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Food Sharing Platforms: Emerging Evidence from Italian and German Users

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Abstract

Among the most challenging problems of the 21st century, the fight against food waste and losses is still one of the biggest concerns researchers and policy makers are trying to solve. The latest United Nations Environment Programme (UNEP)'s report (UNEP, 2021) estimates that around 931 million tons of food waste were generated in 2019, and the majority came from households. As a consequence of the negative social, economic and environmental effects of this phenomenon, numerous actions have been launched by policymakers aiming to try to reduce the volume of food waste also through the donation of surplus food. At the same time, digital transformation and the advent of the sharing economy have boosted the launch of startups with disruptive business models creating a secondary market for the distribution of food surplus, thus trying to spread the practice of sustainable and collaborative consumption. Extant literature on the topic is relatively new. Despite a few recent attempts to study food sharing digital platforms, our knowledge is still limited (either in terms of platforms considered and of users' nationality). This paper aims therefore at shedding new light on the proposed issue by providing a first attempt to study the behavior of Italian and German users of food sharing digital platforms. Data collected through an ad-hoc developed survey have been analyzed through a cluster analysis and preliminary results about users' habits discussed. In doing so, we also provide insights about the critical issues that need to be considered to boost the adoption/diffusion of such platforms, i.e. logistics-related problems to reach full extensiveness of the service.

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1. Introduction

Every year, one-third of all food produced for human consumption in the world gets lost or wasted[1] (Gustavsson et al., 2011). Specifically, more than 930 million tons of food sold in 2019 ended up in waste bins (UNEP, 2021), 61% of which from households, 26% from food service and 13% from retail. Food waste also has a significant impact not only on society but also on the environment: an estimated 8-10 percent of global greenhouse gas emissions are associated with food that is not consumed (Mbow et al., 2019; UNEP, 2021).

These figures reflect not only the permanent loss of food supplies, but also the waste of a vast number of natural resources used in production - such as land, water, energy, and other inputs - as well as unnecessary CO2 emissions across the entire food supply chain. In the richest countries, the majority of waste happens at consumer level (60%, especially at households. Indeed, an improved wellbeing and the diffusion of big food retailers lead to oversupplied shelves at supermarkets and more and more left-over at home.

Green and digital technologies are increasingly being used to prevent, reuse and recycle food waste, opening new opportunities for economy and society (UNEP, 2021). In particular, opportunities created by digital technologies and the emerging phenomenon of the sharing economy have resulted in the proliferation of food sharing platforms which focus on enabling digital connection between suppliers and beneficiaries of edible food waste while having social impacts related to reducing waste (Michelini et al., 2018; Ciulli et al., 2020; Di Leo et al., 2020; Närvänen et al., 2022).

Literature on food sharing (or anti-waste) digital platforms is relatively new (Ciulli et al., 2020; Michelini et al., 2020). Despite, a few recent attempts to study food sharing digital platform users' behavioral intentions (engagement and use) and responses (Harvey et al., 2020; Schanes et al., 2019; Mazzucchelli et al., 2021; Närvänen et al., 2022) our knowledge about consumer/users' behavior is still limited to the specific cases of few mobile applications (UNEP, 2021). Moreover, scholars recently rising the unsolved problem of the last-mile logistics in the sharing economy (Moncef and Dupuy, 2021) pointed out the issues related to the sustainability paradox and also the (lack of) extensiveness of such services.

Accordingly, this paper attempts to shed light on the proposed issue by providing – to the best of our knowledge - one of the first attempts to compare users' behavior by considering more than one food sharing digital platform and users from more than one country, specifically, Germany and Italy. In doing so, we also aim at identifying critical issues that need to be considered to boost the adoption/diffusion of such platforms i.e. logistics-related problems to reach full extensiveness of the service. The preliminary results we discuss in this paper represent the first step of a wider research project aiming at providing a cross-country comparison among European countries.

2. Literature review

As said digital transformation and the advent of the sharing economy have boosted the launch of startups with disruptive business models creating a secondary market for the distribution of food surplus, thus spreading the practice of sustainable and collaborative consumption (Michelini, 2020).

