants created a partnership to produce fish snacks rich in omega-3 from fish that was no longer saleable and non-edible. Another relevant initiative is the company Rejuce (UK) that takes food surplus from local markets and transforms it into healthy juices, soups, and smoothies, given that the initial produce is unrecognizable and aesthetic standards do not matter. Finally, some authors have proposed the development of produce with longer shelf life.<sup>40</sup>



*Source: Woolworths website- Marketing campaign*

<sup>39</sup> Calvo-Porrá, C., Medín, A. F., & Losada-López, C. (2016). Can marketing help in tackling food waste?: Proposals in developed countries. *Journal of Food Products Marketing*

<sup>40</sup> Winkworth-Smith et al., 2014 and Ibidem



*Source: Harris farm website- Marketing campaign*

Marketing can also intervene on the **packaging**. Offering the right size of products, or smaller sizes to help the consumer buy only what he needs. Instead of discounting larger sizes discount the smaller ones. From the research of Cavo-Porrà et al. published in 2016 in the Journal of food products marketing: “Considering that consumers purchase food products and make decisions on what is available to them, food retailers could develop actions to reduce food waste. Previous studies show the great potential of packaging in preventing and reducing food waste.<sup>41</sup> One proposal consists in extending the shelf life through the design of better and smarter packaging to help keeping food fresh for a longer period<sup>42</sup> and to protect food products from damage, since damaged packaging or inadequate wrapping is one key reason of food waste. Other initiatives are related to specific packaging decisions such as offering packages that are “easy to open” and “easy to empty,” as well as adding a lid to the package to make it resealable.<sup>43</sup>

<sup>41</sup> Williams, H., Wikström, F., Otterbring, T., Löfgren, M., & Gustafsson, A. (2012). Reasons for household food waste with special attention to packaging. *Journal of Cleaner Production*

<sup>42</sup> Halloran, A., Clement, J., Kornum, N., Bucarariu, C., & Magid, J. (2014). Addressing food waste reduction in Denmark. *Food Policy*

<sup>43</sup> Williams, H., Wikström, F., Otterbring, T., Löfgren, M., & Gustafsson, A. (2012). Reasons for household food waste with special attention to packaging. *Journal of Cleaner Production*

Finally, another action is developing a new procedure in which damaged packages are opened, spoiled food products removed, and the remaining items are sold loose.<sup>44</sup> Some food manufacturers and retailers have already developed some actions. One initiative was developed by Morrisons' (UK) through the "Great Taste, Less Waste" campaign, which consisted in the introduction of a new packaging system and best-kept stickers on fresh food to show customers the best way of preserving food and allowing customers who need smaller food quantities to purchase a single product at a time. Similarly, Marks & Spencer (UK) redesigned and improved their food packaging to keep the product fresh for as long as possible; and, finally, the food manufacturer Heinz launched an innovative fridge pack, which could be kept in the refrigerator longer after opening." Another great practice would be to get rid of the packaging. We are starting to see in various supermarkets aisle with bulk products.

Retailers could reduce the price for substandard or low-quality food products. They could also implement price discounts when a product is near its expiration date and reduce sales promotions on other products that encourage consumers to purchase excessive quantities. For example, the buy one get one for free or the three for two. Food retailers could use new promotional mechanics to tackle food waste. One example is the UK retailers Sainsbury's and Tesco, who introduced the "buy one, get one later" promotion, to stagger purchases over time. This way, customers can buy one food item and pick up a second one later for free, rather than having to purchase both food products at the same time, reducing food spoiling.

Another initiative was developed by the retailer REMA1000 (Denmark), which stopped the "buy 3 × 2" sales promotions and only sells by the piece in an attempt to reduce food waste.<sup>45</sup>

A quick hint must also be given to companies that implement a food waste policy in their operations. In the consequently mentioned studies, companies which implement

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<sup>44</sup> Halloran, A., Clement, J., Kornum, N., Bucarariu, C., & Magid, J. (2014). Addressing food waste reduction in Denmark. Food Policy

<sup>45</sup> Halloran, A., Clement, J., Kornum, N., Bucarariu, C., & Magid, J. (2014). Addressing food waste reduction in Denmark. Food Policy

food waste reduction initiatives in their daily operations (production level) are proven to reap financial benefits of their actions. After evaluating cost and benefit data for 1,200 business sites across 700 companies in 17 countries, researchers from the World Resources Institute (WRI) and the Waste & Resources Action Program (WRAP) found that for most companies, for every \$1 invested in reducing food waste, they saved \$14 or more. That is why it is important to identify ways to reduce food waste both at the distribution level and at the consumer level and production level.

## Chapter 2

### Current literature on Ugly food

#### 2.1 The Ugly food concept

Ugly food is commonly known as suboptimal food, food that consumers perceive as of lesser value than other items of the same kind. This is related to foods nearing the indicated date, foods deviating in appearance or foods showing packaging damage. Most consumers judge food by its appearance. This assessment of suboptimality by the consumer can occur both at the point of purchase in the store and the point of consumption at home. This consumers' behavior influences the supermarket and supply chain actions upstream, leading to food wasted due to the anticipated consumer reaction.<sup>46</sup> In today's beauty-obsessed world even the food has to look pretty for the consumer. Supermarket companies have set high cosmetic standards for products and consumers have fallen for them. "Companies have sprung up around the world to draw attention to the value of imperfect produce. Misfits Market in the US city of Philadelphia sells subscription boxes of ugly fruit and vegetables, which the company buys directly from farms and sells for up to 50 per cent less than their retail prices. Singapore's Ugly Food also focuses on reducing food wastage in the supply chain. According to the United Nations' Food and Agriculture Organization (FAO), 25 to 30 per cent of carrots do not make it to supermarket shelves because of physical or aesthetic defects. In the United States, about 60 million tons of fruit and vegetables, worth a staggering US\$160 billion, is discarded each year. In Singapore, 763,000 tons was thrown away in 2018."<sup>47</sup> Other startups involved in the ugly food movement are Imperfect Produce, Full Harvest and Hungry Harvest. They sell, online, boxes of imperfect picks for a discounted price around the US.

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<sup>46</sup> Aschemann-Witzel, J., de Hooge, I. E., & Almlı, V. L. (2019). Suboptimal Food? food waste at the consumer–retailer interface. *Saving Food*

<sup>47</sup> Knott K., "Why we should eat 'ugly' food – it helps reduce shocking global food waste, and the fruit and vegetables taste just the same". South China Morning Post. 30/3/2020





*Source: Imperfect food website*

Besides all the campaigns that marketers can use in order to promote the reduction of food waste in private households there are also opportunities to implement at the point of sale in order to promote products that are often overlooked based only on appearance. Researchers have started to identify factors that might increase consumers' acceptance of unattractive produce including positive marketing message framing, reduced pricing, blend the unattractive produce with the attractive one and individual differences in environmental awareness.

## **2.2 Motivators and barriers to the purchases of ugly food**

“To help reduce food waste by successfully promoting ugly food consumption, it is important to enhance consumers' awareness of the waste caused by not eating ugly food and understand the key factors that can influence customer purchase intentions regarding ugly food. Moreover, to expand market size and target different customer segments, it is also critical to explore the key differences between existing buyers of ugly food and non-buyers. What motivates buyers to purchase ugly food? What demotivates non-

buyers and prevents them from purchasing ugly food?”<sup>48</sup> The two main motivators of ugly food consumption are price consciousness and environmental self-identity. And the main demotivator is physical appearance. The environmental self-identity is particularly strong for millennials and gen Z, generations that feel the urge to take action in order to reduce food waste, fight climate change etc. According to Loebnitz N., Schuitema G. and Grunert K.’ research (2015) people with a stronger pro-environmental self-identity express stronger intention to purchase abnormally shaped organic products. People with higher problem awareness. This was also tested through an experiment conducted on 964 citizens of Denmark. This was also confirmed by the research of Xu Y., Jeong E., Jang S., Shao X. which conducted an online survey to test the hypothesis for which price consciousness and environmental self-identity were motivators of the consumption of ugly food.

Before diving into academic research about ways to fight food waste in store let’s analyze barriers that prevent consumers to buy suboptimal products. Hartmann and colleagues gathered the research on suboptimal products in the Web of science and Science direct databases and found out that the main 2 barriers are: abnormal appearance and nearing expiration date. For **abnormal appearance** we refer to misshapeness blemishes or product damage, abnormal shape rather than abnormal size. Expiration date seem to be a psychological contract<sup>49</sup> between retailers and consumers and is often used by consumer to calculate overall product value.<sup>50</sup> Another factor that has been proved to have an impact on lowering quality expectation is **price**. The discounted prices confirm quality concerns.<sup>51</sup><sup>52</sup> In addition to these 2 main barriers there are also other significant barrier worth mentioning. The first group are the **socio-demographics**

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<sup>48</sup> Xu, Y., Jeong, E. H., Jang, S. C. (S.), & Shao, X. (2021). Would you bring home ugly produce? motivators and demotivators for Ugly Food Consumption. *Journal of Retailing and Consumer Services*

<sup>49</sup> Theotokis, A., Pramataris, K., & Tsiros, M. (2012). Effects of expiration date-based pricing on Brand Image Perceptions. *Journal of Retailing*

<sup>50</sup> Aschemann-Witzel, J., Giménez, A., & Ares, G. (2018). Convenience or price orientation? Consumer characteristics influencing food waste behaviour in the context of an emerging country and the impact on future sustainability of the Global Food Sector. *Global Environmental Change*

<sup>51</sup> Theotokis, A., Pramataris, K., & Tsiros, M. (2012). Effects of expiration date-based pricing on Brand Image Perceptions. *Journal of Retailing*

<sup>52</sup> Konuk, F. A. (2015). The effects of price consciousness and sale proneness on purchase intention towards expiration date-based priced Perishable Foods. *British Food Journal*

**barriers.** For example, female consumers show greater reluctance than males. This is of evidence of 2 main studies conducted in Uruguay by Aschemann-Witzel et al. in 2018. Other studies have found that female respondents demand a higher discount for different suboptimal products than men (De Hooze et al., 2017). Opposite to these 2 studies have found man to be more reluctant (Aschemann-Witzel et al., 2018a; Barbe, Dewitz, & Triay, 2017). In terms of age, elderly consumers have proved to be less open both towards misshapen food (Aschemann-Witzel, 2018a; Aschemann-Witzel et al., 2018c; Cicatiello, Secondi, & Principato, 2019; De Hooze et al., 2017; Van Giesen & De Hooze, 2019). This is contradicted, however, by one study which found that younger consumers were less open to SF (low age: Tsiros & Heilman, 2005). Several studies found that consumers with low education levels were less open towards expiring and misshapen food (Aschemann-Witzel et al., 2017; Aschemann-Witzel, 2018a; De Hooze et al., 2017), as were consumers with high income (Aschemann-Witzel et al., 2017; Aschemann-Witzel et al., 2018b; Barbe et al., 2017; Yue et al., 2009) and consumers from small households (Aschemann-Witzel et al., 2017; Aschemann-Witzel et al., 2018a; Cicatiello et al., 2019; Tsiros & Heilman, 2005). Consumers from small households apparently feared being unable to consume expiring food before the expiration date. Consumers with children, as well as consumers buying food for children, were also found to be less open to SF (De Hooze et al., 2017; Lund et al., 2006).

The second group of barriers found is **knowledge and information seeking**. Little knowledge about food/food production was mostly indicated by unsubstantiated conclusions based on suboptimal appearance, with consumers typically believing that misshapen food products are less tasty and less fresh<sup>53</sup> or less healthy and more risky than optimal foods.<sup>54</sup> For example, studies have found that respondents expect suboptimal fruits to be “tasteless” (Aschemann-Witzel, 2018a; Jaeger et al., 2018a), with results further indicating that they believed misshapen and blemished fresh foods

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<sup>53</sup> Barbe, F. G., Dewitz, P. von, & Triay, M. M. (2017). Understanding consumer behaviour to develop competitive advantage: A case study exploring the attitudes of German consumers towards fruits with cosmetic flaws. *International Journal of Academic Research in Business and Social Sciences*

<sup>54</sup> Cooremans, K., & Geuens, M. (2019). Same but different: Using anthropomorphism in the battle against Food Waste. *Journal of Public Policy & Marketing*

to originate from “mistakes in the production process” (Aschemann-Witzel et al., 2018b). Surprisingly, even a ripped label on an otherwise intact sauce package was seen as a “contamination cue”, since the damaged label “suggested it had been touched/contaminated by others”.<sup>55</sup> Another barrier found in this context is low familiarity with SF.

The third group of barriers is related to **attitudes towards SF**. Studies found that SF purchase intentions can be impeded by preconceived negative attitudes towards SF (Barbe et al., 2017; Wong, Hsu, & Chen, 2018) as well as by low environmental awareness (De Hooge et al., 2017; Loebnitz & Grunert, 2015; Van Giesen & De Hooge, 2019; Yue et al., 2009). While low environmental awareness by itself was found to have no significant effect by Loebnitz et al. (2015), the combination with low food waste awareness decreased purchase intentions significantly. The negative influence of low food waste awareness on consumer perceptions of SF also emerged in other studies (Aschemann-Witzel et al., 2017; Cicatiello et al., 2019; Collart & Interis, 2018; De Hooge et al., 2017). Regarding quality-related barriers, numerous studies have found consumers to have general quality concerns about different types of SF (Aschemann-Witzel et al., 2017; Aschemann-Witzel, 2018a; Aschemann-Witzel et al., 2018c; Helmert, Symmank, Pannasch, & Rohm, 2017; Jaeger et al., 2016; Jaeger et al., 2018a; Konuk, 2015, 2018; Lombart et al., 2019; Tsiros & Heilman, 2005; Van Giesen & De Hooge, 2019; Wong et al., 2018). Naturalness concerns have further been found to impede choices of SF (Loebnitz & Grunert, 2018), as have safety concerns (Aschemann-Witzel et al., 2018b; Cooremans & Geuens, 2019; De Hooge et al., 2017; Konuk, 2018; Loebnitz & Grunert, 2018; Tsiros & Heilman, 2005; White et al., 2016). Other quality-related concerns emerged are taste concerns, nutritional quality concerns and freshness concerns.

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<sup>55</sup> White, K., Lin, L., Dahl, D. W., & Ritchie, R. J. (2016). When do consumers avoid imperfections? Superficial packaging damage as a contamination cue. *Journal of Marketing Research*

The fourth group of barriers is related to **context**. This generally refer to shopping and house-keeping context. In the case of shopping many studies found that undiscounted prices of SF have a negative impact since people expect them. On the other end several studies have also pointed out how discounted prices lead to confirm quality concerns. In this context also the low availability of SF has a negative effect. The study of Muro et al. 2016 suggested that consumers shopping at supermarkets are only used to standardized carrots in opposition to those shopping at fresh markets where a broader spectrum is marketed. In the household context, the perceived limited usage span of SF has been found to impede choices (Aschemann-Witzel et al., 2017; Aschemann-Witzel, 2018a; Symmank et al., 2018), together with limited storage options at home (Aschemann-Witzel et al., 2017) and different food plans concerning usage and storage (Aschemann-Witzel et al., 2017; Tsiros & Heilman, 2005).

