Chapter 1

Introduction

1.1 Background

As the food industry is one of the largest industries around the world, the amount of food production that is needed to fulfill the demand has increased with the growing population. Under these circumstances, food production is generating higher levels of waste and byproducts that cause negative impacts on the environment, making it harder to achieve sustainable development. One of the sectors of the food industry, which is agricultural production, generates a high amount of byproducts and waste. Halving the amount of waste generated is one of sustainable development goals, as it can result in a decrease in emissions and excessive use of natural resources (Giménez et al., 2021).

According to the Food and Agriculture Organization (FAO, 2022), the amount of food waste generated annually reaches 1.3 billion tons. Around 20% of it is actually discarded due to cosmetic reasons such as odd shapes, colors, blemishes on a peel that is not consumed. This means, 1 in 5 fruits and vegetables are getting tossed into the landfill just because of their appearance. This concerning amount of wasted food due to physical imperfections (ugly foods/suboptimal foods) are due to the unwillingness to sell, purchase, or consume these said 'ugly' foods or 'suboptimal' foods. Foods that are discarded are due to multiple behaviors that are related to the consumer's food journey: planning, purchase, storage, preparation, and consumption. The planning process and the decision being made by consumers to purchase 'optimal' fruits and vegetables will also influence the retailer's decision on preparing the fruits and vegetables and therefore impact the food waste upstream in the supply chain. Oftentimes during point-of-purchase, consumers select 'optimal' products and avoid 'suboptimal' and/or 'ugly' products, this is due to several factors as to why 'ugly' and/or 'suboptimal' foods are not chosen, one of them being the consumer perception that 'ugly' and/or 'suboptimal' foods has passed the best-before date (Newsome et al., 2014) or that the foods have been compromised in its quality and perceived benefits and could potentially have negative consequences if eaten. There are also external factors that influence the perception of foods being 'ugly' and/or 'suboptimal', with it being the existence of product specifications applied by international trade regulations and retailers, these specifications include the regulatory requirements for its appearance, weight, shape, and size of the products (Göbel et al., 2015). If the product does not meet the necessary specifications, it can be considered as

‘ugly’ or ‘suboptimal’ and consumers are assumed to have no interest in such products (De Hooge et al., 2017).

Factors that determine the consumer preference for ‘ugly’ or ‘suboptimal’ foods are still unclear. However, there have been prior studies that have brought this topic to light, though scarce, it can still be used to better understand how personal preferences play a role in the purchase decision of ‘ugly’ or ‘suboptimal’ foods. According to the Theory of Interpersonal Behavior, one of the main determinants for purchasing ‘ugly’ or ‘suboptimal’ foods are their intentions that are first formed by attitudes, social norms, and feelings elicited by the product. Another theory that is believed to help examine the causal relationship of consumer’s behavior and their purchase decision towards ‘ugly’ and/or ‘suboptimal’ foods is the Theory of Planned Behavior. This theory offered the best framework due to several reasons, first being the most referenced and well-known behavioral theories to help predict human social behaviors, second being the model that is most commonly used to help predict and comprehend consumer behavior, especially related to the environment and food waste. There are five additional constructs to TPB: environmental concern, food waste awareness, past behavior (familiarity) as motivators to purchase and consume ‘ugly’ and/or ‘suboptimal’ food, health consciousness, and lastly perceived risks as demotivators to purchase and consume ‘ugly’ and/or ‘suboptimal’ foods (Adel et al., 2022). These determinants will help perceive the potential benefits and negative consequences of purchasing and consuming ‘ugly’ or ‘suboptimal’ foods. According Giménez et al. (2021), the presence of suboptimality/ugliness of the food can trigger assumptions regarding the quality of the food and negative emotional reactions, this results in a decrease of intention to purchase and perceived quality of the product.

One way to combat the reduction of ‘ugly’ or ‘suboptimal’ foods to be discarded is through marketing strategies and/or product innovations. For marketing strategies, implementing contextual cues might mitigate the less desirable qualities that are perceived from ‘ugly’ and/or ‘suboptimal’ foods. When ‘ugly’ and/or ‘suboptimal’ foods are positioned with a sustainability aspect, the purchase intention of the consumers can appear to be more positive. It can also help the consumers to feel more involved in combating environmental issues, this can help bring awareness while simultaneously motivating consumers to adjust their behavior and perception (De Hooge et al., 2022). Whereas for product innovation, using ‘ugly’ and/or ‘suboptimal’ foods combined with technological innovations will allow the creation of new products that the company can commercialize. Several innovations can be made from ‘ugly’ foods such as jams, jellies, soups and sauces, pickled products, baby food

and purees, and animal feed. These food product innovations do not need to take into account the appearance of the product, therefore food waste or ugly foods can be utilized as its ingredients.

