

Internet and Social Networks to Hinder Food Waste: Responsible Consumption Practices in the Digital Age

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Abstract

National and international research on food waste confirm how it is relevant to hinder food waste, including in domestic consumption contexts. In this respect, responsible and sustainable behavioral styles are fundamental to reduce food wastage. To limit the level of waste and set in motion re-distributive mechanisms of food surpluses, practices have been implemented facilitating enabling environments such as internet platforms, which promote what is known as "gifts" in the framework of collaborative consumption. The key words that characterize these online practices to reduce food waste are *solidarity, sociability, trust and reciprocity, "working together"* in order to cooperate.

The aim of this paper is to implement an analysis which will allow an understanding of how this collaborative consumption, to be understood as a component of the wider field of the sharing economy, fosters re-distribution practices of food surpluses. In this case, added value consists of social capital aimed at collective welfare.

Key Words: no-food waste practices, social capital, civic engagement, responsible consumption, social responsibility.

Introduction

Food waste is one of the key foci of the scientific debate and is part of the EU countries' political agendas. In fact, with over \$1 billion worth of food thrown away globally per year, amounting to \$750 billion (FAO 2011), food waste has become relevant and a priority topic of the

European agenda. From 2012, the European Parliament expressed concern over the considerable amount of wasted food¹. For this reason, the European Union, through the "Joint Declaration Against Food Waste," has decided to take action and implement strategies to reduce the problem significantly by 2025. In addition, in order to raise public awareness, the EU declared 2014 the "Year Against Food Waste." The Horizon 2020 research and innovation program recognizes food waste and is dedicated to reducing it by 50% by 2030. This goal is not easy to achieve, as many obstacles are in the way, starting from the complex rules governing food donation. In this regard, FAO estimates that to meet the demand for food from a growing world population, which according to the UN² will reach 9 billion people in 2050³, agricultural output will have to increase by 70% in 40 years, but only 10% of that production will come from expansion of arable land, while the remaining 90% will be established through the intensification of crops. Therefore, waste involves both environmental (when they have to be disposed of) and social costs, as they cannot fulfill their original function to feed people.

In this regard, the FAO, in 2011, estimated that one third of the food produced globally went to waste, an amount that would be enough to feed four times the malnourished people in the world. Preventing waste, therefore, is not just an opportunity to redistribute resources to those who need it most, but is also a way to tackle unnecessary squandering of natural resources, including land, water and energy used in the different stages of food production, both "upstream" and "downstream." In particular for the FAO (2011), "upstream" wastage - defined as food losses and understood as losses that occur during production, processing and harvesting⁴ - accounts for 54% of the production chain. While food waste – meant as waste that occurs "downstream" and relates to the processing, distribution and domestic consumption stages - amounts to 46%. In developed countries, such as Italy, the waste occurs mainly "downstream" during the production process: through processing,

¹ See http://documenti.camera.it/leg17/resoconti/assemblea/html/sed0238/leg.17.sed0238.allegato_b.pdf

² See <http://www.unric.org/it/attualita/22580>

³ The growth of the world population is estimated to be mainly concentrated in Asia, Africa and Latin America.

⁴ Food losses "include any healthy and edible substance that [...] is wasted, lost, degraded or consumed by pests at any stage of the food chain" (FAO 2011).

distribution and consumption stages, both domestic and restorative. In this case, food waste⁵ concerns both edible foods and inedible, where in the latter case waste is inevitable. On the contrary, waste of edible foods may be avoidable, as in the case of food still in good condition but thrown away⁶, or possibly avoidable, in the case of food consumed by someone but no longer considered consumable and then to be discarded for others⁷. In fact waste refers also to food security, that is the availability of food in adequate quantity and quality for people and communities, in light both of the instability of prices of agricultural commodities, and food poverty which has affected advanced countries as well (Garrone *et. al.*, 2012). In terms of waste, Italy started up the National Plan for Prevention of Food Waste (PINPAS) in order to identify priority areas of intervention⁸. The Italian Government also supports the Charter of Milan to ensure a more sustainable development and the right to food through an assumption of shared responsibility among all social actors, public and private, for a fair and sustainable future⁹.

In fact, the political appeal to hinder food waste has become a higher priority since the systemic crisis of the last decade which caused, even in the social fabric of highly industrialized countries, new forms of food poverty added to traditional ones.

At the national level, reduced access to basic food needs has affected 2.4 million Italian families, about one million more than in 2007 (Censis 2015). These families have been unable to access sustenance food for themselves and also to rely on solidarity networks because of the erosion of social cohesion, a process that has affected various communities of the country. On the other

⁵ For the FAO food waste occurs both "upstream", defined food losses affecting 54% of the production chain, and "downstream", defined food waste affecting not only the processing and distribution stages but also domestic consumption and amounting to 46%. *Cfr. Fao, Global Food Losses and Food Waste – Extent, causes and prevention*, Rome, 2011.