The fifth group of barriers relates to **habits**. Looking at shopping habits, the factor of high food expenditure has been shown to impede choices of SF.<sup>56</sup> Consumers with lower attachment to brands have further been found to be less open to SF. With regard to housekeeping habits, low food involvement (low involvement in food and cooking culture) has been identified as a barrier (Aschemann-Witzel, 2018b; Aschemann-Witzel et al., 2018a, 2018c). Meat consumption (McCarthy & Liu, 2017) and high (perceived) food waste at home are another two housekeeping habits with negative influence on consumer perceptions of SF.<sup>57</sup> From these barriers we can conclude that people expect a sort of compensation for buying SF (ex. Price discounts).

We can sum-up these barriers in three categories of attributes as identified in the research of Mookerjee and colleagues: **tastiness, healthiness, and naturalness**. “Tastiness refers to produce’s hedonic, multisensory qualities: not only its flavor, but also its juiciness or crispiness (Auvray and Spence 2008). Healthiness refers to

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<sup>56</sup> Cicatiello, C., Secondi, L., & Principato, L. (2019). Investigating consumers’ perception of discounted suboptimal products at retail stores.

<sup>57</sup> Hooge, I. E. de, Oostindjer, M., Aschemann-Witzel, J., Normann, A., Loose, S. M., & Almlı, V. L. (2016, September 30). *This apple is too ugly for me! Consumer preferences for suboptimal food products in the supermarket and at home*

nutritional value. Naturalness refers to the absence of chemicals (e.g., pesticides, preservatives), which is characteristic of organic produce (Verhoog et al. 2007). In addition to these categories, there can be additional safety concerns in the case of moldy, rotten, or damaged produce. However, our definition of unattractive produce explicitly excludes these concerns as retailers have strict regulations preventing the sale of unsafe produce.”<sup>58</sup> Healthiness and tastiness seem to have a positive association with appeal with naturalness the association is less straightforward. The concept of perfection is unnatural. Consumers expect natural and organic products to be less attractive, so there is a negative correlation between naturalness and appeal. It is possible to state that the literature suggests that consumers expect unattractive products to be less tasty and less healthy, and at the same time more natural.

<b>Main motivators</b>	<b>Main demotivators</b>
Environmental self-identity	Abnormal appearance
Naturalness	Discounted price = Quality concerns
	Shopping habits
	Low food waste awareness
	Healthiness concerns

Table 1

### **2.3 Proposed marketing strategies from the current literature**

To increase the consumption of Suboptimal food the different authors proposed different solutions. Some authors believe that an eco-friendly packaging or by mixing the suboptimal product with regular produce increases purchase. Another measure include the use of organic logos and certifications on the packaging. In terms of price almost every author believe that price discounts are needed to sell SF products. The greater the flaw the greater the discount ranging from 7% to 70%. In terms of promotion from the

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<sup>58</sup> Mookerjee, S. (S., Cornil, Y., & Hoegg, J. A. (2021). From waste to taste: How “ugly” labels can increase purchase of unattractive produce. *Journal of Marketing*

studies mentioned previously the use of humor or humanization seem to be successful. Anthropomorphism has been proven to have positive effects on consumer’s purchase intentions. Great examples are the M&M’s chocolate candy commercials, the Michelin commercials with the human like puppet etc. This is mainly because of the human connection it is possible to form with the product, and this is also supported by Loebnitz and colleagues of Denmark’s Aarhus University in their research published in March 2015. Mookerjee et al. (2021) tested the theory that the labeling of unattractive produce as “ugly” increases purchase, not only compared to no specific labeling but also compared with more discrete and subtle labels like “imperfect”.

<b>Main proposed marketing strategies from the current literature</b>
Organic logos and certifications on the packaging
Price discounts
Anthropomorphism
Use an “ugly” label

Table 2

Grewal et al. (2019)’ research, at the same time, propose that making a self-perception connection with the consumer at the point of sale increases its likelihood to buy unattractive products. Self-perceptions are beliefs individuals hold about themselves, inferred from their own behaviors. For example, by implementing a sign that says: “*You are awesome! Buy this ugly apple!*” sells more than “Buy this ugly apple” itself. In this, particular research five experiments have been conducted to demonstrate that consumers devalue unattractive produce because of altered self-perceptions. Imagining themselves eating an unattractive product negatively affects how consumers view themselves and lower their willingness to pay for unattractive produce. The authors states: “This discrepancy in willingness to pay for unattractive versus attractive produce can be reduced by altering the self-diagnostic signal of consumer choices and boosting consumers’ self-esteem. An experiment in the field demonstrates the effectiveness of using easily implementable in-store messaging to boost consumers’ self-esteem in ways

that increase consumers' positive self-perceptions and, subsequently, their willingness to choose unattractive produce.

This research, therefore, suggests low-cost yet effective strategies retailers can use to market unattractive produce, potentially raising retailer profits while reducing food waste.<sup>59</sup> The research is based on 5 studies. The first study is based on a survey completed by 304 subjects, they imagined shopping at a grocery store for produce that meets USDA standards. Afterward, participants reported their likelihood of purchase.<sup>60</sup> The results were clear. Participants were willing to pay more for attractive produce (consistent with an aesthetic premium effect). Results also revealed that attractive produce reduces negative self-perceptions and that negative self-perceptions negatively influences WTP for produce. Study 1 shows that merely imagining the consumption of unattractive produce negatively affects self-perceptions and, consequently, lowers people's WTP for unattractive produce. In the second study undergraduates' students participated in this study in exchange for course credit. "Participants progressed to a shopping task, in which they viewed an assortment of four products and were instructed to choose the one item that "best reflects who [they] are as a person." Participants repeated this product choice task for ten different product categories, including water bottles, glass ornaments, and baked bread. The researchers manipulated the diagnostic value of choice in a following summary. In the diagnostic value condition, participants were told they selected products that "strongly match who you are as a person," thereby suggesting that their product choices offer relevant self-signals. In the nondiagnostic value condition, participants were told that they selected "products that don't strongly match who [they] are as a person," thereby suggesting that they should derive little self-signaling value from their product choices.

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<sup>59</sup> Grewal, L., Hmurovic, J., Lambertson, C., & Reczek, R. W. (2018). The self-perception connection: Why consumers devalue unattractive produce. *Journal of Marketing*

<sup>60</sup> Grewal, L., Hmurovic, J., Lambertson, C., & Reczek, R. W. (2018). The self-perception connection: Why consumers devalue unattractive produce. *Journal of Marketing*



After reviewing their result summary, each participant began a presumably unrelated product opinion survey. Participants viewed a picture of an unattractive or attractive strawberry and imagined that, from among several fresh fruit options guaranteed to be healthy and safe for consumption, they selected this strawberry to eat. In Study 2, when people believed their produce choice and imagined consumption were diagnostic self-signals, we replicated the devaluation effects seen in Study 1. However, when people believed their choices were not self-diagnostic, this devaluation of unattractive produce was mitigated. These moderated mediation results, therefore, support our proposed self-perceptions mechanism.”<sup>61</sup> In the third study it is tested the hypothesis that by boosting consumer’s self-esteem it is possible to increase consumers’ WTP for unattractive produce. They tested this by making participants to complete a writing task titled “Life events survey” (in the high self-esteem condition “Write about a time when you accomplished something that made you feel proud of yourself”, in the control condition “Write about a typical morning for you during the week”). “After the writing task, participants continued to a consumer product evaluation survey. Participants read about a monthly produce box delivery service and saw a corresponding image of an open box containing an assortment of seven different types of attractive [unattractive] produce (i.e., green peppers, apples, oranges, cucumbers, carrots, potatoes, and strawberries). The produce was “100% guaranteed to be fresh and safe to eat”. Next, participants imagined consuming a piece of produce from the fruit and veggie box and completed the self-perceptions index used in the previous studies. Afterward, participants learned they have the opportunity to purchase the box and had to indicate their WTP for the sampler box at a range of specified prices.”<sup>62</sup> Results were clear: “Study 3 demonstrate that boosting people’s self-esteem effectively mitigated differences in real WTP for unattractive and attractive produce. Momentarily raising an individual’s self-esteem reduces the negative self-inferences made following the imagined consumption of unattractive produce, thereby disrupting the negative influence of produce attractiveness on self-perceptions and, as a result, increasing how much the consumer is willing to

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<sup>61</sup> Grewal, L., Hmurovic, J., Lambertson, C., & Reczek, R. W. (2018). The self-perception connection: Why consumers devalue unattractive produce. *Journal of Marketing*

<sup>62</sup> Ibidem

spend on unattractive produce. This finding is particularly noteworthy for retailers: it indicates a method to recapture formerly lost revenue.

For example, in this study, boosting self-esteem effectively increased people's WTP for the unattractive produce by 22.4%.<sup>63</sup> In the 4<sup>th</sup> study Grewal and colleagues manipulated the messaging of two in-store advertisements posted above a display of apples in a Swedish grocery retailer (in Stockholm) for one week and measured shoppers' subsequent choice of unattractive or attractive produce. "Ad messaging in the positive self-esteem condition focused on boosting shoppers' self-esteem while encouraging the choice of unattractive produce (i.e., "You are Fantastic! Pick Ugly Produce!"), whereas messaging in the control condition focused exclusively on encouraging the choice of the unattractive produce (i.e., "Pick Ugly Produce!")."<sup>64</sup> This experiment in the field showed that advertising that directly strengthens consumers' self-esteem at the point of purchase effectively mitigated differences in the real choice of unattractive and attractive produce. Boosting shoppers' self-esteem reduced the negative self-inferences made following the consideration of unattractive produce, thereby disrupting the adverse influence of unattractive produce on self-perceptions and, consequently, increasing the likelihood of the shopper choosing unattractive produce. In fact, the in-store self-esteem messaging intervention increased shoppers' choice share of unattractive apples by 93.3%, nearly doubling shoppers' retail selection of unattractive produce."<sup>65</sup>

Then they replicated in the last study the in-store experiment. Participants viewed one of two ads after which they saw two apples displayed next to each other—one unattractive and the other attractive. Participants then indicated which of these two apples they would prefer to receive if given the choice. Next, in randomized order, participants reported their self-perceptions and completed measures related to possible alternative explanations. These included mood, psychological reactance, and self-

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<sup>63</sup> Grewal, L., Hmurovic, J., Lambertson, C., & Reczek, R. W. (2018). The self-perception connection: Why consumers devalue unattractive produce. *Journal of Marketing*

<sup>64</sup> Ibidem

<sup>65</sup> Ibidem

affirmation. In addition to replicating previous findings using identical stimuli in a simulated choice situation, this study also shows that only self-perceptions account for the influence of the messaging on product choice.”<sup>66</sup>

<b>Studies</b>	<b>Methods</b>
Study 1	Survey - 304 subjects- Grocery shopping scenario
Study 2	Shopping task
Study 3	Writing task titled “Life events survey”- 2 scenarios + Survey
Study 4	In-store experiment
Study 5	In-store experiment

Table 3

<b>Studies</b>	<b>Findings</b>
Study 1	Participants were willing to pay more for attractive produce. Merely imagining the consumption of unattractive produce negatively affects self-perceptions and lowers people’s WTP for unattractive produce.
Study 2	When people believed their produce choice and imagined consumption were diagnostic self-signals devaluation effects seen in Study 1. When people believed their choices were not self-diagnostic, this devaluation of unattractive produce was mitigated.
Study 3	Boosting people’s self-esteem effectively mitigated differences in real WTP for unattractive and attractive produce

<sup>66</sup> Grewal, L., Hmurovic, J., Lambertson, C., & Reczek, R. W. (2018). The self-perception connection: Why consumers devalue unattractive produce. *Journal of Marketing*

Study 4	Boosting shoppers' self-esteem reduced the negative self-inferences made following the consideration of unattractive produce
Study 5	Same results as study 4

Table 4

In the previously mentioned research, it has been suggested that consumers don't buy unattractive produce because imagining eating such produce makes them feel less attractive, less moral, less healthy and so on. Mookerjee and colleagues 2021 went further in order to analyze and test the so-called "ugliness penalty". They propose the idea that "deliberately emphasizing the unattractiveness of the produce via "ugly" labeling acts as a signal that there is nothing "wrong" with the produce other than its appearance. Further, "ugly" labeling may make consumers reevaluate the diagnostic of visual appearance for assessing tastiness and healthiness; that is, it will make them aware of the limited nature of their spontaneous objection to unattractive produce." This idea is also supported by the research of Strack and Hannover of 1996 about "awareness of influence" that triggers validity-driven corrections of attitudes. To sum up, the focal point of Mookerjee et al. research is "that "ugly" labeling will increase purchase of unattractive produce vs when no specific label is present and that this will occur by improving attribute expectations, in particular tastiness and healthiness." In their study they also try to compare the use of the "ugly" label with common marketplace interventions, such as price discounts. The studies of Aschemann-Witzel, Giménez, and Ares 2018 and De Hooge et al. 2017 showed this price discounts can motivate consumers to purchase unattractive products. Mookerjee and colleagues proposed that the "ugly" labels and discounts can be used together to have a more effective selling strategy. Their 4<sup>th</sup> and final hypothesis is based on the fact that they believe the "ugly" label to be more effective than other common practice labels used on the market such as "imperfect", "produce with personality", "pickuliar" and "misfit".

For what concerns the method they used to test the previously mentioned hypothesis they conducted 6 studies, in 2 different marketplaces: at a farmer's market and online. The first study tested the "ugly" labeling at a farmers' market in a major city in Canada over four consecutive Saturdays in September 2020 for 16 hours in total. They ran a stand selling 2 baskets of attractive and 2 baskets of unattractive vegetables and manipulated the way the unattractive product was labeled (ugly or not) by changing signage every hour. The pricing was consistent through all days, a 25% discount for unattractive product was granted. "In the control condition, 62.5% of buyers purchased unattractive produce and 56% purchased attractive produce (these proportions do not total 100% because some buyers purchased both types of produce). In the "ugly" label condition, 81.6% bought unattractive produce and 26.5% bought attractive produce. Results clearly show that farmers were more likely to purchase unattractive produce over attractive produce when the damaged produce was labeled as "ugly", this label also increased average spending.

