



## Sharing Economy as a Concept of Solving the Problem of Food Waste

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# Sharing economy as a concept of solving the problem of food waste

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## Abstract

Food waste is a problem of the 21st century which mainly concerns highly developed countries. The growing scale of the problem translates into implementing several actions targeted at counteracting food waste and reducing its negative impact on human development. The purpose of the paper is to present the multi-faceted concept of implementation of activities in the field of food sharing, as an example of actions undertaken by both entrepreneurs in the catering sector, and consumers, to fight the food waste.

## Introduction

Globalization in the food market and consumerism have led to a situation where supply exceeds demand. In recent years it has been observed that more and more food is wasted and "thrown into the bin". Therefore, the problem of food waste is one of the greatest challenges of the 21st century that mankind is currently facing. The scale of food waste is enormous and therefore it should be perceived as a global problem. Not only producers, but also the catering sector and households contribute to this shameful situation. The idea of sharing, which is one of the most effective ways to prevent food waste could be the response to this situation. It is a good example of activity encouraging entities to minimize waste and, if it occurs, to act towards their proper management.

In the opinion of the Authors of the paper, despite a significant growth, food sharing cannot be considered a popular phenomenon. In global approach, Google Trends presents the first term search only in 2013 [1], and the increase in popularity cannot be considered significant.

## The phenomenon of food waste in the world, in the EU and in Poland

The main problem of the 21st century is the increasing amount of waste, including food waste. Many institutions and organizations (national and international) try to define and systematize the issues related to that. Wasted food includes:

- any food product that has been removed from the food production chain, for example by composting, ploughing or not harvesting crops, anaerobic digestion, bioenergy production, incineration, disposal to a sewage system, dumping into the sea or storing on land;
- any food lost because of emergence of food loss or food waste [2].

Generally, it can be assumed that wasted food is food produced for consumption purposes that has not been consumed by people. Nevertheless, it is difficult to define this concept precisely and unambiguously because of its "capacity", i.e., what the food consists of, how it is made and what is disposed of.

Observations show that most food is wasted in the final stages of the food supply chain, i.e., in households and in catering. The conclusions from the observations are also confirmed by the research conducted by EU Fusion at the request of the European Commission. It indicates that households are the main link in the food supply chain that produce food waste (47 million tonnes + - 4.4 million tonnes, representing 53%). They are followed by processing (17 million tons + - 12.7 million tons, accounting for 19%), catering (11 million tons + - 1.5 million tons, accounting for 12%), production (9 million tons + - 1.5 million tons constituting 11%) and sales (5 million tons + - 1.2 million tons which gives 5%) [3].

Research published by FAO (Food and Agriculture Organization of the United Nations) shows that every year around 1.3 billion tonnes of food is thrown away worldwide (which constitutes 1/3 of food intended for consumption) [4,5]. On the other hand, data from the European Commission report indicate that around 100 million tonnes of food worth EUR 143 million, is wasted annually in Europe [6,7]. In one European household, around 20-30% of the purchased food is thrown away, 2/3 of which could still be consumed. In Poland, about 9 million tonnes is wasted annually, which constitutes 235 kg per year per an average Pole. This gives Poland the 5th place in Europe, just behind Great Britain, Germany, France and the Netherlands [8].

The most common reasons for wasting food include: "missing" "the use-by" date, having no shopping list, which for most of us results in purchasing too many products or purchasing unnecessary products, and in the worst case, buying a tasteless or poor-quality product, preparing too large portions of meals and inappropriate storage [9].

According to the calculations of FAO, it is estimated that in Europe the costs associated with wasting food amount to USD 2.6 trillion annually, including economic costs estimated at USD 1 trillion annually, environmental costs at USD 700 billion dollars, and the social costs at USD 900 billion [10].

## The sharing economy and food sharing - theoretical foundations and social challenges

Changing people's attitudes to the issue of ownership and the desire to stay in communities gave rise to the concept of sharing. The perception of socio-economic

system which is different from the previous one that assumed the division of human and material resources is the consequence of these changes. These aspects are comprised in the sharing economy, that is also defined in the literature as: sharing economy, peer-to-peer economy, mesh, collaborative economy or collaborative consumption. The notion is perceived as activities in which one or more people consume goods or services while engaging in this process together with others [11].