The theoretical foundations of the study mainly rely on the recent studies in the field of the sharing economy. It is intended as "the act and process of distributing what is ours to others for their se and/or the act and process of receiving or taking something from others for our use" (Belk, 2007). According to Codagnone et al. (2016), "the expression sharing economy is commonly used to indicate a wide range of digital commercial or non-profit platforms facilitating exchanges amongst a variety of players through a variety of interaction modalities (P2P, P2B, B2P, B2B, and government-to-government - G2G) that all broadly enable consumption or productive activities leveraging capital assets (money, real estate property, equipment, cars, etc.) goods, skills, or just time". The sharing economy uses digital platforms to allow customers to have access to tangible and intangible assets, rather than obtaining the whole ownership. The focus of sharing economy is therefore, not much on the financial aspect, but rather on the enhanced access to products and services and the higher effectiveness within the whole community of users. Codagnone and Martens (2016) tried to outline the sharing economy also from the point of view of other disciplinary fields – such as

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[1] Food *losses* and *wastes* are often used as synonyms. In addition to "loss" and "waste", FAO indicates a further term to be defined: "*wastage*". This term refers to any kind of food lost by deterioration or waste in any phase of the chain (FAO, 2013). Therefore, "wastage" encompasses both food loss and food waste.

sociology, anthropology or business and management – associating it to the concepts of '*collaborative consumption*' (Bootsman and Rogers, 2010), '*access-based consumption*' (Bardhi and Eckhardt, 2012, Belk, 2014), and '*connected consumption*' (Dubois et al., 2014; Schor, 2015; Schor and Fitzmaurice, 2015) and using them as synonymous. In this respect, Botsman and Rogers (2010) referred to activities such as 'bartering, lending, renting, gifting, and swapping' which could be clustered in three broad categories (Codagnone at al., 2016): i) product service systems: access to products or services without need for owning the underlying assets; ii) redistribution markets: i.e., re-allocation of goods; iii) collaborative lifestyles: i.e., exchange of intangible assets.

The sharing economy could represent a very effective way to redistribute food surplus, thus spreading the practice of sustainable and collaborative consumption, and consequently reduce adverse environmental impacts and alleviate poverty (Michelini et al., 2020). In the last decades, a higher worldwide access to digital technology and the emerging phenomena of the sharing economy have fostered the number of web platforms and food sharing apps – either developed by existing organizations (food banks and social supermarkets) or offered by new actors that work exclusively online (Michelini et al., 2018; Harvey at al., 2020).

Food sharing entails not only an economic perspective based on the concept of sharing economy, but also a more social-oriented view focused on social inclusion and community engagement (Schabes, 2019). The engagement within a community of "foodsavers" (Schabes, 2019) is mostly based on ideology and morality (participation to the collective action as reactions to a perceived violation of one's values, to defend their interests and principles), but also on emotions and identity. Commonly, during protests anger dominates, while other emotions, such as guilt, are more present in people who engage in collective climate protection, but also in consumer food waste behavior (Graham-Rowe et al., 2014; Parizeau et al., 2015). In their attempt to be competitive, food sharing platforms need to constantly engage and empower consumers, trust communities' social support, and create social, environmental and economic values (Martin, 2016). Food sharing platforms and particularly peer-to-peer (P2P) platforms are the most used, since they rely on the benefits of communities (Michelini et al., 2018). More specifically, by analyzing the platform more in details, Michelini et al. (2018) identify three type of food sharing models according to the different marketplace in which they operate. Each model is also characterized by distinctive logistical process from providers (businesses or private) to final consumption (users or non-profit organizations). It is acknowledged that the logistics cost related to the collection of small quantities of food requires an extensive mobilization/employment of logistics resources, making the organization of pick-up rounds more complex and expensive than collecting large quantities to fill a vehicle (Moncef and Dupuy, 2021). The first category of food sharing is represented by the so-called "*sharing for money*" model and it is operated by pure player profit organizations. Since the delivery model is primarily B2C, distributors, retailers and restaurants are able to post their unsold products via a website or app, while consumers can view and buy the discounted food (online or directly in store). In this case, the business is more similar to traditional offerings and some scholars would define it therefore as "pseudo-sharing" (Belk, 2014) or "redistribution" (Lago and Sieber, 2016), since it implies a remuneration. The second model is the "*sharing for charity*" and it is run by non-profit organizations, both pure player and "brick and mortar". The delivery model is primarily B2B, B2NPO and C2B whereby food is collected from all types of donors. It is then distributed mainly for free to non-profit organizations at local and national level. According to Lago and Sieber (2016) this model can be understood as hybrid category able to provide a better matching of resources via the use of real-time information. Last but not least, the third model "*sharing for the community*" is operated by profit and non-profit organizations that operate as pure player. The delivery model is P2P meaning that food is collected primarily from consumers and shared with other consumers at a local level. The goal of this model is to serve a community active in reducing food waste and is considered as "pure or real sharing" when it involves "a resource that was previously used individually or was completely idle during certain times is now shared across customers" (Lago and Sieber, 2016) without asking for a compensation (Belk, 2014).

