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# **CIRCULARITY BROKER ROLES IN THE FOOD WASTE RECOVERY INDUSTRY: A CASE STUDY**

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# ABSTRACT

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Food waste is a pressing global issue, with one-third of all food produced for human consumption being wasted, as reported by the Food and Agriculture Organization of the United Nations (FAO, 2017). To tackle this problem, many digital platforms and organizations focusing on food waste recovery have emerged. These organizations value food that would otherwise become waste, creating substantial opportunities to reduce the overall amount of food waste. However, the opportunities and challenges of growth for these organizations remain understudied.

This study explores a business's position in the food waste recovery industry by applying the circularity broker theory (Ciulli et al., 2020) to the business. The objective of this research is to analyze what kind of circularity broker roles are relevant in food waste recovery businesses and how these roles manifest in the case study of Misfits Market. Through a case study approach, this study observed the food waste recovery business of Misfits Market. This research then identifies the opportunities and challenges of Misfits Market's actions in the industry. Thematic analysis is then used to further analyze and gain insights from the data.

The findings reveal significant insights about how engaging in circularity broker roles affect opportunities and challenges in the industry. In Misfits Market's actions as a circularity broker, it was observed that recovered food offers new business opportunities and cost savings but that staying relevant and balancing supply and demand are challenges. Furthermore, through food waste recovery, a company can build positive sentiment for their brand and create new revenue streams. It is also necessary to ensure users on the supply and demand side of the platform about the food safety guidelines in place throughout the platform. Mobilizing volunteers, partners, and stakeholders can build brand recognition and positivity through donations to food banks and collaborations with like-minded businesses. Creating successful integration of users with the platform can also allow companies to provide alternative channels to sell products that cannot be sold to traditional retailers. Lastly, measuring financial impact and waste recovered showcases important environmental and social responsibility principles.

Keywords: food waste recovery, circular economy, digital platforms, circularity brokers, sustainability, business growth

The originality of this thesis has been checked using the Turnitin OriginalityCheck service.

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# 1. INTRODUCTION

## 1.1 Background and Objective of the Study

In recent years, numerous organizations focusing on food waste recovery, many of which are digital platforms, have been created. As these organizations have valued food that would otherwise become waste, substantial opportunity has been created to reduce the overall amount of food waste. This kind of work that results in the reduction or avoidance of food waste is extremely significant because of the immensity of the problem of food waste. The size of the food waste issue clearly represents how considerable the market for a food waste recovery industry is. Because of the size of this market, there is obvious room for expansion among these kinds of organizations. Currently, there are organizations within the food supply chain that operate for different kinds of food waste recovery. The existing literature centered on food waste recovery business models mainly focuses on categorizing these models, on the potential and characteristics of food waste recovery, and on the barriers to food waste recovery (Mazzucchelli et al., 2021, p. 48). However, the opportunities and challenges of the growth of these organizations focusing on food waste recovery need further investigation.

Food waste is increasingly becoming known as a vast problem that our world faces because of its social, environmental, and economic harm. One third of the food produced for human consumption in the world per year is wasted, according to data from the Food and Agriculture Organization of the United Nations (FAO, 2017). In light of the fact that approximately one billion people in the world suffer from food deprivation (Ciulli et al., 2020, p. 299), the reality of food waste becomes tremendously unethical. Furthermore, food waste has a serious negative impact on the environment because it causes an incredible amount of waste to be deposited in landfills, and because it implies an overproduction of and overexploitation of natural resources (Ciulli et al., 2020, p. 299). From an economic

perspective, food waste is also greatly harmful as approximately \$400 billion worth of food is wasted each year (Waste Wise Products, 2017). Solutions to this problem are desperately needed and the work of organizations in the food waste recovery industry can be significant. The market for this industry can be enormous and the growth of these organizations is imperative.

Promoting the practices of food waste recovery businesses may be one of the most influential and scalable ways to end the enormous problem of food waste. Närvänen et al. (2020) remark that regulative efforts will not be impactful enough to make a transition towards a circular economy and they emphasize the importance of food waste recovery startup organizations because of their ability to create institutional change. Their research focuses on the potential for food waste recovery startups to change institutional norms and they highlight the value in synergy among these startups to make a larger impact together, which opens the playing field in the industry and the viability of food waste recovery business models. The authors center on the institutions that are these businesses because they point out that institutions largely determine how the industry runs and how actors participate in it, which includes, for example, actors' positions within the food supply chain (Närvänen et al., 2020, p. 2). Ultimately, this is what differentiates profitable from non-profitable activities. Therefore, this research highlights the remarkable significance of these businesses in the fight to end food waste.

The food waste problem and the ideology of a circular economy led to the birth of the food waste recovery industry. A food waste recovery business can be described as a 'circularity broker', which is defined as an actor who unites those with goods at risk of becoming waste with those who could use the goods as inputs to their organization or for their own consumption (Ciulli et al., 2020). Of course, in the case of a food waste recovery

business, the circularity brokerage role would take place in a food supply chain and the goods would be food at risk of becoming waste.

ResQ Club, Optimiam, Too Good To Go, Misfits Market, and Copia are a few examples of food waste recovery businesses out of the many food waste recovery organizations operating today. ResQ Club is a business in Finland that created a digital marketplace that connects restaurants to consumers for the exchange of meals that are close to their expiry times. This creates a win-win-win situation where restaurants can sell meals instead of disposing them, consumers get meals at a discount, and food waste is avoided. Optimiam is a business similar to ResQ Club that started in France but focuses on connecting not just restaurants to consumers but also supermarkets with near-expiring food to consumers.

Too Good To Go is a food waste recovery business that started in Denmark, which is somewhat similar to ResQ Club and Optimiam but it has its differences. The company has now expanded to many countries around Europe, as well as the United States and Canada, and has the app which is now the world's largest business to consumer marketplace for surplus food (Too Good To Go, 2021). Their business model also included the exchange of meals and products close to their expiry date from restaurants and supermarkets to consumers. However, during the COVID-19 pandemic, as many restaurants began closing, Too Good To Go encountered a 62 per cent decline in revenue (Alleyne, 2021). Because of this, the company innovated by creating direct partnerships with suppliers who are not retailers, such as Unilever, Danone and Nestle, which resulted in a 600 per cent growth for the company.

Misfits Market is another food waste recovery business, and their business model is also repeated in other food waste recovery businesses. Misfits Markets partners directly with farmers and makers to save organic produce and other grocery items that would be wasted

and delivers these items to their customers' doors (Misfits Market, 2021, *About*). They focus on rescuing foods that are rejected by traditional grocery markets simply because the foods do not meet a certain quality of cosmetic appearance, despite still being perfectly edible. Their website claims that, "We're dedicated to making affordable, high-quality food more accessible while helping break the cycle of food waste." Igor Bosilkovski (2021), senior contributor to Forbes writes, "the company has passed the 9-digit in annual revenue threshold, grew 5x YoY from 2019 to 2020, and it serves 400,000 customers every month over 37 states."

Another kind of food waste recovery business is that as seen in the company Copia. Copia provides an end-to-end solution for food waste and hunger. Their website says that organizations with surplus food can take advantage of Copia's technology to understand their overproduction trends, reduce their surplus food, donate this food to those in need, and access enhanced tax deductions. Donors use Copia's app to organize donations and then Copia arranges transportation for the donations. In an article about the company, several key numbers were stated: "We've recovered more than 350,000 kilograms of food that fed nearly 700,000 people in the Bay Area. We are on our way to achieving our goal of feeding one million people this year. In doing so, we've helped our customers (businesses that donated food) claim over US\$4.6 million dollars in tax savings." (Feeding Two Birds with One Stone: Copia Re-Routes Food Waste and Alleviates Hunger, 2016).

## **1.2 Research Questions**

This study aims to research the understudied area of the opportunities and challenges of growth for a food waste recovery business. Regarding organizations within the food waste recovery industry, the existing literature has developed many notable theoretical frameworks, analyses, and classifications. More specifically, the literature has focused on different aspects about this industry such as the nature of, potential of, reactions to, and possible applications



for food waste recovery organizations. Together, these studies show that there is a specific need for research in the area of growth and expansion for existing food waste recovery businesses. Gaining understanding on this research gap would be a significantly valuable way to advance the previous research. To gain insight into this, this research will apply the circularity broker theory (Ciulli et al., 2020) to a food waste recovery business. Therefore, there are two research questions for this study, which are the following: 1) What kind of circularity broker roles are relevant in food waste recovery businesses? 2) How do these roles manifest in the case study of Misfits Market?

### **1.3 Structure of the Study**

The goal of this research was to provide new insights on the growth of the food waste recovery industry. As it had been determined that the extant research of this area already included many surveys and research at a broad level of entities within this industry, this study decided to take a more pinpointed case study approach. Through case studies, the research aimed to gain understanding on not only the operations of a business within this industry but also on the relationships a business has in its network with its customers and suppliers.

The background, objective, and structure of this study and its research questions help to introduce this research. The theoretical framework provides a basis of circular economy principles, digitalization principles, and key business aspects related to the food waste recovery industry. It also explores the framework of the circularity brokers theory identified by Ciulli et al. (2020). The research methodology section explains and justifies the use of the case study approach and thematic analysis to study and analyze the collected data. The findings section presents the results of applying the theoretical framework and research methodology to the data collected about the research questions. In the final section, discussions and conclusions are presented to provide insights into this area of research and industry and limitations about the research conducted are clarified.

## **2. THEORETICAL FRAMEWORK**

This chapter will present the theoretical background of my research, consisting of streams of literature focusing on circular economy, digital platforms, and food waste recovery businesses. These concepts are critically reviewed, and the research gap focused on in this study is further defined. The ideology of circular economy combined with the techniques and opportunities available with digitalization provide structure and rewarding possibilities to food waste recovery businesses. Different aspects in the food waste recovery industry have been analyzed in the previous literature such as business models, characteristics and possibilities of food waste recovery, and barriers to food waste recovery (Mazzucchelli et al., 2021, p. 48). However, there is little academic literature about the specific opportunities and challenges for growth of food waste recovery businesses.

The growth and expansion of these businesses could be considered from several perspectives such as through government regulations and incentives or through consumer habits and activities. However, this research will take the perspective of businesses. Even though this industry could be affected from several perspectives, only the activities that could be considered the responsibility of a business will be considered. In the following subchapters, the foundation of the industry, the areas of business improvement in the industry, and a comprehensive framework with which to analyze the industry are reviewed more in detail.

### **2.1 The Basis of the Food Waste Recovery Industry**

#### **2.1.1 Circular Economy**

The concept of the circular economy is the basis through which the idea of the food waste recovery industry begins. Food waste is simply one of the kinds of wastes that can be avoided through a circular economy. Murray et al. (2017, p. 369) defines circular economy as

“an economic model wherein planning, resourcing, procurement, production and reprocessing are designed and managed, as both process and output, to maximize ecosystem functioning and human well-being”. Circular economy allows the environment and the economy to thrive simultaneously. The Ellen MacArthur Foundation (2014) argues that moving away from the traditional linear ‘take-make-waste’ model to a circular no-waste model provides more value than the traditional model and can be accomplished through methods such as repairing, reusing, and refurbishing.

The current applications of circular economy within supply chains have also been analyzed to detect what the drivers, inhibitors, and enablers that allow for supply chains to operate with a circular economy ideology are (Masi et al., 2017). Drivers for participation in a circular economy related to topics such as increased competitiveness, opening new value streams, avoiding regulative costs, brand reputation, and increased business resiliency. The inhibitors and enablers identified that influence the drivers of participation were categorized into financial, technological, societal, informational, and institutional issues. The traditional business and supply chain designs used in the food industry need to transition towards a circular economy design, which has begun in food waste recovery businesses.