There is also the concept of collaborative consumption, i.e., an economic model based on borrowing, exchange, barter contracts or paid access to goods, in opposition to ownership [12]. It can be concluded that the change in the way of using consumer goods is the basic assumption of collaborative consumption. The previous trend towards possessing is being replaced by the trend towards using [13]. In 2010, The Time Magazine included collaborative consumption among the top ten ideas that will change the world [14].

The gastronomy sector/HoReCa industry (joint term for the hotel and catering sector - Hotel, Restaurant, Catering / Café,) fits perfectly into the assumptions of the concept of sharing and allows for its development both in terms of cooperation between entrepreneurs and the society. The buyers' perception of catering services in market conditions is based on a multidimensional identification of the essential features of these services in the space of market communication, with a simultaneous strong impact of the specific nutritional needs of consumers [15]. Ecological phenomena, which are gaining in popularity, significantly affect the "image" of modern gastronomy and determine continuous and dynamic changes. At the same time, the popularity of such phenomena as food sharing or freeganism is growing all over the world, which is also increasingly more often observed in Poland.

The expansion of the sharing economy is now seen in the changes taking place in communication and access to information. The development of online platforms has allowed for reaching every potential private buyer and seller. It is often believed that the concept reflects the idea that people may sometimes have a spare resource (space in the car, room in the house, unused lawn mower) and sometimes may need the same resource [16]. This specific exchange may be paid or free of charge, and it may concern tangible goods as well as intangible services. As a result of digitization, business models are significantly changing, transaction costs are lowered, and the shared assets are cheaper and more accessible, which is clearly used by the catering sector. We are dealing with the so-called disruptive innovation that destroys operating conditions and business models shaped in the past [17].

Food sharing comes from the two English words, i.e. food and share, but the discussed activity comes from Germany. It was there, just a few years ago, that the first food sharing facilities were created. This phenomenon, however, does not have an officially adopted definition. Food sharing is a bustling, active community of members engaging in very practical actions, at the local level, for the exchange of food [18].

Food sharing spots are places (both inside buildings and located in the open air), where the space is made available for people to leave food that is no longer needed. These can be refrigerators, cabinets and shelves that allow people to store certain food products in accordance with the instructions (products often must be described in detail if they are ready meals or marked with a use-by-date).

Some types of products, e.g., eggs, cannot be left in food sharing facilities. The facilities are most often located in popular, frequently visited places in the city, which are easily accessible to many groups of residents. Recently there have been more and more of them for example in various types of city offices. Unfortunately, these are most often grassroots initiatives. They are created, among others: at universities, in dormitories, at marketplaces, but also in housing estates and in smaller communities of people close to each other, e.g., neighbours. However, the fact that they should be places that create a sense of anonymity could be a problem. The research conducted for the purpose of this paper clearly proves that shame and negative connotations are one of the most important barriers to taking advantage of food sharing.

It is extremely important, that sharing food is not only giving food to another user; it is a much more complex concept that allows for forming a community and discussing aspects related to food and its use. Food sharing is perceived as the following:

- eating a portion of food with others (shared consumption and commensality);
- giving a portion of food to others (redistribution);
- shared using, handling or enjoying food and related activities, appliances and places (shared use of farming, preparing and cooking spaces; shared gardening utensils and tools; shared growing, cooking and eating);
- having a shared fascination with food (shared interest);
- telling someone about food (shared skills and knowledge) [19].

The elements typical of the food sharing phenomenon fit into the broader concept of the sharing economy. Both phenomena are based on engaging the local community, and have a network system, while the character of their relationship takes the form of an exchange / transaction between individuals or between individuals and organizations.