Besides the fact that - as seen - food sharing is often discussed as a potentially transformative mechanism for a reducing food waste and losses in the system, empirical studies on the topic are still scarce. Only few researchers have empirically investigated digital platforms users' behavior (Schanes et al., 2019) or have raised last-mile logistics related issues whose economic, social and environmental effects are still largely unknown (Moncef and Dupuy, 2021). In this respect, scholars are still struggling to identify which are the critical elements that motivate users to download and recurrently use such platforms and more specifically, whether the economic benefit influences food platforms user's purchasing behaviors more than the environmental one (the so-called sustainability paradox) (Moncef and Dupuy, 2021). Last but not least, since logistics related issues are strictly related to the typology of platform

used/considered, interesting insights for future research also emerge when considering the problems related to the last-mile (delivery) and the extensiveness of the service.

3. Data and methodology

As anticipated, the aim of this study is to investigate on the diffusion of food sharing platforms in Italy and Germany to investigate purchasing habits and motivations behind the use of such platforms by also raising the issue of the extensiveness of the service, i.e. last-mile logistics, coupled with the promise of societal and/or environmental issues. To conduct this study at the same time in the two countries, two online Google surveys have been created, one in Italian and one in German language. Both consists of 25 questions of various kind – open, multiple choice and Likert scale – concerning respondents' shopping, waste, and food sharing habits. Both surveys have been distributed via social media (e.g., Facebook, LinkedIn, and WhatsApp), in order to maximize the number of respondents.

The first part of the survey was dedicated to respondents' general information such as age, nationality, region of residence, size of the place of residence and education, in order to have a general description of the participants. The second part of the questionnaire was more related to shopping habits: frequency of online shopping, tendency to buy products close to their expire date and knowledge about food sharing platforms and food sharing phenomena in general, to understand how much online shopping is developed and specifically how much about the food sharing phenomena is known. Finally, the third section was rather related to the "emotional" side of the respondents. Indeed, it was asked to the respondents - through multiple Likert scales - how much consciousness on household food waste they had, how much the economic and the environmental sides were influencing their decisions and the reasons why they decided to use food sharing platforms. Additionally, the questionnaire ended with an open question directed to those who are not recurrently using the platform, asking for the reasons hindering a more frequent use.

From August to December 2021, a total of 155 respondents took part to the survey spread in Italian language, while 132 people took part to the German one. Most respondents are young people. They belong to the age range 18-24 followed by 25-30 for both the Italian and the German sample (72% of Italian respondents and 61% of German respondents are between 18-30 years old). However, among the respondents, only 50 for Italy and 68 for Germany declared to use food sharing platforms, thus reducing a lot the two samples size.

In order to perform our analysis, we chose the method of cluster analysis, which is the process of categorizing and grouping data into smaller groups so that they have basically the same properties within each group, regardless of whether the observations are diverse in different groups (Lattin et al., 2003). As a result, using this strategy, researchers can create representations of items based on their similarities, dissimilarities, or other proximity measurements. To conduct this study, the Euclidean distance has been chosen as measure of proximity and the hierarchical method was used to approach the analysis. For the purpose of this study, variables related to the purchasing behavior retrieved in the Likert scale questions were chosen (see Table 1).

