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RESEARCH ARTICLE

A Digital Platform Strategy to Improve Food Waste Disposal Practices: Exploring the Case of "*Too Good To Go*"

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Abstract: This conceptual article delves into the intricate dynamics of global food security and the paradox of food waste, with a focus on Europe and Italy. Specifically, we examine the transformative potential of digital platforms, with a spotlight on the *Too Good To Go* platform, in tackling the challenge of redistributing food surpluses. In conventional market settings, the intricacies of food waste often go unnoticed by buyers and sellers, resulting in an inefficient equilibrium quantity determined solely by supply and demand forces. This failure to achieve an optimal outcome leads to a missed opportunity to maximize social benefit. Taking a microeconomic perspective, we highlight the platform's capacity to mitigate the adverse environmental and social impacts associated with food waste. Our findings illustrate how a market-based platform can address the inefficiencies and shortcomings of the Coase Theorem within the realm of food waste. By facilitating negotiation, reducing information asymmetries, and addressing environmental costs, the platform exemplifies how innovative market solutions can foster efficiency and sustainability.

Keywords: Food waste; Sustainability-oriented innovation; Technology; Gift economy; Gadda Law; Waste out-of-home

1. Introduction

Surplus food and food poverty are ethical issues that affect the functioning of entire food systems and the behavior of individuals [1]. According to the latest figures from the Food and Agriculture Organization of the United Nations (FAO) [2], almost 87,6 million tons of food is wasted each year in Europe, with disposal costs of up to 143 billion euros. In Italy, families waste around 36 kg of food per person per year, an amount that increases significantly during the summer. They

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are alarming figures, aggravated often by the lack of updated data about household food waste outside Europe and North America [3]. This is mainly due to the discrepancy between the definitions of food losses and food waste and the variety of quantification methods used at national and international levels. Xue [4] claimed that even today we have a huge gap in national estimates of food and waste loss. Often these estimates are based on elaborated proxy data or worse they are obsolete [4]. Although methodologies have been improved [5], it remains difficult to harmonize approaches [6,7]. The redistribution of surplus food is seen by many as a partial solution to reducing food waste and alleviating food poverty, while others criticize charitable initiatives as an unsatisfactory response. Despite the introduction of the Gadda Law① in Italy, in the last decades, the welfare state has slowly devolved its capacity and responsibility on the problem of food poverty to charitable food organizations [1]. Contemporary, ways of making purchases have also changed, changing the profile of the consumer too. Already Norris. [8], in the early 2000s, stated that the "new" citizens could be also called "critical citizens"; a person with a specific socio-economic profile, a higher level of education and income, having a willing to pay a higher cost of experimenting with innovative and engaging modes of action able to promote the "*common good*", that is a citizen with a sense of civic responsibility and community-oriented behavior. Someone able to contribute to societal advancement and well-being. Online grocery shopping has steadily increased across Europe over the past 10 years [9,10]. According to Eurostat [11], from 2009 to 2018 in Europe, the share of people buying food or groceries online has grown in the past 12 months from 5% to 15%. Besides, the new business model, introducing a digital third party in the purchase and sale of goods or services, has the potential to affect all actors involved in the physical supply and demand chain. Despite an increase, online food shopping has not experienced the same level of growth as other online retail sectors, like clothing and books [10]. Bauer, Aarestrup, Hansen, and Reisch [12] suggest that real-world in-store stimuli can serve as a potential starting point for multiple consumption goals, including health, self-gratification, and sustainability. Moreover, according to Davies and Michelini [13,14] a systematic analysis of how information and communication technologies are linked with food consumption has been made only regarding food-sharing models, while online grocery shopping has been quite deserted. The situation has changed only in recent years, with an acceleration certainly given by the COVID-19 pandemic. In recent decades, the current economic model, which is based on the paradigm of take, make and dispose [15], has been widely criticized for its lack of sustainability. Due to the over-exploitation of resources [16] and environmental degradation [17], this model is believed to harm the balance of the ecosystem. Recycling and the reuse of materials and components while avoiding waste form the basis of the circular economy, which has been propagated worldwide for several years. However, to move from a linear economy to a circular economy, new business models are required [18]. Moreover, these models must be flexible in terms of resources and management skills [19], as well as capable of incorporating technical and organizational innovation. The circular economy is therefore closely linked to innovation, as the transition requires important policy actions and socio-economic changes, including new technologies and products [20]. Many young entrepreneurs are showing great sensitivity towards this issue, and they are working to find economically sustainable business models [21]. Today, according to Ciulli, Kolk and Boe-Lillegraven [22] digital platforms can help to reduce food waste by creating the necessary connections, including linking retail stores and consumers, who play an important role in food production and consumption. Indeed, Mummah [23] highlight that digital applications can be an effective, scalable, and low-cost approach to changing consumer behavior. Different studies about consumers' tendencies highlight how they disapprove of foods that look different from standards due to cosmetic imperfections. So, foods that are disfigured, discolored, or marginally damaged, contribute to causing food waste to consumers [24,25]. Often, food items that do not meet ideal image standards are cast off as waste in the value chain. So, why are we interested in buying unsold food that is exactly food with all the characteristics to become food waste? Is it a free choice or an economic necessity? According to Lee [26], the attitude and the desire to voluntarily help someone place self-reward and personal benefits in a secondary position of importance. So, the attitude of prioritizing the interests of others could affect irrational economic behavior.