What distinguishes co-consumption of the beginning of the 21st century is not only its scope or scale, but above all the simplicity with which the user becomes an offeror [20]. From the very beginning, the catering sector was distinguished by the use and creation of business platforms, social media, or other platforms connecting users (customers), but also the very entrepreneurs. Thanks to this type of activities, the perspective of creating social networks has become more real and achievable, being a specific alternative to approaches based on essentialising categories, e.g., socio-economic status or gender [21, 22]. This poses a significant difficulty in studying social networks. It is almost impossible to measure the complexity of the emotional elements in a traditional way, especially

because within social networks, it is based on the aspects that address both the issues of awareness and raising mutual awareness by individuals.

However, it must be noticed that the social nature of the changes is most affected by the development of communication and other interactions on the Internet. Interactive computer networks are growing exponentially, while creating new forms and channels of communication, shaping our lives, and at the same time being shaped by them [23].

### Research methodology

The research presented in the paper is of an exploratory character. It constitutes an introduction to in-depth quantitative and qualitative research. For this reason, the presented results cannot provide the basis for general conclusions on a global scale. They are only an attempt to identify the phenomenon within the group of donors and takers.

Two separate studies were performed . in the group of consumers and enterprises representing the catering sector in Poland, to examine the awareness and understanding of the concept of food sharing, the prospects for its development and the opportunities it offers. It was assumed that the obtained results should complement each other, giving the possibility of a more in-depth analysis of the food sharing phenomenon.

The source of consumer research was the survey with the use of the CAWI questionnaire, conducted on a sample of 190 respondents, purposefully selected from among the inhabitants of the Silesian metropolis and its surroundings. The research was conducted between 5 and 19 May 2019. The respondents were classified into five age groups. Young people aged up to 25 (66.3%), with higher education (64.7%) and living in medium and large cities (almost 90%) were the predominant group in the study. Since the problem of food waste mainly concerns highly developed countries and urban areas, such a sample selection had a positive effect on the obtained results.

To ensure comparability of results, the CAWI questionnaire was also used in the study of representatives of the catering sector, and the study covered a purposefully selected sample of 102 representatives of the HoReCa industry operating in the Silesian metropolis. The research was conducted in October 2020, before the restaurants were closed again due to the announced lockdown in Poland. The structure of the studied group consisted of restaurants (64%), representatives of bars serving food (21%), eateries (13%) and canteens (2%). Most of the surveyed entities were young companies, operating on the market for at least 4 years (77%), representing the SME sector (including micro-enterprises -55% and small enterprises - 27%).

### Results and discussion

The conducted research showed that despite numerous social and media campaigns promoting food sharing among representatives of the HoReCa industry (25%), and consumers (43%), the concept of food sharing is not really

known and popular. The observed difference between the surveyed groups allows to suggest that the use of food sharing solutions constitutes a niche that is not filled by representatives of the HoReCa industry. However, it needs to be emphasised that despite the lack of knowledge of the concept of food sharing, consumers consider sharing redundant food a good idea (graph 1).

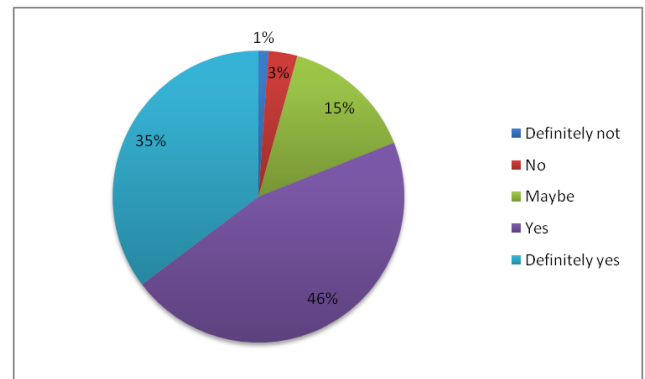


Fig. 1: Perceiving sharing redundant food a good idea

Additionally, almost ¾ of the respondents declared that they would like to have the possibility to donate food that could be wasted. This is especially important, because almost 40% of the respondents admitted that they disposed of food from time to time. Moreover, 37% admitted that they threw food away from time to time, and less than 10% admitted that they frequently or very often threw away food.

Although potential users of food sharing solutions strongly support food sharing, they still have many concerns regarding the use of this type of solutions (graph 2). They are mainly related to information aspects (lack of general information about sharing or information about the origin of the donated food).