The second study was used to further test the effectiveness of "ugly" labeling in the context of produce boxes purchased online. Participants decided whether to buy a box of unattractive produce or a box of attractive produce (or nothing at all), and they manipulated the label for the unattractive produce (either "ugly" or not). The stimuli was a photo of attractive oranges, apples, cucumbers, and carrots, and a photo of the same items but visually unattractive. The results were clear: "In the "ugly" label (vs. control) condition, 41.1% of participants (vs. 26.3%) decided to purchase the box of unattractive produce, 7.9% (vs. 23.0%) decided to purchase the box of attractive produce, and 51.0% (vs. 50.7%) preferred to keep the cash." (Mookerjee et. al 2021). In the third study Mookerjee and colleagues tested a mechanism: consumers have negative expectations regarding tastiness and healthiness of unattractive produce, and that "ugly" labeling improves expectations. 320 participants were shown photos of baskets of attractive and unattractive cucumbers sold by a vendor that respected the USDA safety standards. "Across conditions the attractive cucumbers were called "Type A" and priced at \$1.26 per pound, and the unattractive cucumbers were called "Type B" and priced at

\$.95 per pound. We manipulated the label attached to the basket of unattractive cucumbers: “Ugly Cucumbers” in the “ugly” label condition versus “Cucumbers” in the control condition. Participants indicated which produce they would purchase on a five-point scale ranging from 1 = “Definitely Cucumbers A” to 5 = “Definitely Cucumbers B,” with a midpoint of 3 = “I would be indifferent.” They measured anthropomorphic perceptions by asking participants to rate whether Cucumbers B reminded them of humanlike features (Koo, Oh, and Patrick 2019) on a five-point scale (1 = “Not at all,” and 5 = “To a great extent”). We also asked participants whether they “feel sorry,” “feel compassion,” and “feel sympathy” for Cucumbers B on the same five-point scale. We measured whether participants perceived the image of cucumbers B to be original, surprising, and funny (with two items: funny and amusing) on a five-point scale (1 = “Not at all,” and 5 = “To a great extent”).<sup>67</sup> For what concerns the results, the “ugly” label increases the likelihood of choosing the unattractive produce. The “ugliness penalty” effect on tastiness was confirmed, meaning that the label negatively impacted taste expectations. While it was confirmed that the “ugly” label increased the healthiness index. The naturalness index was not impacted by the “ugly” label contrary to what it was expected. Regarding self-perception the “ugly” label did not significantly affect it while it marginally improved credibility.

The fourth study was used to further test the findings. The mediator was manipulated: they informed half of the participants that aesthetic differences across produce do not pertain to differences in taste or healthiness and the 423 participants had to choose between purchasing attractive vs unattractive cucumbers. The scenarios were identical to the ones of study 3 but half of the participants read that although the two types of cucumbers looked different, these differences in visual appearance do not pertain to any differences in taste or healthiness. “When there was no message, in line with Study 3, the “ugly” label (vs. control label) significantly increased choice likelihood of unattractive cucumbers. However, when participants were exposed to the “no other

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<sup>67</sup> Mookerjee, S. (S., Cornil, Y., & Hoegg, J. A. (2021). From waste to taste: How “ugly” labels can increase purchase of unattractive produce. *Journal of Marketing*

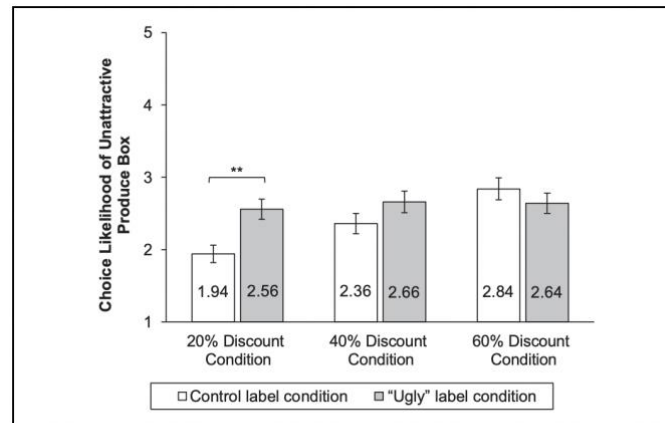
difference than visual” message, the “ugly” label (vs. control label) no longer had a significant impact. Merely labeling unattractive produce “ugly” had a similar effect as informing consumers that visual differences do not pertain to other attribute differences. This provides support for our argument that “ugly” labeling increases choice of unattractive produce because it improves expectations about tastiness and healthiness of unattractive produce (H2).”<sup>68</sup> In all previously mentioned studies 25-33% discounts were applied. In the fifth study Mookerjee and colleagues tested whether the depth of discount moderates the effectiveness of “ugly” labeling. They propose that “ugly” labels are more effective for moderate discounts because a large discount may signal low quality, thereby hindering the positive effect that “ugly” labels have on taste and healthiness expectations and thus on purchase (H3).

709 participants “saw an ad for two produce boxes, described as customizable boxes of fruits and vegetables that meet USDA safety standards. The ad depicted examples of produce contained in each of the two boxes, one featuring attractive oranges, apples, carrots, and cucumbers and the other featuring the same produce but aesthetically unattractive. We manipulated the label used for the unattractive produce: either “Ugly Fruits and Vegetables” (“ugly” label condition) or “Fruits and Vegetables” (control condition). The box with attractive produce was always priced at \$20 for 5 pounds of produce. We manipulated the price of the box with unattractive produce: \$16 with a “20% OFF” tag, \$12 with a “40% OFF” tag, or \$8 with a “60% OFF” tag. To facilitate measurement, the boxes were called “Box 1” (at the top of the ad) and “Box 2” (at the bottom); the position of the unattractive and attractive boxes was counterbalanced across participants. Participants indicated which produce box they would rather purchase on a five-point scale ranging from 1 = “Definitely Box 1” to 5 = “Definitely Box 2,” with a midpoint of 3 = “I would be indifferent”. As shown in Figure 5, contrast analyses revealed that the “ugly” label (vs. control) significantly increased the choice likelihood of unattractive produce when the price discount was 20%. When the discount was 40%,

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<sup>68</sup> Mookerjee, S. (S., Cornil, Y., & Hoegg, J. A. (2021). From waste to taste: How “ugly” labels can increase purchase of unattractive produce. *Journal of Marketing*

the “ugly” label (vs. control) had a directionally positive but nonsignificant impact on choice. When the discount was 60%, the “ugly” label (vs. control) had a nonsignificant impact. Also note that “ugly” labeling coupled with a low discount (20%) was just as effective as providing a steep price discount (60%) with or without the “ugly” label.”<sup>69</sup>



**Figure 5.** Choice likelihood of unattractive produce box by label and price discount conditions (Study 5).

### Graph 3

*Source: From Waste to Taste: How “Ugly” Labels Can Increase Purchase of Unattractive Produce; Mookerjee S., Cornil Y., Hoegg J., 2021.*

In the final study the “ugly” label was compared with two other labels: “with personality” and “imperfect”. H4 was tested. A total of 440 participants were assigned to one of four label condition: “ugly”, “imperfect”, “with personality”, or control. The stimuli were similar to the ones of study 5. Although “imperfect” and “with personality” were less effective than “ugly,” they still increased choice of unattractive produce compared with the control label. “Imperfect” labeling (vs. control) did not have any significant impact on tastiness, healthiness, and naturalness expectations. “With personality” labeling (vs. control) positively affected tastiness, and tastiness mediated the effect of “with personality” labeling on choice. However, “with personality” labeling did not significantly influence healthiness or naturalness, and these categories were not significant mediators. They replicated the study using “Facebook Ads Manager’s Split

<sup>69</sup> Mookerjee, S. (S., Cornil, Y., & Hoegg, J. A. (2021). From waste to taste: How “ugly” labels can increase purchase of unattractive produce. *Journal of Marketing*



Test (also called “A/B Test”) to compare the effectiveness of different versions of an ad on click-through rates, holding all other factors constant. The “ugly” ad generated the highest CTR (3.07%) and the lowest cost per click. In line with Study 6a, the “imperfect” ad was the least effective and the “with personality” ad was in between. This is remarkable, given that the more than 50 grocery store managers that we interviewed overwhelmingly preferred “imperfect” labeling over “ugly” labeling. The “ugly” label was directionally more effective than the “with personality” label, but the differences did not approach significance, failing to support H4.<sup>70</sup> From this research we can conclude that with a simple but effective marketing communication strategy unattractive products can be sold contributing to the reduction of food waste.

Besides these 2 researches there have been others for example the one of Shao X., Jeong E., Jang A. and Xu Y. published on the International journal of hospitality management. The thesis revolves around anthropomorphism, meaning “the tendency to imbue nonhuman objects with human-like characteristics, intentions, and behaviors”. Attributing humanlike factors to ugly food in advertisements could significantly improve consumers’ positive evaluations by constructing a connection between consumers and products and helping consumers feel greater moral care and trust toward the product.”<sup>71</sup> In order to test this hypothesis, they used different advertising posters to promote an ugly potato. The results revealed that a main effect exists through anthropomorphism, which plays a significant role in promoting ugly food. Consistent with previous studies.<sup>72</sup>

<b>Studies</b>	<b>Methods</b>
Study 1	Stand in a farmer’s market in Canada
Study 2	Online experiment
Study 3	Visual survey - 320 participants

<sup>70</sup> Mookerjee, S. (S., Cornil, Y., & Hoegg, J. A. (2021). From waste to taste: How “ugly” labels can increase purchase of unattractive produce. *Journal of Marketing*

<sup>71</sup> Shao, X., Jeong, E. H., Jang, S. C. (S., & Xu, Y. (2020). Mr. Potato Head fights food waste: The effect of anthropomorphism in promoting Ugly Food. *International Journal of Hospitality Management*,

<sup>72</sup> Ibidem

Study 4	423 participants had to choose between purchasing attractive vs unattractive cucumbers
Study 5	Visual survey - 709 participants
Study 6	Visual survey- 440 participants + Facebook ads test

Table 5

<b>Studies</b>	<b>Results</b>
Study 1	Farmers were more likely to purchase unattractive produce over attractive produce when the damaged produce was labeled as “ugly”, this label also increased average spending
Study 2	In the “ugly” label (vs. control) condition, 41.1% of participants (vs. 26.3%) decided to purchase the box of unattractive produce, 7.9% (vs. 23.0%) decided to purchase the box of attractive produce, and 51.0% (vs. 50.7%) preferred to keep the cash
Study 3	The “ugly” label increases the likelihood of choosing the unattractive produce
Study 4	“Ugly” labeling increases choice of unattractive produce because it improves expectations about tastiness and healthiness of unattractive produce
Study 5	The “ugly” label significantly increased the choice likelihood of unattractive produce when the price discount was 20%. When the discount was 40%, the “ugly” label (vs. control) had a directionally positive but nonsignificant impact on choice. When the discount was 60%, the “ugly” label (vs. control) had a nonsignificant impact
Study 6	The “ugly” label was more effective

Table 6

Overall, in these researches it has been demonstrated that there are cost-effective ways to market unattractive or atypical produce. Grewal et al. strategy is based on a social-cognitive understanding of why consumers reject unattractive produce: altered self-perceptions. The findings suggest that there is the potential for retailers to display in-store advertisements designed to weaken the tendency for shoppers to make inferences about the self from their behavior. In the Mookerjee et al. strategy, is based on using the label “ugly” to increase WTP of consumers. While Shao et al. strategy is based on using human characteristics in advertising in order to increase WTP. Not only these strategies (combined or not) will reduce food waste but will increase the retailers’ revenues. Consumers might be aware of food waste but still not choose to purchase any suboptimal food. Even if the consumer has the buying power the retail sector is responsible for shaping and influencing consumer behavior in the first place

After having conducted this rich literature review on the subject I believe that using a straightforward language in marketing messages is able to increase purchases for ugly foods. At the same time by leveraging the pro-environmental self-identities of people and the urge of reducing food waste and doing one-self part in the fight against climate change, with a clear and urge message at the point of sale, marketers will be able to increase the willingness to pay for ugly food more than in the absence of it. Therefore in the next chapter the antecedents of the rejection of suboptimal food will be further investigated through interviews of primary grocery shoppers at the end of the chapter a brief marketing strategy will be proposed.

Generally speaking, the aim of marketers needs to be to emphasize more the content rather than the look. Therefore, leveraging on the organic origin of the product, the reliable and sustainable production process, the use of renewable resources to produce it are all elements that marketers can use in order to increase the willingness to buy suboptimal products and therefore reduce food waste. Due to the urge of solving the food waste problem worldwide it is important to tackle this problem also from a marketing standpoint, a focus that it is lacking in the current literature.

## Chapter 3

### Research on the antecedents of the rejection of ugly food

From the previous chapter it has become clear how the selling of “ugly food” is essential in order to reduce food waste. In this chapter a research has been conducted in order to get an understanding of why primary grocery shoppers refuse to buy this kind of products. This market research on the antecedents of the rejection of suboptimal food will be conducted in order to get an understanding of why people don’t buy these products and then, ideally, construct a marketing strategy with the findings.

The current literature on the subject primarily focused on how to sell ugly food with marketing strategies in-store such as the use of anthropomorphism in ads<sup>73</sup>, enhance the consumer self-perception with signs in store<sup>74</sup> or by simply calling these products ugly at the point-of-sale<sup>75</sup>. The studies were conducted in multiple ways with some real-time scenarios, online scenarios, and online surveys. The barriers to purchase that most of the literature found are: abnormal appearance, price, little knowledge about the food production, negative attitudes, low environmental awareness, low food waste awareness or habits. The aim of this research, and therefore of this thesis, is to further test these findings and expand on the antecedents of the rejection of ugly food.

#### 3.1 Research method

Empirical academic studies can be made using two different methodologies: qualitative or quantitative or by using a mixed approach. In the academic world there is an increasing demand for qualitative research. In broad terms, qualitative research is an approach that allows you to examine people’s experiences in detail by using a specific

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<sup>73</sup> Loebnitz, N., Schuitema, G., & Grunert, K. G. (2015). Who buys oddly shaped food and why? Impacts of food shape abnormality and organic labeling on purchase intentions. *Psychology & Marketing*

<sup>74</sup> Grewal, L., Hmurovic, J., Lambertson, C., & Reczek, R. W. (2018). The self-perception connection: Why consumers devalue unattractive produce. *Journal of Marketing*

<sup>75</sup> Mookerjee, S. (S., Cornil, Y., & Hoegg, J. A. (2021). From waste to taste: How “ugly” labels can increase purchase of unattractive produce. *Journal of Marketing*

set of research methods such as in-depth interviews, focus group discussions, observation, content analysis, visual methods, and life histories or biographies. The rationale of this methodology is that it aims at understanding the “why” and “how”, to gain a contextualized understanding of behaviors, beliefs, motivation. It is an interpretive approach.<sup>76</sup> The orientation of this research is qualitative, a method that best suits the research purpose and answer the research question. The method used is in-depth interviews, a disruptive method compared to the ones that the current available researches on the subject use. Essential to fill the gap in the literature, in order to get a better understanding behind the behaviors of the consumers at the point of sale where they decide to not pick up the ugly product.