In the realm of food systems and societal ethics, the intertwined issues of surplus food, food poverty, and sustainable consumption patterns occupy a central

①LAW August 19, 2016, n. 166 Provisions concerning the donation and distribution of food and pharmaceutical products for social solidarity purposes and for the limitation of waste. (16G00179) (Official Gazette General Series no. 202 of 30-08-2016) https://www.gazzettaufficiale.it/eli/id/2016/08/30/16G00179/sg

stage. From the alarming statistics of food wastage across Europe to the sobering realities of food insecurity faced by millions worldwide, the global discourse on food security and sustainability has reached critical prominence. Against this backdrop, legislative measures such as Italy's Gadda Law and innovative initiatives like the *Too Good To Go* platform have emerged as pivotal responses to the dual challenges of food waste and poverty. Moreover, the transformative potential of the circular economy paradigm and the shifting consumer behaviors, exemplified by the rise of online grocery shopping, underscore the need for holistic approaches to address these complex issues. This paper navigates through the intricate web of factors shaping contemporary food systems, from legislative interventions and technological innovations to grassroots movements and consumer behavior shifts, aiming to elucidate pathways towards a more equitable, sustainable, and resilient food future. Through a comprehensive analysis spanning global perspectives to local interventions, this study endeavors to shed light on the multifaceted dimensions of food security, food waste, and the imperative for collective action in forging a more just and sustainable food system.

This research addresses a critical issue at the intersection of food waste, food poverty, and consumer behavior. This paper contributes to increasing valuable insights for policymakers, businesses, and charitable organizations seeking to develop effective strategies for addressing food waste and food poverty. Additionally, the study underscores the need for holistic approaches that consider both economic and sociocultural factors in promoting sustainable consumption behaviors. This paper offers valuable insights for policymakers, businesses, and charitable organizations seeking to address food waste and food poverty.

The paper is divided as follows: The first part is a general framework exploring global food security challenges and the paradox of food waste, and then we discuss the food waste disposal practices in Europe and Italy. In the second part, we present *Too Good To Go* microeconomic approach. Finally, we analyze how the platform can reduce food waste and imperfect information problems.