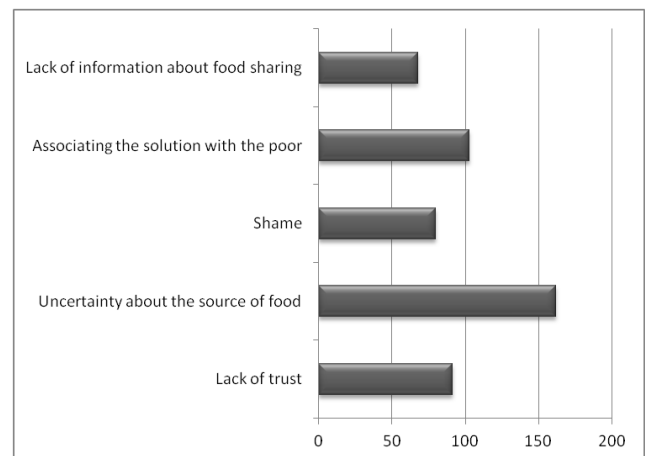
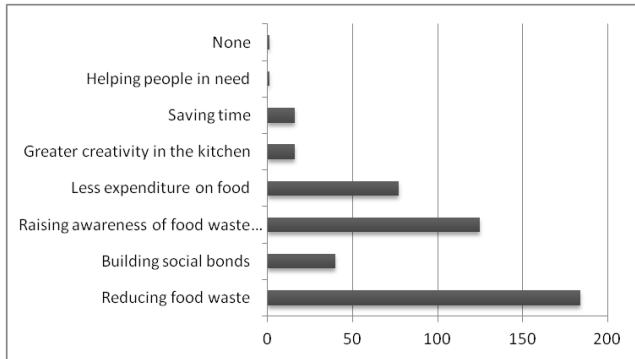


Fig. 2 Barriers to food sharing

Among the respondents, 85% (162 people) considered the information factor to be a significant barrier. More than half of the respondents consider shame as a barrier, which partially translates into associating food sharing wrongly with poverty. This is a very unfair, but unfortunately common, opinion concerning food sharing among

consumers. For example, in Krakow food sharing spots, we can find dishes from companies specializing in the expensive box diet, which is recently popular not only in Poland, but also all over the world. Despite this, less than 6% of consumers declare that they would take advantage of this form of consumption.



Graph 3: Benefits of food sharing

The research results confirm the high awareness of the respondents in the sphere of food waste. 97% of the respondents linked food sharing with a direct reduction in waste. In addition, attention was also paid to the educational aspect related to raising people's awareness about the problems caused by wasting food (66% of respondents). Almost 41% of the respondents also notice savings that result from the use of solutions in food sharing. Unfortunately, only 20% of consumers indicate the positive aspect of building durable social bonds.

For the representatives of the HoReCa industry, it is important to achieve an economic effect (profit), therefore they are interested in minimizing the costs of doing business. It seems that for them, food sharing is a modern tool that can have impact on reduction of costs. For this purpose, deciding to lower prices or give away meals for free are possible solutions within the framework of food sharing. The same opinion is shared by the vast majority of respondents (over 70% of respondents), who have a positive attitude both to lowering the prices of dishes, and to donating meals without generating any profit on them (Fig. 4). In addition, 85% of the respondents running a business, find the solution that reduces the unit food cost, but does not cause a total loss, to be more beneficial.

Therefore, it should not be surprising that more and more applications for "donating" meals are being developed, and not only small, local enterprises decide to use them, but also such chain as Starbucks or Pizza Hut [18].