Bocken et al. (2016) explains two kinds of product design strategies and their correlated business model strategies to implement a circular economy. These include strategies for slowing resource loops and strategies for closing resource loops. In a slowing resource loop, product life cycles are extended and/or intensified so that the flow of resources is slowed; in a closing resource loop, processes such as recycling are used to connect the stages of post-use and production in a product life cycle so that the resource loop is closed (p. 309). The article further distinguishes between different kinds of recycling to explain how they relate to a circular economy. It is explained that there is “upcycling” and “downcycling” where “downcycling” is a kind of recycling that only slows the linear flow of resources from

production to waste and, therefore, does not create a cyclical flow of resources (p. 311). The result of “downcycling” is a kind of lower value product. On the other hand, “upcycling” is the kind of recycling where the quality of the recycled material is maintained.

As regards to business model strategies, Lüdeke-Freund et al. (2019) directed a morphological analysis on 26 current business models that were structured with a circular economy in mind. From this analysis, they identified the major dimensions of each of the business models and the specific characteristics of these dimensions. Their research identifies and suggests six major patterns among these models, which includes: repair and maintenance; reuse and redistribution; refurbishment and remanufacturing; recycling; cascading and repurposing; and organic feedstock business model patterns.

There are several examples of these kinds of circular economy practices in the food waste recovery industry. Because of the perishable characteristic of food products, there is some overlap in the circular economy of this industry between the closing and slowing of resource loops and the most common business models follow a redistribution or repurposing structure. It is also significant to note that there is usually no post-use phase in these products because they are obviously completely consumed, which is a sustainable endpoint for the product and can be considered the closing of the resource loop. However, there are some food products that do have a post-use phase, which there are closing resource loop solutions for. For example, the company ReGrained uses grain that could be considered post-use. The brewing process for making beer uses grain, removes the sugar from it, and protein, fiber, and micronutrients from the grain are left behind. ReGrained turns these leftovers into a flour, uses it in snack bars, and sells the snack bars and the flour itself (Peters, 2019).

On the other hand, in the businesses mentioned previously like ResQ Club, Optimiam, and Too Good To Go, closing and slowing resource loop processes can happen simultaneously. Firstly, in the cases of these companies, because food products that would

have gone to waste are consumed, these resource loops are being closed. Secondly, because these companies' products can be considered as substitutes for products at restaurants, grocery stores, and food producers without increasing the number of offerings in the market, the product life cycles are being extended and the resource loops are being slowed.

There are also examples of upcycling and downcycling in the food waste recovery industry. For example, the products of ReGrained mentioned above are clear examples of upcycling where the material is used in a high-quality way instead of being wasted. Another example of upcycling may be the business model of the company Misfits Market mentioned previously. The products they sell are rejected by traditional channels because of not having a certain quality of cosmetic appearance. Misfits Market uses a certain business structure and branding tactics to sell these products as the perfectly good and edible food that they are. Therefore, these products are consumed just like the offerings in traditional grocery stores instead of being wasted, which means this could be considered as upcycling.

An example of downcycling in this industry could be considered as the case in the research of Borrello et al. (2017) where consumers were asked if they would bring their organic food waste to retailers to receive discounts on animal products in return. This organic food waste would then be used in the production process of products for animals. This, as well as possibly composting in general, can be considered as downcycling because the original products were used to create a kind of lower value product.

### **2.1.2 The Age of Digitalization**

Food waste recovery businesses have focused on utilizing technology to accomplish food waste recovery. This is an increasingly effective approach in this age of digitalization and some forms of recovery are only possible in practice because of the relatively recent

technologies that lead to digitalization. In the midst of the many opportunities of digitalization, its challenges should also be considered.

Digitalization is a powerful tool that can revolutionize businesses towards a circular economy. This new age of technologies provides the opportunity to use fewer resources more efficiently, enable reduction of energy consumption, allow for more efficient use of logistics and capacity, enable transparent access to data, optimize product life-cycle, and enable faster exchange of knowledge (Antikainen et al., 2018, p. 46, Berg & Wilts, 2019, p. 4). Each of these areas can directly impact and reduce the amount of waste coming from the food industry's practices, enhance food waste recovery businesses' effect, and improve the overall sustainability in the industry.

Eight specific functionalities made possible through digitalization are the following: improving product design, attracting target customers, monitoring and tracking products, providing technical support, providing maintenance, optimizing product usage, upgrading the product, and enhancing renovation and end-of-life activities (Antikainen et al., 2018, p. 47). Berg & Wilts (2019, p. 4) further describe digital platforms as a place where discarded products, components, or recyclable fractions, etc. can be exchanged in a digital-based marketplace; different companies within the supply chain such as producers of raw material, manufacturers, and platforms for waste management can interact in this new value creation network to embrace the reuse, remanufacture, and recycle ideology for sustainable waste management.

There are many opportunities and possibilities for digital platforms to become enablers of a circular economy, but there are several challenges relevant to them that have been identified. Reaching profitability, establishing infrastructure, and the integration of these technologies into the current economy are apparent challenges that these digital platforms focusing on circular economy are confronting (Antikainen et al., 2018, p. 47). Navigating the

correct business models, data ownership, data sharing, data integration, and collaboration among partners are more challenges these platforms face (Antikainen et al., 2018). Economic and environmental standards and legal frameworks must be developed to make these platforms safe and accessible to use (Berg & Wilts, 2019, p. 8). Co-creation among partners with these platforms is certainly a likely solution for some of these challenges (Antikainen et al., 2018, p. 48).

## **2.2 Areas of Improvement from the Business Perspective in the Food Waste Recovery Industry**

The extant literature has observed and analyzed several key aspects of the food waste recovery industry from the business' perspective. These aspects include business strategy, innovation through digital platforms, user experience in online platforms, social value, consumer responses towards these businesses, industry structure, and organizational legitimacy. To understand the potential of and the possible upcoming opportunities and challenges of businesses within this industry, it is absolutely important to be knowledgeable about each of these key aspects in the industry. Table 1 below summarizes the key business aspects covered in this study that are relevant to and can be shaped by businesses of the industry.

**Table 1** Key Business Aspects of the Food Waste Recovery Industry

Business Aspect	Results	Reference(s)
Business Strategy	<p>A combination of operational logics between different organizations in the industry would help form a type of open-access, multi-functional platform for the greatest advancement in sustainability.</p> <p>Studies on the effectiveness of and complementation and competition between different digital intervention strategies are needed.</p>	<p>Mattila et al. 2020</p> <p>Mullick et al. 2021</p>
Digitalization	<p>Digitalization aids in avoiding waste and increasing sales such as by effective selling of products near expiration at a reduced price.</p> <p>Digitalization can aid in the promotion of products at risk of waste such as through suggestion of recipes which include these products.</p>	<p>Cane &amp; Parra, 2020, Mullick et al. 2021</p> <p>Mullick et al. 2021</p>
User Experience	<p>There is a direct positive relationship between a user's familiarity with an online platform and that user's intention of purchase.</p>	Mazzucchelli et al. 2021
Social Value	<p>Corporate social responsibility principles should be embedded in these firms; environmental and social values add to the success of organizations because consumers view these values as quality indicators of these organizations.</p> <p>Also encouraging consumers to fight for sustainable solutions can satisfy customer needs, communicate responsible values, and build the platform around a strong community.</p>	<p>Mazzucchelli et al. 2021</p> <p>Mazzucchelli et al. 2021</p>
Consumer Responses	<p>Social media of these organizations plays a major role in these organizations' growth and their community support.</p> <p>These organizations should intentionally create an environment where users of their platforms can share experiences, offer support to each other, and become involved to create interactive marketing.</p> <p>Research is needed in the consumer behavior differences of actually purchasing discounted food products close to their expiry date and simply just viewing these offers within a digital platform without purchasing.</p> <p>Digital platforms leaders should target functionality towards the consumer side of the market as the consumer-to-retail store effect is stronger than the retail store-to-consumer effect.</p> <p>In a study where consumers could exchange organic food waste to retailers to receive discounts on animal products, it was concluded that there was substantial willingness of consumers to participate in at least this kind of circular economy model.</p>	<p>Mullick et al. 2021</p> <p>Mullick et al. 2021</p> <p>Borrello et al. 2017</p>
Industry Structure and Organizational Legitimacy	<p>Food supply chains have holes that inhibit the transfer of knowledge and circular flow of resources.</p> <p>These supply chain holes need to be bridged by actors, namely 'circularity brokers', who have six brokerage roles, which are: connecting, informing, protecting, mobilizing, integrating, and measuring.</p>	<p>Ciulli et al. 2020</p> <p>Ciulli et al. 2020</p>



### **2.2.1 Business Strategy**

As the strategy of food waste recovery businesses continues to develop, Mattila et al. (2020, p. 262) suggest that a combination of operational logics between different organizations focusing on food waste recovery would be useful to help form a type of open-access, multi-functional platform for the greatest impact towards sustainability. They also suggest that the specific capabilities that enable and/or hinder the development of sustainable platform-based business models need investigation.

Mullick et al.'s (2021, p. 542) cross-side network effects study of consumers' and retail stores' usage of digital platforms concluded that studies on the effectiveness of different digital intervention strategies such as providing recipes, enabling grocery shopping lists, and push notifications should be conducted. Their study focused on last-minute discounts on food products close to their expiration dates, but they encouraged studies on different strategies to understand the effects of complementation and competition between them.

### **2.2.2 Innovation Through Digital Platforms**

The Internet of Things, Big Data, Artificial Intelligence, and other technologies are all useful in enabling a transition towards a circular economy, which supports the food waste recovery industry. For example, with these technologies, it is possible to avoid waste and increase sales by notifying customers within short timespans about food products that are close to expiration at a reduced price (Cane & Parra, 2020; Mullick et al., 2021, p. 541). In addition to this type of feature, selling food products about to expire could also be promoted through current technologies by suggesting recipes that customers could use with these products, which could also lead to more sustainable consumer behavior by selecting products that avoid food waste (Mullick et al., 2021, p. 541).

### **2.2.3 User Experience**

Mazzucchelli et al. (2021) underscore the direct positive relationship between a user's familiarity with an online platform and that user's intention of purchase. This research focused on the importance of a platform catering to users of different levels of familiarity with online platforms. User experience and features throughout these platforms' apps should be simple to understand, easy to use, and, for the greatest effect, align with preexisting, familiar web technologies so that the largest number of barriers between a user and their purchase can be removed.

### **2.2.4 Social Value**

One of the most valuable aspects and a significant competitive advantage that food waste recovery businesses have is the social value that they offer. It is emphasized that corporate social responsibility principles should be embedded in these firms; these environmental and social values add to the success of the organizations because consumers view these values as quality indicators of these organizations (Mazzucchelli et al., 2021, p. 54). These organizations could not only embrace these environmental and social values, but also encourage consumers to fight for sustainable solutions, satisfying their needs and communicating their responsible values in the process, which will build the platform around a strong community (Mazzucchelli et al., 2021, p. 54).

### **2.2.5 Consumer Responses**

Social media revolving around these food waste recovery organizations and the community support that it brings plays a major role in these organizations' growth (Mazzucchelli et al., 2021, p. 54; Cane & Parra, 2020, p. 1664). Because of this, these organizations should intentionally create an environment where users of their platforms can share experiences, offer support to each other, and become involved. This kind of interactive

marketing can lead to consumer behavior being more involved on the platforms. Cane and Parra (2020) also recommend that researching consumer behavior regarding the contexts and technologies related to reducing and avoiding food waste would be useful.

Mullick et al. (2021, p. 542) also encourages researching consumer behavior matters such as in the gap in consumer behavior between actually purchasing discounted food products close to their expiry date and simply just viewing these offers within a digital platform without purchasing. In addition, Mullick et al. (2021, p. 541) conclude that the consumer-to-retail store effect is stronger than the retail store-to-consumer effect. Therefore, it was advised that digital platforms leaders should target functionality towards the consumer side of the market.