2. Global Food Security and the Food Paradox

Food waste is one of the "food paradoxes" that characterizes contemporary societies in both the global north and the global south, combining food poverty and food waste, which is one of the most ethically unacceptable issues in developed economies [27]. It is estimated that between 691 and 783 million people in the world will face hunger in 2022. Looking at the average (about 735 million), 122 million more people will face hunger in 2022 compared to 2019, before the global pandemic [28]. According to Eurostat, in 2022, 8.3% of the EU population cannot afford a square meal with meat, fish or vegetarian meals every two days [29]. The food security problem is closely related to the problem of food waste [1]. Transition countries are the heirs of a world that lives above the limits allowed by the planet with environmental and economic backlash [30,31]. 149.2 million children who are stunted and 45.4 million children who live in a wasteful society [32]. In recent years, the food paradox has gained growing interest among academia, civil society and politicians [33]. This global issue is becoming increasingly political and social because it is not only a waste of precious nutritional resources, but also a waste of water, land, capital and energy [34]. The waste of food could be described as a "low hanging fruit", an easily attainable purpose that could generate benefits for many actors in a short time as well as for the environment itself [35], but unfortunately, it is not so. It is the consequence of multiple factors, often interconnected to each other, and it cannot be linked to single incorrect behaviors [36].

The issue of food waste represents a profound paradox within contemporary societies, transcending geographical boundaries and socioeconomic disparities. The juxtaposition of food poverty and excessive waste underscores the ethical dilemma inherent in developed economies. Despite global efforts, the scale of hunger remains staggering, with millions facing food insecurity daily. This crisis is exacerbated by the interconnected challenges of environmental degradation and economic inequality, which continue to plague transition countries. The growing recognition of the food paradox among academia, civil society, and policymakers reflects the increasing political and social significance of this issue. It is not merely a matter of squandering precious nutritional resources but also entails the wasteful use of water, land, capital, and energy. While addressing food waste may seem like a readily achievable goal, it is a complex phenomenon shaped by multiple interconnected factors. Nevertheless, concerted efforts are needed to rectify systemic inefficiencies and forge a path towards sustainable food systems that prioritize equity and environmental stewardship. Only through collective action can we hope to overcome the ethical and practical challenges posed by food waste and build a more equitable and sustainable future for all.

3. Food Waste Disposal Practices in Europe and Italy (The Gadda Law)

Due to the COVID-19 pandemic crisis, the problem of wasted food has gained considerable attention worldwide [37]. Before that, in 2015, the General Assembly of the United Nations introduced Objective 12 (Agenda 2030) among the 17 sustainable development goals (Sustainable Development Goals, SDGs). Goal 12, "ensure sustainable production and consumption patterns", highlights the need for a radical change, "do more and better with less". According to FAO, the world's population will reach 9.7 billion by 2050 [38]. The European Commission (EC) has recently launched the Farm to Fork strategy (F2F) on the basis of the new European Green Deal; a package on the circular economy of the European Commission. In fact, in 2016 the EU started to organize a Platform on food losses and waste as a center for the exchange and dissemination of good practices, information, and policies to combat waste [39]. Besides, with the Circular Economy Action Plan, the food waste prevention issue becomes a priority area [40]. This virtuous path was partially affected by the COVID-19 pandemic, which highlighted the vulnerability of food systems. During the months of the COVID-19 crisis, in Italy, the Banco Alimentare, which normally supports about 300,000 people a month, helped about 450,000 people a month [41]. Although poverty has increased, consumers have become more attentive and diligent in their behavior. Because of the COVID-19 pandemic, people have changed the models of purchase, storage, and disposal of food to ensure a constant domestic supply [42]. Besides the measures adopted have influenced domestic purchases, the consumption of food out of the home and consequently the production of food waste too [43]. An initial monitoring of COVID-19's effects suggested that restrictions and quarantine measures could increase food waste (World Economic Forum, 2020; FAO, 2020). Otherwise, later surveys have reported a decrease in domestic food waste throughout the first wave of the pandemic [44]. Before the COVID-19 pandemic, there were just 5 countries that recorded a positive trend in terms of food loss and waste: Canada, Italy, Germany, Japan and the United States these five countries have formulated policies and proposals, including reforms in their legislation, capable of giving a strong response to the food waste problem. In this field, Italy has been able to distinguish itself through cutting-edge reform.