⁶ It's about bread, dairy products, vegetables, *etc.*

⁷ It's about bread crusts, skins of apples or potatoes etc that are believed edible for some culinary cultures and discarded elements for others.

⁸ The Pinpas was set in response to the European resolution of 19 January 2012. The Ministry of Environment through participatory processes involving food chain stakeholders, researchers, institutions and social/private organizations, has drafted a document concerning 10 priorities over actions for a national strategy against waste, including the goal of the reduction of 5% of the waste. The document is available at [online]: <http://bit.ly/1swAoL5>.

⁹ The Charter addresses issues inherited from Expo 2015. The latter is the largest event in the world that focuses on the centrality of food and agro-food diversity. In fact, under the admonition "Feeding the Planet, Energy for Life", it aims to affect policy as well as public opinion on the value of food.

hand, at the same time, non-profit organizations' engagement in the collection and distribution of surplus food increased, both qualitatively and quantitatively (Garrone *et. al.*, 2012). Thus, such organizations play a key role for the reduction of food waste as well. In this scenario, initiatives promoted by both the Third Sector (associations, charities, secular and Catholic organizations) and private organizations, are not sufficient to meet the growing demands of solidarity coming both from traditional and new forms of poverty. For this reason, a synergy between institutions, citizens, businesses, profit and non-profit organizations is necessary in attempting to attain a shared responsibility in order to provide concrete outcomes to facilitate – from the principle of subsidiary perspective – practices aimed at tackling such waste. An opportunity, especially referring to practices for the recovery of food surplus and waste reduction, comes from ICT (Information and Communication Technologies), in terms of digital platforms that facilitate exchanges and expand relationships. These digital platforms are progressively more accessible and collaborative (Dahlgren, 2013), and are able to promote networking (Castells, 2009; Rainie, Wellman, 2012), assuming a rationally, and not economically, enabling function. In fact, in these digital spaces bottom-up participation practices take place, by means of citizens expressing their civic engagement, thus supporting solidarity and cooperation, although it should be stressed that, in any case, such practices cannot by themselves counter poverty¹⁰.

Italian consumers and online communities in food sharing platforms

Currently, Italy is characterised by sobriety and low incomes where generally the expenditure on consumption has been reduced, and an old symbolic dimension is being resuscitated as reuse practices in the kitchen bear witness. In this sense, television broadcasts, blogs and online sites offering recipes and methods of food recovery in order to bring a new life and value to

¹⁰ *Cfr.* Musarò P., Parmiggiani P., *Consumers and citizens towards new form of participation*, in “Sociology of Work”, n. 108, Angeli, Milan, 2007.

otherwise potentially wasted food¹¹ are increasing. Despite the anthropic pressure on ecosystems, in fact, Italy's biodiversity is being preserved mainly due to the promotion of traditional practices that identify its regions and local identities. Such features, re-discovered in this time of crisis, account for an original and rising concern about food by Italians and their relationship with food generally. These relationships are regaining centrality in the life of individuals and today more than ever, indicate more attention being devoted to a socially, culturally and environmentally balanced society. According to the data collected by Censis (2015), in fact 46.6% of Italian consumers direct their eating preferences toward typical local products, with 17% of them preferring zero km products. The relationship between young Italians and food is particularly intense. Especially for the 26.9% of Millennials¹² or "generation foodies" (Censis 2015), food represents an identity-making relationship, not only for the realization of one's own personality and the desire for distinction and taste that highlights a hedonic aspect, but also for the aspiration to identify oneself with strong value systems such as those oriented to environmental sustainability. This indicates that modern and reflective society is characterized by a complex network of local and global networks and information and communication structures (Beck, Giddens, Lash 1994), as even in the national context a responsible and aware consumer appears. The new consumer is an active protagonist of the consumption act, whose consumption behavior is affected by values of an ethical sense. The act of consuming becomes a tool to express commitment and responsibility in the public sphere, contributing to the affirmation and determination of new ways of being, putting first the quality of relationships for a better quality of life (Micheletti 2003; Paltrinieri 2012).

The food, however, becomes a vehicle of values and traditions; a way to live experiences, a social justice and ethical value tool towards the planet and future generations to ensure their right to access to food and healthy, sustainable eating. Even though these consum-actors are still small in

¹¹ According to a Censis report of 2015, around 29% of Italians look for prices and information about food quality on the web.

¹² We refer to those born between the 80s and early 2000s in western countries.

number, they represent an objective fact that something is changing in Italian consumer culture. In particular, digital technologies offer them the power of connection capable of linking a multitude of people beyond space and time constraints. This has favored the possibility of implementing consumer practices geared towards more sustainable lifestyles: aware and responsible consumers have the opportunity, through ICT, to inquire more, to exchange opinions, to express opinions (positive or negative) concerning a product, a company, or a certain type of consumer.