Borrello et al. (2017) conducted a study that tested the willingness of consumers to participate in a circular economy model. A questionnaire was distributed to a representative sample of Italian households, in which the participants were asked if they would bring their organic food waste to retailers to receive discounts on animal products in return. This organic food waste would then be used in the production process of products for animals. The results were as follows:

88% of interviewees declared sorting organic food waste as a normal activity in his household. 78.9% of participants accepted to participate to the proposed programs independently of the type of agreement's attributes. 14.49% accepted only some programs depending on the program type, while 6.61% of respondents choose not to participate to any of the proposed program.

(Borrello et al., 2020, p. 1)

It was explained that the expected participants in the circular economy program were already active in reducing or avoiding food waste in their own lives and already had a long-lasting relationship with a retailer.

### **2.2.6 Industry Structure and Organizational Legitimacy**

Ciulli et al. (2020) describe how food supply chains have holes that inhibit the circular flow of resources. The authors identify several possibilities as to why these supply chain holes exist, which prevent the transfer of knowledge and food resources between actors in the economy. The variety of reasons why these holes exist can be summed up into two issues. It may be that the owner of the food resource at risk of waste does not value the food resource and discards it instead of transferring it or that the potential recipients of the food resource at risk of waste do not value the resource or are not interested in obtaining it (Ciulli et al., 2020, p. 300).

Ciulli et al. (2020) explain that these supply chain holes need to be bridged by actors, who they conceptualize as ‘circularity brokers’. These circularity brokers have six brokerage roles, i.e., connecting, informing, protecting, mobilizing, integrating, and measuring. Furthermore, each role was also identified along with several correlating sub-roles. Table 2 below further describes each circularity broker role.

**Table 2** The Circularity Broker Roles (Adapted from Ciulli et al., 2020, p. 310)

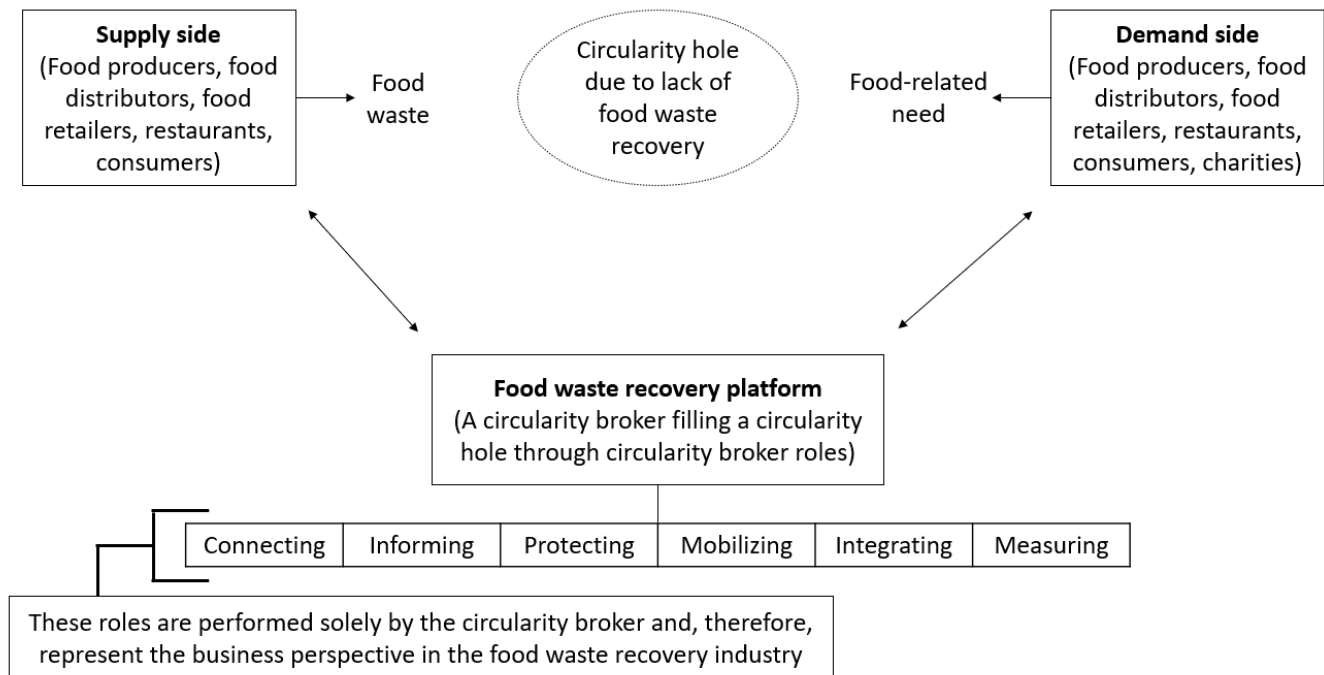
Circularity Broker Roles	Description of the Role
Connecting	The sub-roles include enabling new linkages, selecting platform users, balancing supply and demand and related activities include providing a virtual place where supply and demand of food waste can connect, selection of suppliers to join the platform based on relevant information, and ensuring of sufficient, supply, demand, and food waste on the platform.
Informing	The sub-roles include framing waste and educating (potential) platform users about waste and related activities include highlighting business and economic benefits of promoting recovered food waste and providing education on the misconceptions and logistics regarding food waste.
Protecting	The sub-roles include protecting providers of waste and protecting receivers of waste and related activities include tracing the flow of food waste to ensure safety practices are kept and vetting and verifying supply and demand users to ensure food safety.
Mobilizing	The sub-roles include mobilizing volunteers, partners, and stakeholders and related activities include mobilizing volunteers to increase the number of supply and demand side users, mobilizing organizations for volunteer projects and to engage networks of charities, businesses, and consumers, and mobilizing governmental institutions in food waste issues.
Integrating	The sub-roles include combing the platform with existing technologies, processes, artefacts as well as co-creating with supply-side users and related activities include integrating food waste recovery processes into retailers' food management systems and business processes and co-creating food recovery solutions and pricing strategy with companies and suppliers.
Measuring	The sub-roles include measuring environmental/social impact, measuring financial impact, and measuring the waste recovered and related activities include supporting methods to report food waste, tracking sales and traffic related to food waste recovery, and providing data on business statistics and performance related to food waste recovery.

Note: The Circularity Broker Roles. Adapted from "Circularity Brokers: Digital Platform Organizations and Waste Recovery in Food Supply Chains," by Ciulli, F., Kolk, A., & Boe-Lillegraven, S., 2020, *Journal of Business Ethics*, 167(2), 310.

The authors explain that it is the role of circularity brokers to connect actors within the supply chain by making interventions at the positions where these resources exit and become wasted. Figure 1 below shows the position of these circularity brokers in the supply chain. It can be seen that the practices of these roles that help to create a circular economy are solely performed by and are the responsibility of the circularity brokers (or the food waste

recovery businesses) themselves, which is precisely suitable for this study focusing on the growth of these businesses from the business perspective.

**Figure 1** The Position of Where the Circularity Broker Roles Are Performed From



Note: The Position of Where the Circularity Broker Roles Are Performed From. Adapted from “Circularity Brokers: Digital Platform Organizations and Waste Recovery in Food Supply Chains,” by Ciulli, F., Kolk, A., & Boe-Lillegraven, S., 2020, *Journal of Business Ethics*, 167(2), 311.

### 2.3 The Comprehensive Framework of the Circularity Brokers Theory

There are many notable theoretical frameworks, analyses, and categorizations that have been developed about organizations within the food waste recovery industry. The extant literature mentioned above centers on different aspects about this industry such as the nature of, potential of, reactions to, and possible applications for food waste recovery organizations. Together these works of research reveal the need for specific research in the understudied area of the opportunities and challenges of growth for food waste recovery businesses. Gaining understanding on this research gap that is the direction of these businesses and their expansion would be a significantly valuable way to move forward with this existing research.

Promoting the practices of these businesses may be one of the most influential and scalable ways to end the enormous problem of food waste.

After considering the different ways in which and perspectives with which the food waste recovery industry can be analyzed, I believe the circularity brokers theory mentioned above provides a comprehensive framework with which to analyze the influence and effectiveness of food waste recovery businesses and, therefore, it can aid in providing understanding on the opportunities and challenges of growth for these businesses. Because the circularity brokers theory establishes a comprehensive framework that covers the roles of businesses themselves in the industry, the majority of the key concepts, factors, and findings from the existing literature are represented within this framework.

For example, the areas of improvement from the business perspective in the food waste recovery industry as described in the section above can be categorized according to the roles present in the circularity brokers theory. These relations are summarized in Table 3 below. The business strategy portion of this section describes concepts such as the idea of an open-access, multi-functional, sustainability-focused platform and the effectiveness of complementation and competition among digital platforms, which support and are represented by the circularity broker roles of connecting, protecting, and integrating. The innovation through digital platforms portion describes how digitalization can aid in avoiding waste and promoting products before they are waste through several means, which supports and is represented in the circularity broker role of connecting and integrating as well.

The section above also describes how a user's familiarity with an online platform is directly related to the user's intention of purchase, which is mentioned in the user experience portion and relates to the informing and integrating circularity broker roles. In the social value part of the section above, the importance of corporate social responsibility principles being embedded in the business actors and the act of encouraging consumers to fight for

sustainable solutions are discussed and represent the circularity broker roles of measuring and mobilizing. Lastly, the portion discussing consumer responses describes several concepts and two of which are the idea of an organization creating an environment where users can be involved in and the idea of a digital platform targeting functionality towards the consumer side of the market, which supports the roles of connecting and integrating.

**Table 3** The Relation of Discussed Key Business Aspects to the Circularity Broker Roles

Business Aspect	Circularity Broker Roles Related to the Discussed Concepts
Business Strategy	Connecting, Protecting, and Integrating
Digitalization	Connecting and Integrating
User Experience	Informing and Integrating
Social Value	Measuring and Mobilizing
Consumer Responses	Connecting and Integrating

Closely aligning the food waste recovery industry with the circularity brokers theory could be a significant way to increase the chances of success of businesses in this industry. It could be that if a circularity broker (a food waste recovery business in this case) can improve in one of its specific circularity broker roles or take on additional circularity broker roles, then it can improve its effectiveness and influence in the food waste recovery sector. It is likely that most food waste recovery businesses, especially those that are digital platforms, could benefit from participating in most of these roles. Because there are several sub-roles correlating to each role identified in the theory, there are a variety of ways that a business could participate in a role. Therefore, aiming to participate, to at least some capacity, in each role identified in the circularity brokers theory could likely help most businesses reach opportunities and overcome challenges in this new industry.



Understanding a business's position in relation to the circularity broker roles could also help to reveal specific opportunities and challenges of growth in this sector. It would be valuable to study what may be the opportunities businesses are missing out on or what challenges they struggle with because of a lack of participation in the circularity broker roles. These opportunities and challenges could be categorized according to the main six 'circularity brokerage' roles that were identified. It is also important to note that the circularity brokers theory emphasizes that the roles are not only meant to connect actors in the supply chain, but also to maintain, intensify, and expand these connections.

Ciulli et al. (2020, p. 326) comment on several ways that their research could be expanded upon. They remark that it would be useful to further validate their findings by, for example, employing theory testing designs. They also recommend that investigating the networks of the different actors around the food waste platforms would be interesting. For example, noticing when and why organizations or consumers come to rely on the food waste recovery businesses would be interesting. Furthermore, it would be useful to explore the impact of each of the (sub-) roles influence on supply- and demand-side users' willingness to utilize the platform, the amount and frequency of food waste posted and acquired, and the financial sustainability of the businesses. Studying if different portfolios of (sub-) roles are more effective at the different stage(s) of the supply chain could also be researched.