Compared to the rest of Europe, Italy has developed a strong awareness of the food waste issue. Initially the Law's Good Samaritan n. 155/2002 has facilitated the recovery and the redistribution of safe and edible food to those in need. A conscious law that, instead of punishing those who waste food, rewards those who pursue a reducing food waste behavior. It had provided a strong alternative to the French law. In France, the donations are an imperative. In Italy, otherwise, this law helps, with incentives and bonuses, the food companies to recover edible food. The Gadda Law is the synthesis of a long process of study and analysis of the Italian context. It tackles the problem by establishing a system of rewards and administrative simplification. A clearer and unified organizational structure has helped in achieving the Food Bank's set objectives. Over the years, recovery activity has increased in both quantity and quality, paying more attention to the nutritional aspects of food redistributed [45]. In 2020 food waste shows a positive trend mainly due to greater attention to domestic purchases because of COVID-19 [46]. It is estimated that Italians waste an average of €4.9 per household per week, which is a national figure of around €6.5 billion [47]. Seven years after its introduction, the Gadda Law is still not well known and there are often some actors involved in the recovery action in the struggle to find resources, and donors, to manage the surpluses guaranteeing the safety of the recovered food [48]. These difficulties show that the path is still long and that it remains vital to fuel the political debate by involving new players, projects and ideas. One of them could be to observe in which way *Too Good To Go*'s platform is able to build a food waste disposal practice, in this case not a public intervention, but a private intervention. In Italy, we are less accustomed to this kind of mediation because the culture of food recovery is historically linked to the economics of the gift.

3.1 The *Too Good To Go's* Platform

The biggest challenge businesses face today is the digital transformation [49]. The Internet, social networks, mobile applications and other digital communication technologies have become part of the daily lives of billions of people around the world. According to recent statistics for January 2020, 4.54 billion people are actively using the Internet, equivalent to 59% of the world's population [50]. *Too Good To Go*'s platform was born in Denmark as a social movement with a simple goal: saving food that is "*Too Good To Go*". Currently, *Too Good To Go* operates in 15 European countries and expanded its presence to the United States, Canada, and Ireland since 2020. For seven years, *Too Good To Go* has evolved into a substantial international movement,

structured around four key pillars: People, Business, Schools, and Policy. Specific goals have been outlined for each pillar. During this time frame, the company has transformed into the largest business-to-consumer (B2C) platform dedicated to combatting food waste. In 2022, *Too Good To Go* achieved steady growth, reaching 5.7 million users, and establishing partnerships with 21,384 businesses, including bars, restaurants, supermarkets, and hotels. This collaborative effort is geared towards saving 7 million meals. Notably, nearly 70% of the platform's user base comprises millennials aged between 25 and 40, with women representing 60% of this demographic [51]. Two years after its launch in Italy, *Too Good To Go* celebrated a significant milestone by distributing 2 million "magic boxes" [52].