Nevertheless, it is appropriate to consider the limitation of the interview methodology there is no interaction or feedback between participants, it is possible to get an understanding only of individual perceptions and multiple interviews are needed to identify the range of issues.<sup>77</sup>

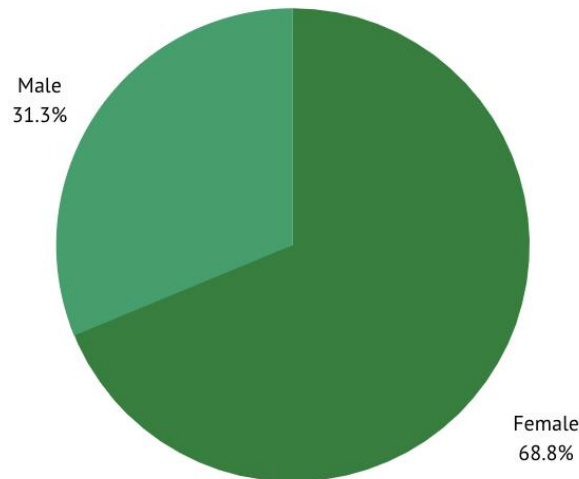
The participants are 16 Italian primary grocery shoppers. 11 females (68,8%) and 5 males (31,3%). The age range is between 22 and 60 years old. 75% of the participants have children. The average number of children is 1,58. Some of the interviews were conducted using Microsoft teams while others were conducted in-person. The interviews were conducted in Italian to make the participants more comfortable in their native language, in fact not all of them spoke English. Primary shopper is a person that does the majority of household grocery shopping. Secondary shopper relates to households that have a person who does the minority of household grocery shopping. Shared shopper relates to households that equally split grocery shopping.<sup>78</sup>

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<sup>76</sup> Hennink M., Hunter I., Bailey A. – Qualitative research methods. SAGE 2020

<sup>77</sup> Ibidem

<sup>78</sup> Grocery shopping responsibility share US 2018; Statista



**Graph 4**

In the table below it is possible to see the summary of main socio-demographic data of the participants.

<b>Total number of Participants</b>	16
<b>Participants aged 22-30</b>	4
<b>Participants aged 47+</b>	12
<b>Female participants</b>	11
<b>Male participants</b>	5
<b>Participants without any income (students)</b>	3
<b>Participants with an annual income below 50000 euros</b>	4
<b>Participants with an annual income above 50000 and below 100000 euros</b>	7
<b>Participants with an annual income above 100000 euros</b>	2

Table 7

### 3.2 Interview structure and research questions

The expected outcomes of these interviews are very straightforward. It is possible to state four main research question.

*RQ1: Will participants refuse to buy these products due to their odd look?*

*RQ2: Will participants be more inclined to buy these products knowing that they can contribute to the reduction of food waste?*

*RQ3: Will the reason why they reject to buy these products be the fact that they expect a different taste?*

*RQ4: Will they think that the products are harmful to their health?*

The in-depth interview is composed of two sections. In the first section demographic data is collected and in the second section there are 14 questions to test the hypotheses. In the middle of the interview participants were shown a picture of some ugly products. This is a projective technique which is used in psychology, to let a person respond to ambiguous stimuli, presumably revealing hidden emotions and internal conflicts projected by the person into the test. In this case it was used to better project the scenario of finding these products at a common supermarket and make the participant project himself at the fresh product aisle.



*Source: Google images*

In this paragraph there will be listed the English translation of the 14 research question with the reason why these were made.

***Q1: Are you responsible for the grocery shopping in your household?***

This question was used has an exclusion criterion in order to exclude from the study participants not in charge of the grocery shopping in their household.

***Q2: How much time you dedicate to do the grocery shopping?***

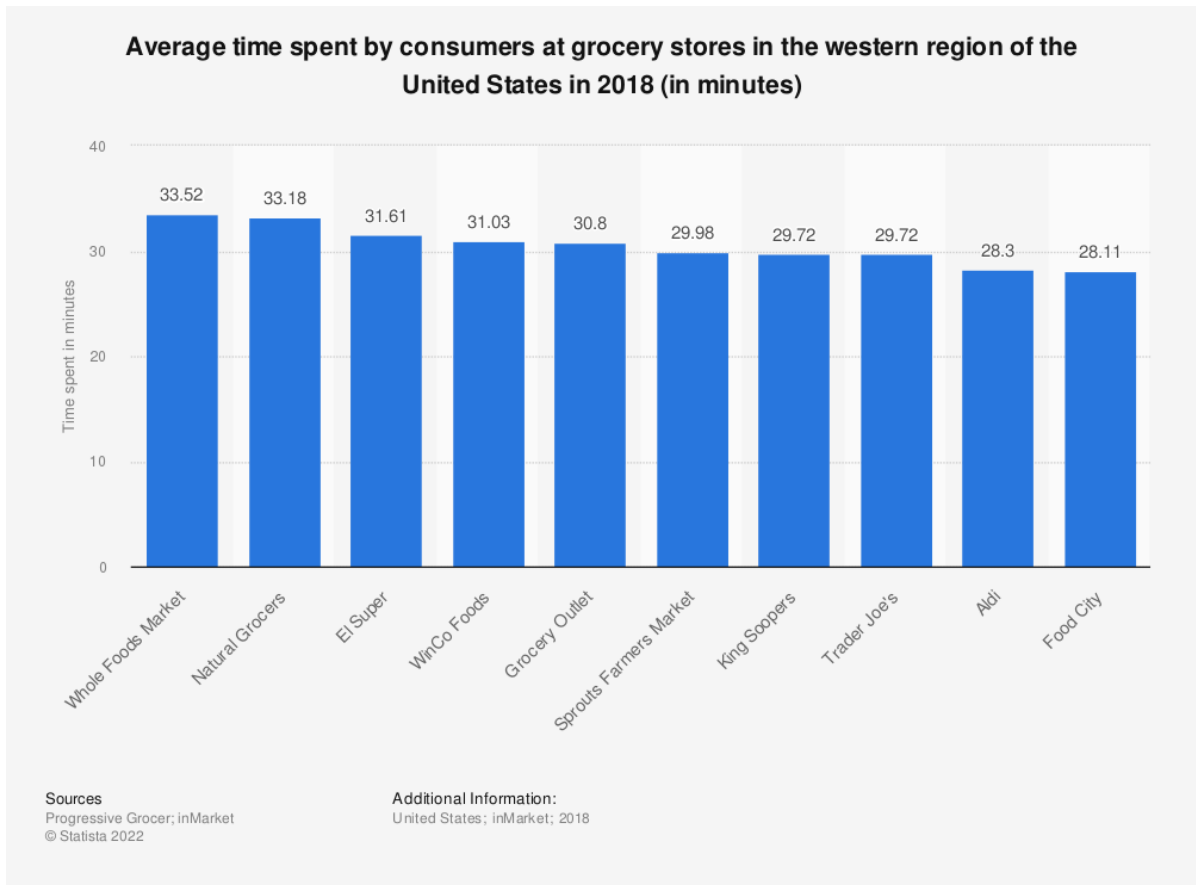
This question was asked in order to get an understanding of the impulsive choices of the consumer. The dwell time is defined as the length of time a person spends looking at a display or remains in a specific area. It is an essential retail metric for analyzing shopping behavior and increasing customer spending. In fact, there is a positive relation between dwell time and sales.<sup>79</sup> From a Statista analysis referred to the year 2018 titled the “Average time spent by consumers at grocery stores in the western region of the United States”<sup>80</sup>, it is possible to see that the average time of a grocery shop run is between 28 to 33 minutes depending on the type of retailer and the consumer habits. This result was also similar for studies in other US regions (southern , northern , eastern). Indeed, the analysis of this paper is based on Italian consumers, but we can use as an approximation these Statista data and we can consider that consumers who answered less than 30 minutes are impulsive consumers. Consumers that answered more than 30 minutes are consumers who like to take their time while they do grocery shopping and like to compare in-store the different alternatives. Consumers who answered 30 minutes are average.

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<sup>79</sup> Retail sensing. 11 June 2020

<sup>80</sup> Progressive Grocer. (March 1, 2019). Average time spent by consumers at grocery stores in the western region of the United States in 2018 (in minutes). Statista.





**Graph 5**

***Q3: Do you identify yourself as an environmentally friendly person?***

This question was asked to understand if the consumer think of himself as environmentally aware in general in his life.

***Q4: How important is for you to make environmentally friendly choices while you do your grocery shopping?***

This question was proposed in order to understand if the consumer makes any sustainable choice while he shops such as buying bio products, buying products with a recycled/recyclable packaging and so on.

***Q5: Is price an important attribute when you consider which product to buy?***

***Q6: Would you shop at multiple grocery outlets in order to get the best price?***

These two questions were included in order to understand if the consumer is price sensitive and the degree of this price sensitiveness.

At this stage the above-mentioned picture was shown and the participants were asked to imagine themselves at the supermarket and that they found those product in the fruit and vegetable aisle.

***Q7: What is the first thought it comes to your mind when you see these products?***

Question number seven was asked to see if the consumer noticed the oddly aspect right away.

***Q8: Do you think they will taste different from normally shaped fruits and vegetables?***

This was asked to make the consumer reflect on not only the look of the products but their intrinsic characteristics as well.

***Q9: If you needed these products and you also had the option of choosing would you buy these products?***

***Q10: Why?***

Question 9 is definitely one of the more direct question of the study. It tests directly the willingness to buy of the participant. Question number 10 is used to expand and make the consumer think about his behavior.

At this point the interview can take two different path, that for the purpose of this study we are going to call scenarios. The first scenario A occurs when the consumer answers that he will buy the products. Scenario B occurs when he refuses to buy the products.

SCENARIO A	SCENARIO B
<i>Q11: Why do you think people refuse to buy these ugly products?</i>	<i>Q11: If you knew these products were discounted, let's say a 30% discount would you be more incline to buy them?</i>
Question 11 was asked to understand if the consumer has any latent prejudice not declared at first.	Question 11 was proposed to understand if the consumer will buy the products after a price reduction, as suggested by the current literature on the subject.

Table 8

Then commonly to the two scenarios the following questions were asked.

***Q12: If the products were branded with a well-known brand, like Chiquita for bananas, would you feel more comfortable and incline to buy them? Why?***

Question 12 was proposed in order to understand if there is any chance for branding in order to increase the sales of these products.

***Q13: Are you aware of the food waste problem? In what ways do you think you contribute in reducing food waste?***

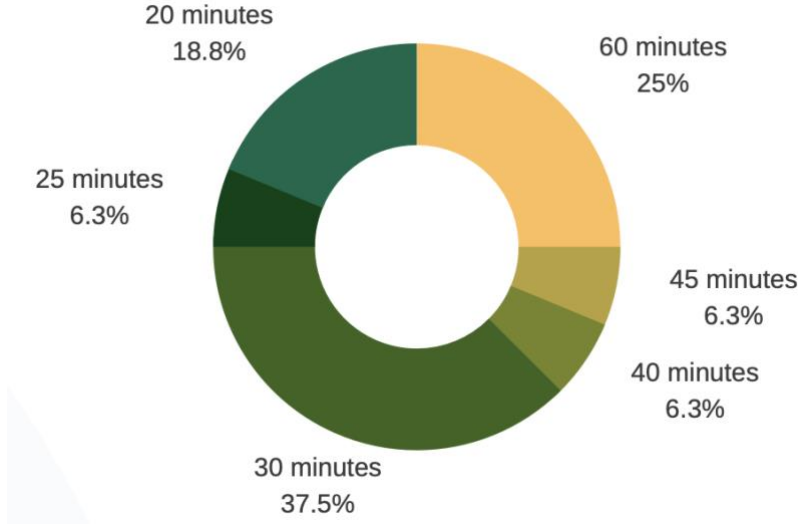
This question was asked to understand if the consumer knows about the food waste problem and make him reflect on the fact that he may not be doing enough to reduce it in his household. This question was proposed at the end in order to not influence the answer to question 9.

***Q14: If I told you that tons of these “ugly” products are thrown away every day , that are safe and taste the same has other products, and by buying this products you would contribute to the reduction of food waste would you consider to buy them?***

In order to understand if any sensibilization campaign might help increasing the willingness to buy of these products.

### 3.3 Results and findings

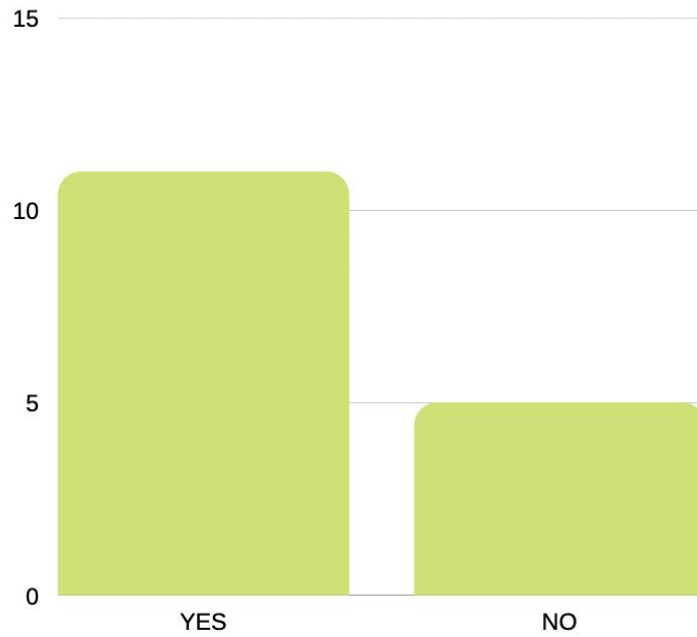
After having conducted the 16 interviews great points emerged. Following the order of the research question here it is possible to find the results. 4 participants mentioned that they spend an average of 60 minutes to do their grocery shopping, 1 participant mentioned he spends 45 min, 1 participant mentioned he spends 40 min, 6 participants spend 30 minutes, 1 participant spends 25 minutes and 3 participants spend 20 minutes. The average that is possible to calculate is 26 minutes this is coherent with the Statista analysis carried out in the Western region of the United States.



**Graph 6**

11 out of 16 participants consider themselves environmentally aware.

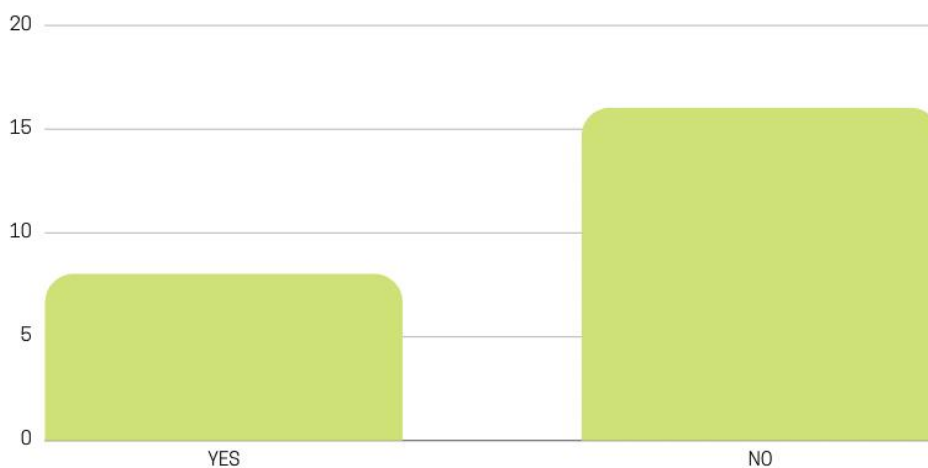
Do you identify yourself as an environmentally friendly person?



**Graph 7**

Overall, only 8 out of 16 (50%) participants think it is important to make sustainable choices while they shop.

