

FOOD WASTE IN THE HOSPITALITY INDUSTRY IN ITALIAN AND ROMANIAN EXPERIENCE

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Abstract

Every year, in the European Union (EU) approximately 20% of food produced, with associated costs estimated at €143 billion, is thrown away along the whole food supply chain. Approximately, 88 million tons (Mt) of food are yearly wasted particularly at the final consumption stage both at households and hospitality level. The hospitality industry is responsible of substantial amounts of waste and of course of Food Waste (FW). It is estimated that a hotel guest generates each day on average over than 1 kg of waste of which more than one-third is FW. Although Academia and authorities have widely recognized the issue, it remains under-researched. Based on these considerations, the authors analyze FW management within the hospitality industry, proposing a comparison between an Italian (Bari) and a Romanian (Buzau) hotel, with the final aim of understanding their food service weaknesses and the principal opportunities to prevent or minimize FW. Throughout the usage of Qualitative Content Analysis (QCA) and personal communications, the authors highlight their main characteristics and the main drivers of FW, focusing on managerial and future policy implications.

Keywords:

Food waste, food waste in tourism, hospitality waste management, sustainability.

JEL Classification:

L83, Z32, Q53.

Introduction

In the European Union, approximately 88 million tons of Food Waste (FW) is generated every year, which represents around 20% of food produced in the member states, with associated

costs estimated at €143 billion (European Commission, 2019a). In order to mitigate this phenomenon with highly social, economic and environmental impact, European Union strength the necessity of sustainability in the food and drink industry, and in other associated areas, like hospitality. In this regard, EU declared FW as one of ten major indicators of the Circular Economy Monitoring Framework and targeted the decrease food losses as one of the priorities of Sustainable Development Goal, adopted in Agenda 2030. The hospitality industry, mainly composed by hotels and restaurants (in this study also identify with the word “unit”), represents a growing sector worldwide, with a market value of over 600 billion U.S. dollars in 2018 (+28% on 2014 data) (Statista, 2020). The International Hotel Environmental Initiative (2002) has estimated that a hotel guest generates each day on average 0.8-1.2 kg of waste, an amount which is doubled on checkout days (Pirani and Arafat, 2014; Abdulredha et al., 2018). This quantity is mainly composed by solid waste (e.g. packaging), but more than one-third is represented by FW of which roughly 75% is still edible (WRAP, 2013). Although Academia and authorities have widely recognized its crucial importance, it remains under-researched. Literature investigates only a small part of the subject and the results are restricted in geographical coverage and representativeness (Filimonau et al., 2019). Moreover, there is no standardized methodology on how to assess the volume (measure) and appraise the content (qualify the composition) of hospitality FW, making it more difficult for public authorities to assess its scale, origins, and trends over time (Filimonau and De Coteau, 2019). EU legislation does not focus on FW specifically and there are no specific regulations in hospitality industry, not helping its management to adopt responsible practices. The main directives and regulations refer to the waste mitigation in other areas: Directive 2008/98/EC on waste and repealing specific directives; Regulation 1774/2002 laying down health rules concerning animal by-products not intended for human consumption; Directive 94/62/EC on packaging and packaging waste (Styles et al., 2019). In this context, it needs governments to facilitate a more sustainable activity in hospitality to adopt regulations that support FW prevention and/or minimization (Pirani and Arafat., 2016). Based on these considerations, the authors investigate FW management within the hospitality sector comparing an Italian and a Romanian hotel experiences. The aim of this paper is to identify food service weaknesses and suggest FW opportunities of prevention and/or minimization. Throughout the usage of Qualitative Content Analysis (QCA) and personal communications, the authors highlight their main characteristics and the main drivers of FW, focusing on managerial and future policy implications

Food waste in the hospitality industry

Tourism is responsible for a small share of waste generation within the EU, with a contribution of 6.7% of total waste generation (Styles et al., 2019), but predictions on its sharp increase in future years impose several challenges to economy, environment and society. In terms FW in the hospitality industry, there is still no regulatory frameworks adopted internationally, but individual initiatives prove this issue as a priority. Gretzel et al. (2019) has recored examples of reductions in pre- and post-consumption FW, respectively kitchen and plate waste, mostly due to its impact on profitability and its high costs of disposal. A further study, conducted in a five-star hotel in Malta, revealed that plate waste was an average of 0.21 kg/person at lunch and 0.16 kg/person at dinner, increasing to 0.48 kg/person during a buffet-dinner (Camilleri-Fenech et al., 2020), while a study conducted in Malaysia estimated an average value of 0.53 kg per meal (Papargyropoulou et al., 2019). The “*Piano Provinciale di Gestione dei Rifiuti*” drafted by Provincia di Bari has found an average quantity of 0.2-0.3 kg of FW per meal, depending on caterings or internal food preparations (RTI, 2009). According to literature (Pirani and Arafat, 2014; Pirani and Arafat, 2016; Kasavan et al., 2019), FW represents a pressing issue in the hospitality industry in terms of money losses in food purchasing and production. It is also important to remark that several action could be

adopted, considering that FW production per person per day strongly depends on nationality, age, educational level and consumption behavior of the single tourist (Papargyropoulou et al., 2016). However, FW occurs also during food preparation within the kitchen.