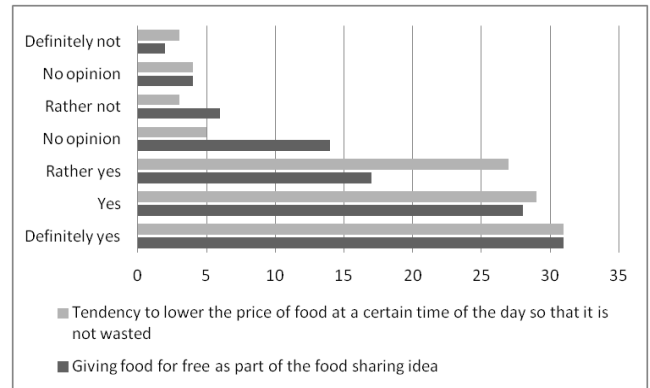


Fig. 4: Tendency to lower the price of food at a certain time of the day so that it is not wasted vs giving food for free as part of the food sharing idea

HoReCa sector representatives see the attractiveness of sharing in the catering sector (Fig. 5). Aspects related to financial savings (96%), the area of waste (96%) and recycling (94%) are ranked the highest. However, the respondents did not associate sharing with something remarkably interesting (76% of respondents). The negative attitude towards limiting own consumption (70%) or significant opposition of the respondents to excessive consumption (75%) are not clearly noticed either.

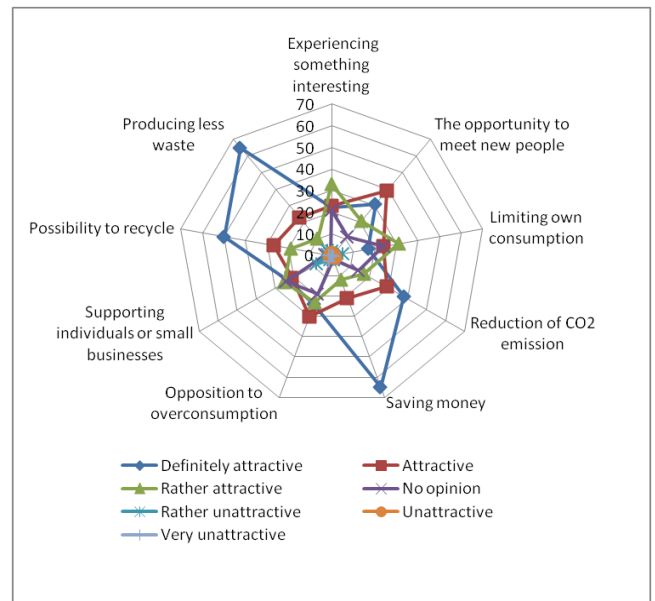


Fig. 5: The attractiveness of individual aspects related to sharing

Unfortunately, sharing in the catering sector is primarily associated with sharing food or meals (research has proved that this is not a popular phenomenon among representatives of the HoReCa industry and consumers).

Representatives of the HoReCa industry perceive the opportunities offered by the sharing economy (Fig. 6), but do not identify them as attractive.

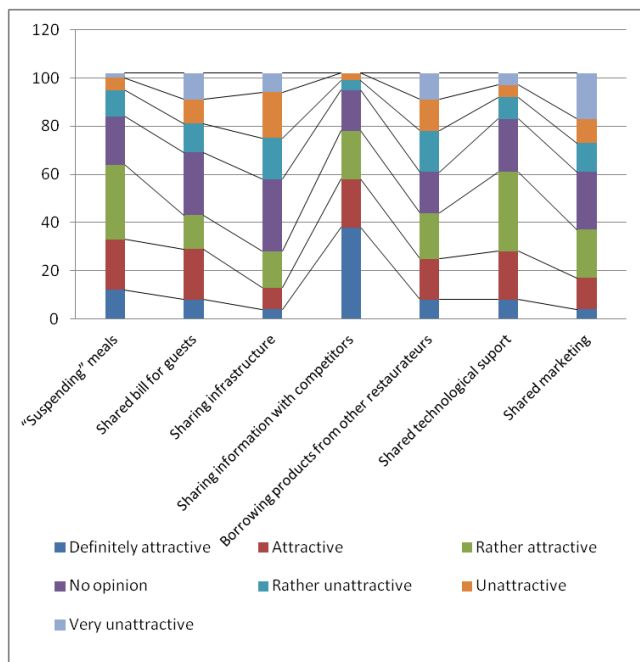


Fig. 6: Attractiveness of the possibilities of sharing economy

Among the obtained responses, only the area concerning cooperation with competitors as part of sharing information was distinguished (76%). More than half of the respondents (60%) consider shared technology support attractive. Cooperation between entrepreneurs, in the period of the pandemic caused by the SARS-COV-2 virus, is clearly visible in the studied region (hidden observation of the Authors). The so-called "suspending" meals is quite an interesting and at the same time attractive solution. This notion represents a simple, social action. As consumers, we buy coffee, dinner or dessert - for someone in need. Anyone who needs it, can get such a meal. The receipt for the meal is usually placed in a visible place in the premises, and the person in need can use it at any time. However, representatives of the HoReCa industry are not definitely willing to share the infrastructure, borrow products from other restaurateurs and do not consider shared marketing an attractive solution.