In a trend confirmed by research carried out by Ipsos (2014), 81% of surveyed consumers¹³ sampled were considered "aware"; that is, able to read labels, while half of these targets paid more attention to purchasing choices that, most of the time, took place on the basis of needs and/or making use of a shopping list. This consumer is, therefore, considered an empowered consumer, meaning an active consumer towards the bidding system, demanding and selective, typically a nomad who performs identity-making choices, who focuses primarily on the person, their actions and experiences. In particular, some individuals, defined as "producers" (Dahlgren, 2013), are willing to renounce property in the name of experience, to build relationships and act sensitively on the reality which constitutes a parallel and complementary micro-universe. At the same time, these consumers, who live between the space of flows and the space of places, are prosumers (Toffler 1980 Degli Esposti 2015); in other words active co-authors in their heterogeneous and complex social community thanks to the dissemination of the latest devices, such as smartphones, tablets, netbooks, etc., that have stimulated intensive and continuous total connectivity (Castells 2009; Rainie, Wellman 2012). By means of such devices, innovative exchange practices can take place, materializing on the web as a plurality of behaviors. Among these online communities, one tendency stands out – material relationships result, for a significant number of users, in a

¹³ In this case, the reference population refers to those aged between 18 and 60. The sample was randomly sampled and stratified, selected according to sex, age, geographic area, and educational qualification. The number of interviews carried out was 1000, handed out through the CAWI method. The survey period was 7-14 July, 2014. International Journal of Public and Private Management, Volume 03, No. 1, 1 August – 31 December, 2016

participation in initiatives across the territories in which they live¹⁴. Civic communication and participation is guaranteed by the convergence of media languages (Jenkins 2007).

For nearly 50% of users who use digital platforms, there is no clear boundary between virtual and local communities (Censis 2012). This is due to a sort of virtual proximity in which the platform becomes the tool through which continuity is provided to relationships, driving them towards concrete goals and objectives that can, at times, create local relationships related to common goals or key issues. Among the latter, food plays a major role. In addition, an uninterrupted flow of communication, an extension of those of the belonging to local communities, flows from digital spaces featured by a collective and localized intelligence (Lévy, 1996). Exchanges of information and opinion favors, in turn, a greater sense of belonging to the territories of individuals giving rise to new opportunities for development through urban experiences oriented to resilience. These consumers, who are part sometimes of hybrid mobilization movements for access to food for all people, use the network as a communication option. According to research by Coldiretti and Censis in 2012, there are already more than 415,000 Italians who said they regularly participate in food-focused communities on the web for which digital platforms represent an enabling factor. We are facing creative communities seeking collaborative solutions relying on large, diversified (Rainie, Wellman 2012) and co-operative networks in which each individual has the same weight in the determination of the game. In fact, digital platforms offer social networks a new access to the right (MacPherson 1973, p. 139) to food that rediscovers a renewed social value and relationship. The people, for their part, just being in digital environments can exercise forms of citizenship. These individuals can express their subjective empowerment (Dahlgren, 2013, p. 23) in the sense of civic duty. Especially on digital platforms, these create social links between different

¹⁴ In everyday life, the postmodern individual is immersed in communicative and social systems triggered by the food in a certain environment which constitutes the experiential sphere. In urban life, with modern, liquid and individualized society, re-emerges the "desire of the community." See. Z. Bauman, *Desire for community*, trans. en. Laterza, Roma-Bari, 2001.

people characterized as a "bridge ties" (Granovetter 1998) that connects each individual to others, and then onwards to the community.

In this sense, food takes on value addressed to the community, in that it becomes a collective good for a collective well-being. These web platforms, operating both globally and locally, in linking citizens with other citizens or associations/charities for food exchanges, are able to limit wastage levels. Consumers, in fact, can dispose of surpluses without throwing them away but by passing it on to someone in need. This is done through re-distributive mechanisms of food surpluses, which promotes a "free gift" in the sense of "to give something of themselves" (Mauss 1923). The gift and counter-gift turn out to be a collective and community response. A reinvention of ancient market behavior through new social technologies, mobile, and localized, allows people to trade items with each other in ways never experienced before. Food sharing platforms can be considered environments in which it is possible to rethink a new economic and social model starting just from those actions aimed at reducing food waste, thus reducing our carbon footprint and giving back to the people their human dignity (Marciante 2014).

We want to point out that the lack of specific regulations and investment, both private and public, is slowing the innovative and technological drive of these social platforms. This is an important factor for sustainable growth since an innovation wave featured by sociability, aggregation and sharing, moving simultaneously to individualism, competitiveness and privatization, is spreading worldwide. In fact, while on one hand macroeconomic systems are rigid, outdated and weakly democratic, on the other hand practical, virtuous patterns of consumption able to provide a response to social and environmental challenges, with innovative relationships and forms of collaboration, are taking place. Nevertheless, food waste in Italy is still related to a "culture of imperfection" (Slow Food 2015).