Therefore, I believe taking the circularity brokers theory approach in this study will provide access to rich data that has not been thoroughly explored in research before. Through my work, I aim to discover solutions to reaching opportunities and overcoming challenges in the food waste recovery industry through analysis on circularity broker roles. Thus, gaining an understanding on these matters could enable practitioners and academics to develop more effective and influential strategy for businesses in the food waste recovery industry to help end the problem of food waste.

### **3. RESEARCH METHODOLOGY**

#### **3.1 Method and Design of Data Collection**

The goal of the data collection process was to focus on case studies of one or two food waste recovery organizations based in the United States. The search for organizations was done in the United States because this is my home country, which ensured there were no language barriers. Not only would the case study focus on the food waste recovery organization but also on the network of the food waste recovery organization, which includes the partners, customers, and other possible actors related to the organization. This method was chosen because studying many cases of food waste recovery organizations may result in superficial results for the scope of this research. Furthermore, many “surveys” of food waste recovery organizations have been conducted in the extant research but there is less research on network case studies.

The intention of the case study was to collect data on the entire network that the food waste recovery organization has created. The organization was first contacted by me using the Wastebusters research group platform. The company was informed about the intention of the case study and was asked to participate in a semi-structured interview. To connect with the company’s customers, the company was asked if a survey created by me could be posted on the company’s social media accounts in the same way as how Mazzucchelli et al. (2021) conducted their study with the food waste recovery platform OLIO. To connect with the company’s partners, the company was asked if I can contact them through an interview or a survey.

In the preparation of the interviews and surveys for this study, the questions covered areas about the focal company’s suppliers, their customers, and their own operations and were based on the six circularity brokerage roles (connecting, informing, protecting,

mobilizing, integrating, and measuring) as identified by Ciulli et al. (2020). This supports the research questions with the idea that, if the circularity broker can improve in its specific circularity broker role or take on additional circularity broker roles, then it can improve its effectiveness and influence in the circularity brokerage landscape. Understanding the company's position to the circularity broker roles in relation to the collected data from the network could help reveal the opportunities and challenges to the company's expansion.

The case study methodology used in this research was guided by Rashid et al. (2019) who lays out a step-by-step guide to this process. These steps consist of four phases, which are the foundation phase, prefield phase, field phase, and the reporting phase. For each phase, the article mentions a checklist of items to be considered. In the foundation phase, the checklist consists of the following items: 1) philosophical consideration, 2) an inquiry techniques consideration, and 3) research logic consideration. During this phase, Rashid et al. (2019, p. 2-3) state that "Every researcher should familiarize, understand, and develop a stance that will eventually reflect in the mechanics of the research method." This stance emerges from the ontology, epistemology, and paradigm choices of the researcher.

The prefield phase items are 1) decide and 2) case study protocol. The decide item is simply about deciding if the case study methodology is truly the right methodology for the study. The article (2019, p. 5) suggests that case studies are especially fitting for exploring business-to-business relationships and networks. It also suggests a case study strategy of focusing intensely on one or a few business networks while drawing evidence from multiple sources within the network to provide a holistic description of the network. The case study protocol item is simply the action to define in writing the set of procedures that will be used to conduct the case study.

The field phase items are 1) contact and 2) interact. These items can be understood straightforwardly as they simply consist of contacting and interacting with the case study

participants. Even though these steps are simple, the way they are executed are vitally important because the relationships with the participants and the recording of the information must be handled well to ensure a smooth data collection process.

Lastly, the only reporting phase item is 1) case study reporting. Rashid et al. (2019) emphasize that “The quality of a case study does not only depend on the empirical material collection and analysis but also on its reporting.” (p. 6). The article gives an example outline to a case study report as follows: 1) Case descriptions 2) Participant descriptions 3) Relationship descriptions 4) Details of field protocols 5) Empirical material interpretation and analysis 6) Conclusion.

### **3.2 Data Collection**

Due to resource constraints on this research, the data collection was limited. Many food waste recovery businesses were contacted including Misfits Market, Copia, Flashfood, Goodr, Karma, Instock, Yume Food, Phenix, OLIO, Too Good To Go, and more. However, I was only able to conduct an interview with Misfits Market (the interview questions can be found in Appendix A) and I then also collected secondary data about the company and their network. Misfits Market was not able to participate with me in conducting a survey about their customers through their platform. I also directly contacted all the suppliers of Misfits Market that I could find out about independently, as they were not able to provide contact information about their suppliers for this research. In my direct contact to the suppliers, I requested to have an interview with them about their business with Misfits Market, but I did not receive responses.

Although the data collection was limited, there was still a substantial amount of secondary data able to be collected in addition to the interview with the company that

provided interesting insights in the findings. In Table 4, the secondary data that was collected for this research is summarized and further described.

**Table 4** Summary of the secondary data

<b>Type of media</b>	<b>Description of the content</b>
<b>Podcast</b> 1. How Misfits Market Raised \$100 Million to Reinvent How you Get Groceries, 28.7.2020	An interview with Misfits Market's CEO that discusses the company's history, business model, and goals
<b>Social media posts</b> 1. Misfits Market's Instagram, 24.10.2020 2. Misfits Market's Instagram, 17.12.2020 3. Misfits Market's Instagram, 14.1.2022	1. This post explains Misfits Market's partnership with Taza Chocolate 2. This post describes Misfits Market's community fridges initiative 3. This post educates consumers on how to make a recipe from recovered food waste
<b>Blog posts</b> 1. Everything You Need to Know About The Marketplace, 3.9.2022 2. The Misfits Market 2020 Recap is Here! About, 7.9.2021 4. 2021: A Year in Review 5. How Misfits Market is Supporting New Legislation. 6. Delivering Value to the Food System—and You, 21.4.2021	1. This Misfits Market blog post explains their offerings and educates about food waste matters 2. This blog post from the company describes different partnerships and initiatives of 2020 3. This blog post describes the mission of Misfits Market 4. This blog post of Misfits Market describes different partnerships and initiatives of 2021 5. This Misfits Market blog post describes their activism for legislation supporting the prevention of food waste 6. The blog post describes how Misfits Market is aiming to change the food supply chain to avoid trivial causes of food waste
<b>Online article</b> 1. Belgian Boys, 1.8.2022 2. The Washington Post, 18.9.2020 3. Misfits Market's term of service, 1.8.2022	1. The website article describes the partnership and creation between Misfits Market and Belgian Boys 2. This article describes the affect of the Covid-19 pandemic on Preferred Popcorn's business and their interaction with Misfits Market 3. The Misfit Market's terms and conditions describe relevant legal matters and donation participation
<b>Website</b> 1. Misfitsmarket.com, 1.8.2022	Website of Misfits Market

### 3.3 Data Analysis

The data collected from this network case study approach was studied inductively to better understand the opportunities and challenges of growth of food waste recovery organizations. To further analyze the data, thematic analysis was used. Clarke & Braun (2017) explain that, “Themes provide a framework for organizing and reporting the researcher’s analytic observations. The aim of [Thematic Analysis] is not simply to summarize the data content, but to identify, and interpret, key, but not necessarily all, features of the data, guided by the research question...” (p. 1). Thematic analysis can be used to understand, categorize, and reveal opportunities and challenges for growth seen among different factors related to these organizations. These factors include the marketing and operations trends used in the food supply chain, success rates of food waste recovery organizations, collaboration between non-profit and for-profit food waste recovery organizations, technologies which can be utilized for food waste recovery, and narratives about ‘circularity brokers’.

## 4. FINDINGS

In this chapter, the findings of this research are presented. The actions of Misfits Market in the food waste recovery industry are analyzed with thematic analysis and compared to the activities of each role of the circularity brokers theory (Ciulli et al., 2020) to gain insights on the opportunities and challenges of businesses in this industry. How Misfits Market's actions compare to each circularity broker role is observed and analyzed each in its own section.

### 4.1 Enabling New Linkages

The “enabling new linkages” sub-role is part of the “connecting” circularity broker role. Ciulli et al. (2020, p. 312) describe this sub-role as process where, as an example, virtual locations are created which supply chain actors can use to make their food surpluses available so that those interested in them can find them easily. Therefore, in this process, new linkages to producers and consumers are created. Below, it is described how Misfits Market validates this role in the circularity brokers theory by how they practice it. Misfits Market participates in some but not all of the activities listed for this role, from which it can be seen the opportunities and challenges they are presented with.

**Table 5** Thematic Analysis of the Role of Enabling New Linkages in Misfits Market

Enabling new linkages activities of the circularity brokers theory	Representative quotes, actions, etc. in Misfits Market	Theme(s) found in Misfits Market
Offering a virtual place where supply and demand of food waste can meet/connect	Misfits Market's home web page describes that you can shop from a range of grocery products online that grocery stores would let go to waste. (Misfits Market, 2022 / Website 1)	Innovative food waste prevention
Offering a system that allows the upload of information on available food waste	For Misfits Market's purposes, this activity is the same as the previous one.	N/A

Offering a system that allows users to ‘follow’, create a network of and/or connect with specific suppliers or receivers of food waste	Misfits Market does not participate in this activity.	N/A
Connecting supply- and demand-side users positioned in the same geographical area	Misfits Market does not participate in this activity.	N/A
Enabling information exchange between supply and demand through messaging system	This activity does not currently fit Misfits Market’s business modal.	N/A
Enabling the sending of notifications on available food waste	Misfits Market does not send specific notifications on available food waste as they have an online store that is constantly updated.	N/A
Aligning schedules of retailers and charities	Misfits Market does not currently participate in aligning the schedules of retailers with food that could become wasted and charities, but they do donate to charities, which is described in section 4.4.3 Charity Support.	N/A

#### 4.1.1 Innovative Food Waste Prevention

This theme of innovative food waste prevention found in Misfits Market is fundamental to their business and is what allows them to thrive and accomplish an important circularity broker activity. With statements on Misfits Market’s home web page (Misfits Market, 2022 / Website 1) such as “Get organic produce and sustainably sourced groceries delivered at up to 40% off grocery store prices.”, “Joining for FREE helps fix a broken food system and build a more sustainable future.”, and “Skip the trip to the store, while tracking your box as it makes the journey to you.”, the company declares how they have a strategy of creating opportunities to prevent food waste, offering high-quality and organic groceries to customers at a discount, and providing an effective delivery service that allows customers to skip traveling to traditional grocery stores



### 4.1.2 Nonparticipation in a ‘Following’ or Geographical Connection Feature

Misfits Market has not implemented a feature that allows the activity of users to ‘follow’ a specific supplier on their platform. This may not be central to the business model of the company but there could still be opportunities in this activity that could grow their business. If consumers would be able to follow certain suppliers on the platform, they could follow suppliers near their area which could give consumers a sense of supporting and being more connected to their local community. It could also potentially create more environmentally friendly business due to shorter delivery distances.

These opportunities relate to key business aspects of the industry discussed in the theoretical framework. Research by Mazzucchelli et al. (2021) and Cane & Parra (2020) has shown that social media activities of the digital platform and an environment where users can become involved play a significant role in the growth of digital platforms fighting food waste. Mazzucchelli et al.’s (2021) research also shows that encouraging consumers to fight for sustainable solutions can satisfy their needs.

### 4.2 Selecting Platform Users

The “selecting platform users” sub-role is part of the “connecting” circularity broker role. Ciulli et al. (2020, p. 313) explain that, in this role, the circularity broker is actively searching for supply- or demand-side users that would fit and benefit from their platform. Misfits Market shows the importance of this role in how they tailor their platform to meet the needs of their suppliers and consumers.