As reported by Punj and Stewart (1983), there are no clear guidelines to determine the boundaries of clusters. Therefore, the use of many clustering variables is expected to maximize the likelihood of discovering meaningful differences. Due to the fact that our sample of data does not contain outliers, we decided not to use standardization of variables.

Table 1. Variables used in the clusterization process.

Variable	Description	Type
VAR1_AGE	Age of the respondent	Categorical
V26_INFLU_ECOBENEFIT	Level of influence of the economic benefit on the use of the platforms	Categorical
V27_INFLU_SAVEMEAL	Level of influence of saving a meal on the use of the platform	Categorical
V28_USE_NOTTOWASTEFOOD	Saving food as reason to use the Platforms	Categorical
V29_USESAVEMONEY	Saving money as a reason to use the Platforms	Categorical
V30_USE_NEWPLACE	Discovering new places as a reason to use the Platforms	Categorical
V31_USE_TREND	Follow the trend as a reason to use the Platforms	Categorical
V32_USE_FUN	Having fun as a reason to use the Platforms	Categorical
V33_SUSPECT_BADQUALITYFOOD	Suspect of bad quality of food proposed on the Platforms	Categorical
V34_SUSPECT_FRESHNESS	Suspect of bad freshness of food proposed on the Platforms	Categorical
V35_AGREECONVENIENCE	Convenience as a reason to use the Platforms	Categorical
V36_MOREPOPULARCOLLEAGUE	More popularity among friends and colleagues as a reason to use the Platforms	Categorical
V37_BETTERREPUTATION	Better reputation among friends and colleagues as a reason to use the Platforms	Categorical
V38_AGREENOADV	No advantage in the use of platforms	Categorical

In order to determine the number of clusters in a data set, we followed the basic procedure, as explained by Ketchen and Shook (1996), as there were no significant jumps in the agglomeration coefficients. To this end, we visually inspected the "dendrogram", and performed the cut off determining the number of clusters. Finally, to validate the clusters' solution, we performed the cluster analysis using different algorithms and methods, as no meaningful clusters can be derived from the too small half-samples.

Italian and German respondents have been examined as separate samples. Therefore, we run two separate cluster analysis each one resulting in the identification of three clusters for each sample[2].

4. Results and discussion

As said the findings of our analysis consist of three clusters for each country, each one with its own characterization, and a set of variables that turned out to be significant for the clusterization.

As regards Italian respondents, the three clusters identified are:

- "*Digital native users*"
- "*Curious millennials users*"
- "*Committed senior users*"

The first cluster "*Digital native users*" is the most populated and represented by people between the age of 20 and 26, mostly coming from Lombardy and with a high school education (40%) or bachelor's degree (30%). They're household is on average composed by 3/4 people, meaning that probably food get consumed with the family and not as a single. For this cluster, the frequency of online purchases is pretty low. This could be presumably driven by the fact that the members of this cluster still live with their family in most of the cases, and therefore are not directly in charge of purchasing food. However, when it comes to buying food close to its expiration date, the people in this cluster are more likely to do it, with an average of 3.12 out of 5. An interesting offer is a valid reason to do so, but the environmental prevails in this cluster, where avoiding waste for the supermarket and safeguard the environment are highly considered. Indeed, in the result from the Likert scales investigation, these two aspects obtained the highest result, with 3.6 and 3.9 on a scale of maximum 5. The economic benefit, as predictable, is an important factor influencing the user experience. Interestingly, the quality of the food seems to be doubted more than in the other clusters. In general, the Covid-19 pandemic had been neutral on the habits of this cluster. Compared to the other two clusters, this first group is the only one where people do not prefer doing shopping exclusively in supermarkets but declared themselves open also for online shopping supporting their choice by stating that "online websites are as much reliable as the physical one". This could be interpreted as a more "openness" toward new digital habits, which is typical for a younger population. However, the frequency of use of food sharing platforms seems not to be so high, but rather rare.