Is it important for you to make sustainable choices?



**Graph 8**

Out of 16 participants most of them seem to be price sensitive (14) but at the same time this price sensitiveness is not strong as only 2 of them would shop at multiple grocery

outlets in order to have the best price. All the participants were aware of the food waste problem and said that they are committed to not waste at home. Only one was open to say that he does not enough to reduce the problem. A couple of participants mentioned that they use the app too good to go and are happy to save some food occasionally.

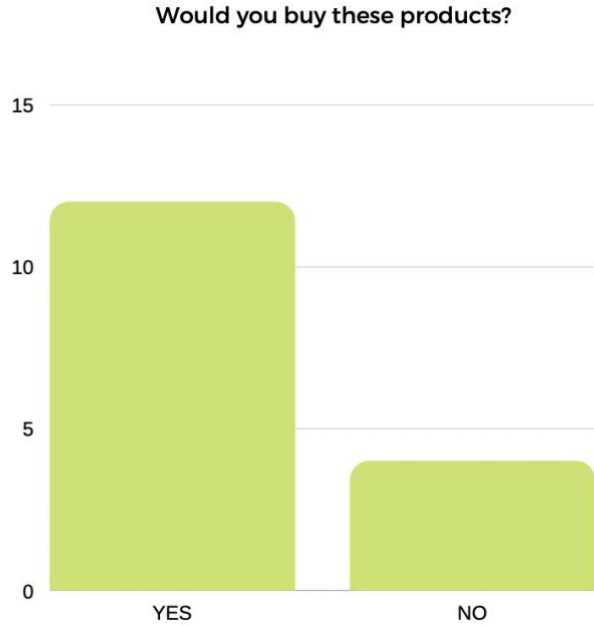
Regarding the part of the interview related to the supermarket scenario, the interviewer tried to replicate these are the results:

To the question what is your first thought that comes to your mind when you see the products? Few translated interesting responses are listed below.

- “They are GMOs (genetically modified organisms) and are not good for my health”;
- “OMG they are very ugly”;
- “They taste weird”;
- “They seem fake”
- “They remind me of cartoons”

Some participants, on the contrary, also stated positive thoughts like “freshness”, “they seem good”, “they are simply fruit and vegetables”, “Health and wellness”.

Half of the participant expect a different taste than averagely looking food. Concerning the willingness to buy 12 participants (75%) said that they won’t buy the product while 4 people said that they would buy the products. The ones that wish to buy the products are intrigued by the different look and wish to bring home the product to show it to their children or husband/wife.



**Graph 9**

On the reason why they did not want to buy the products, so the barriers to purchase were: the look of the product, the fact that they were afraid for their health, they were unsure about the way these products were grown, they thought that these products are difficult to wash and cut. One of the participants said that she was scared and horrified. These participants except one, where also refusing any discount on the product or said that having a well-known brand would not change their purchase decision. To cite one of the participants “I wouldn’t eat these even if you would gift them to me”.

<b>Barriers to purchase</b>
Look of the product
Concerned about the healthiness and freshness of the product
Felt unsafe about the source of the product
Difficulty to use the product

Table 9

The participants who said they would buy the products when asked about why they thought others refuse to buy those products said that it's because they think they are faulty, not tasty and it's not what they are used to.

At the end of the interview all the participants were asked if after knowing they could reduce food waste and knew that the products were perfectly safe and tasty, they would buy the product and they all answered affirmative. Some would feel more comfortable if these had a quality mark released by a government's organization that stated that all the necessary checks had been implemented. One male participant was not too convinced as he thought that these products could be better used in industries or canteens.

### **3.4 Discussion**

As identified by the Mookerjee et al. in their study "From waste to taste: How "ugly" labels can increase purchase of unattractive produce" the subjects of this study evaluated the products along three attributes: tastiness, healthiness, and naturalness. For what concern tastiness the subjects were divided between the ones that did not expect a different taste from these ugly products and those who thought they would taste different, not necessarily bad. Regarding healthiness, participants were reluctant for the fact that they did not believe that these products would bring the same nutritional value. Almost all participants that declared that they won't, but the products made an naturalness evaluation and were scared for their health. They thought the product was an OGM, full of chemicals. Once they were forced to reflect on the fact that an OGM is a product that is aesthetically perfect, they were less scared on the naturalness part but still they did not want to buy the products.

In accordance with the research of 2015 of Loebnitz, Schuitema G. and Grunert K. and the study of Xu Y. et al., also in this study has been proven that people that have a



stronger self-identity express stronger intention to purchase abnormally shaped organic products.

Contrary to the study of Theotokis A, et al named “Effects of expiration date-based pricing on Brand Image Perceptions” that identified the expiration date as a barriers to purchase, in this study participants were not concerned about expiration dates, this might be due to the fact they only saw a picture of the product and image themselves buying the product. If the experiment was done in-store at a supermarket we might have gotten a different result.

For what concerns price discounts that have been proved to have an impact on quality concerns, this study confirmed as many participants specifically said that by seeing the product discounted at the supermarket would make them suspicious on the quality of the product and they would not buy it. Price discounts have been identified as a marketing practice to promote ugly food consumption but from this study such practice might lead to the opposite effect and discourage the purchase. A better practice would be to give out a price discount but very moderate and make the consumer reflect on the environmental positive effect he might create buying the product.

One of the most significant discrepancy with the barriers to purchase identified by the literature is a socio-demographic barrier. Specifically, the studies of Aschemann-Witzel conducted in Uruguay in 2018 showed that females were more reluctant to buy suboptimal products. In this empirical study females were more open to buy the product. In order to further test this important point this study could be replicated on a higher number of participants divided between 50% females and 50% males.

In terms of age, a lot of studies have identified that elderly people show greater reluctance but actually in this study younger people seemed to be less open. One was almost afraid to buy these, and others (3) were not convinced even if they were environmentally aware. This might be because most of the younger consumers were students living outside of their home region in Rome and did not have the means to afford to throw out a product without eating it. In this study it was not possible to test the level of education of consumers since the sample wasn't big enough and diversified

enough to make any correlation. In terms of income the study did not identify any difference between high or low income, so it disagrees with the studies of Aschemann-Witzel that identified that people with higher income were more reluctant. Even though one participant wanted to buy the product only to show it to his children, the others with children were reluctant to buy the products. It is difficult to state that, from the study of this thesis, consumers with children are more reluctant than the ones without.

Another point that emerged from this study, in line with the literature is the fact that the low availability of suboptimal food has a negative impact on purchase intentions. In fact one of the participants stated “If there is only one carrot like that I won’t buy it. If there are all like this I would buy it. Why not?!”

Remembering the barriers to purchase found by the current literature such as: abnormal appearance, price, little knowledge about the food production, negative attitudes, low environmental awareness, low food waste awareness or habits, the findings confirm these barriers. Furthermore, the findings added two barriers: the way this product made people feel (afraid, horrified etc.) and the fact that they require more time to be handled.

Having evaluated the motivators and barriers to purchase with this empirical study, it is possible to evaluate the proposed marketing strategy contextualized by the literature. According to this study and the discoveries that emerged, the use of eco-friendly packaging proposed by the literature won’t change the consumer’s attitudes towards the products. The use of humor might be useful to increase purchase as well as anthropomorphism. Regarding anthropomorphism in this study the contribution of two participants was notable. In fact, they said that these products seemed like people or funny characters and were attracted by their look and interested in buying them and showing them to the people in their household. Indeed, it might be profitable to explore the anthropomorphism in advertising to promote these ugly food. Some participants naturally (without stimuli) associated the ugly fruits and vegetables with characters or people.

The self-perception connection proposed by the research of Grewal et al. at the point of sale was not possible to test or conceptualize over. The empirical study of this thesis confirmed the theory of the large-scale experiment of Mookerjee et al. study. The theory was that the using the “Ugly label” would increase the purchase of this type of products. In fact, once the participants were told that these “ugly products” using the word “ugly” (brutti in Italian) would help reduce food waste every participant (except one) said that they would buy them. This might be also due to the environmental consciousness recall.

### **3.5 Proposed marketing strategy**

From this empirical study a few good points emerged, points that could be used in order to create a marketing strategy, this could be carried out at the European level. The goal of the campaign could be realized in the context of the United Nations 2030 sustainable goals. Especially the goal number 12 “Responsible consumption and production” by promoting a sustainable food consumption reducing food waste at the consumer-level. Entities such as the FAO (for the United Nations) or the EFSA (for Europe, European Food Safety Authority) or the FDA (for the United States, Food and drug administration) could create a campaign based on 3 main actions: a trademark, a TV-campaign and a social campaign. The main 2 objective of the marketing campaign would be: to increase safeness and trustworthiness of ugly products and to raise awareness on food waste linked to the rejection of ugly food.

The first action they could carry out in order to increase the safeness and trustworthiness of ugly produce would be to release a trademark. This trademark would guarantee to the buyer that the product has the same standards has other regularly looking products and that it is safe to eat. For example, a trademark released by the European Union would guarantee that the governments of the member State assure to their citizens that the product even if oddly looking tastes just as good and is safe just-as much as other product

of the same category. Below an illustration of a possible European trademark in Italy for ugly product similar to the ones of DOP, IGP.



The second marketing action would be a TV campaign. In order to engage more with the consumer the European union could make a sensibilization campaign through a (or multiple) Tv ads. The technique they could use is storytelling. That has been proven to generate higher narrative transportation. Storytelling or narrative advertising is a form of advertising that communicates about a brand, a product, or a service in a story-like format.<sup>81</sup> Storytelling has also been proved to have strong persuasive elements capable of influencing consumer attitudes towards the product. The ad could start with images of the world hunger in developing countries and food waste practices around the world. Then it should focus on the ugly products that get thrown away every day or left out at the point of sale and consequently thrown away. The ad could end with a slogan using the ugly label as suggested by the research of Mookerjee and colleagues. A slogan example could be:

**“Ugly but tasty”**

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<sup>81</sup> Dessart, L. (2018). Do ads that tell a story always perform better? The role of character identification and character type in storytelling ads. *International Journal of Research in Marketing*.

The third action is aimed at raising awareness among younger consumers (20-30 years old) through a social campaign using tiktok and Instagram. In addition of posting graphics and photos on the European Union accounts it could be also interesting to start a trend “Find the ugliest product” on tiktok. Younger audience could compete with the others and their friends to find the ugliest product and post it on their account. No prize would be granted but the trend if successful would create a lot of rumor and attention on the subject and possibly other private initiatives at National level will be created afterwards.

## Conclusions

The grocery industry is a strong and mature industry that will continue to grow in the next 5 years as the world recovers from the Covid pandemic. The market will become more volatile with the shift in shopping habits from traditional in-store shopping to online grocery shopping or pick-up. Firms in this industry will need to create an omnichannel offering and at the same time actor will continue to merge or acquire new companies. The sustainability focus has reached this industry as well, responsible for a big share of food waste.

Due to the growth of population, industrialization, urbanization and modernization of food systems food waste is extremely increasing. It has become a real and concrete problem that will affect the population around the world more and more in the next decade. It is also responsible for a big share of other sustainability-related problems such as climate change with the greenhouse gas emissions that worldwide equals to the third-largest polluting country in the world.

To conclude it is clear how important it is to act., as marketers. In the context of ugly food, a topic that will be central in the next few years as more and more people become sensitive to the topic of food waste. The ugly food consumption should be promoted by governments or national/international organizations. The consumer fears for the naturalness and safetiness of these products that is why he should be reassured and guaranteed with the same standards of quality of other products. The current literature proposes to give out price discounts, use ugly labels or anthropomorphism in ads. This thesis suggests to create a well-rounded marketing campaign at European level mainly based on creating a trademark certification to put on the food's packaging and promote this initiative on TV and social medias. Future research could expand on this topic analyzing the effects of the marketing actions proposed.

“If food is produced more sustainably, distributed fairly and consumed more responsibly, we can feed everyone without destroying more forests, rivers and oceans. We need to increase people’s awareness of where food comes from, and change our behaviors to ensure the proper functioning of our food system,” said Joao Campari, WWF Food Practice Leader.

## **APPENDIX**

### 1. Interview format in Italian

#### **INTERVISTA A:**

#### **BACKGROUND INFORMATION:**

*Name and surname:*

*Sex:*

*Date of birth:*

*Age:*

*Country of residence:* Italy

*City of residence:*

*Job:*

*Average income:*

*Children:*

- 1) Sei responsabile della spesa nella tua casa?
- 2) Quando vai a fare la spesa, quanto tempo ci impieghi?
- 3) Ti consideri una persona che è attenta all'ambiente?
- 4) Quanto è importante per te fare scelte sostenibili quando fai la spesa?
- 5) Il prezzo è importante per te quando consideri cosa comprare?
- 6) Compreresti a più di un supermercato per avere il miglior prezzo?



**Adesso ti faccio osservare questi prodotti. Immagina di trovarti al supermercato.**



- 7) Qual è il primo pensiero che ti viene in mente quando vedi questi prodotti?
- 8) Pensi che dato il loro aspetto avranno un gusto diverso?
- 9) Se avessi bisogno di questi prodotti, e avresti l'opzione di scegliere tra questi e altri della stessa categoria, compreresti questi prodotti?
- 10) Perché?
- 11 A) Perché secondo te molte persone non acquisterebbero questi prodotti?
- 11 B) Se questi prodotti fossero scontati del 30% li acquisteresti?
- 12) Se questi prodotti, ad esempio, avessero un brand riconosciuto come ad esempio ciquita per le banane, ti sentiresti più a tuo agio e incline a comprarli?

13) Sei a conoscenza del problema dello spreco alimentare?

14) In quali modi contribuisce a ridurre questo problema?

15) Se ti dicessi che tonnellate di questi prodotti, che possiamo chiamare brutti, vengono sprecati ogni giorno e buttati, non arrivano nemmeno sui banchi dei supermercati proprio perché si sa che il consumatore finale non li acquisterebbe, ma allo stesso tempo questi prodotti sono buoni e sani e comprandoli potresti ridurre lo spreco alimentare saresti più incline a comprare questi prodotti?

## **Legend of tables and graphs**

### **Tables**

*Table 1* – Main motivators and demotivators of purchase of suboptimal foods

*Table 2*- Main proposed marketing strategy from the current literature

*Table 3*- Methods of the research of Grewal et. al of 2019

*Table 4*- Main findings of the research of Grewal et. al of 2019

*Table 5*- Methods of the research of Mookerjee et. al of 2021

*Table 6*- Main findings of the research of Mookerjee et. al of 2021

*Table 7*- Summary of demographics of the subjects of the empirical study

*Table 8*- Scenario A and Scenario B of the interview's questions

*Table 9*- Summary of barriers to purchase identified from the interviews

### **Graphs**

*Graph 1*- How people shop during the pandemic

*Graph 2*- Contribution of each phase of the food supply chain to carbon footprint and foot wastage

*Graph 3*- Choice likelihood of unattractive produce box by label and price discount conditions; Study 5 of Mookerjee et al's research

*Graph 4*- Division of male and female subjects of the empirical study

*Graph 5*- Average time spent by consumers at grocery stores in the western region of the United States in 2018

*Graph 6*- Time spent by interviewed subjects at the supermarket for an average grocery shopping.