**Table 6** Thematic Analysis of the Role of Selecting Platform Users in Misfits Market

Selecting platform users activities of the circularity brokers theory	Representative quotes, actions, etc. in Misfits Market	Theme(s) found in Misfits Market

Composing a network of local charities for a business/a store of a retailer	Misfits Market does not currently participate in composing networks of local charities, but they do donate to charities, which is described in section 4.4.3 Charity Support.	N/A
Selecting suppliers to join the platform based on location, time of food availability, quality of food	Misfits Market's home web page describes that they specifically take in food that typical grocery stores would let go to waste instead. (Misfits Market, 2022 / Website 1)	Supplier selection based on unconventional food
Involving first major food producers/retailers to participate in the platform in order to trigger other users' participation	Misfits Market does not participate in this.	N/A

#### 4.2.1 Supplier Selection Based on Unconventional Food

Misfits Market has built their business model on selling food that has previously gone to waste. Although still high in quality, this is unconventional food that does not fit a standard of cosmetic appearance that typical grocery retailers have set. And they have convinced their customer base that this unconventional food is still very worthy of purchase. Misfits Market has found a great opportunity in buying goods that has had no demand, which comes with the benefit of discounted purchasing. In this way, Misfits Market side steps part of the competition in the grocery retail space.

Golub (2021) also described the advantageous situation the company is in with building relationships with more suppliers. She described that as Misfits Market has been growing, suppliers understand better what the company is doing and now many suppliers reach out to the company for business. As an example, Golub told how one supplier contacted Misfits Market to try to solve one of their issues:

“As our company has grown and our volume has grown, people understand more what we do and what we're looking for so now we get a lot of suppliers reaching out to us and saying, ‘Hey, I have 10 pallets of cauliflower that Whole Foods just rejected because it doesn't meet the sizing specifications that they wanted. Can you take this and buy it from us and sell it to your customers?’”

Suppliers are willing to work with Misfits Market as they have created an opportunity to do business that did not exist before. This is a prime example of a circularity broker filling a circularity hole, which correlates with the industry structure key business aspect of the food waste recovery industry mentioned in Table 1.

### 4.3 Balancing Supply and Demand

The “balancing supply and demand” sub-role is part of the “connecting” circularity broker role. Ciulli et al. (2020, p. 313) explain the purpose of this role as balancing the supply-side and demand-side users of the platform so that both types of users continue to have motivation to use the platform.

**Table 7** Thematic Analysis of the Role of Balancing Supply and Demand in Misfits Market

Balancing supply and demand activities of the circularity brokers theory	Representative quotes, actions, etc. in Misfits Market	Theme(s) found in Misfits Market
Ensuring that there is a sufficient and/or right number of supply side users-on the platform	Misfits Market is providing different categories of grocery items. (Flanagan, 2020 / Podcast 1)	Variety of suppliers
Ensuring that there is a sufficient and/or right amount of food waste offered on the platform	For Misfits Market’s purposes, this activity is the same as the previous and following activity.	N/A
Ensuring that there is a sufficient number of demand-side users	Misfits Market has a referral program, which incentivizes customers to share about the platform to others. (Flanagan, 2020 / Podcast 1)	Strategic action to attract customers

	Misfits Market loses money on their base delivery box and delivery fee. (Flanagan, 2020 / Podcast 1)	
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### 4.3.1 Variety of Suppliers

In an interview with the company CEO, Abhi Ramesh, he states that the company is aiming to go “aisle by aisle down the grocery store” and provide groceries of different categories for their customers (Flanagan, 2020 / Podcast 1). Ramesh also clarifies that he sees their platform as a direct competitor to typical grocery retailers in the sense that they are not providing, for example, recipe kits in their boxes but simply raw groceries. Therefore, the company is purchasing from a variety of suppliers to provide a variety of groceries to their customers so that they can be a viable solution as a company.

### 4.3.2 Strategic Action to Attract Customers

In the interview, Abhi Ramesh also states that they lose money on their base box and with the delivery fee, but they make a profit when customer orders reach a certain monetary threshold. In this it can be seen that Misfits Market is trying to make it easier for more customers to use their platform and, therefore, trying to attract more demand to the platform. As mentioned above, there is a variety of groceries categories provided and Ramesh says they are aiming to “fill as much of our shopper’s digital grocery cart, if you will, as possible” (Flanagan, 2020 / Podcast 1). In doing this, more profit will be made on each order.

It can also be seen on their platform that not all of the items offered are unconventional in some way or were not necessarily going to be rejected by traditional grocery retailers. This is because Misfits Market is aiming to provide more categories of grocery items. Therefore, even though not all the items offered on their platform have been recovered from waste, it can be concluded that the total offering of items makes it more

possible to sell the items that have been recovered before being wasted since the offering as a whole is more consistent and relevant for the customer. This strategy of offering food recovered from being wasted with conventional food products also relates to the interest Mullick et al. (2021) suggests there is in the complementation and competition between different digital intervention strategies.

#### 4.4 Framing Waste

The “framing waste” sub-role falls under the “informing” circularity broker role. Ciulli et al. (2020, p. 314) explain that in this sub-role, food waste recovery platforms shape the perceptions of food waste and its recovery by describing and emphasizing its economic, environmental, and social meanings. In doing this, supply and demand actors can be persuaded about the value in food waste recovery. Consequently, the specific way that a platform chooses to frame food waste depends on the type of actor the platform was targeting. It is described below how Misfits Market validates the circularity brokers theory in how they practice and participate in the roles and activities of the theory. It can be seen that Misfits Market takes part in all of the activities that Ciulli et al. lay out for this sub-role of “framing waste” in their paper.

**Table 8** Thematic Analysis of the Role of Framing Waste in Misfits Market

Framing waste activities of the circularity brokers theory	Representative quotes, actions, etc. in Misfits Market	Theme(s) found in Misfits Market
Emphasizing business benefits (brand reputation, attraction of new customers, increased revenues/lower costs, reduced risks from bad press)	<p>“We are proud to partner with a company dedicated to eliminating inefficiencies in the food supply chain.” (Belgian Boys, 2022, Upcycled Stroopwafel / Online article 1)</p> <p>“We launched each of these items in 2021 by teaming up with our partners to give would-</p>	Positive brand sentiment, Product creation

	be food waste an exciting new life.” (Misfits Market, 2021, <i>2021: A Year in Review</i> / Blog post 4)	
Emphasizing economic benefits for the consumers (convenience)	<p>“[I]f you care about buying all organic produce you're going to find the best deals for that on our site.” (Golub, 2021)</p> <p>“Get organic produce and sustainably sourced groceries delivered at up to 40% off grocery store prices.” (Misfits Market, 2022 / Website 1)</p>	Discounted items
Emphasizing economic benefits for charities (reduction of costs for food supply)	<p>“To stay committed to expanding food access and affordability nationwide, we partnered with Feeding America to help support the communities that do the same for us. We couldn't be here without you: Through our partnerships with local community fridges, our skipped box donation program, and our summer mobile tour, you've helped us raise more than \$155,000 and donate more than 1.5 million meals through Feeding America.” (Misfits Market, 2021, <i>2021: A Year in Review</i> / Blog post 4)</p>	Charity support
Emphasizing environmental damage of food waste /environmental benefits from food waste recovery (e.g. carbon reduction)	<p>“As a food system globally, it is somewhere between a third to 40% of what we produce today goes to waste.” (Flanagan, 2020 / Podcast 1)</p> <p>“[W]e've rescued 228,531,504 pounds of food to date that might otherwise have gone to waste, with more than 128 million pounds of that food rescued in 2021 alone.” (Misfits Market, 2021, <i>2021: A Year in Review</i> / Blog post 4)</p>	Environmental impact of food waste and its recovery
Emphasizing social damage of food waste (connecting food waste with food poverty) /	<p>“We have a really important mission to create more accessibility for high-quality</p>	Greater food accessibility

social benefits from food waste recovery (e.g. edible food waste will reach people in need, sense of community among users, reduction of social isolation)	food and by accessibility I mean offering our high-quality products at a more affordable price point mean which makes that product more available to a larger group of people.” (Golub, 2021)  Community fridges initiative	
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#### 4.4.1 Positive Brand Sentiment and Product Creation

In the table above, themes were found in the quotes about and actions of Misfits Market, which relate to the circularity broker sub-role of “framing waste”. Because Misfits Market participates in this role by emphasizing business benefits, they have benefitted from a number of valuable opportunities. One example, as the table above mentions is how the company Belgian Boys, who make stroopwafels, are proud to partner with Misfits Market as they are “eliminating inefficiencies in the food supply chain” (Online article 1). It can be concluded here that the opportunity is the capability to build positive brand sentiment by addressing a need that is underrepresented or simply unfulfilled, which separates Misfits Market from conventional food retailers.

The partnership between Misfits Market and Belgian Boys includes the creation of a new product. Through framing waste, Misfits Market initialized the creation of a new product made by repressing unused scraps of Belgian Boys’ stroopwafels into cookies. Furthermore, Misfits Market also has a customer base interested in products resulting from food waste recovery. Because of this, Belgian Boys is relying on and willing to use Misfits Market’s platform. In the end, new revenue streams have been created through this new product and more food waste is recovered and made available through Misfits Market. This also correlates with the idea brought forward by Mattila et al. (2020) (mentioned previously as a business

strategy aspect of the industry) to combine operational logics between different organizations in the industry to help form a type of multi-functional platform for greater sustainability.

There is also a potential challenge for food waste recovery businesses that emerged through discussion around this topic. In the interview I conducted with Misfits Market, Golub (2021) explained this challenge saying,

“However, there are some categories, as we enter, that are much harder for us to have a full assortment just of “misfit” products. We are trying to round out our assortment in those categories so [...] we are buying more everyday products so that's more of your traditional buyer and supplier kind of relationship.”

Also, when talking about expanding their selection to new categories, Abhi Ramesh, the company CEO, in an interview (Flanagan, 2020 / Podcast 1), says, “I want us to go aisle by aisle down the grocery store.” The potential challenge Misfits Market is trying to overcome is that of being relevant enough for consumers. In this case, that means to provide a wide range of products, similar to a traditional grocery retailer’s offering. Misfits Market is trying to accomplish this by also providing food not recovered before being wasted along with their recovered food products. It can be concluded here that food waste recovery businesses may not be viable if their offerings are too inconsistent or inconvenient compared to conventional food retailers.

Ramesh believes they can overcome this challenge and become a replacement for traditional grocery stores. When discussing the company’s business model he says, “I view what we’re doing as not a subscription but as a repeat purchase platform.” And he also adds that,



“The goal is to start expanding our selection and as we start expanding our selection more people should start shifting their purchasing from their traditional brick and mortar grocery store that they need to drive 20 minutes to and 20 minutes back from to our platform.”

Ramesh briefly describes an advantage and opportunity they have as a nontraditional grocery retailer in a case where they were able to purchase approximately 1,000 bottles of olive oil at a substantial discount. This was because the labels had been placed on the bottles backwards and, for that reason alone, a traditional grocery store would not expect them.

#### **4.4.2 Discounted Items**

Another opportunity food waste recovery businesses have is to foster willingness in consumers to use their platform by framing the economic value of food waste recovery. As seen in the “discounted items” theme in the table above, Misfits Market does this in offering organic produce at a significant discount by gathering and selling unconventional produce that would go to waste. Therefore, by participating in this role and by emphasizing the advantage consumers get with the discounts, the company benefits, and consumers come to rely on them for discounts.

#### **4.4.3 Charity Support**

Misfits Market also participates in emphasizing economic benefits for charities by providing a donation option through their platform. Misfits Market delivers grocery boxes weekly but there is also an option to skip a weekly box order if desired. However, instead of skipping a week, a customer can also donate the value of their box for that week to a food bank (Misfits Market, 2022, Terms of Service / Online article 3). In this, Misfit Market has shown they have opportunities to provide donations to charities, which can be a way of marketing themselves while benefiting those in need. This activity also connects with the

social value industry aspect mentioned previously by Mazzucchelli et al. (2021) which was that “Corporate social responsibility principles should be embedded in these firms [...] because consumers view these values as quality indicators of these organizations.”