The second cluster "*Curious millennials users*" is composed by people between the age of 27 and 36, with a master's degree and a household of 2/3 people. Probably this cluster is represented by young couples with on average

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[2] Dendrogram and distribution tables for each sample (Italian and German) are available on request. Due to space constraints cannot be added as an appendix.

one child. The online purchase frequency is definitely higher, with purchases once per month or even more. Same results emerge for the purchasing of food close to expiration, which is strongly influenced by the economic benefit of it. At the same time, planning meals in advance is not among the habits of this cluster, while supermarket waste and the safeguard of the environment represents strong reasons to buy food close to expiration as well. These two motivations influence the use of food sharing platforms as well. All the members of the cluster stated to prefer to do shopping in supermarkets rather than online one, supporting their choice with the fact that they prefer to see the product in person, but also because they can choose "directly in the supermarket which product to save in the dedicated shelves". The convenience aspect of online shopping is therefore included in their experience, but the "on-site" purchase is still preferred. Indeed, even if the Covid pandemic forced us to a less frequent shopping in person, the members of this cluster disagree with the fact that the virus changed their buying habits. Another aspect related to the tendency of preferring in loco purchase, is the opportunity to discovery new places through food sharing apps. Interestingly, the average cluster score for this variable is 3.8 on a scale of maximum 5. Finally, people in this cluster agree on the advantages that using platforms bring in general terms. The frequency of use of food sharing platforms is higher than in the first cluster, but lower than in the third one.

The last cluster of Italian respondents "*Committed senior users*" is composed by older users, with an age span from 48 to 68 years old. The education level of this cluster is on average "high school diploma". Household is composed by three people and the average frequency of online food purchase is the highest among the three cluster, more than once per month. The members of this cluster buy products close to their expiration dates less often than the members of the second one, but the economic advantage of them has a very strong impact on this choice. Same impact have interesting offers and the avoidance of waste for the supermarket. People in this cluster seem therefore very motivated by both environmental and economic-related aspects in performing such kind of purchase. All the members of this cluster stated to prefer supermarket shopping than online shopping, showing a higher reluctancy towards new online methods. Their own perceived attention to waste has the highest average among the three clusters and this could be reconnected to the "how much" the Covid pandemic has changed their habits. Indeed, according to the members of this cluster, the Covid pandemic extremely changed their habits. As a peculiar trait of this cluster, the aspect of "fun" in the users' experience is highly appreciated. Even if the economic advantage and also environmental-related aspects are still considered as an important part of the platform's usage, people in this cluster seem to consider food sharing platforms as a recreative activity, to be used once in a while, but not a real substitute of the traditional shopping.

As regards German respondents, the three clusters identified are:

- "*Young green consumers*"
- "*Wealthy sustainability-driven users"*
- "*Last-minute senior users*"

The first cluster "*Young green consumers*" is represented by people in the age span 18-29, on average 24 years old, with at least a high school diploma. Their household is composed by on average 2/3 people. As in the case of Italy, this cluster is the most populated. The average frequency of online food purchasing is relatively low, and all people in the cluster have declared to prefer to do shopping in the supermarket, rather than online. Respondents belonging to this cluster have left some comments in the "open questions" of the survey on this regard. A strong focus on environmental-related aspects - and impact - of a hypothetical delivery emerge among people in this cluster as a relevant issue. Indeed, according to the answers provided, besides seeing the product in person, on-site shopping also allows to save greenhouse gases emissions and superfluous plastic packaging. As a matter of fact, the purchase of products close to their expiration dates – and specifically, in order to safeguard the environment - has an average frequency sensibly higher than in the correspondent cluster of young Italians. In line with this environmental-friendly approach, the perceived personal attention to waste is very high, and indeed the strongest motivation behind the use of platforms is the fact that food waste can be avoided, followed by the economic benefit, which still has a high impact. It has to be said that, according to respondents belonging to this cluster, Covid pandemic apparently triggered a change in the shopping habits. Rather than on a high quality-price ratio, the respondents agree on the "fun" side of the user experience. Therefore, in this cluster, the trade-off between the economic and environmental impact of the use of the platforms, but also the "emotional" side of it – having fun while using the apps – encourage the user to take advantage of the sharing services.