1.2 Research Questions

1. How does perception (PER), subjective norm (SN), and perceived behavioral control (PBC) influence consumer attitude (ATT) and intention (INT) behavior towards products made from 'ugly' or 'suboptimal' fruits and vegetables?
2. To what extent does perceived behavioral control (PBC) influence consumer attitude (ATT) and behavioral intention (INT) towards purchasing products made out of 'ugly' or 'suboptimal' fruits and vegetables?
3. How does perception (PER) shape the attitude (ATT) of consumers towards products made out of 'ugly' or 'suboptimal' fruits and vegetables?
4. Does subjective norm (SN) significantly impact the intention (INT) behavior in the context of purchasing products made out of 'ugly' or 'suboptimal' fruits and vegetables?
5. What role does attitude (ATT) play in being the mediator between TPB constructs and intention (INT)?

1.3 Research Objectives

The core aims of this research are:

1. To better understand purchasing behavior and consumer perspective regarding food product innovation using ugly foods
2. The result of this research will be used as future insights for consumer perspective about ugly food product innovation

1.4 Hypothesis

H1: Perception significantly influences attitude towards products made out of 'ugly' or 'suboptimal' fruits and vegetables.

H2: Attitude (ATT), subjective norm (SN), and perceived behavioral control (PBC) significantly influence the intention of purchasing products made out of 'ugly' or 'suboptimal' fruits and vegetables.

H3: Attitude (ATT) mediates the relationship between the predictor (PER, SN, and PBC) and the outcome (INT) towards the intention of purchasing products made out of 'ugly' or 'suboptimal' fruits and vegetables.

1.5 Scope of research

- Provide previous literature to help highlight the importance of the study
- Conduct a survey regarding consumer insights on food product innovation using ugly foods specifically for people residing in Jakarta and is at the productive age range
- Conduct an interview with the local fruits and vegetables suppliers/wholesalers about their management of 'ugly' or 'suboptimal' fruits and vegetables
- Share the results of the research with local communities through presentation
- Compose documentation, research final report, and report presentations

1.6 Significance of the study

1.6.1 Environment

This research addresses one of the prevalent issues in sustainable development, which is food waste from 'ugly' or 'suboptimal' fruits and vegetables that are often discarded based on appearance instead of quality. By examining consumer attitudes and behaviors toward products made out of 'ugly' or 'suboptimal' fruits and vegetables, this study allows an opportunity to upcycle produce that are still edible despite being considered 'ugly' or 'suboptimal'. This opportunity to upcycle the produce can help reduce the amount of food waste.

1.6.2 Economic

This research will provide insight that was obtained from fruit wholesalers that supply their produce all over Indonesia, this insight with how 'ugly' or 'suboptimal' fruits and vegetables are managed when retailers refused to buy it can provide an opportunity to develop a more efficient and inclusive supply chain. The investigation of consumer behavior towards products made out of 'ugly' or 'suboptimal' fruits and vegetables can help encourage the use of 'ugly' or 'suboptimal' fruits and vegetables in processed food and therefore lead to cost reductions. It can also provide alternative streams of income for suppliers/ wholesalers who usually would have discarded products that can not be sold.

1.6.3 Social

This research addresses a broader issue regarding consumer perception, food stigmas, and inclusivity within the food system. 'Ugly' or 'suboptimal' fruits and vegetables are often rejected due to their visual appearance, leading to unnecessary food waste. This research is the start of destigmatizing the quality of 'ugly' or 'suboptimal' fruits and vegetables. By incorporating it into a product, it can prove a point that products made out of 'ugly' or 'suboptimal' fruits and vegetables can have just as good quality as those made out of 'optimal' fruits and vegetables. This inclusion is hoped to generate a more positive attitude towards 'ugly' or 'suboptimal' fruits and vegetables that will also shape their belief that all food is equal regarding their appearance and create a more socially responsible consumption culture.

1.6.4 Literature

The study could jumpstart further research and debate in this topic, contributing to more knowledge regarding the consumer perception of products made out of 'ugly' or 'suboptimal' fruits and vegetables. Further factors and variables that have not been explored in this study can be explored more to provide more guidance and results to the topic and also provide awareness to the problem and the potential way to combat it.