The applications, thanks to which the food that is not sold on a given day becomes a wonderful meal-surprise instead of being wasted, are a great possibility of linking both studied groups. It is not always possible to sell all prepared portions during the day, and thanks to the use of such solutions, good food will not be treated as waste. Thanks to the applications, users have a chance to save wholesome products or meals from being disposed of, by buying them at incredibly attractive prices [24]. The rules of the application operation are quite simple and transparent; the customer buys a "surprise package" – i.e., what the premises served on a given day and what has not been sold. Meals must be picked up in person at indicated times. The business model of the application is based on commissions on sold packages. The applications are free for both buyers and sellers. The premises are not additionally bound by partnership agreements with companies providing individual applications [25].

For example, the Accor Group - and hotels under its brands such as: Sofitel, Mercure, Ibis or Novotel, have been cooperating with "Too Good To Go" since mid-2016, in 8 European countries such as France, Great Britain, Germany, Switzerland and Spain . Thanks to this cooperation, Accor saved 160,000 meals from being thrown into the trash, which means reducing CO<sup>2</sup> emission to the atmosphere by 370 tonnes [26].

Unfortunately, the Authors' observations show that some restaurateurs are starting to use applications inconsistently with their intended use, offering allegedly "unsold" meals in the early hours. This misleads potential users and encourages them to purchase meals contrary to the idea of sharing. It cannot be denied that such activities are contrary to the assumptions of food sharing and may negatively affect the reception of such solutions in the future.

## Conclusions

Sharing food in the city space can be consistent with the sustainable development strategies of cities or support food systems. It also allows to minimize food waste, and additionally it supports building new economic and socio-spatial relations.

Solutions in the sphere of sharing economy in the catering sector can be seen in the category of social innovations, which contributes to a better and greener distribution of goods and services. It is consistent with the sustainable development concept. In conditions where - according to J. Hausner - breaking of the relationship between the market, and values appears to be the critical problem of capitalism, such an economy model means a return to the sources [17]. Therefore, sharing economy can be seen as complementary to the mainstream economy with the socially responsible business segment.

The conducted research clearly proves that, unfortunately, although the concept of food sharing is perceived positively by both entrepreneurs and customers, it is still a big challenge. The most important barriers to using this solution include shame, negative associations and fears related to the origin, or freshness of the offered meals. Nevertheless, the popularization of this phenomenon may significantly affect the reduction of the level of wasted food in the world.

## References

- [1] <https://trends.google.com/trends/explore?date=all&q=foodsharing>
- [2] Bednarczuk A., Śleszyński J. (2019) Marnotrawstwo żywności: problem pomiaru i dostępności danych, *Optimum: studia ekonomiczne*, no. 3(97), pp. 19-32.
- [3] Estimates of European food waste levels, 2016, FUSIONS, <https://www.eufusions.org/phocadownload/Publications/Estimates%20of%20European%20food%20waste%20levels.pdf>