*Graph 7*- Representation of answers to question 3

*Graph 8*- Representation of answers to question 4

*Graph 9*- Representation of answers to question 9

## References

- Aschemann-Witzel, J. (2018). Consumer perception and preference for suboptimal food under the emerging practice of expiration date-based pricing in supermarkets. *Food Quality and Preference*, 63, 119–128. <https://doi.org/10.1016/j.foodqual.2017.08.007>
- Aschemann-Witzel, J., de Hooge, I. E., Almli, V. L., & Oostindjer, M. (2018). Fine-tuning the fight against Food Waste. *Journal of Macromarketing*, 38(2), 168–184. <https://doi.org/10.1177/0276146718763251>
- Aschemann-Witzel, J., de Hooge, I. E., & Almli, V. L. (2019). Suboptimal Food? food waste at the consumer–retailer interface. *Saving Food*, 347–368. <https://doi.org/10.1016/b978-0-12-815357-4.00012-2>
- Aschemann-Witzel, J., Giménez, A., & Ares, G. (2018). Convenience or price orientation? consumer characteristics influencing food waste behaviour in the context of an emerging country and the impact on future sustainability of the Global Food Sector. *Global Environmental Change*, 49, 85–94. <https://doi.org/10.1016/j.gloenvcha.2018.02.002>
- Barbe, F. G., Dewitz, P. von, & Triay, M. M. (2017). Understanding consumer behaviour to develop competitive advantage: A case study exploring the attitudes of German consumers towards fruits with cosmetic flaws. *International Journal of Academic Research in Business and Social Sciences*, 7(6). <https://doi.org/10.6007/ijarbss/v7-i6/3013>
- Beauty and taste are one the inside*. Food and Agriculture Organization of the United Nations. (2018). Retrieved February 12, 2022, from [www.fao.org/fao-stories/article/en/c/1100391/](http://www.fao.org/fao-stories/article/en/c/1100391/)
- Berkenkamp, JoAnne, Nennich, Terry (2015), “Beyond Beauty: The Opportunities and Challenges of Cosmetically Imperfect Produce,” Report No. 1: Survey Results from Minnesota Produce Growers(May), [http://misadocuments.info/Beyond\\_Beauty\\_Grower\\_Survey\\_Results\\_052615.pdf](http://misadocuments.info/Beyond_Beauty_Grower_Survey_Results_052615.pdf).
- Betz, A., Buchli, J., Göbel, C., & Müller, C. (2015). Food waste in the Swiss food service industry: Magnitude and potential for reduction. *Waste Management*, 35, 218–226. doi:10.1016/j.wasman.2014.09.015
- Buzby, J. C., & Hyman, J. (2012). Total and per capita value of food loss in the United States. *Food Policy*, 37(5), 561–570. <https://doi.org/10.1016/j.foodpol.2012.06.002>
- Calvo-Porrá, C., Medín, A. F., & Losada-López, C. (2016). Can marketing help in tackling food waste?: Proposals in developed countries. *Journal of Food Products Marketing*, 23(1), 42–60. <https://doi.org/10.1080/10454446.2017.1244792>

- Cicatiello, C., Franco, S., Pancino, B., Blasi, E., & Falasconi, L. (2017). The Dark Side of retail food waste: Evidences from in-store data. *Resources, Conservation and Recycling*, 125, 273–281. <https://doi.org/10.1016/j.resconrec.2017.06.010>
- Cicatiello, C., Secondi, L., & Principato, L. (2019). Investigating consumers' perception of discounted suboptimal products at retail stores. *Resources*, 8(3), 129. <https://doi.org/10.3390/resources8030129>
- Cooremans, K., & Geuens, M. (2019). Same but different: Using anthropomorphism in the battle against Food Waste. *Journal of Public Policy & Marketing*, 38(2), 232–245. <https://doi.org/10.1177/0743915619827941>
- Dessart, L. (2018). Do ads that tell a story always perform better? The role of character identification and character type in storytelling ads. *International Journal of Research in Marketing*, 35(2), 289–304. <https://doi.org/10.1016/j.ijresmar.2017.12.009>
- Di Muro, M., Wongprawmas, R., & Canavari, M. (2016). Consumers' preferences and willingness-to-pay for misfit vegetables. *ECONOMIA AGRO-ALIMENTARE*, (2), 133–154. <https://doi.org/10.3280/ecag2016-002003>
- Diment, D. (2021, December). *Supermarket & Grocery Stores in the US*. IBIS World. Retrieved February 12, 2022, from [www.IBISWorld.com](http://www.IBISWorld.com)
- Dion, Karen, Berscheid, Ellen, Walster, Elaine (1972), “What Is Beautiful Is Good,” *Journal of Personality and Social Psychology*, 24 (3), 285–90.
- European Commission Q&A. Brussels, 18 March 2021
- Finn, S. (2013). Valuing our food: Minimizing waste and optimizing resources: The scope and significance of the global food waste problem. Pennsylvania, USA: University of Pennsylvania Scholarly Commons
- Food loss prevention in perishable crops. Food and Agriculture Organization of the United Nations. Rome: bulletin, no. 43. FAO Statistic division (1981).
- Food Wastage Footprint & Climate change*. Food and Agriculture Organization of the United Nations. (2015). Retrieved February 12, 2022, from <https://www.fao.org/3/bb144e/bb144e.pdf>
- Garnett, T. (2014). Three Perspectives on Sustainable Food Security: Efficiency, demand restraint, food system transformation. what role for life cycle assessment? *Journal of Cleaner Production*, 73, 10–18. <https://doi.org/10.1016/j.jclepro.2013.07.045>
- Giménez H.C. (2019). Normalizing sustainable consumption: How marketing is used to fight food waste. Lund University Thesis.

- Godfray, H. C., Beddington, J. R., Crute, I. R., Haddad, L., Lawrence, D., Muir, J. F., Pretty, J., Robinson, S., Thomas, S. M., & Toulmin, C. (2010). Food security: The challenge of feeding 9 billion people. *Science*, 327(5967), 812–818.  
<https://doi.org/10.1126/science.1185383>
- Gonzalez Ruiz R. (2022). 5 trends transforming the grocery industry. Oracle blog.
- Grewal, L., Hmurovic, J., Lamberton, C., & Reczek, R. W. (2018). The self-perception connection: Why consumers devalue unattractive produce. *Journal of Marketing*, 83(1), 89–107. <https://doi.org/10.1177/0022242918816319>
- Gustavsson J., Cederberg C., Sonesson U., Van Otterdijk R., Meyback A. (2011). Global Food Losses and Food waste. Extern, Causes and Prevention.
- Halloran, A., Clement, J., Kornum, N., Bucarariu, C., & Magid, J. (2014). Addressing food waste reduction in Denmark. *Food Policy*, 49, 294–301.  
 doi:10.1016/j.foodpol.2014.09.005
- Harcar, T., & Karakaya, F. (2005). A cross-cultural exploration of attitudes toward product expiration dates. *Psychology and Marketing*, 22(4), 353–371.  
<https://doi.org/10.1002/mar.20063>
- Hartmann, T., Jahnke, B., & Hamm, U. (2021). Making ugly food beautiful: Consumer barriers to purchase and marketing options for suboptimal food at retail level – a systematic review. *Food Quality and Preference*, 90, 104179.  
<https://doi.org/10.1016/j.foodqual.2021.104179>
- Hennink M., Hunter I., Bailey A. Qualitative research methods. SAGE 2020
- Hooge, I. E. de, Oostindjer, M., Aschemann-Witzel, J., Normann, A., Loose, S. M., & Almlí, V. L. (2016, September 30). *This apple is too ugly for me!: Consumer preferences for suboptimal food products in the supermarket and at home*. *Food Quality and Preference*. Retrieved April 13, 2022, from  
<https://www.sciencedirect.com/science/article/pii/S0950329316302002>
- Jaeger, S. R., Antúnez, L., Ares, G., Swaney-Stueve, M., Jin, D., & Harker, F. R. (2018). Quality perceptions regarding external appearance of apples: Insights from experts and consumers in four countries. *Postharvest Biology and Technology*, 146, 99–107.  
<https://doi.org/10.1016/j.postharvbio.2018.08.014>
- JH;, G. A. M. L. (n.d.). *Stereotype directionality and attractiveness stereotyping: Is Beauty good or is ugly bad?* Social cognition. Retrieved April 13, 2022, from  
<https://pubmed.ncbi.nlm.nih.gov/17016544/>
- Knott K. “Why we should eat ‘ugly’ food – it helps reduce shocking global food waste, and the fruit and vegetables taste just the same”. South China Morning Post. 30/3/2020

- Konuk, F. A. (2015). The effects of price consciousness and sale proneness on purchase intention towards expiration date-based priced Perishable Foods. *British Food Journal*, 117(2), 793–804. <https://doi.org/10.1108/bfj-10-2013-0305>
- Lebersorger, S., & Schneider, F. (2014). Food loss rates at the food retail, influencing factors and reasons as a basis for waste prevention measures. *Waste Management*, 34, 1911–1919. doi:10.1016/j.wasman.2014.06.013
- Lipinski, B., Hanson, C., Lomax, J., Kitinoja, L., Waite, R., & Searchinger, T. (2013). Reducing food loss and waste. Working Paper, World Resources Institute, Washington, DC.
- Loebnitz, N., & Grunert, K. G. (2015). The effect of food shape abnormality on purchase intentions in China. *Food Quality and Preference*, 40, 24–30. <https://doi.org/10.1016/j.foodqual.2014.08.005>
- Loebnitz, N., Schuitema, G., & Grunert, K. G. (2015). Who buys oddly shaped food and why? impacts of food shape abnormality and organic labeling on purchase intentions. *Psychology & Marketing*, 32(4), 408–421. <https://doi.org/10.1002/mar.20788>
- Lund, C. M., Jaeger, S. R., Amos, R. L., Brookfield, P., & Harker, F. R. (2006). Tradeoffs between emotional and sensory perceptions of freshness influence the price consumers will pay for apples: Results from an experimental market. *Postharvest Biology and Technology*, 41(2), 172–180. <https://doi.org/10.1016/j.postharvbio.2006.03.011>
- Mookerjee, S. (S., Cornil, Y., & Hoegg, J. A. (2021). From waste to taste: How “ugly” labels can increase purchase of unattractive produce. *Journal of Marketing*, 85(3), 62–77. <https://doi.org/10.1177/0022242920988656>
- Papargyropoulou, E., Lozano, R., K. Steinberger, J., Wright, N., & Ujang, Z. bin. (2014). The food waste hierarchy as a framework for the management of food surplus and Food Waste. *Journal of Cleaner Production*, 76, 106–115. <https://doi.org/10.1016/j.jclepro.2014.04.020>
- Parfitt, J., Barthel, M., & Macnaughton, S. (2010). Food waste within food supply chains: Quantification and potential for change to 2050. *Philosophical Transactions of the Royal Society*, 365, 3065–3081. doi:10.1098/rstb.2010.0126
- Progressive Grocer. (March 1, 2019). Average time spent by consumers at grocery stores in the western region of the United States in 2018 (in minutes) [Graph]. In *Statista*. Retrieved April 10, 2022, from <https://www.statista.com/statistics/984396/grocery-store-dwell-time-western-region-us/>
- Shao, X., Jeong, E. H., Jang, S. C. (S., & Xu, Y. (2020). Mr. Potato Head fights food waste: The effect of anthropomorphism in promoting Ugly Food. *International Journal of Hospitality Management*, 89, 102521. <https://doi.org/10.1016/j.ijhm.2020.102521>
- Smil V. (2004). Improving efficiency and reducing waste in our food system. *Environ. Sci.*, 1 (1) (2004), pp. 17-26

- Spicer R. (2021). 8 grocery retail industry trends, drivers, and challenges. Oracle retail blog
- Stenmarck A., Jensen C., Quedsted T., Moates G. (2016). Estimates of European food waste levels. *FUSIONS*. ISBN 978-91-88319-01-2
- Stuart T. (2009). *Waste. Uncovering the global food scandal*. Penguin Books, London
- Theotokis, A., Pramataris, K., & Tsiros, M. (2012). Effects of expiration date-based pricing on Brand Image Perceptions. *Journal of Retailing*, 88(1), 72–87.  
<https://doi.org/10.1016/j.jretai.2011.06.003>
- Thyberg, K. L., & Tonjes, D. J. (2016). Drivers of food waste and their implications for sustainable policy development. *Resources, Conservation and Recycling*, 106, 110–123.  
<https://doi.org/10.1016/j.resconrec.2015.11.016>
- Tsiros, M., & Heilman, C. M. (2005). The effect of expiration dates and perceived risk on purchasing behavior in grocery store perishable categories. *Journal of Marketing*, 69(2), 114–129. <https://doi.org/10.1509/jmkg.69.2.114.60762>
- Understanding Consumer Behavior when grocery shopping in the new next 2020 (2021). Oracle retail, Anatomy of change.
- Van Giesen, R. I., & de Hooge, I. E. (2019). Too ugly, but I love its shape: Reducing food waste of suboptimal products with authenticity (and sustainability) positioning. *Food Quality and Preference*, 75, 249–259. <https://doi.org/10.1016/j.foodqual.2019.02.020>
- White, K., Lin, L., Dahl, D. W., & Ritchie, R. J. (2016). When do consumers avoid imperfections? superficial packaging damage as a contamination cue. *Journal of Marketing Research*, 53(1), 110–123. <https://doi.org/10.1509/jmr.12.0388>
- Williams, H., Wikström, F., Otterbring, T., Löfgren, M., & Gustafsson, A. (2012). Reasons for household food waste with special attention to packaging. *Journal of Cleaner Production*, 24, 141–148. doi:10.1016/j.jclepro.2011.11.044
- Wong, S.-L., Hsu, C.-C., & Chen, H.-S. (2018). To buy or not to buy? consumer attitudes and purchase intentions for Suboptimal Food. *International Journal of Environmental Research and Public Health*, 15(7), 1431. <https://doi.org/10.3390/ijerph15071431>
- Xu, Y., Jeong, E. H., Jang, S. C. (S.), & Shao, X. (2021). Would you bring home ugly produce? motivators and demotivators for Ugly Food Consumption. *Journal of Retailing and Consumer Services*, 59, 102376.  
<https://doi.org/10.1016/j.jretconser.2020.102376>
- Yue, C., Alfnes, F., & Jensen, H. H. (2009). Discounting spotted apples: Investigating consumers' willingness to accept cosmetic damage in an organic product. *Journal of Agricultural and Applied Economics*, 41(1), 29–46.  
<https://doi.org/10.1017/s1074070800002534>



## Summary

# **The fight against food waste: an empirical study on the antecedents of the primary grocery shoppers' rejection of suboptimal food**

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## **Keywords**

Ugly food; suboptimal food; food waste; grocery industry; food waste in supermarkets.