In fact, a wide range of food variety is still sought by Italian consumers, related to both the multiplication of opportunities for consumption and enjoyment, and the purchasing decision process

according which does not match quality standards of products or defective packaging. Not least is the symbolic food value that induces consumers to seek some valid reasons to deprive themselves of a food product, even when it is in surplus¹⁵. Sometimes these motivations arise after three or four days, when the natural deterioration is in progress, thus convincing the consumer to throw it away.

I-food waste, the Internet and the sharing economy

The Internet, by means of its potential to connect more than one billion people in different networks, has facilitated the sharing of practices. These practices boost collaborative consumption which is a particular type of sharing economy meant as a new form of economy currently operating besides more traditional capitalist economies, sometimes standing in for it. Digital platforms constitute the enabling factor, especially nowadays since 64% of Italian households have access to the Internet (Istat 2014). Furthermore, 13% of the Italian population have used sharing services at least once (DOXA 2013). Consumers who participate in sharing platforms are mostly *early adopters* with a high level of education and residents in major urban centers in northern Italy, with a slight prevalence of women than men, mostly adults aged between 18-34 years. These data are confirmed by a research carried out by the University of Milan (Mainieri 2013). Sharing services founders, instead, are primarily men aged between 25 and 44 years; they have in common motivations like solidarity and social inclusion as well as the spread of a responsibility culture in terms of food waste reduction. Such motivations are easier to contextualize if we take into consideration the current economic and social crisis that is still impacting Italian families and which has been accentuated by the erosion of social cohesion. Meanwhile, non-profit organizations

¹⁵ The beginning of the twentieth century marks a key step in defining the current scenario, when the evolution of agriculture, livestock and food industry offered an amount of food never thought of before. At the same time, the average income increase has enabled large population groups to access better quality and more food. Consumers in developed countries, therefore, have been able to count on a growing variety of food at ever lower prices. This is why many shopping carts are filled as if you were in a war economy, especially since you are buying without any real planning which results in more purchases than necessary. In fact, today as in the South food is wasted due to inadequate tools and storage facilities, in the North too much food is produced and bought.

engaged in the collection and distribution of food surpluses increased, both from a qualitative and quantitative point of view (Garrone *et. al.*, 2012). According to the platform founders who have been questioned in the framework of this research paper, solidarity connected motivation to play a key role in the recovery of food surplus and, consequently, to reduce food waste. The Internet enables and supports sharing practices, as a virtual environment, an interconnected and cooperative network; however, the lack of specific regulations and especially investment funds are slowing their effectiveness.

These web platform relationships are based on generalized trust and reciprocity. Trust is at the core of these reticular relationships in which every member acts to cooperate and assist. More specifically, food sharing platforms, in putting together people who have interests or experiences to share, create strong community ties. Such links may have positive effects on local regions and facilitate more efficient and environmentally friendly lifestyles. We are seeing more creative communities seeking collaborative solutions. In these digital places, citizens are, as defined Ipsos (2014), "consumer aware[...] in the digital age." They play their symbolic battles in the arena of communication which is the ground of election where they generate identities and ideological conflicts, which are a powerful tool in the digital network (Mazzoli 2009). These platforms bring to life forms of cooperation to serve the local community. These platforms that move in the arena of collaborative economy, generate profits for the community, both for consumers and for the founders. That is to say, it is a fair trade economy where the individual can act in social solidarity networks. This activity between groups is related to "weak ties" (Granovetter 1998, pp. 117 *et seq.*). The identity of the individuals who adhere to these platforms is constructed from a dual relationship of "gratitude" and "recognition" between participants ready to replicate the membership of the exchange projects, events, formations, giving rise to a capital social collective (Bagnasco, peas, Pizzorno, Trigilia 2001).

Specifically, food sharing platforms, by encouraging relationships between people who have interests or experiences to share, create strong community bonds that may have positive effects on local territories and facilitate more efficient and environmentally friendly lifestyles. Once again, creative communities are seeking collaborative solutions. In these digital spaces, citizens are, as defined by Ipsos (2014), "Aware[...] consumers in the digital age." They play out their symbolic battles in the arena of communication where identities and ideological conflicts are generated; digital networks represent powerful tools for aware consumers (Mazzoli 2009). In these platforms, operating in the context of a collaborative economy, cooperatives come to life in various forms to serve the local community: profits generated are addressed to the community, consumers and founders. A sort of fair trade economy, where the individual can act in social solidarity networks, active between groups and are related by "weak ties" (Granovetter 1998, pp. 117). The identity of the individuals who adhere to these platforms is constructed from a dual relationship: "gratitude" and "recognition" between participants often willing to be part of more exchange projects, events, formations, give rise to a collective social capital (Bagnasco, peas, Pizzorno, Trigilia 2001). These interconnected citizens, in being more and more aware about their privileged role in all parts of the world, are exploring how to use food with a view which is truly collaborative, combining their personal needs with those of society, researching and creating new ways to enjoy life and meanwhile living sustainably (Marching 2014).