- [4] Food wastage footprint. Full-cost accounting. Final Report, 2014, FAO, <http://www.fao.org/3/a-i3991e.pdf>
- [5] Food wastage footprint. Impacts on natural resources. Summary Report, 2013, FAO, <http://www.fao.org/docrep/018/i3347e/i3347e.pdf>
- [6] Dyrektywa Parlamentu Europejskiego i Rady zmieniająca dyrektywę 2008/98/WE w sprawie odpadów, 2015, Komisja Europejska, [https://eur-lex.europa.eu/resource.html?uri=cellar:c2b5929d-999e-11e5-b3b7-01aa75ed71a1.0011.02/DOC\\_1&format=PDF](https://eur-lex.europa.eu/resource.html?uri=cellar:c2b5929d-999e-11e5-b3b7-01aa75ed71a1.0011.02/DOC_1&format=PDF)
- [7] Rozporządzenie Komisji (UE) NR 849/2010 z dnia 27 września 2010 r. zmieniające rozporządzenie (WE) nr 2150/2002 Parlamentu Europejskiego i Rady w sprawie statystyk odpadów, 2010, Komisja Europejska, <http://eur-lex.europa.eu/legalcontent/PL/TXT/PDF/?uri=CELEX:32010R0849&from=EN>
- [8] [http:// foodfakty.pl](http://foodfakty.pl)
- [9] Raport Federacji Polskich Banków Żywności, *Nie marnuję jedzenia 2018*.
- [10] <https://www2.deloitte.com/pl/pl/pages/press-releases/articles/odpowiedzialne-gospodarowanie-odpadami-to-inwestycja-w-przyszlosc.html>
- [11] Felson M., Spaeth Joe L. (1978) Community Structure and Collaborative Consumption: A Routine Activity Approach, *American Behavioral Scientist*, Vol. 21, pp. 614-624.
- [12] Botsman R., Rogers R. (2010) *What's mine Is Yours: the Rise of Collaborative Consumption*, Harper Collins, New York
- [13] Markiewicz E., Niezgoda A. (2018) *Wpływ konsumpcji kolaboratywnej na jakość życia mieszkańców regionów turystycznych*, Prace Naukowe Akademii im. Jana Długosza w Częstochowie. *Pragmata tes Oikonomias*, nr 12, 9-23
- [14] [http://content.time.com/time/specials/packages/article/0,28804,2035319\\_2034098\\_2034146,00.html](http://content.time.com/time/specials/packages/article/0,28804,2035319_2034098_2034146,00.html)
- [15] Kosicka-Gębska M., Tul-Krzyszczuk A., Gębski J. (2011) *Handel detaliczny żywnością w Polsce* (wyd. 2). Warszawa: Wyd. SGGW
- [16] Farronato, C., Levin, J. (2015) *The sharing economy New opportunities, new questions*, *Global Investor* 2.15, Oxford, pp. 6-13.
- [17] Poniatowska-Jaksch M., Sobiecki R. (2016). *Sharing Economy*, Oficyna Wydawnicza SGH, Warszawa
- [18] Ganglbauer, E., Fitzpatrick, G., ÖSubasi, Ö., Güldenpfennig, F. (2014). Think Globally, Act Locally: A Case Study of a Free Food Sharing Community and Social Networking. *CSCW'14, February 2014*, Baltimore, MD, USA, 15 – 19.
- [19] Davies, A., Evans, D. (2019). Urban food sharing: Emerging geographies of production, consumption and exchange. *Geoforum, Volume 99, February 2019*, 154-159.
- [20] Gansky L. (2010). *The Mesh. Why the Future of Business is Sharing*, Portfolio/Penguin, London
- [21] Thatcher M. (1998). *The Development of Policy Network Analyses: From Modest Origins to Overarching Frameworks*, „*Journal of Theoretical Politics*”, vol. 4, nr 10
- [22] Wichłacz M. (2012). *Sieć a rozumienie przestrzeni polityki*, [in:] A. Czajowski, L. Sobkowiak (red.), *Polityka i polityczność. Problemy teoretyczne i metodologiczne*, Wrocław, Atla 2 – Wrocławskie Wydawnictwo Naukowe
- [23] Castells M. (2007). *Spoleczeństwo sieci*, PWN, Warszawa
- [24] <https://stories.starbucks.com/stories/2019/20-million-people-fed-through-starbucks-foodshare-program/>
- [25] <https://www.wirtualnemedial.pl/artykul/too-good-to-go-w-polsce-ceny-zasady-dzialania-zamowienia-tworcy-ratuja-jedzenie-przed-zmarnowaniem>
- [26] <http://kuchnia.ugotuj.to/szukaj/kuchnia/co+katarzyna+w>