People in the second cluster "*Wealthy sustainability-driven users*" have an average age of 33 years, hold at least a master's degree and live in a household of 2/3 people. As in the previous cluster, online food shopping is not so

diffused, mostly because of the environmental impact it has and because some members prefer to support local shops, buying fresh zero-miles product. The latter represent for sure a more sustainable category of products, but it has to be noted that they are generally more expensive than the ones available in supermarkets. However, since the members of the cluster hold at least a master's degree, it could be observed that the average income is on average higher, and they can therefore afford different kind of products. Indeed, the safeguard of the environment and the avoidance of food waste marked sensibly higher score compared to the economic benefits, both in the purchasing of close-to-expiration products and in the use of food sharing platforms. Also in this case, the quality-price ratio is not considered as highly important, but sustainability-related aspects are highly taken into consideration. Differently to the second Italian cluster, the fact of discover new places does not influence the choice of using the platforms.

The third cluster of German respondents "*Last-minute senior users*" is represented by the oldest people of the sample. The average age is however 48, which is 10 years less than the respective Italian cluster. The majority of the respondents has an "Abgeschlossene Berufsausbildung" (i.e., completed professional training) and live in a household with 2/3 people. The frequency of online food purchasing is slightly higher than the other two German clusters, but not comparable to the Italian average in general. Once again, the support to local shops represents a reason to shop personally, but the environmental impact is less considered compared to the other clusters; "I prefer to see the products in person" is the most frequently chosen statement. About the decision of buying products close-to-expiration, the environmental aspect still plays an important role. However, this cluster is the only one presenting a medium high score for the option "I buy close-to-expiration products, because I plan to consume them soon", meaning that a last-minute decision on what to eat is common. This is probably related to the fact the members of the clusters live in smaller households, which could imply a proper planning in advance of meals in order not to have too much waste. Since the functioning of food sharing platforms implies an unplanned daily availability and also last-minute decisions, it makes sense that the use of the apps is most frequent within this cluster – more than once per month. The "fun" aspect, being important or have a better reputation in front of the colleagues, the fact that food sharing has become a trend but also the possibility to discover new places do not influence the choice of using food sharing platforms, which is apparently driven by last-minute decisions, the opportunity to save meals and the safeguard the environment.

Summing up, the cluster analysis made separately for Italy and Germany shows some similarities. Younger people appear to be more open towards this new digital shopping trend, while older people prefer more traditional way of purchasing. Users tend to choose sharing economies initiatives because of economic rather than environmental reasons. However, from the Italian and German's users clusterization some differences emerge too. It has to be underlined that among German respondents a higher attention to environmental-related aspects has also been identified. Indeed, sparing pollutive emissions and superfluous packaging seems to be a primary concern for these users. On the other hand, Italian respondents show less awareness – or interest – on the topic.

As regards the "open questions" provided at the end of the survey, a great number of comments left stated that the questionnaire triggered a new-born curiosity towards these platforms. As a "side feature" of the platforms, the "emotional" part play an important role. As a matter of fact, "having fun" and "discovering new places" still represent valid reasons to choose the platforms – even though it emerged among comments that this shopping modality could better fit single's habits than those of more numerous households, typically families. The idea of making last-minute decisions without planning the meal in advance, indeed, seems to work properly for older households. In addition, the Covid-19 pandemic has significantly changed consumers' habits, mostly concerning the amount of waste produced at household level. People seem to be more aware of the amount of food they produce, and the purchasing habits shifted from big retailers to the support of local producers and sellers. Last but not least, the survey revealed how the food sharing platforms are still not enough diffused and known. Smaller city and villages are often not covered by the service, and this represents a strong obstacle in their diffusion. This result highlights that one of the main challenges of food sharing platforms, i.e. the extensiveness of the service, is related to the logistic process of food recovery and redistribution (Moncef and Dupuy, 2021). As said, extant literature has classified food sharing platforms according to the different marketplace in which they operate i.e. B2C, B2NPO and C2C (Michelini et al., 2018); and each model is characterized by distinctive logistical process from providers (businesses or private) to final consumption (users or non-profit organizations). In the C2C model, the logistic is generally door-to-door, but some platforms have set up "collecting points" to simplify the collection and redistribution of perishable items. In the B2NPO model, logistics is coordinated by the platform but is in charge of the non-profit organizations. While in the case of B2C platforms, the

final consumer goes to the retailers to pick up the items. In this respect, since we only consider B2C platforms, the last-mile delivery could raise economic- and sustainability-related issues so-far unexplored (the so-called "sustainability paradox") (Moncef and Dupuy, 2021). However, it has to be said that none of the respondents raise the issue/request of the home delivery as a triggering factor in boosting the adoption of such platforms.