3.2 How *Too Good To Go* Works

Too Good To Go is a marketplace by restaurants and supermarkets with the aim to sell surplus food throughout the day. It creates a digital market between supply and demand in which the seller can re-establish a new price, lower it, and attract new clients. Otherwise, the cooked food unsold would be thrown away. *Too Good To Go* very quickly information asymmetry between restaurateur and consumer. The seller increases his profits, transforming what previously was a cost in terms of disposal of waste food, into a revenue and the consumer enjoys the reduction of price. Both found an economic surplus. The "magic box" contains eco-friendly packaging and includes a food product that is nearing its expiration date. However, rather than being a random selection from the menu, the food items included are those that the restaurant is unable to sell. These items may be of lower quality compared to other menu offerings or less popular among customers. The surprise element for consumers lies in discovering whether the food is of lower vertical quality or an unpopular variety. This fundamental asymmetry of information poses a challenge that *Too Good To Go* cannot fundamentally resolve unless real-time assessments of the items by consumers who were in the restaurant that same evening are somehow credibly transmitted along with the posted offers. Usually, there is a pre-set time (often 30 minutes before closing). This sale methodology justifies the lowering of the price. Through a microeconomic approach, we present the analysis of the *Too Good To Go* model of business. According to Smith (1776), the free market is self-regulating. The concept of Pareto stability (Figure 1) is closely linked to welfare economics and economic efficiency theory. Chen N. et al. [53] argue that a desirable matching outcome should also demonstrate Pareto efficiency, serving as a standard for overall efficiency in many traditional problems. To ensure both fairness and efficiency in many-to-many matching scenarios with weak preferences, a natural solution concept is Pareto stability, which requires both pairwise stability and Pareto efficiency. As described by Sotomayor, M. [54] only Pareto-stable matchings, i.e., stable matchings that are Pareto optimal, will occur. Pareto stability defines a situation in which it is impossible to improve the well-being or utility of one party without worsening that of another [55].

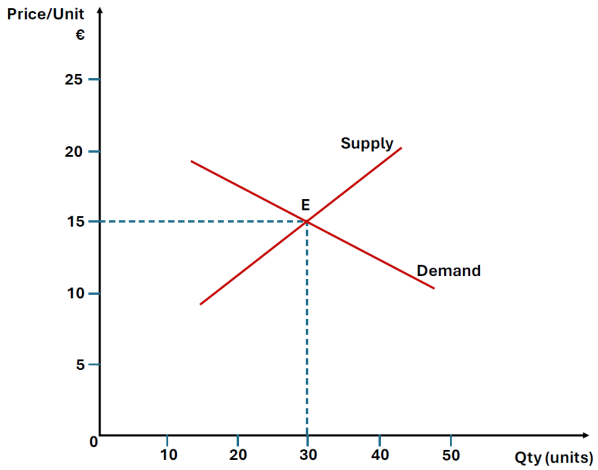

Figure 1. Supply and demand in balance.

Despite that, it is important to note that this principle only applies in an ideal perfectly competitive market environment, with all the basic assumptions valid [55]. Indeed, individuals, driven by personal expenses or benefits, make decisions that can impact third parties who are not directly involved [55]. In this case, the choice of the seller, for cooking more food than the capacity of the market to absorb it in one day, becomes a social and an environmental cost with effects on third parties. This problem stems from market imperfections resulting from incomplete information rather than external influences. Generally, buyers and sellers ignore external influences (positive or negative), so market forces (supply and demand) cannot guarantee an efficient equilibrium quantity. In this instance, the optimal social benefit isn't fully realized [55]. Instead, *Too Good To Go* endeavors to mitigate imperfect information within the market rather than solely addressing information asymmetry, thus transforming it into a positive opportunity. Figure 2 illustrates a scenario within a restaurant during a working day where the seller fails to sell the expected amount of food (30 units). This situation results in a loss of earnings for the seller due to

fewer food products being sold. Additionally, the seller incurs costs associated with disposing of the surplus food, which, by the end of the day, loses its economic value and becomes food waste. Consequently, there is a demand shift and a surplus: this surplus is because there is a lower demand and if the price remains at the original level, a quantity difference between E and E' remains unsold (in the example 10 units).

The solution proposed is that the seller (depicted in Figure 3) lists its unsold cooked food on the *Too Good To Go* marketplace at a price where the new demand curve equals the original supply of 30 units (in the example one-third of the full price) to mitigate some of their lost revenue. They upload 10 "magic boxes" onto their restaurant's profile, each priced at €4.99. All unsold food is then reallocated on the market, allowing new customers to reserve and collect the "magic box" during specific hours of the day. This surplus food is repurchased by consumers, and the costs of waste disposal are absorbed by the market (at least if the market price for the 10 boxes sold is higher than the costs incurred for the waste disposal of the 10 meals).