## **Abstract**

Food waste is one of the many problems society is generating in this 21<sup>st</sup> century. According to the WFP (World Food Programme) 1.3 billion tons of food get wasted per year. One of the reasons contributing to food waste is the rejection of suboptimal food also called “ugly food”. These are products that are visually not appealing and that are perceived as of lesser value than other items of the same kind by the consumers. According to the United Nations' Food and Agriculture Organization (FAO), 25 to 30 per cent of carrots do not make it to supermarket shelves because of physical or aesthetic defects. Marketers have the obligation to contribute to the reduction of this problem through targeted marketing actions.

## **Introduction**

During the past two decades, grocery has shifted from an industry dominated by small grocers serving local markets to multinational retailers present in international markets. The grocery industry is a competitive environment where many players are active. In the last five years it grown exponentially thanks to a stronger economy. Over the next five years, industry revenue will continue to increase as the economy recovers after the pandemic. Another driver of the success of this industry is the fact that now consumers tend to live more in urban cities and purchase less from smaller retailers or grow their own products. This business did not suffer the effects of the Covid-19 pandemic, in fact revenue increased significantly in 2020 as a result of retailers being able to stay open during lockdowns and people buying more food than usual. The pandemic although it did not impact the revenues of the industry accelerated many of the trends the industry was already seeing. For example, the market became more volatile with the shift in

shopping of many consumers who turned to grocery delivery and pickup, many supermarket operators shifted to omnichannel offerings to remain competitive with e-tailers, such as Amazon.com Inc. (Amazon), merger and acquisition activity is expected to continue as large operators seek to increase their economies of scale and expand their geographic reach, due to increased competition and high market saturation (Diment D. 2021). Agility and adaptability have become critical to the sustainability of grocery businesses.

Nonetheless, with the increase of super-centers retailers and the consequent decrease of local grocers a major problem arose: food waste. Would you go into a supermarket, buy three shopping bags of food, and then immediately throw one away? Statistically, that's what's happening to our food today. The Food and Agriculture Organization (FAO) defines food waste as wholesome edible material intended for human consumption, arising at any point in the food supply chain that is instead discarded, lost, degraded, or consumed by pests (FAO, 1981). When we waste food, we waste all the resources that go into producing and transporting the food, such as land, water and fuel use, without gaining any of the benefits of feeding people. When food ends up in landfill it also contributes to greenhouse gas emissions (food waste generates 8%-10% of global greenhouse gas emissions, it emits more greenhouse gases than all single countries except China and the US) (FAO,2015).

### **The ugly food problem**

According to the U.S. Department of Agriculture (USDA) in the US alone, \$15.4 billion of edible produce get throwed away each year. Farmers discard up to 30% of produce simply because they do not consider it “pretty enough” for retail sale (Berkenkamp, JoAnne, Nennich, Terry 2015). A carrot, for example, often faces many obstacles before even getting to a supermarket. It must pass the rigid requirements that supermarkets have for their fruits and vegetables. Sometimes, carrots must go through photographic sensor machines that analyze them for aesthetic defects. If they are slightly bent, not bright orange, have a blemish or are broken, they are moved into the pile intended for livestock feed even though they are still fit for human consumption. In total about 25-30% of carrots, don't make it to the grocery store because of physical or aesthetic defects (FAO, 2018).

Several studies of consumer psychology show that people tend to attribute a “beauty premium” to attractive individuals and objects and penalize unattractive produce with an “ugliness penalty”. Studies have also shown that unattractive individuals are perceived as less intelligent and less sociable than attractive individuals (JH, G. A. M. L.). There is a common stereotype “what is beautiful is good”, such that attractive

individuals are evaluated as more intelligent, socially skilled, ethical, and occupationally competent (Dion, Karen, Berscheid, Ellen, Walster, Elaine, 1972).

More than 82 million people go hungry every day, while the world as a whole wastes or loses 1/3 of what is produced. In the case of fruits and vegetables, almost half (45%) is wasted. In our world of increasing extreme weather events and changes in climate, saving ugly fruit isn't only an issue of ethics, it is a question of resources. We, as marketers, must act to encourage the sale of these products.

The main drivers of food waste are modernization of food system, industrialization, economic growth, urbanization, globalization, cultural factors (such as attitudes, eating habits, personal preferences, values etc.), socio-demographic factors (es. Aging population), policies driving food waste generation. At the retail and institutional levels, food is generally wasted due to choices regarding quantities of available food and visual qualities of food. Specific causes include (1) un-purchased specialty holiday food; (2) damaged packaging; (3) damaged or inadequately prepared items; (4) overstocking or over preparation of food; (5) routine kitchen preparation waste; and (6) out-grading/quality control (Buzby, J. C., & Hyman, J., 2012). As previously mentioned, many grocers discard food in order to respect visual standards such as shape, color and size. Buzby et al. (2015) found that in U.S. supermarkets, the percentage of fresh produce delivered to U.S. supermarkets that was not sold for any reason ranged from 2.2 (sweet corn) to 62.9 (turnip greens) percent; the range for fruits was smaller, ranging from 4.1 (bananas) to 43.1 (papaya) percent.

Most consumers judge food by its appearance. This assessment of suboptimality by the consumer can occur both at the point of purchase in the store and the point of consumption at home. This consumers' behavior influences the supermarket and supply chain actions upstream, leading to food wasted due to the anticipated consumer reaction (Aschemann-Witzel, J., de Hooge, I. E., & Almlı, V. L., 2019). In today's beauty-obsessed world even the food has to look pretty for the consumer. Supermarket companies have set high cosmetic standards for products and consumers have fallen for them.

## **Motivators and barriers to the purchase of ugly food**

The two main motivators of ugly food consumption are price consciousness and environmental self-identity. And the main demotivator is physical appearance. The environmental self-identity is particularly strong for millennials and gen Z, generations that feel the urge to take action in order to reduce food waste, fight climate change etc. According to Loebnitz N., Schuitema G. and Grunert K.' research (2015) people with a

stronger pro-environmental self-identity express stronger intention to purchase abnormally shaped organic products. People with higher problem awareness. This was also confirmed by the research of Xu Y., Jeong E., Jang S., Shao X. which conducted an online survey to test the hypothesis for which price consciousness and environmental self-identity were motivators of the consumption of ugly food.

Hartmann and colleagues gathered the research on suboptimal products in the Web of science and Science direct databases and found out that the main 2 barriers are: abnormal appearance and nearing expiration date. For **abnormal appearance** we refer to misshapeness blemishes or product damage, abnormal shape rather than abnormal size. Expiration date seem to be a psychological contract (Theotokis, A., Pramataris, K., & Tsiros, M., 2012) between retailers and consumers and is often used by consumer to calculate overall product value (Aschemann-Witzel, J., Giménez, A., & Ares, G., 2018). Another factor that has been proved to have an impact on lowering quality expectation is **price**. The discounted prices confirm quality concerns (Theotokis, A., Pramataris, K., & Tsiros, M., 2012; Konuk, F. A., 2015). In addition to these 2 main barriers there are also other significant barrier worth mentioning. The first group are the **socio-demographics barriers**. For example, female consumers show greater reluctance than males. This is of evidence of 2 main studies conducted in Uruguay by Aschemann-Witzel et al. in 2018. Other studies have found that female respondents demand a higher discount for different suboptimal products than men (De Hooze et al., 2017). Opposite to these 2 studies have found man to be more reluctant (Aschemann-Witzel et al., 2018a; Barbe, Dewitz, & Triay, 2017). In terms of age, elderly consumers have proved to be less open both towards misshapen food (Aschemann-Witzel, 2018a; Aschemann-Witzel et al., 2018c; Cicatiello, Secondi, & Principato, 2019; De Hooze et al., 2017; Van Giesen & De Hooze, 2019). This is contradicted, however, by one study which found that younger consumers were less open to SF (low age: Tsiros & Heilman, 2005). Several studies found that consumers with low education levels were less open towards expiring and misshapen food (Aschemann-Witzel et al., 2017; Aschemann-Witzel, 2018a; De Hooze et al., 2017), as were consumers with high income (Aschemann-Witzel et al., 2017; Aschemann-Witzel et al., 2018b; Barbe et al., 2017; Yue et al., 2009) and consumers from small households (Aschemann-Witzel et al., 2017; Aschemann-Witzel et al., 2018a; Cicatiello et al., 2019; Tsiros & Heilman, 2005). Consumers from small households apparently feared being unable to consume expiring food before the expiration date. Consumers with children, as well as consumers buying food for children, were also found to be less open to SF (De Hooze et al., 2017; Lund et al., 2006).

The second group of barriers found is **knowledge and information seeking**. Little knowledge about food/food production was mostly indicated by unsubstantiated

conclusions based on suboptimal appearance, with consumers typically believing that misshapen food products are less tasty and less fresh (Barbe, F. G., Dewitz, P. von, & Triay, M. M., 2017) or less healthy and more risky than optimal foods (Cooremans, K., & Geuens, M., 2019). For example, studies have found that respondents expect suboptimal fruits to be “tasteless” (Aschemann-Witzel, 2018a; Jaeger et al., 2018a), with results further indicating that they believed misshapen and blemished fresh foods to originate from “mistakes in the production process” (Aschemann-Witzel et al., 2018b). Surprisingly, even a ripped label on an otherwise intact sauce package was seen as a “contamination cue”, since the damaged label “suggested it had been touched/contaminated by others” (White, K., Lin, L., Dahl, D. W., & Ritchie, R. J., 2016). Another barrier found in this context is low familiarity with SF.

The third group of barriers is related to **attitudes towards SF**. Studies found that SF purchase intentions can be impeded by preconceived negative attitudes towards SF (Barbe et al., 2017; Wong, Hsu, & Chen, 2018) as well as by low environmental awareness (De Hooge et al., 2017; Loebnitz & Grunert, 2015; Van Giesen & De Hooge, 2019; Yue et al., 2009). While low environmental awareness by itself was found to have no significant effect by Loebnitz et al. (2015), the combination with low food waste awareness decreased purchase intentions significantly. The negative influence of low food waste awareness on consumer perceptions of SF also emerged in other studies (Aschemann-Witzel et al., 2017; Cicatiello et al., 2019; Collart & Interis, 2018; De Hooge et al., 2017). Regarding quality-related barriers, numerous studies have found consumers to have general quality concerns about different types of SF (Aschemann-Witzel et al., 2017; Aschemann-Witzel, 2018a; Aschemann-Witzel et al., 2018c; Helmert, Symmank, Pannasch, & Rohm, 2017; Jaeger et al., 2016; Jaeger et al., 2018a; Konuk, 2015, 2018; Lombart et al., 2019; Tsiros & Heilman, 2005; Van Giesen & De Hooge, 2019; Wong et al., 2018). Naturalness concerns have further been found to impede choices of SF (Loebnitz & Grunert, 2018), as have safety concerns (Aschemann-Witzel et al., 2018b; Cooremans & Geuens, 2019; De Hooge et al., 2017; Konuk, 2018; Loebnitz & Grunert, 2018; Tsiros & Heilman, 2005; White et al., 2016). Other quality-related concerns emerged are taste concerns, nutritional quality concerns and freshness concerns.

The fourth group of barriers is related to **context**. This generally refer to shopping and house-keeping context. In the case of shopping many studies found that undiscounted prices of SF have a negative impact since people expect them. On the other end several studies have also pointed out how discounted prices lead to confirm quality concerns. In this context also the low availability of SF has a negative effect. The study of Muro et al. 2016 suggested that consumers shopping at supermarkets are only used to

standardized carrots in opposition to those shopping at fresh markets where a broader spectrum is marketed. In the household context, the perceived limited usage span of SF has been found to impede choices (Aschemann-Witzel et al., 2017; Aschemann-Witzel, 2018a; Symmank et al., 2018), together with limited storage options at home (Aschemann-Witzel et al., 2017) and different food plans concerning usage and storage (Aschemann-Witzel et al., 2017; Tsiros & Heilman, 2005).

The fifth group of barriers relates to **habits**. Looking at shopping habits, the factor of high food expenditure has been shown to impede choices of SF (Cicatiello, C., Secondi, L., & Principato, L., 2019). Consumers with lower attachment to brands have further been found to be less open to SF. With regard to housekeeping habits, low food involvement (low involvement in food and cooking culture) has been identified as a barrier (Aschemann-Witzel, 2018b; Aschemann-Witzel et al., 2018a, 2018c). Meat consumption (McCarthy & Liu, 2017) and high (perceived) food waste at home are another two housekeeping habits with negative influence on consumer perceptions of SF (Hooge, I. E. de, Oostindjer, M., Aschemann-Witzel, J., Normann, A., Loose, S. M., & Almlı, V. L. 2016). From these barriers we can conclude that people expect a sort of compensation for buying SF (ex. Price discounts).

We can sum-up these barriers in three categories of attributes as identified in the research of Mookerjee and colleagues: **tastiness, healthiness, and naturalness**. “Tastiness refers to produce’s hedonic, multisensory qualities: not only its flavor, but also its juiciness or crispiness (Auvray and Spence 2008). Healthiness refers to nutritional value. Naturalness refers to the absence of chemicals (e.g., pesticides, preservatives), which is characteristic of organic produce (Verhoog et al. 2007). In addition to these categories, there can be additional safety concerns in the case of moldy, rotten, or damaged produce. However, our definition of unattractive produce explicitly excludes these concerns as retailers have strict regulations preventing the sale of unsafe produce” (Mookerjee, S. Cornil, Y., & Hoegg, J. A., 2021). Healthiness and tastiness seem to have a positive association with appeal with naturalness the association is less straightforward. The concept of perfection is unnatural. Consumers expect natural and organic products to be less attractive, so there is a negative correlation between naturalness and appeal. It is possible to state that the literature suggests that consumers expect unattractive products to be less tasty and less healthy, and at the same time more natural.

## Research method

The aim of this research, is to further test these findings and expand on the antecedents of the rejection of ugly food. Empirical academic studies can be made using two different methodologies: qualitative or quantitative or by using a mixed approach. The orientation of this research is qualitative, a method that best suits the research purpose and answer the research question. The method used is in-depth interviews, a disruptive method compared to the ones that the current available researches on the subject use. Essential to fill the gap in the literature, in order to get a better understanding behind the behaviors of the consumers at the point of sale where they decide to not pick up the ugly product. Nevertheless, it is appropriate to consider the limitation of the interview methodology there is no interaction or feedback between participants, it is possible to get an understanding only of individual perceptions and multiple interviews are needed to identify the range of issues (Mookerjee, S. Cornil, Y., & Hoegg, J. A., 2021). The expected outcomes of these interviews are very straightforward. It is possible to state four main research question.

*RQ1: Will participants refuse to buy these products due to their odd look?*

*RQ2: Will participants be more incline to buy these products knowing that they can contribute to the reduction of food waste?*

*RQ3: Will the reason why they reject to buy these products be the fact that they expect a different taste?*

*RQ4: Will they think that the products are harmful to their health?*

The participants are 16 Italian primary grocery shoppers. 11 females (68,8%) and 5 males (31,3%). The age range is between 22 and 60 years old. 75% of the participants have children. The average number of children is 1,58. Some of the interviews were conducted using Microsoft teams while others were conducted in-person. The interviews were conducted in Italian to make the participants more comfortable in their native language, in fact not all of them spoke English. Primary shopper is a person that does the majority of household grocery shopping. Secondary shopper relates to households that have a person who does the minority of household grocery shopping. Shared shopper relates to households that equally split grocery shopping (Grocery shopping responsibility share US 2018; Statista).