- *Study area*

The hotels global occupancy rate, which is “*the share of total rooms available which are occupied or rented at a given time*”, reaches its highest value in Europe (72.4%), where over 6.3 million bedrooms are located (not considering the United Kingdom). Among the EU-28 countries, Italy represents the highest quota, accounting for over 1 million bedrooms and similar accommodations (17%) in 2018 (Statista, 2020). The Italian number of hotels is roughly 32,900 with a capacity of over 2.2 million tourists each day (Banca d’Italia, 2019; Istat, 2020). In Romania, the total number of hotels was 1,600, with an accommodation capacity of 198,000 places and around 195,000 rooms. According to the last data published by the National Institute for Statistics (2020), in 2018, in Romania, the total number of arrivals was around 12.9 million of which 10.1 million internal and 2.8 foreign tourists. The Romanian tourism had a more robust increase in 2019, compared to 2018 and the efforts of the stakeholders to diversify the offer and to attract new tourists are visible. However, there is still room for improvement, especially in transport and tourism infrastructure. At present, the most probable market target are neighboring countries, like the Republic of Moldova, Bulgaria, Hungary and Ukraine (Fitch Solutions, 2020), which do not really support Romanian tourism. From these regions, guests arrive to visit their relatives and friends or for shopping limiting a long stays and a real demand of tourist activities (Euromonitor, 2019). The Italian experience in FW field began in 1989 with the creation of “*Banco Alimentare*”, followed by the introduction of Law 460/1997 and Law 133/1999. However, the first efficient project in such field has been carried out in 2003 in Mogliano Veneto, Marcon e Treviso (“*Buon Samaritano*”, Law 155/2003). On the 19th August 2016, the Italian Government has enacted a specific law – *Legge Gadda* (166/2016) – which contains provisions concerning the donation and distribution of food and pharmaceutical products for purposes of social solidarity and waste purchases. In Romania, FW legislation resumes at the Law 217/2016 that was completed on 30 January 2019 with the implementing rules. The main objective of the law is to mitigate the FW in Romania and to encourage food donation. Moreover, the companies that agree to donate food surpluses will benefit from tax incentives. Food donation is the subject of several rules, such as the durability of food products or the type of food (Ministry of Agriculture and Rural Development, 2019). However, a specific law to apply in hotels and restaurants sector was not developed yet in Romania, so FW remains the responsibility of each unit, depending on the interest of managers and staff regarding adopting a sustainable behaviour.

Research methodology

The authors conducted an interview followed by personal observation in two hotels situated in Italy and in Romania in order to highlight their main characteristics (e.g. managerial policies, strategies, targets related to food production, kitchen operations) and to compare two EU realities focusing on similarities/differences and weaknesses/strengths of each country with the final aim to understand the principal drivers/opportunities of FW management in hospitality industry.

- *Brief hotel description*

The Italian hotel is located in Marina of Palese, a coastal town in North of Bari in Apulia region. Its strategic position, 100 meters from the beach (Marina of Palese), 10 km far from Bari city centre, 2 km from the airport (Karol Wojtyła International Airport), well connected with central railway station and sea port make it perfect for business, cultural events and leisure stays. It is a 4-star hotel, with 101 rooms, a restaurant, a cocktail bar, four conference halls and an outdoor pool. The Romanian hotel is a 4-star accommodation unit located in the

city centre of Buzau, in the South-East Region. The unit is around 20 km away from the spa resort, Sarata Monteoru and 110 km away from Bucharest, the capital of Romania. The hotel has a capacity of 120 rooms: 90 double rooms and 30 apartments, spa centre, four restaurants for large and small events and two conference halls and is suitable for business and events.