In Figure 3, point E* represents the new equilibrium, where the market absorbs the surplus of food, thereby converting environmental costs into positive outcomes.

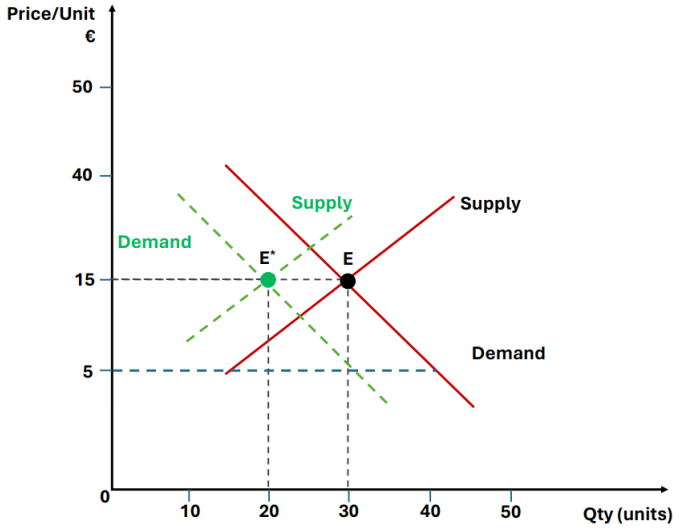

Figure 2. Unsold food in a restaurant during a working day.

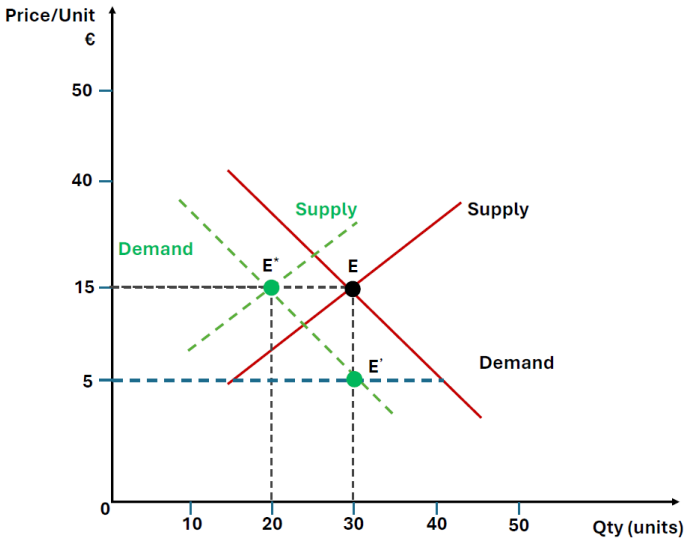

Figure 3. Absorbing surplus food.

4. *Too Good To Go* as a Market Solution to Food Waste and Imperfect Information Problems

In economics, *Too Good To Go* represents a private solution to an imperfect information problem that may result in food waste. In most cases, the costs of food waste disposal are either covered by the government or by private waste producers, depending on how waste disposal costs are recovered by the public sector. Typically, the government imposes a tax equivalent to the abatement cost (known as a Pigouvian tax), aimed at encouraging market actors to consider the environmental costs. However, in certain scenarios, the government delegates this adjustment process to private entities. Citizens affected by the social and environmental costs of food waste may address the issue privately. This is in line with the Coase theorem, which suggests that if all parties involved can negotiate the allocation of resources without transaction costs, the market can efficiently allocate them, irrespective of the initial distribution of rights. The Coase theorem demonstrates this assumption: "If all the parties involved can negotiate the allocation of resources without costs (absence of 'transaction costs') the market can allocate them efficiently, regardless of the initial distribution of rights" [55].

The critical points of the Theorem's Coase are:

- Transaction costs (costs to make and execute a viable agreement);
- Negotiation issues (the obstinacy of the parties);
- Coordination of interested parties (their number);
- Asymmetric information;
- Irrational factors in decision-making.