#### **4.4.4 Environmental Impact of Food Waste and Its Recovery**

Emphasizing the environmental damage of food waste and the benefits of its recovery is another activity of the framing waste role that Misfits Market participates in. Abhi Ramesh clearly points out in his interview (Flanagan, 2020 / Podcast 1) that a third to 40% of food produced globally today gets wasted and Misfits Market is keeping track of the amount of food they have rescued as seen in the quote from their blog in the table above. This activity aligns with the social value aspect of this industry as pointed out by Mazzucchelli et al. (2021) which was to encourage consumers to fight for sustainable solutions as it can satisfy customer needs, communicate responsible values, and build the platform around a strong community. This activity is an especially useful opportunity for the company since this is a value also likely shared with consumers. And if Misfits Market is focused on this value much more than traditional grocery retailers, it could be a chance to stand out to consumers and even bring them to rely on the company as a sustainable retailer of choice.

#### **4.4.5 Greater Food Accessibility**

Misfits Market also emphasizes the social benefits of food waste recovery. Golub (2021) stresses their mission of creating greater accessibility for high-quality, organic food so that these products are offered at a more affordable price point for more groups of people. She continues saying that people should not have to choose between quantity and quality when it comes to healthy food. Another social impact initiative that the company is involved in is a community fridge program. Misfits Market donates hundreds of pounds of their produce to these community fridges across New York City and Philadelphia (Misfits Market,

2020, Photograph of a Misfits Market community fridge and a description of the program / Social media post 2). These are street-side refrigerators that advertise “Free food for all” and “Please leave and take” (Misfits Market, 2020, *The Misfits Market 2020 Recap is Here!* / Blog post 2). These activities can potentially attract customers who are seeking grocery retailers with social impact values and are likely to include customers who are usually excluded due to too high prices for organic produce. Therefore, food waste recovery businesses practicing these activities have a potential opportunity to attract more customers. These activities also align with social value aspects in this industry as discussed under the immediate previous themes.

#### 4.5 Educating (Potential) Platform Users About Waste

The “educating (potential) platform users about waste” sub-role belongs to the “informing” circularity broker role. Ciulli et al. (2020, p. 315) describe this sub-role as a process of ‘educating’ supply-side or demand-side actors in the supply chain about the realities of food waste. They explain that the goal of this education is to beneficially shape beliefs held by the actors about food waste. For example, in their research, one platform focused on educating about the difference between the “best-before date” and the “expiry date”. Misfits Market validates the theory in this role through their own participation in its activities as seen below.

**Table 9** Thematic Analysis of the Role of Educating (Potential) Platform Users About Waste in Misfits Market

Educating (potential) platform users about waste activities of the circularity brokers theory	Representative quotes, actions, etc. in Misfits Market	Theme(s) found in Misfits Market
Educating potential customers about the quality of food waste	Misfits Market’s website home page explains that they take in high-quality food that grocery stores would rather let go to	Trivial reasons cause food waste

	<p>waste for trivial reasons such as produce items being too big or too small or packaging being out of date (Misfits Market, 2022 / Website 1).</p> <p>Abhi Ramesh, the CEO, tells a story on the company's blog of when he first found out that great amounts of food are wasted simply because it does not meet the aesthetic standards of traditional grocers (Ramesh, 2021 / Blog post 6).</p>	
Educating consumers about the best-before date	Among the great amount of material of food waste tips on their blog and social media, Misfits Market educates on best-before dates in one of their blog articles (Misfits Market, 2019, <i>Everything You Need to Know About The Marketplace</i> / Blog post 1).	Education on best-before dates
Educating food businesses about the absence of legal risks for food donation	Misfits Market does not participate in this activity.	N/A
Educating suppliers and/or receivers about how to handle recovered food	In one out of the many social media posts from Misfits Market, they educate consumers to put perfectly good food scraps to use in making a vegetable broth (Misfits Market, 2022, [Photograph of a vegetable broth recipe] / Social media post 3).	Education on handling recovered food

#### 4.5.1 Trivial Reasons Cause Food Waste

In educating (mainly) consumers that much food waste is the result of grocery retailers not accepting food since it does not measure up to trivial aesthetic standards, awareness rises about how the food that goes to waste is actually high-quality food. One example of this educating is in one of Misfits Market's blog posts:

“I saw this firsthand on a trip to a Pennsylvania orchard a few years ago when I was apple picking with friends. I noticed the fruit that looked a little different—too big or small, or just a little misshapen—was being collected and placed into storage bins. So I asked why. The reason? It didn’t meet the aesthetic standards that traditional grocers have had in place for decades.” (Ramesh, 2021 / Blog post 6)

In doing this education, Misfits Market has won over customers to their products and dissipated beliefs about recovered food being lesser than conventional food. The investment Misfits Market has made in educating potential customers about food waste has clearly paid off as is apparent in their business. Furthermore, Misfits Market has gained access to buying and selling products that conventional retailers are not competing over. Without any kind of education about food waste for the consumer, it could mean that customers would be lost due to their unawareness about the high-quality even in food that has been recovered from being wasted.

#### **4.5.2 Education Through Social Media**

Through their social media, Misfits Market has educated customers on the realities of best-before dates, potential uses of food that would be wasted, and more. The company website blog and their Instagram account are filled with tips and tricks and information about the realities of food waste, how food can be used instead of being wasted, and about common misconceptions related to food waste. It is an influential and strategic move for Misfits Market to leverage their social media in this way of educating customers. In the key business aspect of consumer responses in this industry discussed previously, Mazzucchelli et al. (2021) and Cane & Parra (2020) explain that social media of food waste platforms play a significant role in the growth and community support of these organizations. It may be a challenge to convince customers of the value that food waste platforms offer, but, in Misfits

Market's case, they have greatly taken advantage of the influence social media can have on customer education.

#### 4.6 Protecting Providers of Waste

The “protecting providers of waste” sub-role is part of the “protecting” circularity broker role. Ciulli et al. (2020, p. 315) explain that, in this role, measures are taken to avoid risks related to food safety standards. In their research, some of the circularity brokers they studied organized the food handling process so that, for example, charities receiving food donations took full responsibility of confirming that the food was handled properly according to food safety legislation. Some circularity brokers also required participating businesses and charities of their platform to sign legal agreements related to handling food safely and associated liabilities.

**Table 10** Thematic Analysis of the Role of Protecting Providers of Waste in Misfits Market

Protecting providers of waste activities of the circularity brokers theory	Representative quotes, actions, etc. in Misfits Market	Theme(s) found in Misfits Market
Setting up contracts which limit liability concerns for providers regarding food donations	The research was unable to clarify Misfits Market's participation in this activity. However, Misfits Market does state that their customers are “solely responsible for inspecting all products for any damage or other issues upon delivery” (Misfits Market, 2022, Terms of Service / Online article 3).	Legal action to protect providers
Vetting and verifying demand-side organizations who want to join the platform	This activity does not apply to Misfits Market's business model.	N/A
Allowing providers to hide their name	In the website marketplace, not every item available shows the source from where Misfits Market is selling it from (Misfits Market, 2022 / Website 1).	Provider privacy
Customizing the network of demand-	Since the demand-side users	N/A

side users receiving the offers from suppliers	of Misfits Market are consumers and not charities or other types of organizations, this activity does not affect the providers of waste.	
Tracing the flow of food waste from the suppliers to the receivers	Because Misfits Market is the sole middleman between their suppliers and their consumer customers, they obtain the details of the flow of food waste from supplier to receiver.	Tracing food waste flow
Providing a safe payment system	Misfits Market accepts all major credit cards, Apple Pay, and Google Pay.	Safe payments
Developing/setting/imposing/applying food safety guidelines/system	Misfits Market has participated in a coalition of 51 companies and nonprofits calling on Congress in an open letter to pass the Food Donation Improvement Act of 2021 (Misfits Market, 2022, <i>How Misfits Market is Supporting New Legislation</i> / Blog post 5)	Action towards food safety
Providing documentation on donations to defend against an audit	This activity does not apply to Misfits Market's business model.	N/A
Enabling ratings/reviews of receivers	This activity does not apply to Misfits Market's business model.	N/A

#### 4.6.1 Protecting Providers of Waste Through Legal Action, Privacy, Reporting, and Safety

As this section is more technical and as the activities of this sub-role are indeed important but yet likely have a less variable effect on the success of the business model of a food waste recovery business, the analysis of this section will summarize all the findings together.

Clearly, there are opportunities for businesses that participate in these activities of protecting providers of food that would be wasted. The legal ramifications without this type of support would leave the food waste recover business without any users. Trust needs to be

clearly established by the business with its suppliers, partners, and customers to enable successful relationships. Misfits Market has certainly done that through the activities that can be seen in the table above.

One of the most notable actions Misfits Market has taken is joining forces with others in enabling food that would be wasted to be moved forward to where it is needed without fear of any liabilities. As seen in their blog article (Blog post 5), “How Misfits Market is Supporting New Legislation”, their activism in campaigning for the Food Donation Improvement Act of 2021 to be passed can build further trust with their suppliers. Misfits Market shows that protecting them from liabilities is an important step in fighting food waste. Furthermore, there may also be an opportunity in gaining their customers attention through this activism. The blog opens with the following:

“Did you know that while 42 million people are expected to experience food insecurity this year, \$408 billion is being spent on food that will never be eaten? That’s millions of pounds of fresh food—24% of all food in the U.S.—going to waste.”

Customers may be drawn to the social and environmental responsibility Misfits Market is taking on with this action.

#### **4.7 Protecting Receivers of Waste**

The “protecting receivers of waste” sub-role is part of the “protecting” circularity broker role. Ciulli et al. (2020, p. 315) explain that in this role measure are taken to avoid risks related to food safety standards. In their research, some of the circularity brokers they studied organized the food handling process so that, for example, charities receiving food donations took full responsibility of confirming that the food was handled properly according to food safety legislation. Some circularity brokers also required participating businesses and



charities of their platform to sign legal agreements related to handling food safely and associated liabilities.

**Table 11** Thematic Analysis of the Role of Protecting Receivers of Waste in Misfits Market

Protecting receivers of waste activities of the circularity brokers theory	Representative quotes, actions, etc. in Misfits Market	Theme(s) found in Misfits Market
Developing/setting/imposing/applying food safety guidelines/system	Misfits Market has participated in a coalition of 51 companies and nonprofits calling on Congress in an open letter to pass the Food Donation Improvement Act of 2021 (Misfits Market, 2022, <i>How Misfits Market is Supporting New Legislation</i> / Blog post 5)	Action towards food safety
Tracing the flow of food waste from the suppliers to the receivers	Because Misfits Market is the sole middleman between their suppliers and their consumer customers, they obtain the details of the flow of food waste from supplier to receiver.	Tracing food waste flow
Setting up contracts which define the liability of suppliers and compliance with food safety guidelines	The research was unable to clarify Misfits Market's participation in this activity. However, Misfits Market does state that their customers are "solely responsible for inspecting all products for any damage or other issues upon delivery" (Misfits Market, 2022, Terms of Service / Online article 3).	N/A
Verifying that the charities have correct food standards in place	Misfits Market does donate to charities as described in section 4.4.3 Charity Support but The research was unable to clarify Misfits Market's participation in this activity.	N/A
Vetting and verifying supply-side organizations who want to join the platform	The research was unable to clarify Misfits Market's participation in this activity.	N/A
Customizing the network of supply-side users receiving the offers from suppliers	Misfits Market does create the network of supply-side users themselves but the research was unable to	N/A

	clarify if there is customizing for the purpose of protecting receivers of food.	
Enabling ratings/reviews of suppliers	The research was unable to clarify Misfits Market's participation in this activity.	N/A

#### 4.7.1 Protecting Receivers of Waste Through Food Safety Action

As this section is more technical and as the activities of this sub-role are indeed important but yet likely have a less variable effect on the success of the business model of a food waste recovery business, the analysis of this section will summarize all the findings together.