In this scenario the diffusion of food sharing platforms and the ability to attract new users will depend by the ability of these models to develop an effective logistics system to increase the extensiveness of the service.

5. Conclusion

The growing importance of waste management and poverty issues around the world has led to the development of alternative distribution models, such as food banks and social supermarkets, aimed at decreasing food waste and producing a good social impact. Opportunities afforded by digital technology and the emergence of the sharing economy have recently raised the number of web platforms and food sharing apps being produced by existing organizations (food banks and social supermarkets) as well as new online-only entities. As shown, literature classified food sharing platforms according to the different marketplace in which they operate (Michelini et al., 2018), and each model is characterized by distinctive logistical process from providers to final consumption. Food sharing digital platforms represent one of the opportunities to address the food waste issue, however an integrated approach that considers both prevention and recycle and the connections among different actors (players, policy makers, consumers) and therefore logistics-related issues (Moncef and Dupuy, 2021) is needed. Consumer preferences and choices can influence business and government decisions on food waste, and consumer behavior of food waste is driven by intertwined factors at multiple levels embedded in everyday practices (UNEP, 2021), so it became crucial to improve the understating of how different factors affect the food waste practices and which are the economic-, social- and environmental-related effects.

Despite, a few recent attempts to study food sharing digital platforms (Harvey at al., 2020; Schanes et al., 2019; Mazzucchelli et al., 2021; Närvänen et al., 2022), our knowledge about users' behavior is still limited to the specific cases of few mobile applications (Schanes et al., 2019). The study we conducted attempts to shed new light on the proposed issue by investigating, the diffusion of food sharing platforms in two European countries, namely Italy and Germany, and in doing so, provide insights about users' behavior (the different ways users navigate these platforms to get the benefits they expect) and about the critical issues that need to be considered to boost the adoption/diffusion of such platforms. To analyze data collected, we chose the method of cluster analysis, and only the respondents who used the platforms at least once have been considered for the analysis.

As discussed, the analysis shows how younger people appear to be more open towards this new digital shopping trend, while older people prefer more traditional way of purchasing. Users tend to choose sharing economies initiatives because of economic rather than environmental reasons. It is also worth noting that, after filtering the sample for respondents who have used the platforms at least once, the number of total respondents shrank sensibly, confirming the fact that a great number of "knowers" of food sharing platforms actually never complete a purchase until the end. In this respect, logistics-related problems represent a critical issue that need to be considered to boost the adoption/diffusion of such platforms, i.e. to reach full extensiveness of the service. This represents a starting point for future research, since it would be useful for to further investigate on the reasons why users get informed about platforms, download them, but never complete a purchase. Based on the insights collected from respondents who are not-users, it seems that the extensiveness of the service represents the critical success factor that triggers the decision whether or not to use the platform. It is acknowledged that smaller city and villages are often not covered by the service, and this represents a strong obstacle for the platforms' diffusion and usage. Therefore, as previously said, the ability to attract new users will also be partly determined by the ability of the platforms to develop effective logistics systems (i.e., food recovery and redistribution). Accordingly, it might be useful to investigate more in-depth, in the future, two main emerging issues: i) to understand whether logistics methods and last-mile related issues impact on the propensity to use the platforms; and ii) to identify what are the most efficient logistics models according to the marketplaces addressed.

Looking forward, the preliminary results we've discussed in this paper represent the first step of a wider research project aiming at providing a cross-country comparison about food sharing platform users' behavior, the diffusion of the different platforms and the logistics-related issues that hinder a widespread adoption among European countries.

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