Italian food sharing platforms: research

Considerations emerged over this paper - also presented at the X National Conference of Environmental Sociologists in the session "Responsible consumption and sustainable lifestyles" on 18th of June 2015 - are the preliminary results obtained from a National Research Project entitled

Prin "Practices and food consumption policies in relation to sustainable lifestyles in response to the crisis" which involved the Bologna Unit¹⁶.

The mapping carried out for this research by the Milan Unit through the semantic analysis, understood as an advanced and innovative web queries technique and performed at a preliminary stage, returned 15 practices in particular belonging to the subcategory called Unit of Bologna "Organized forms of food exchange and sharing citizen-to-citizen ". By means of this mapping, a rational sample of experiences has been built, selected on the basis of their relevance at the national level and of the players involved and considered good practices: iFoodShare, S-Cambia Cibo (Exchange Food), BringTheFood, Breeding and Kalulu. For the realization of this research, we made use of the methodology of the case study (De Masi, Pepe 1989; De Masi, 1985), and once observation of the reality under study, through the involvement of the people it, the results were analyzed. Specifically, the survey has used qualitative detection of non-standard interview technique: talks that aim at the cognitive, guided by the interviewer, based on a flexible scheme and non-standardized interview. For the realization of this research we made use of the 'Case Study' methodology (De Masi, Pepe 1989; De Masi, 1985), which aimed at observing and listening to the studied object, through the involvement of the people part of it. Specifically, the survey implemented a qualitative approach technique: non-standard interviews, fact-finding conversations, interviewer lead, based on a flexible and non-standardized interview scheme. The research design was structured by two main steps:

- background analysis;
- extended research in the field.

¹⁶ In particular the Department of Sociology and Economic Law and Ces.Co.Com, Centre of Advanced Studies on Consumption and Communication, afferent to the previously mentioned Department (University of Bologna). At a qualitative level, the survey made use of an innovative program for web semantic analysis which enabled a holistic mapping of the main communities of anti-waste practices in Italian territory. In a second step, identification of the categories and subcategories belonging to the semantic universe was done. The desk research allowed us, then, to identify authenticity, intensity and relevance of mapped cases in order to build a sample of experiences to be studied in the context of the case studies, for the collection and analysis of data and information, as well as, sometimes, the reconstruction of the case studies under investigation.

Being non-standardized interviews, the grid interviews maintained high flexibility, meaning that interviewed persons were given the freedom to express their own views. This choice was guided by the predominantly cognitive nature of the research aimed at listening and discovering, and not the mere verification of initial assumptions.

In particular five key witnesses¹⁷ were interviewed, identified as those who best could offer, each from their own particular point of view, input of comparison and analysis: platform designer-managers, mostly men (three out of five) aged between 25 and 44 years, with a medium-to-high profile (graduate or Masters, curious, trend setters with national and international experience of life and work), motivated to offer a service ascribable to the sharing economy model.

The interviews have been fully audio-recorded and transcribed in order to preserve the answers as much as possible in their original formulation and, in doing so, not losing their semantic richness. Subsequently, a content analysis of the extracted material was carried out (Corbetta 1999; Guidicini 1993; Guidicini, Castrignano 1997), on the basis of which two analysis lines were implemented, concerned with common characteristics and objectives, other than the correlation between the 5 platforms investigated (ifoodshare and Bring the food, Ex-Change food and Breeding, Kalulu). Parameters and factors taken into account were:

- stakeholders (donors / beneficiaries);
- exchange activities and communication models;
- limitations and weaknesses;
- public and/or private sponsors;
- business models.

¹⁷ Interviews were carried out between May and December, 2015.

ifoodshare.org is a non-profit¹⁸ organization whose economic contributions come from its supporters, both public and private, even though contributions are still insufficient and, thus, limiting technological growth and the promotion of the platform. Created by three young Sicilians¹⁹ in 2013, this platform allows excess or nearly expired food sharing at the national level. To access this practice, a user has to simply, and free of charge, register for the site, and enter their personal details. It is reported on the web site platform that it can be used by "individual donors, citizens, associations, NGOs, parishes". Once enrolled in a specific sector, donors and beneficiaries can access their private area and enter the surplus food or certain amount of food in terms of food baskets, indicating the expiration date of the products and the location of the donor. Then, offers are published on the platform. The beneficiaries, through an internal messaging system, can contact donors to arrange withdrawal directly with them, or vice versa.