Clearly, there are opportunities for businesses that participate in these activities of protecting receivers of food that would be wasted. The legal ramifications without this type of support would leave the food waste recover business without any users. Trust needs to be clearly established by the business with its suppliers, partners, and customers to enable successful relationships. Misfits Market has taken some steps in protecting specifically the receivers of waste but, as far as this research has been able to gather, there could be more protection for receivers from Misfits Market.

As mentioned in the previous section on protecting providers of waste, Misfits Market has joined forces with others to actually lift away liabilities related to food waste (Blog post 5). The Food Donation Improvement Act of 2021 would enable more food that would be wasted otherwise to be passed on to those who need it most. Therefore, there is importance in not overbearing suppliers of food waste in trying to protect receivers of it. Through this activism and effort towards social and environmental responsibility, Misfits Market can gain customers' attention and improve their business.

## 4.8 Mobilizing Volunteers

The “mobilizing volunteers” sub-role is part of the “mobilizing” circularity broker role. Ciulli et al. (2020, p. 317) explain that this sub-role helps to bridge additional circularity holes in the food supply chain by mobilizing third parties to enable more connections between supply- and demand-side actors. This role may have a substantial positive impact on the brand of Misfits Market and help to expand their business. However, this research was not able to find evidence that Misfits Market participates in this role.

## 4.9 Mobilizing Partners

The “mobilizing partners” sub-role is part of the “mobilizing” circularity broker role. Ciulli et al. (2020, p. 317) explain that this sub-role helps to bridge additional circularity holes in the food supply chain by mobilizing third parties and establishing partnerships with them to enable more connections between supply- and demand-side actors. The especially useful partnerships mentioned in their research were those with organizations that provided circularity broker platforms access to an increased number of supply- or demand-side users. Misfits Market validates this role in the circularity brokers theory through their participation in this role. In their participation, they find opportunities to help expand their influence and business.

**Table 12** Thematic Analysis of the Role of Mobilizing Partners in Misfits Market

Mobilizing Partners activities of the circularity brokers theory	Representative quotes, actions, etc. in Misfits Market	Theme(s) found in Misfits Market
Mobilizing organizations that have a network of charities	“To stay committed to expanding food access and affordability nationwide, we partnered with Feeding America to help support the communities that do the same for us. We couldn’t be here without you: Through our partnerships with	Charity collaboration

	local community fridges, our skipped box donation program, and our summer mobile tour, you've helped us raise more than \$155,000 and donate more than 1.5 million meals through Feeding America." (Misfits Market, 2021, <i>2021: A Year in Review</i> / Blog post 4)	
Mobilizing organizations that have a network of businesses/stores	The research was unable to clarify Misfits Market's participation in this activity.	N/A
Mobilizing organizations for transportation of food waste	The research was unable to clarify Misfits Market's participation in this activity.	N/A
Mobilizing organizations for volunteering projects	The research was unable to clarify Misfits Market's participation in this activity.	N/A
Mobilizing organizations with network of consumers	In the interview with Alex Golub, she said that Misfits Market collaborated with Urban Outfitters and a yoga studio to get their message out to these businesses' customers (Golub, 2021).	Business collaboration

#### 4.9.1 Collaboration With Charities and Businesses

Misfits Market creates collaboration with their partners to build more bridges between supply- and demand-side actors so that food can be rescued. In their mentioned collaboration with Feeding America (Misfits Market, 2021, *2021: A Year in Review* / Blog post 4), Misfits Market is able to donate boxes of food to their charity, which avoids this food from going to waste. The collaboration with Urban Outfitters and the yoga studio also became opportunities for Misfits Market. Golub also mentioned that Urban Outfitters reached out to them first saying that they were big fans of their brand. One insight here may be that the sustainable and accessible nature of Misfits Market's brand can influence the opportunities possible through collaborations. These collaborations also enhance the connection that consumers have to a business. As Mazzucchelli et al. (2021) and Cane & Parra (2020) mention, social media

presence plays a major role in the growth and community support of these organizations. Furthermore, they also mentioned that having an environment where users can share experiences, offer support to each other, and be involved in interactive marketing helps to grow business

Another opportunity to be seen here is that a new standard is being formed to rescue food from being wasted and ensure that it meets someone who can use it. This standard encourages the business of food waste recovery and could create more opportunities for businesses in this industry.

#### **4.10 Mobilizing Stakeholders**

The “mobilizing stakeholders” sub-role is part of the “mobilizing” circularity broker role. Ciulli et al. (2020, p. 317) explain that this sub-role helps to bridge additional circularity holes in the food supply chain by mobilizing governmental institutions, key stakeholders, or retailers to take action to minimize food waste and to enable more connections between supply- and demand-side actors. The activities of this role could be great forces to minimize food waste and further empower the business of Misfits Market. However, this research was not able to find evidence that Misfits Market participates in this role.

#### **4.11 Combining the Platform With Existing Technologies, Processes, and Artefacts**

This sub-role of combining a platform with existing technologies, processes, and artefacts is part of the “integrating” circularity broker role. Ciulli et al. (2020, p. 319) write that this sub-role aims to participate in integrating a platform’s activities with the supply- and/or demand-side actors current food management practices and processes. Although it was observed that Misfits Market is flexible in their business ventures and explores a variety of

ways that food can be recovered and sold through their platform, the research was not able to collect detailed information about this role's activities.

#### 4.12 Co-Creating With Supply-Side Users

The “co-creating with supply-side users” sub-role is part of the “integrating” circularity broker role. Ciulli et al. (2020, p. 320) mentioned that food waste recovery platforms participated in this role by “actively integrating their knowledge, competences and requirements with those of their business users”. Misfits Market has a new type of platform where consumers can come to purchase food products and the company has embraced their place in the marketplace with new and creative solutions to offer recovered food waste on their platform.

**Table 13** Thematic Analysis of the Role of Co-Creating With Supply-Side Users in Misfits Market

Co-creating with supply-side users activities of the circularity brokers theory	Representative quotes, actions, etc. in Misfits Market	Theme(s) found in Misfits Market
Co-creating food recovery solutions with companies	Misfits Market has created opportunities to turn food waste into food products with brands like GrandyOats (granola), Preferred (popcorn), and Taza (chocolate) (Misfits Market, 2020, <i>The Misfits Market 2020 Recap is Here!</i> / Blog post 2).	Co-creating food products with brands who had food that would be wasted
Co-creating the pricing strategy for food waste with the suppliers	The research was unable to clarify Misfits Market's participation in this activity.	N/A
Co-creating solutions for recurring food waste with the suppliers	Considering Misfits Market's role as a platform and what the research was able to collect, this activity will be combined with this role's first activity for this analysis.	N/A
Collaborating on communicating the involvement in food waste recovery	Misfits Market posts about the collaborations they do with other brands to fight food waste. They explain in an Instagram	Engaging in communication about how collaborations are fighting food waste

	<p>post how they were able to offer some of Taza Chocolate's products to avoid food waste (Misfits Market, 2020, Photograph of chocolate pieces / Social media post 1).</p>	
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#### 4.12.1 Collaboration With Other Businesses to Avoid Food Waste

Misfits Market has used their new type of platform to disrupt the food retailing industry and offer customer solutions that were not available before. Alex Golub (2021) mentions that there are plenty of examples where Misfits Market worked directly with suppliers to “extract more value for both them and us”. She went on to give an example where one farmer pitched an idea of doing a second harvest of their broccoli to pick broccoli crowns that would be smaller than what traditional customers are used to but that could be offered on the Misfits Market platform. Misfits Market worked with them to make that happen.

Misfits Market has also worked with Preferred Popcorn and Taza Chocolate to create products with them that were not available before. Preferred Popcorn was established as movie theater popcorn supplier, but times became difficult for them when the Covid-19 pandemic came around. Laura Reiley (2020 / Online article 2) reported that Misfits Market worked with Preferred Popcorn to sell their popcorn directly to consumers.

““We work with Preferred to repack the giant bags into 28-ounce household bags, branded with Preferred Popcorn as a way to get recognized by consumers,” Ramesh says. He says that while some theaters are reopening, he anticipates it will be many months before movie popcorn sales resume historic numbers.”

Misfits Market took advantage of this moment in Preferred Popcorn's business to innovate. With Taza Chocolate, Misfits Market stepped in to become a new customer when Taza Chocolate had products that could not be sold to their regular customers also during the time of the Covid-19 pandemic.

This co-creation of new products that avoid food waste opens up new revenue streams for not only Misfits Market but also their suppliers. Furthermore, it can be concluded that the willingness of the suppliers in this industry to work with Misfits Market likely increases as new kinds of opportunities like these are opened and as these partnerships with Misfits Markets show their success. Lastly, through these collaborations, Misfits Market is able to offer consumers new products that cannot be found elsewhere.

#### **4.13 Measuring Environmental/Social Impact**

The "measuring environmental/social impact" sub-role is part of the "measuring" circularity broker role. Ciulli et al. (2020, p. 321) explain that this sub-role relates to activities on measuring the food waste that is saved through donations or product offerings that avoid food waste. This role highlights the positive impact of actions taken by supply- and demand-side users to rescue food that would become waste. The activities of this role could put great emphasis on the positive impact that the business of Misfits Market has on reducing food waste.

In the interview with Alex Golub (2021), she explained that Misfits Market is currently working on producing environmental and social impact reports of their business. She mentioned the company is putting together these reports for the first time and they will cover a range of measurements of different kinds of impact.

"The biggest thing that we're trying to measure specifically is our environmental impact, primarily transport carbon emissions. That's the biggest thing that we



want to get a number on and we're currently doing that assessment with a third-party company so that's definitely something that's a priority for us. ...[W]e're also going to talk about the social impact efforts that were making. In terms of our donation programs, we donate a lot of food and a lot of money to causes that align with our values and we want to talk about that as we want our customers, our investors, and we want the public to know what we're doing.”

Most notably, it was mentioned that carbon emissions from the logistics and transportation of their business will be covered as this is likely the most impactful activity of the business on the environment. Packaging is another significantly impactful operation that will be in the reports. Another metric that was mentioned to be in the reports is the donation programs Misfits Market is involved in as they are responsible for donating a great amount of food and funding to causes that align with their values. Golub mentioned that in providing these reports, the company will be able to be more transparent with their customers and investors about their values. Furthermore, based on the findings in these reports, Golub mentioned that Misfits Market wants to make commitments on how they can have a more positive impact on the environmental and society.

Golub pointed out that food supply chains do have a very high impact on the environment. Therefore, if Misfits Market can make efforts to reduce their environmental impact and implement sustainable practices, they could gain a major advantage among their competitors in the eyes of their customers. This is a substantial opportunity for the business of Misfits Market and, as mentioned before, Mazzucchelli et al. (2021) stresses that corporate social responsibility principles are important to these kinds of organizations as their customers see these principles in these organizations as indicators of their quality.

#### **4.14 Measuring Financial Impact**

The “measuring financial impact” sub-role is part of the “measuring” circularity broker role. Ciulli et al. (2020, p. 322) explain that in this sub/role, platforms were able to provide supply-side users with analytics on their financial performance through the platform. Furthermore, sales, related customer metrics, number of portions sold, and promotion efficiency were also able to be tracked. However, because this sub role does not fit the business modal of Misfits Market and because no other related data was collected, this research cannot speak to Misfits Market’s participation in this role.

#### **4.15 Measuring the Waste Recovered**

The “measuring the waste recovered” sub-role is part of the “measuring” circularity broker role. Ciulli et al. (2020, p. 322) write that this role entails offering information about food waste to the supply-side actors involved with the food waste recovery platforms so that they can use this information for the reasons mentioned: “verifying whether everything was going according to plans, setting future waste recovery goals, identifying the causes of food waste or communicating the waste recovered to different stakeholders”.