According to classical economic theories, the Theorem's Coase is too complicated to implement because, generally, in the market, there are myriads of people involved and the costs to reach private solutions usually outweigh the benefits. That is why, public intervention is often necessary. *Too Good To Go*'s platform copes to overcome these critical issues by building a system in which:

Transaction costs are low. They are absorbed by large trading volumes that the platform has on a daily basis.

Negotiation challenges and non-rational behaviors are addressed through a robust marketing strategy that benefits both buyers and sellers. Utilizing the TGTG platform adds value for sellers by attracting new customers, while consumers enjoy price reductions.

The seller's economic behavior is in line with the classical theory of economic welfare: the seller sells one more unit of "magic box" if the selling price is higher than or equal to the waste disposal cost to be incurred to produce one of it.

And it pursues this behavior, maximizing the profit, until the cooked food is exhausted. The consumer's economic behavior, driven by the attraction to a lower price, prompts the purchase without full knowledge of what they will receive or in what quantity. Additionally, they do not visually inspect the food before making the purchase; instead, they pay the restaurant in advance and only later verify the integrity and quality of the food upon collection. However, it's important to note that this process is not significantly different from the traditional restaurant experience, where customers also make purchases without prior inspection. Moreover, while there may be leftover food after consumption, some portion is typically consumed, reducing overall waste. Therefore, while there may be a residual fraction, purchasing through platforms like TGTG still contributes to waste reduction compared to complete disposal. The abundance of food satisfies the preferences of some users, but, on the other hand, a random cardboard box containing a large amount of food, could lead to food waste [56]. However, as Mankiw, N. G., et al. [54] state buying food waste magic boxes is not a common practice and when it does, the consumer often knows the cooked food sold in the partner's store [54]. As stated by Płaczek, E. et al. [57], there are criticisms directed towards the application due to its facilitation of purchasing low-cost food. This exacerbates the challenges faced by individuals who are unable to afford higher-quality or more expensive food options [57].

5. Conclusions

The consumers of the 21st century are very demanding consumers, more concerned with the quality and health benefits of the products they buy [58]. Perceived food quality influences eating habits with potential health consequences at both the individual and societal levels. Moreover, the environmental impact of the entire food chain is influenced by consumer choices [60]. According to Papargyropoulou, E. et al. [60], even if the surplus food has no commercial value, it still has a high intrinsic nutritional value. So, through reuse, recycling, or recovery, it can consequently retain its economic and social value. In this case, food surplus regains an economic value. This aspect is essential because it turns into a benefit for the seller and an incentive for the consumer. Without a price, the food waste disposal practices remain in the gift and donation cycle the food waste disposal practices remain in the gift

and donation cycle for those who suffer from poverty and food insecurity. From the analysis, it is evident that *Too Good To Go* holds significant potential both economically and in terms of reducing environmental costs associated with food surplus. However, it may not fully address the poverty problem highlighted in the introduction. One alternative solution could involve donating surplus food to poverty organizations free of charge, but this would require a powerful distribution system to be set up by these poverty organizations given the low conservation time of cooked meals. From a societal perspective as well, the application puts the consumer at the center, leaving him, at least partially, free to choose what to eat. No longer supported, but is active and an actor in the choice of his diet. This is the basis for educating the consumer, making him the leading actor of his choices and not just an inactive person assisted by third parties. This is the basis for building a conscious and quality food education: allowing people, often in poor and fragile social situations, to choose and strive for themselves. According to Petrescu, D. C. et al. [59], there exists an interdependence between environmental protection, healthy diets and human progress and it is on this sustainable consumption model that we must build a sustainable food system. *Too Good To Go* has the potential to reduce some asymmetric information problems of food surplus for cooked meals, and in terms of consumer behavior, TGTG raises user awareness in the fight against food waste and it enables the normalization of sustainable consumption practices by presenting these sustainable practices and behaviors as normal. This normalization of sustainable food consumption practices in society should lead to an increase in the number of consumers adopting these practices and should let to perceive unsustainable consumption practices as "non-normal" [53,61]. However, as a market-driven mechanism, it has the drawback of establishing a new market for food surplus (and thus the danger of oversupply). This indirectly reinforces the unsustainable practices of food retailers, who uphold strict cosmetic standards for the physical appearance of food, a significant contributing factor to food waste [62].

