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Analysis

Understanding Food Sharing Models to Tackle Sustainability Challenges

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ABSTRACT

The current global scene is characterized by a huge paradox: on one side, there is the scourge of poverty, on the other, 1.3 billion tonnes of food is wasted around the world every year.

To address these problems, alternative distribution formats aimed at reducing food waste - and generating a positive social impact - are emerging, particularly food banks and social supermarkets. Recently, opportunities created by digital technology and the phenomenon of the sharing economy have boosted the increasing number of web platforms and food sharing apps that are being developed by existing organizations or by new entities that work exclusively online.

The main aim of this research is to highlight – following an overview of existing food sharing models - how alternative distribution systems change in response to digitalization, and how the value propositions they claim change in the online context.

A hierarchical cluster analysis based on a sample of 52 food sharing cases was carried out. Three categories of models have emerged: - the "sharing for money" model, which is primarily a B2C for-profit model to reduce waste and, at the same time, generate revenue; - the "sharing for charity" model in which food is collected and given to non-profit organizations; - the "sharing for the community" model which is a P2P model where food is shared amongst consumers.

By way of conclusion we suggest that food bank seems to be replicated online in the same way in the online context (the "sharing for charity" model). However the model of the social supermarket does not seems to be replicated in the same way in the digital context, but changes towards a more profit oriented approach (the "sharing for money" model). Additionally, in the digital scenario, a new model emerges: the "sharing for the community".

Finally, the study highlights some preliminary evidences on the effects of the new forms of sharing on social inequality.

1. Introduction

The current global scene is characterized by a huge paradox: material deprivation co-existing with massive wastage of food.

On the one hand, there is the scourge of poverty. Although it has been declining all around the world over the last ten years, the number of people living in poverty (less than $1.90 a day) is still about 9.6% of the global population (World Bank, 2016). Furthermore, Europe is marked by an inverse trend; between 2009 and 2013 the number of Europeans living without enough money to heat their homes or cope with unforeseen expenses, known as "severe material deprivation", rose by 7.5 million to 50 million people (Oxfam, 2015).

On the other hand, 1.3 billion tonnes of food is wasted every year around the world, which represents one third of global food production (Gustavsson et al., 2011). This huge amount has several economic, environmental and social impacts. Indeed, it has been estimated that globally the economic cost of wasted food is approximately 1 trillion US Dollars every year. The environmental costs reach about 700 billion US Dollars and social costs around 900 billion US Dollars (FAO, 2014). At the environmental level, it is a striking fact that, if wasted food were to be represented as a country, it would be one of the top three greenhouse gas emitters after the USA and China (FAO, 2014). At the social level, according to FAO, the total amount of wasted food generated every year could feed more than four times the 795 million poor people who go hungry.

Poverty and food waste should be a top priority for policy makers since they are both included in the Sustainable Development Goals proposed by the United Nations (UN, 2015).

To address these problems, alternative distribution formats aimed at reducing food waste - and generating a positive social impact - are

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emerging, mainly food banks and social supermarkets.

Food banks are a relatively new phenomenon in Europe, although they have long been a feature of the North American welfare scene (Wells and Caraher, 2014; Riches, 1986). In the face of global economic austerity, the number of food banks is increasing and today they are a well-established model all over the world. Food banks can be defined as "organizations that acquire donated food, much of which would otherwise be wasted, from farms, manufacturers, distributors, retail stores, consumers, and other sources, and make it available to those in need through a network of community agencies"(Global Foodbanking Network, 2016).

Recently, a different model has been developed, namely, the social supermarkets (SSMs), a retail formula where the retailer receives surplus food and consumer goods from partner companies (e.g. manufacturers, retailers) for free and sells them at discounted prices to a limited section of the population living in or at risk of poverty (Holweg et al., 2010a).

In addition to these developments there has been another important innovation: the digital revolution. This has changed the way in which companies and organizations act in the market and create value. The digital revolution is occurring rapidly in most public, private and non-profit sectors, and in response to the digital revolution enterprises across all sectors of the economy are seizing new growth opportunities and changing the way they do business (Accenture, 2016). Consequently food banks and SSMs may also find new benefits and opportunities as they move towards digitalization. As Davis et al. pointed out, "ICT mediation is reshaping the ways people share and that in the arena of food such technologically mediated sharing may be well placed to confront the abhorrent geographies of hunger and food waste (within and beyond cities)." (Davis et al., 2017, p. 2).

In fact the advent of technology has provided new opportunities for existing food banks and SSMs to integrate online and traditional channels by developing web platforms and/or mobile apps to support the distribution of food, the management of information and the logistics processes. This integration results in the evolution from a "bricks and mortar" organization (which uses only traditional channels) to the so-called "clicks-and-mortar" (where online and offline channels are integrated), (Bernstein et al., 2008).