Although Misfits Market does recover food that would be wasted, they specialize in recovering food that traditionally goes to waste because it does not meet the superficial cosmetic standards that traditional grocery stores accept. Therefore, in many cases, the food they recover does not have a chance to avoid being wasted through traditional channels in the market because it does not make it to these channels. Consequently, in some ways, this kind of reporting may not be useful to their supply side users. This research was also not able to collect significant data related to Misfits Market’s participation in this sub-role. However, in the interview with Alex Golub (2021), it was mentioned that the company is currently working on providing reports on environmental and social impact, which could include information related to this sub-role.

## 5. DISCUSSION AND CONCLUSION

This thesis explores a business's position in the food waste recovery industry, and it may navigate opportunities and challenges within the industry by considering its relation to the circularity broker roles identified in the circularity brokers theory by Ciulli et al. (2020). The aim for the value of this research has been to identify opportunities and challenges of businesses within this industry and provide insight into how they can be leveraged and overcome. This study has analyzed with thematic analysis how these business' effectiveness and influence can be increased in the industry by fulfilling their roles as circularity brokers. In Table 14 below is a summary of the conclusions of this research. It displays the opportunities and challenges revealed in the themes of Misfits Market's actions in the industry.

**Table 14** Summary of Research Findings and Conclusions

<b>Circularity Broker Role</b>	<b>Circularity Broker Sub-role</b>	<b>Activity of the Role</b>	<b>Theme(s) Observed</b>	<b>Opportunity of the Activity</b>	<b>Challenge of the Activity</b>
<b>Connecting</b>	Enabling New Linkages (4.1)	Offering a virtual place where supply and demand of food waste can meet/connect	Innovative food waste prevention	Offer high-quality and organic groceries to customers at a discount	
	Selecting Platform Users (4.2)	Selecting suppliers to join the platform based on location, time of food availability, quality of food	Supplier selection based on unconventional food	Purchasing and selling goods (food nearing waste) that has had no demand	
				Creating an opportunity to do business that did not exist before (selling food nearing waste)	
	Balancing Supply and Demand (4.3)	Ensuring that there is a sufficient and/or right number of supply side users-on the platform	Variety of suppliers		Purchasing from a variety of suppliers to provide a variety of groceries to customers to provide a viable solution as a company
		Ensuring that there is a sufficient number of demand-side users	Strategic action to attract customers		Potentially taking losses on base orders to grow the user base of the platform
					Offering food nearing waste with conventional food products to provide a consistent and relevant offering for customers

Informing	Framing Waste (4.4)	Emphasizing business benefits of framing waste	Positive brand sentiment, Product creation	Building positive brand sentiment by eliminating inefficiencies in the food supply chain	Staying relevant enough for consumers by having a full assortment of products
				Initializing the creation of a new product from recovered food	
				Attracting a special customer base that is interested in products resulting from food waste recovery	
				Belgian Boys, a partner, is now relying on and willing to use Misfits Market's platform	
				New revenue streams	
				Capability to purchase, at a substantial discount, and sell, bottles of olive oil simply because of mislabeled bottles	
		Emphasizing economic benefits for the consumers by framing waste	Discounted items	Gaining loyal customers by offering organic produce at a significant discount by gathering and selling unconventional produce that would go to waste	
		Emphasizing economic benefits for charities by framing waste	Charity support	Providing a convenient option for customers to make donations to food banks, which also increases the social value in the business and provides positivity to brand image	
		Emphasizing environmental damage of food waste /environmental benefits from food waste recovery	Environmental impact of food waste and its recovery	Stand out to consumers from traditional grocery retailers through tracking of the amount of food rescued from waste	

Informing (Cont.)	Framing Waste (4.4) (Cont.)	Emphasizing social damage of food waste / social benefits from food waste recovery	Greater food accessibility	Creating greater accessibility for high-quality, organic food so that these products are offered at a more affordable price point for more groups of people	
				Building brand positivity by donating hundreds of pounds of produce to charity	
	Educating (Potential) Platform Users About Waste (4.5)	Educating potential customers about the quality of food waste	Trivial reasons cause food waste	Misfits Market has dissipated beliefs about recovered food being lesser than conventional food	
				Misfits Market has gained access to buying and selling products that conventional retailers are not competing over	
				Misfits Market used social media as an aid in communicating to consumers about the issue related to food waste	
	Protecting	Protecting Providers of Waste (4.6) & Protecting Receivers of Waste (4.7)	(For all activities related to these roles, see Tables 8 & 9)	Legal action to protect providers, provider privacy, safe payments, tracing food waste flow	
Developing / setting / imposing / applying food safety guidelines / system			Action towards food safety	Misfits Market's activism with the Food Donation Improvement Act of 2021 can attract attention, build trust with, and engage users of their platform	

Mobilizing	Mobilizing Volunteers (4.8)	This research was not able to find evidence that Misfits Market participates in this role.			
	Mobilizing Partners (4.9)	Mobilizing organizations that have a network of charities	Charity collaboration	Misfits Market has a donation program with Feeding America that provides an opportunity to build awareness and positive sentiment to their brand	
		Mobilizing organizations with network of consumers	Business collaboration	Because of the brand Misfits Market built, business reached out to them wanting to do collaborations and Misfits Market also initiated collaborations. These collaborations exposed Misfits Market to other business's customer bases	
	Mobilizing Stakeholders (4.10)	This research was not able to find evidence that Misfits Market participates in this role.			
Integrating	Combining the platform with existing technologies, processes, artefacts (4.11)	This research was not able to find evidence that Misfits Market participates in this role.			
	Co-Creating With Supply-Side Users (4.12)	Co-creating food recovery solutions with companies	Co-creating food products with brands who had food that would be wasted	Provide an alternative channel in the market for suppliers to sell their products that could not be sold to traditional retailers	
		Collaborating on communicating the involvement in food waste recovery	Engaging in communication about how collaborations are fighting food waste	Building connections with customers and partners by engaging them in communication about food waste recovery	

Measuring	Measuring Environmental/Social Impact (4.13)	(See section 4.13)		Standing out from competitors in the industry and attracting customers by emphasizing environmental and social responsibility principles, which are also a core part of a food waste platform's operations	
	Measuring Financial Impact (4.14)	This research was not able to find evidence that Misfits Market participates in this role.			
	Measuring the Waste Recovered (4.15)	(See section 4.15)			



## 5.1 Implications of Research Results

When observing Misfits Market's actions related to activities of the circularity broker role of connecting, there were several key opportunities and challenges of the food waste recovery industry observed. Through Misfits Market's untraditional methods, they were able to offer their customers high-quality organic groceries at a significant discount. This food saved from becoming waste is also a good that traditionally has not had any demand, which provides a means for Misfits Market to save on purchasing costs. Furthermore, new business opportunities are created with food that has been rescued instead of going to waste. However, a challenge identified in this industry is staying relevant enough to attract a significant amount of customers. This means that offerings of food recovered from waste may need to be offered along side traditional food and groceries to maintain a consistent product offering for customers. Moreover, strategic action should be taken to ensure there is a balance between supply and demand to maintain effective business.

In the informing circularity broker role, there are significant insights to learn from as well. Food waste recovery companies have an advantage in the fact that their business helps to solve the pressing environment and social issue of food waste. Companies in the industry can build positive sentiment for their brand in showing how they eliminate inefficiencies in the food supply chain. These companies also have the chance to create new products and new revenue streams from recovered food with the opportunity of the new market they are helping to create. This kind of business can also have an attraction to customers who are supportive of finding solutions to food waste and who are wanting to be customers of business's who share their values. Furthermore, as suppliers start to sell products of recovered food waste, companies in the industry gain influence as unique distributors of these products. These companies can also gain loyal customers through their discounted offerings, which also help to support values the customers have as well.

The protecting role of a circularity broker is a necessary role that comes with challenges and opportunities. The actions companies take related to this role will have a substantial impact on their business as they build trust with their users on the supply and demand sides. Although these activities may mostly be meeting basic expectations, Misfits Market found an opportunity in this role to elevate their brand by advocating for the Food Donation Improvement Act of 2021. This act would help to limit liabilities of businesses and organizations in making food donations, which would help to solve the issue of food waste.

Mobilizing is another role revealing opportunities in the food waste recovery industry. This includes mobilizing volunteers, partners, and stakeholders but this research was only able to find information on Misfits Market's activities with partners. Opportunities observed in these activities were building brand positivity and recognition by making donations to food banks and collaborating with other businesses who shared their environmentally and socially friendly values to become exposed to other customer bases.

Integrating is a role that companies in this industry have a unique opportunity to. Misfits Market was able to work with companies and provide an alternative channel to sell products that could not be sold to traditional retailers. Factory inefficiencies resulting in food waste and interruptions and gaps in the food supply chain have become opportunities for the market of recovered food waste. Misfits Market also intentionally communicated to others on their social media and website about the process of their partnerships with companies to recover food.

Lastly, there is the circularity broker role of measuring. This involves measuring financial impact and measuring the amount of waste recovered, which are unique activities that food waste recovery business have the opportunity to do. These activities emphasize and showcase important environmental and social responsibility principles of these companies. Partners and customers can see the benefits of doing business with these companies in these

measurements and can see the difference between these companies and their conventional competitors. This measuring role can take additional resources to perform but can also provide an opportunity to stand out from competitors.

## **5.2 Limitations of the Study and Future Research**

This research gained insights on what kind of circularity broker roles are relevant in food waste recovery businesses and how these roles manifested in the case study of Misfits Market. However, there are limitations to this study in the amount of data it was able to collect during the time of the research. The researcher was only able to conduct interviews with one business in the food waste recovery industry, which limits the impact of the results of this research. Therefore, the conclusions of the results are aware that there is partiality and inadequacy in the presentation of the opportunities and challenges for businesses in this industry. However, these limitations to this research are an invitation for future research to be conducted on businesses in this industry and to further establish the findings of this research.

This research has aimed to study a topic currently uncovered in extant research. Considering the large amount of food going to waste every year, and the successful opportunities Misfits Market has been able to find in this situation, there is fascinating research to be conducted on how businesses can create value out of this alarming situation. For example, in accordance with Misfits Market's business practices, it can be studied what new products can be created from recovered food waste, what market channels in this sector can be opened through unconventional means, and what other opportunities and challenges can be discovered for these businesses in analyzing their roles as circularity brokers. Therefore, a wide scope exists for the research of the opportunities and challenges of food waste recovery businesses.

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## APPENDIX A: INTERVIEW QUESTIONS

The questions asked in the interview with Alex Golub (Senior Social Impact Specialist and also former Procurement Project Specialist) of Misfits Market are as follows:

- To start off, could you please briefly describe the recent history of Misfits Market? Where has it come from a few years ago to today?
- Could you tell about the development of relationships with customers, suppliers, and/or partners with Misfits Market's new kind of business model?
- Are all your suppliers similar in their operations? For example, are they mostly farmers or do you also have different kinds of suppliers?
- Do you have the same or similar kind of formula with all your suppliers where you purchase and sell surplus products or this "ugly" kind of produce?
- Could you describe the process of how Misfits Market collects the food products from their suppliers?
- Are there any other kinds of entities that you work or partner with besides the traditional kind of supplier?
- Could you describe how the process to establish new suppliers has developed through the years or in the time you have been in the company?
- Could you talk about what kind of information Misfits Market is already providing or planning to provide on their social impact?
- Are there certain goals or effects Misfits Market anticipates seeing or already sees in providing information on their social impact for their relationships with their customers and suppliers?
- With the idea in mind that Misfits Market is centered around the large issue of food waste, could you talk about the kind of atmosphere or community this creates amongst the company and the suppliers, partners, and/or customers?

- From your perspective, could you describe what the marketing of Misfits Market focuses on?