The in-depth interview is composed of two sections. In the first section demographic data is collected and in the second section there are 14 questions to test the hypotheses. In the middle of the interview participants were shown a picture of some ugly products. This is a projective technique which is used in psychology, to let a person respond to

ambiguous stimuli, presumably revealing hidden emotions and internal conflicts projected by the person into the test. In this case it was used to better project the scenario of finding these products at a common supermarket and make the participant project himself at the fresh product aisle.



**Figure 1.** Pictured shown to participants downloaded from Google images

## **Results and findings**

After having conducted the 16 interviews great points emerged. 4 participants mentioned that they spend an average of 60 minutes to do their grocery shopping, 1 participant mentioned he spends 45 min, 1 participant mentioned he spends 40 min, 6 participants spend 30 minutes, 1 participant spends 25 minutes and 3 participants spend 20 minutes. The average that is possible to calculate is 26 minutes this is coherent with the Statista analysis carried out in the Western region of the United States. Out of 16 participants most of them seem to be price sensitive (14) but at the same time this price sensitiveness is not strong as only 2 of them would shop at multiple grocery outlets in order to have the best price. All the participants were aware of the food waste problem and said that they are committed to not waste at home. Only one was open to say that he does not enough to reduce the problem. A couple of participants mentioned that they use the app too good to go and are happy to save some food occasionally.



Regarding the part of the interview related to the supermarket scenario the interviewer tried to replicate, these are the results:

To the question what is your first thought that comes to your mind when you see the products? Few translated interesting responses are listed below.

- “They are GMOs (genetically modified organisms) and are not good for my health”;
- “OMG they are very ugly”;
- “They taste weird”;
- “They seem fake”
- “They remind me of cartoons”

Some participants, on the contrary, also stated positive thoughts like “freshness”, “they seem tasty”, “they are simply fruit and vegetables”, “Health and wellness”.

Half of the participant expect a different taste than averagely looking food. Concerning the willingness to buy 12 participants (75%) said that they won’t buy the product while 4 people said that they would buy the products. The ones that wish to buy the products are intrigued by the different look and wish to bring home the product to show it to their children or husband/wife.

On the reason why they did not want to buy the products, so the barriers to purchase were: the look of the product, the fact that they were afraid for their health, they were unsure about the way these products were grown, they thought that these products are difficult to wash and cut. One of the participants said that she was scared and horrified. These participants except one, where also refusing any discount on the product or said that having a well-known brand would not change their purchase decision. To cite one of the participants “I wouldn’t eat these even if you would gift them to me”.

The participants who said they would buy the products when asked about why they thought others refuse to buy those products said that it’s because they think they are faulty, not tasty and it’s not what they are used to.

At the end of the interview all the participants were asked if after knowing they could reduce food waste and knew that the products were perfectly safe and tasty, they would buy the product and they all answered affirmative. Some would feel more conformable if these had a quality mark released by a government’s organization that stated that all the necessary checks had been implemented. One male participant was not too convinced has he thought that these products could be better used in industries or canteens.

## Discussions

This study aimed to identify the barriers to the purchase of ugly food. As identified by Mookerjee et al. in their study “From waste to taste: How “ugly” labels can increase purchase of unattractive produce” the subjects of this study evaluated the products along three attributes: tastiness, healthiness, and naturalness. For what concern tastiness the subjects were divided between the ones that did not expect a different taste form these ugly products and those who thought they would taste different, not necessarily bad. Regarding healthiness, participants were reluctant for the fact that they did not believe that these products would bring the same nutritional value. Almost all participants that declared that they won’t buy the products made a naturalness evaluation and were scared for their health. They thought the product was an OGM, full of chemicals. Once they were forced to reflect on the fact that an OGM is a product that is aesthetically perfect, they were less scared on the naturalness part but still they did not want to buy the products.

In accordance with the research of 2015 of Loebnitz, Schuitema G. and Grunert K. and the study of Xu Y. et al., also in this study has been proven that people that have a stronger self-identity express stronger intention to purchase abnormally shaped organic products.

Contrary to the study of Theotokis A, et al named “Effects of expiration date-based pricing on Brand Image Perceptions” that identified the expiration date as a barriers to purchase, in this study participants were not concerned about expiration dates, this might be due to the fact they only saw a picture of the product and imaged themselves buying the product. If the experiment was done in-store at a supermarket we might have gotten a different result.

For what concerns price discounts that have been proved to have an impact on quality concerns, this study confirmed as many participants specifically said that by seeing the product discounted at the supermarket would make them suspicious on the quality of the product and they would not buy it. Price discounts have been identified as a marketing practice to promote ugly food consumption but from this study such practice might lead to the opposite effect and discourage the purchase. A better practice would be to give out a price discount but very moderate and make the consumer reflect on the environmental positive effect he might create buying the product.

One of the most significant discrepancy with the barriers to purchase identified by the literature is a socio-demographic barrier. Specifically, the studies of Aschemann-Witzel conducted in Uruguay in 2018 showed that females were more reluctant to buy

suboptimal products. In this empirical study females were more open to buy the product. In order to further test this important point this study could be replicated on a higher number of participants divided between 50% females and 50% males.

In terms of age, a lot of studies have identified that elderly people show greater reluctance but actually in this study younger people seemed to be less open. One was scared to eat these, and others (3) were not convinced even if they were environmentally aware. This might be because most of the younger consumers were students living outside of their home region in Rome and did not have the means to afford to throw out a product without eating it. In this study it was not possible to test the level of education of consumers since the sample wasn't big enough and diversified enough to make any correlations. In terms of income the study did not identify any difference between high or low income, so it disagrees with the studies of Aschemann-Witzel that identified that people with higher income were more reluctant. Even though one participant wanted to buy the product only to show it to his children, the others with children were reluctant to buy the products. It is difficult to state that, from the study of this research, consumers with children are more reluctant than the ones without.

Another point that emerged from this study, in line with the literature is the fact that the low availability of suboptimal food has a negative impact on purchase intentions. In fact one of the participants stated "If there is only one carrot like that I won't buy it. If there are all like this I would buy it."

Remembering the barriers to purchase found by the current literature such as: abnormal appearance, price, little knowledge about the food production, negative attitudes, low environmental awareness, low food waste awareness or habits, the findings confirm these barriers. Furthermore, the findings added two barriers: the way this product made people feel (afraid, horrified etc.) and the fact that they require more time to be handled.

Having evaluated the motivators and barriers to purchase with this empirical study, it is possible to evaluate the proposed marketing strategy contextualized by the literature. According to this study and the discoveries that emerged, the use of eco-friendly packaging proposed by the literature won't change the consumer's attitudes towards the products. The use of humor might be useful to increase purchase as well as anthropomorphism. Regarding anthropomorphism in this study the contribution of two participants was notable. In fact, they said that these products seemed like people or funny characters and were attracted by their look and interested in buying them and showing them to the people in their household. Indeed, it might be profitable to explore the anthropomorphism in advertising to promote these ugly food. Some participants

naturally (without stimuli) associated the ugly fruits and vegetables with characters or people.

The self-perception connection proposed by the research of Grewal et al. at the point of sale was not possible to test or conceptualize over. The empirical study of this research confirmed the theory of the large-scale experiment of Mookerjee et al. study. The theory was that by using the “Ugly label” it would be possible to increase the purchase of this type of products. In fact, once the participants were told that these “ugly products” using the word “ugly” (brutti in Italian) would help reduce food waste every participant (except one) said that they would buy them. This might be also due to the environmental consciousness recall.

### **Proposed marketing strategy**

From this empirical study a few good points emerged, points that could be used in order to create a marketing strategy, that could be carried out at the European level. The goal of the campaign could be realized in the context of the United Nations 2030 sustainable goals. Especially the goal number 12 “Responsible consumption and production” by promoting a sustainable food consumption reducing food waste at the consumer-level. Entities such as the FAO (for the United Nations) or the EFSA (for Europe, European Food Safety Authority) or the FDA (for the United States, Food and drug administration) could create a campaign based on 3 main actions: a trademark, a TV-campaign and a social campaign. The main 2 objective of the marketing campaign would be: to increase safeness and trustworthiness of ugly products and to raise awareness on food waste linked to the rejection of ugly food.

The first action is to release a trademark. This trademark would guarantee to the buyer that the product has the same standards has other regularly looking products and that it is safe to eat. For example, a trademark released by the European Union would guarantee that the governments of the member State assure to their citizens that the product even if oddly looking tastes just as good and is safe just-as much as other product of the same category. The second marketing action would be a TV campaign. In order to engage more with the consumer the European union could make a sensibilization campaign through a (or multiple) Tv ads. The technique they could use is storytelling, that has been proven to generate higher narrative transportation. Storytelling has also been proved to have strong persuasive elements capable of influencing consumer attitudes towards the product. The third action is aimed at raising awareness among younger consumers (20-30 years old) through a social campaign using tiktok and Instagram.

## Conclusions

Due to the growth of population, industrialization, urbanization and modernization of food systems, food waste is extremely increasing. It has become a real and concrete problem that will affect the population around the world more and more in the next decade. It is also responsible for a big share of other sustainability-related problems such as climate change with the greenhouse gas emissions that worldwide equals to the third-largest polluting country in the world.

To conclude it is clear how important it is to act, as marketers. In the context of ugly food, a topic that will be central in the next few years as more and more people become sensitive to the topic of food waste. The ugly food consumption should be promoted by governments or national/international organizations. The consumer fears for the naturalness and safeness of these products that is why he should be reassured and guaranteed with the same standards of quality of other products. The current literature proposes to give out price discounts, use ugly labels or anthropomorphism in ads. Although this might be good practices at the retail level it is also possible to act at a government level creating a trademark certification to put on the food's packaging and promote this initiative on TV and social medias.

## References

- Aschemann-Witzel, J., De Hooge, I. E., & Almlí, V. L. (2019). Suboptimal Food? food waste at the consumer–retailer interface. *Saving Food*, 347–368. <https://doi.org/10.1016/b978-0-12-815357-4.00012-2>
- Aschemann-Witzel, J., Giménez, A., & Ares, G. (2018). Convenience or price orientation? consumer characteristics influencing food waste behaviour in the context of an emerging country and the impact on future sustainability of the Global Food Sector. *Global Environmental Change*, 49, 85–94. <https://doi.org/10.1016/j.gloenvcha.2018.02.002>
- Barbe, F. G., Dewitz, P. von, & Triay, M. M. (2017). Understanding consumer behaviour to develop competitive advantage: A case study exploring the attitudes of German consumers towards fruits with cosmetic flaws. *International Journal of Academic Research in Business and Social Sciences*, 7(6). <https://doi.org/10.6007/ijarbss/v7-i6/3013>

- Berkenkamp, JoAnne, Nennich, Terry (2015), “Beyond Beauty: The Opportunities and Challenges of Cosmetically Imperfect Produce,” Report No. 1: Survey Results from Minnesota Produce Growers(May), [http://misadocuments.info/Beyond\\_Beauty\\_Grower\\_Survey\\_Results\\_052615.pdf](http://misadocuments.info/Beyond_Beauty_Grower_Survey_Results_052615.pdf).
- Buzby, J. C., & Hyman, J. (2012). Total and per capita value of food loss in the United States. *Food Policy*, 37(5), 561–570. <https://doi.org/10.1016/j.foodpol.2012.06.002>
- Cicatiello, C., Secondi, L., & Principato, L. (2019). Investigating consumers’ perception of discounted suboptimal products at retail stores. *Resources*, 8(3), 129. <https://doi.org/10.3390/resources8030129>
- Cooremans, K., & Geuens, M. (2019). Same but different: Using anthropomorphism in the battle against Food Waste. *Journal of Public Policy & Marketing*, 38(2), 232–245. <https://doi.org/10.1177/0743915619827941>
- Diment, D. (2021, December). *Supermarket & Grocery Stores in the US*. IBIS World. Retrieved February 12, 2022, from [www.IBISWorld.com](http://www.IBISWorld.com)
- Food loss prevention in perishable crops. Food and Agriculture Organization of the United Nations. Rome: bulletin, no. 43. FAO Statistic division (1981).
- Food Wastage Footprint & Climate change*. Food and Agriculture Organization of the United Nations. (2015). Retrieved February 12, 2022, from <https://www.fao.org/3/bb144e/bb144e.pdf>
- Loebnitz, N., Schuitema, G., & Grunert, K. G. (2015). Who buys oddly shaped food and why? impacts of food shape abnormality and organic labeling on purchase intentions. *Psychology & Marketing*, 32(4), 408–421. <https://doi.org/10.1002/mar.20788>
- Lund, C. M., Jaeger, S. R., Amos, R. L., Brookfield, P., & Harker, F. R. (2006). Tradeoffs between emotional and sensory perceptions of freshness influence the price consumers will pay for apples: Results from an experimental market. *Postharvest Biology and Technology*, 41(2), 172–180. <https://doi.org/10.1016/j.postharvbio.2006.03.011>
- Mookerjee, S. (S., Cornil, Y., & Hoegg, J. A. (2021). From waste to taste: How “ugly” labels can increase purchase of unattractive produce. *Journal of Marketing*, 85(3), 62–77. <https://doi.org/10.1177/0022242920988656>

- Konuk, F. A. (2015). The effects of price consciousness and sale proneness on purchase intention towards expiration date-based priced Perishable Foods. *British Food Journal*, 117(2), 793–804. <https://doi.org/10.1108/bfj-10-2013-0305>
- Theotokis, A., Pramataris, K., & Tsiros, M. (2012). Effects of expiration date-based pricing on Brand Image Perceptions. *Journal of Retailing*, 88(1), 72–87. <https://doi.org/10.1016/j.jretai.2011.06.003>
- Tsiros, M., & Heilman, C. M. (2005). The effect of expiration dates and perceived risk on purchasing behavior in grocery store perishable categories. *Journal of Marketing*, 69(2), 114–129. <https://doi.org/10.1509/jmkg.69.2.114.60762>
- Van Giesen, R. I., & de Hooze, I. E. (2019). Too ugly, but I love its shape: Reducing food waste of suboptimal products with authenticity (and sustainability) positioning. *Food Quality and Preference*, 75, 249–259. <https://doi.org/10.1016/j.foodqual.2019.02.020>
- White, K., Lin, L., Dahl, D. W., & Ritchie, R. J. (2016). When do consumers avoid imperfections? superficial packaging damage as a contamination cue. *Journal of Marketing Research*, 53(1), 110–123. <https://doi.org/10.1509/jmr.12.0388>
- Xu, Y., Jeong, E. H., Jang, S. C. (S.), & Shao, X. (2021). Would you bring home ugly produce? motivators and demotivators for Ugly Food Consumption. *Journal of Retailing and Consumer Services*, 59, 102376. <https://doi.org/10.1016/j.jretconser.2020.102376>