At the same time, the growth of digital opportunities, and the advent of the sharing economy concept, has led to the rise of new social start-ups based on sharing models that operate exclusively online (so called "pure player" organizations) whereby people use platforms to rent, sell, lend or share things with others without the involvement of shops, banks or agencies (Nesta, 2014; Tauscher and Laudien, 2017).

The power of the sharing economy is that it offers a transformative perspective on the social, environmental, and economic value that can be created from any number of assets, in ways and on a scale that did not exist before, by existing organizations and startups and "in that transformation lie threats—and great opportunities" (Bootsman, 2014).

As Kenney and Zysman (2015, 2016) noted "we are entering in the Platform Economy; one in which tools and frameworks based upon the power of the internet will frame and channel our economic and social lives" (Kenney and Zysman, 2015, p. 2). In this platform-based environment the more profound question may be whether economic and social life will be transformed, and whether the outcome will result in a very different distribution of wealth and power in society at a global level (Kenney and Zysman, 2016).

In spite of the growing importance of alternative distribution systems aimed at reducing food waste and the increasing importance of the sharing economy, we have only a nascent understanding of the multi-faceted phenomenon of sharing (Price and Belk, 2016; Widlok, 2013; Belk, 2014), and the literature on food sharing practices to reduce food waste is still sparse (Davis et al., 2017; Falcone and Imbert, 2017; Morone et al., 2016; Corbo and Fraticelli, 2015).

Against this background, and to answer the questions posed by Kenney and Zysman (2016) the present study aimed to:

- identify the more relevant variables which are useful in describing the food sharing platforms aimed at reducing food waste;
- classify the different models of food sharing platforms;
- understand how each sharing model works and the value proposition each model offers to its potential beneficiaries (providers, customers and society).

The final aim of the research, and the contribution to the existing literature, is to point out how alternative distribution systems are reshaped by digital opportunities, and how the value proposition offered changes in the online context.

Our study differentiates itself from previous research by providing not only a taxonomy of sharing models but also preliminary evidence on the effects of the new forms of sharing on social inequality.

To this end, the research begins with an analysis of the existing academic and managerial literature regarding food banks and social supermarkets and their role in addressing the food waste issue and the alleviation of poverty. We then provide an overview of the literature on the sharing economy, itemizing those aspects which are relevant for the purposes of our analysis. We then conduct a hierarchical cluster analysis on a sample of 52 food sharing platforms.

The results reveal three categories of food sharing models: "sharing for money", which is a B2C for-profit model intended to reduce waste and, at the same time, generate revenue; the "sharing for charity" model in which food is collected and given to non-profit organizations, and the "sharing for the community" model, which is a P2P model in which food is shared amongst consumers.

By way of conclusion we suggest that online food banks seem to be digital replicas of the conventional food bank (the "sharing for charity" model). However the model of the social supermarket does not seems to be replicated in the same way in the digital context, but changes towards a more profit oriented approach (the "sharing for money" model). Finally, in the digital scenario, a new model emerges: "sharing for the community".

2. Food Banks and Social Supermarket: Operational Methods and Social Value

To further the main objectives of the research, the following paragraphs aim to: 1) point out the social role of food banks and SSMs as a means of waste reduction and poverty alleviation; 2) describe how these organizations work (in terms of the operational methods of the distribution format); 3) explore the recent evolution of food banks and SSMs within the digital scenario.

The theoretical overview will facilitate the exposition of the social value and the distribution mechanisms of food banks and SSMs, and permit comparison with the digital food sharing models which have emerged from the empirical research.

2.1. Food Wasted at Retail Level: The Role of Food Banks

In the developing countries food losses mainly occur at the early stages of the food supply chain (FSC) and are mainly caused by limited technical or financial resources in the cultivation, harvest, collection, or transportation of food (Gustavsson et al., 2011). In the developed countries, food losses are known as *food waste* and occur mainly at the end of the FSC, in the distribution, retail and final consumption phase (Gustavsson et al., 2011; BCFN, 2012). They are generally due to incorrect or undesirable practices, such as overbuying of food by consumers, or overstocking or discarding food on aesthetic grounds by retailers (Griffin et al., 2009; Parfitt et al., 2010; Gustavsson et al., 2011; Principato et al., 2015).

According to the EU Commission, every year the retail sector wastes around 4.4 million tonnes of food, which represents 5% of total food wastage (BIO Intelligence Service, European Commission, 2010). Although this amount is considerable, up to now, food waste at retail level