The withdrawn products become unavailable and are no longer public. The transition is performed without any money. Such a platform was actually born with the aim of promoting joint participation and consequently tackling food waste. The sharing of food surplus includes both small and large quantities. In the latter case, if necessary, user assistance is accessible by e-mail and by phone. According to one of the platform founders during the interview, iFoodShare is accessed mostly by women (about 60% of users), aged between 24 and 44 years. This project was inspired by a similar German experience known as Foodsharing,²⁰ which is among the most established and organized in Europe. The most evident difference between the Italian and German platforms is at the foundation level: that of Foodsharing has made a way of life so as to benefit, for

¹⁸ The website, created by Francesco Perticone, Elisabetta Di Benedetto, Daniele Scivoli, states that "the association is non-political, independent, not-for-profit and carries out cultural, educational, tourism, hospitality-tourism, catering, recreation, promotion and enhancement of local crafts and food products, educational, theatrical, musical, artistic, sporting, hunting, publishing, education, ecological-environmental, healthcare, consulting, mutual facilitation, to and between the members, charity and solidarity in Italy and abroad, education and professional training".

¹⁹ iFoodShare.org Association founders are three men from Sicily, Caltagirone (Catania): Francesco Perticone, Elisabetta Di Benedetto, Daniele Scivoli.

²⁰ The German Foodsharing site was established in 2012 and since then it has managed to grow so much so as to involve different European countries. Moreover, it can count on more than nine thousand food baskets delivered weekly. However, Italian iFoodShare didn't reach the same potential as its German fooshare.de sister, taken as a reference. A further difference is that the German platform designer has made a way of life out of it so as to benefit from donated surplus to make a living from it.

sustenance, of donated surplus. The Italian iFoodShare can count on 1,439 *followers* and attracts citizens, small and large retailers, stores, and manufacturers. Beneficiaries, mainly agencies and Catholic organizations such as Caritas, can search for products after registration by selecting those available depending on location. The project's goals are mainly solidarity and to address poverty with the aim of socially including the economically weaker range of the Italian population and to provide them with access to a variety of food from which they would otherwise be excluded.

Ex-Change food is a web platform created in 2014 as a project of young coworkers in Bologna. It is currently in beta version. Ex-Change food is an urban project that pursues a twofold purpose: to stimulate reflection on food waste, and facilitate neighborly relationships by enabling and networking user communities' apartment buildings and gym communities, etc. Ex-Change food is among the few platforms that can rely on forms of investment by a cooperative society (Coop Adriatica). This economic sustainability has been a positive force in the creation and dissemination phases, especially considering the passing lack of both public and private economic subsidies which limit technological growth and spread of these types of digital platforms. The main objective of Ex-Change food is linking and providing people with an opportunity to share expiring, or soon-to-be discarded, food, especially among local communities like those involving condominiums, gym friendship networks, etc. A geolocation system fosters the exchange between people living in nearby areas. The platform doesn't assume any specific responsibility for the exchange, rather it proposes guidelines for a safe exchange, arranging it in public places. Platform founders are currently designing a new business model in order to make it more economically sustainable while supporting ever more food sharing practices; one of the proposals is an annual fee for donors.

Breading.foundation was created in 2014 as a start-up project called 'StartUp Live' in Bergamo, by a team of 9 young people under 30 and funded with a hundred thousand euro by Vodafone, an international telephone company. It has less than a thousand subscribers, and is still

in beta version. The founders are planning a business model for the future that may include a monthly fee or a monthly/yearly subscription to be paid by its members. In particular, Breeding focuses on connecting small-scale retailers, such as bakers and local shopkeepers, through a geolocation system, with a third sector by associations dealing with redistribution of surplus food to economically vulnerable people (Ranci 2002), in order to exchange such food.

Breeding offers this service to associations which, as highlighted by the platform founders interviewed, suffered from a lack of digital skills due to a low level of ICT literacy. In order to facilitate the coming business model aimed at economic sustainability of the project, voluntary organizations will be asked for a contribution fee which is on one hand a cost for them, however, on the other hand, it decreases annual costs of food for their beneficiaries. The main objective of the platform is to support local development and solidarity among local communities.

Platform reputation is built, among others, through the comments posted by users on the platform itself. Furthermore, Breeding intends to enlarge the network among all stakeholders of anti-waste food to make it easier to effectively match supply and demand. One of the most critical aspects, as stated by the founders interviewed, is represented by associations that are quite often unable to network. To that end, and to promote a "civil economy," Breeding has "tried to create an association that would bring together all these entities concerned with anti-waste food" but it wasn't successful because "Italy" as referred to by platform founders, "is not very open to the exchange of ideas."