By creating a new market for food surplus, TGTG has a partial impact on reducing the negative effects of food waste, but it does not address the root causes of food waste. Moreover, there is a risk that TGTG could be used as a tool for greenwashing by retailers. This is because TGTG's model may incentivize restaurants to rely on the platform for surplus management rather than investing in more sustainable waste reduction technologies, such as LeanPath or Winnow, or sophisticated demand projection software. Ultimately, life cycle assessments consistently demonstrate that preventing waste is in the first place more environmentally sound than attempting to recover or reuse unwanted items. While *Too Good To Go* has a positive impact on partially reducing the negative effects of food waste by creating a new market for surplus food, it indirectly perpetuates the unsustainable practices of food retailers. These retailers often uphold cosmetic standards for food appearance, contributing significantly to food waste. However, *Too Good To Go* does not directly address these underlying causes of food waste and runs the risk of inadvertently enabling greenwashing by retailers.

In 2023 [63], *Too Good To Go* continued to demonstrate its commitment to reducing food waste and its positive environmental impact. Through the implementation of innovative solutions such as Surprise Bags and Box Dispensers, the company managed to save an impressive number of meals, avoiding the waste of precious resources and reducing CO_2 emissions. The recognition with the prestigious App Store Award from Apple in the "Cultural Impact" category attests to the platform's significant social impact. Additionally, *Too Good To Go* actively collaborated with governments, universities, and policymakers to promote legislation and educational initiatives aimed at combating food waste. Thanks to the dedication of partners, users, and employees, the company achieved extraordinary results in meal rescue, proving that even small actions can have a huge impact on the fight against food waste and climate change.

The advent of platforms like *Too Good To Go* (TGTG) holds promise in addressing the economic and environmental costs associated with food surplus. By creating a market for surplus food, TGTG offers a tangible solution to reducing waste and raising consumer awareness about sustainable consumption practices. However, while TGTG has the potential to alleviate some of the negative effects of food waste, it falls short of addressing its root causes. Policy interventions are crucial in complementing market-driven solutions like TGTG. Governments and regulatory bodies can play a pivotal role in incentivizing retailers to adopt more sustainable practices, such as investing in waste reduction technologies and reevaluating strict cosmetic standards for food appearance. Additionally, policymakers can promote education and awareness campaigns to empower consumers to make informed choices and advocate for sustainable food systems. Furthermore, policy suggestions should aim to foster

collaboration between stakeholders across the food supply chain, from producers to consumers. Implementing measures to prevent waste at the source, rather than solely relying on recovery or reuse mechanisms, is paramount for achieving meaningful reductions in food waste and promoting a circular economy. In conclusion, while TGTG represents a step towards mitigating the negative impacts of food waste, comprehensive policy frameworks are needed to address the systemic issues underlying this complex problem. By integrating market-based solutions with targeted policy interventions, we can strive towards a more sustainable and equitable food system that benefits both people and the planet.

Author Contributions

Filippo Sgroi: Supervision of the project, Conception of the presented idea; Teresa Totaro: Designated the initial idea, Conceptualization of the study, Writing of the original draft; Federico Modica: Discussion of the results, Contribution to the general framework of the manuscript; Caterina Sciortino: Design and implementation of the research, Review and editing, Contribution to the final version of the manuscript.

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Data Availability

The data will be made available upon request.

Conflict of Interest

The authors disclosed no conflict of interest.

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