BringFood.org is a digital application involved with the food industry, services and catering. It is both a website and an app accounting for 248,682 donated food baskets. It was developed by researchers at the Bruno Kessler Institute of Trento, in partnership with the Food Bank Foundation. This platform aims to redistribute surplus food in favor of economically and socially vulnerable subjects. BringTheFood deals with donations of fresh, cooked, dry and frozen food. Donors are checked through a free and compulsory accreditation system enabling access to the platform which

thereby takes responsibility for all users, especially in terms of safety. Food offers remain visible as long as a donation is accomplished and then they are removed. Donations are labelled with indications such as "available", "reserved", "withdrawn", and "expired." This allows beneficiaries to evaluate on a map the available offers and select it according to geographical proximity. In citizen-citizen transactions, as well as citizen-charitable organization, when a donation is requested an email is sent both to the donor and the beneficiary, asking for *sharing*. To book a donation, a click on the "applicants" button is requested. In the case of charitable organizations carrying out a withdrawal, they must contact the donor. Once a transaction is completed, the donor is supposed to submit a withdrawal code, received by the beneficiary, on the website. The biggest challenge of these platforms and local groups is cultural and educational, as both consumption and lifestyles can affect the production pathways and on development policies.

Kalulu.it – A special feature of this food sharing platform, compared to the other case studies, is the capacity to facilitate connections between ethical purchasing groups and local producers, in order to both reduce organization costs and the gap between producers and consumers and only indirectly curb food waste. The issue was highlighted by one of the founders of Kalulu, who used to be a member of an ethical purchasing group and who well knows the main organizational difficulties related to these realities, from the collection of money to their traceability. In this case, digital technologies facilitate the producers to better reach the market.

On Kalulu, whose working principles are based on geolocalization, local producers create their own offers in areas where there are more nearby users, while consumers have the opportunity to consult it and choose where to pick it up, other than invite their acquaintances through which set on social networks whose shared goal is buying healthy food, while positively impacting the local economy and natural environment. For the time being, Kalulu does not really have a business model, but in the future it plans to introduce a fee to be paid by producers. Specifically, Kalulu is

the only platform, including those reviewed here, where each economic transaction between producers and consumers is financial. In addition, it can count on a higher number of registrations compared to other digital anti-waste platforms: more than 23,000 users. The Kalulu founders stated that the digital divide is an obstacle to the dissemination of the platform. The biggest limitation to Kalulu, according to the respondent, "is that at a national level, a social and cultural ecosystem that helps to grow such businesses is still missing" as in the case of policy or local administration support.

Elements in common between the food sharing platforms – all food sharing platforms in this study were established between 2013-2014. The main legal forms were association and non-profit organization. In particular, all platforms are of peer-to-peer type, linking citizens with other citizens and/or a third sector. A common practice of these platforms was the recovery of food surpluses through sharing practices that can occur from citizens, organizations/associations or the production and distribution system. A key-factor of these platforms were both social and environmental sustainability, as well as the need to input to an alternative economy, compared to the traditional one that is deemed dysfunctional for sustainability, specifically with the aim of a better and more efficient use of food, skills and other resources.

An analysis of the interviews shows that the users who participate in the sharing platforms are mostly early adopters with a high level of education, while the most active are mainly residents in major population centers, with a slight predominance of females, mainly adults aged over 18; usually consumers who care for the environment; are aware of the political worth of their purchase and of the social, environmental and cultural implications of the food they buy. Users can access sharing and exchange functions for free, while a geolocation system favors local connections (Unipolis 2015). These data comply with those surveyed for research conducted by the University of Milan and published in Collaboriamo.org (2014). The digital platforms examined had no specific business model; however, four out of five were willing to introduce one as soon as they

have enough users, with a fee or a recurring subscription covering costs. The economic-financial aspect limits both the technological evolution of the platforms and the acquisition of users since it is unable to rely on communication and marketing strategies that involve significant costs. The limited number of monthly active users (in some cases under one thousand users) is one of the most critical factors if we consider that the constant increase in users is the key factor of network economies. In fact, one of the principles of network economies is based precisely on the progressive enlargement of the users concerned with the service: the more users, the higher the value of the platform. A major cause is due to a lack of general trust in activating forms of sharing with strangers, which then results in a matter of safety, secondarily expressed in terms of fear for their privacy that could result from providing personal data online.

Another critical issue that these digital platforms are currently facing is the so-called 'click-activism' or 'slacktivism' (Joyce 2010), which enabled-by-web 2.0 citizens participate in a cause through the click of a mouse on online systems such as social network sites, rather than in contexts of everyday life. In fact, as reported by the respondents “users are more active on a Facebook fanpage than on food sharing digital platforms”. This occurs especially in a time when Web 2.0 is turning into a 'Real time web' (a web of real-time communications) that represents a new form of online communication and participation through which information from the Internet is spread and received at the same moment they are produced. Further limiting the growth of these platforms is their fragmentation into more digital environments that causes, in turn, a user division resulting in a clear reduction in trade volume.

To conclude: questions raised

The main feature of food sharing platforms examined here is access to food. Plus, the main input fostering the creation of these platforms is social and environmental sustainability, as well as the need to input to an alternative economy as compared with the traditional one that is deemed

dysfunctional for sustainability, specifically with the aim of a better and more efficient use of food, skills and other useful resources. These digital platforms, operating globally while enabling action locally, links citizens with other citizens or associations/charities for the exchange of food, tackling wastage. This means re-distributive mechanisms of food surpluses, which promotes "free gifts" (Mauss 1923). Social capital becomes a civic flame, able to increase its efficiency and facilitate collective action (Putnam, 1993), supporting solidarity and cooperative relations towards "working together." These relations are based on trust and reciprocity in the promotion of solidarity initiatives taken by mutual agreement, and that leads to a form of civic engagement (*ibid.*), and which gives rise to collaborative consumption (Botsman 2010). Trust is at the heart of these forms of reticular relations because each member acts on the idea of assisting and cooperating with other members of the network as an expression of urban resilience. On these platforms, civic communication and participation are favored by the convergence of media languages (Jenkins 2007).

It should be pointed out that the lack of specific regulations and, above all, private as well as public investment, limits potential innovation, and are slowing the technological and social evolution of these platforms. Such practices, in fact, represent an important factor of social innovation and sustainable growth since they promote, stimulate and foster economic models based on access, social aggregation and sharing rather than individualism, competitiveness and privatization which feature in traditional economic models. In fact, while on one hand the macroeconomic systems are rigid, outdated and weakly democratic, on the other hand, sustainable practices and ethical patterns of production and consumption can provide a response to social and environmental challenges, innovating relationships and forms of collaboration.

A strong element of these digital platforms are communities, and this is why they spend a lot of effort attracting and keeping them together, mainly by making available a set of tools typical of the social web, the so-called web 2.0 (O'Reilly 2005), like blogs, social networks, wikis, etc. that

can facilitate relationships around a shared value system such as solidarity, environmental care and respect for cultures. Food- and experience-sharing brings about local networks (*ibid.*) of citizens who arrange re-distribution of surplus, a process which is capable of rediscovering and revolutionizing the food culture and helping people understand the importance of the relationship between food and the environment, or between these and health. The food sharing platforms can be considered virtual squares where every citizen can come and go as driven by their desire for consumption and relationships. Citizens-consumers can dispose of surplus food without throwing it away but providing it to someone else in need. This promotes individual and collective wellbeing that focuses on the ethics of responsibility (Paltrinieri 2012): the paradigm of Social Shared Responsibility. This is responsibility that takes place both at the micro level, referring to each individual, and the macro level, attributing to the whole development model. In the latter case, therefore, the responsibility beseeched by these platforms calls for social spheres present at the local level to recognize that food is a common good (Slow Food 2015) that must not be wasted.

Even if food sharing is considered an important way to tackle waste, it cannot be considered the only solution to a global phenomenon that deeply impacts the lower and middle classes, as well as between developed and developing countries where people are still prevented from accessing certain foods. Paradoxically, while advanced economies seek solutions to combat excesses concerned with food, developing countries are struggling to access food. Digital technologies can enable consumers to tackle food waste and make food available for those in need. Primarily, though, the Internet provides people with a practical way to discuss personal issues and share concerns, to create common knowledge and understand that the problems are not exclusive (Micheletti 2010). In our opinion, countering food waste must become a common goal of consumer-citizens, associations, and institutions, from education to consumption. In this sense, food waste must play a central role in the debate between citizens, institutions, and the third sector, in a sustainable way. An interpretive key, thus, could be the capability approach of Armatya Sen

(2011) as a pattern to produce new knowledge; that is, what the people of a particular territory are capable of doing and being, with the hope that such practices may evolve into a global movement based on collaboration. This becomes important when the traditional economy becomes dysfunctional for sustainability, while increasing the need for citizens to make their own local economy.

An attempt is being made to think of actions enabling and raising the sense of community that has been largely eroded. In this sense, a partnership between public and private spheres could be an innovative way to redefine common welfare. This is why it becomes important to deeply know and understand the potential of the sharing economy. However, at least two questions remain unsolved. The first one is concerned with trust towards public institutions but also between consumers who avoid taking part in this practice because of issues related to personal safety as well as food safety (in this regard, for Doxa 14% of consumers never contacted people they did not know previously). The second question, which is related to the first, is inherent in a political priority to govern waste at the institutional level as well as an educational and cultural approach to issues in order to promote a social and environmental sensitivity to act responsibly. This will raise awareness among consumers with a desire for environmental and social responsibility, but still of a small number, and to strengthen communities disconnected from their territory.

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