• *Semi-structured interview and activities investigated*

The interview, composed by 20 questions both open- and closed-ended, has been based on literature, documents and manuals content (Leray et al., 2016; Pirani and Arafat, 2016; Kasavan et al., 2019) and conducted between 26th February and 7th March 2020. The interviewees have been distinguished according to their operation sectors: management (e.g. general manager, food and beverage manager), kitchen (e.g. chefs) and food service (e.g. Waiters). The activities investigated within the study (figure no. 1) include: a) purchase of raw materials; b) food preparation; c) food service à la carte and/or buffet; d) food disposal of inedible food; e) food disposal and/or recovery of unconsumed and still edible food.

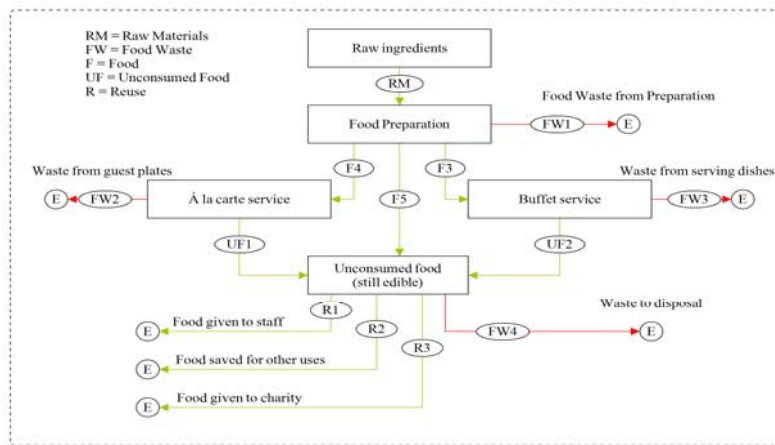


Figure no. 1 Activities investigated in the study

Source: Personal elaboration by the authors

Interview results have been analyzed according to a Qualitative Content Analysis (QCA). The goal of QCA is “to provide knowledge and understanding of the phenomenon under study” (Downe-Wamboldt, 1992), ensuring flexibility to the analysis through the collection of visual and verbal primary data. All answers have been read word by word in order to capture key-thoughts or key-concepts on FW management in the hospitality industry (Hsieh and Shannon, 2005; Kasavan et al., 2019). The results obtained, even if related to a limited sample, are very useful: first, to improve authors direct knowledge about FW phenomenon within the structures; secondly, to discuss possible and future managerial and policy implications. This research is a first part of a larger analysis-which will include a greater number of hotels with different characteristics and located in different parts of the two countries, in order to create a basis to evaluate measures for FW reduction in hospitality industry.

Results

The main step to understand FW drivers is to distinguish between food production and food consumption. Generally, food production leads to systematic FW generation, while food consumption mainly depends on consumer habits (influenced by several variables such as social, cultural, economic factors) and sensibility towards the issue. The two units analyzed present several differences, but also some similarities. Table no. 1, recording them, focuses on internal FW policy, food purchase, meals preparation and disposal. In terms of internal FW policy, in unit 1 (Italian hotel) managers take care personally of the kitchen, coordinating

both departments (management and kitchen). Unit 1 has three main pillars: 1) control of guests' attendance; 2) efficient communication between departments; 3) perishable goods management. Breakfast and dinner are served as buffet, while lunch is à-la-carte. In the buffet organization, the principal steps regard the quantification of guests and the analysis of their nationality, since the quality/quantity of food mostly depends on it. As instance, the management has declared: *"If guests are widely composed by English or German people, croissants are not needed but eggs and bacon are. On the contrary, when Italians book for breakfast, quantity is more important than quality, since Italian people has a strong food culture"*. Unit 1 tries to maximise food self-production (e.g. croissants, cakes, jam or bread) and zero food miles approaches to reduce FW amount and associated environmental impacts and money losses. In unit 2 (Romanian hotel), both managers and chefs consider FW policy a necessity, and declared: *"In the actual context of doing business, a company cannot operate without an efficient management of FW"*. They focus their strategy of collection according to the national rules and are trying to have a sustainable behaviour. According to managers and chefs of the unit 2, the main obstacles in decreasing FW amount are the lack of logistic service to support FW and the lack of reservation forecast. In future, management and kitchen staff are planning to implement a system to facilitate the donation of unconsumed but still edible food and improve the composting system for the inedible fractions. Unit 2 serves breakfast as a buffet. Because the management is aware that this type of serving is FW generating, it makes an effort to mitigate it regularly analyzing the number of guests and their nationality, the season and the special requests. Moreover, the management is also concerned about the behaviour changes in terms of food consumption, to be able to adjust the provisioning quantities.

Table no. 1. Main results from the Italian and the Romanian experience

	Unit 1 (Italian hotel)	Unit 2 (Romanian hotel)
Food purchase	<i>Where?</i> Cash and carries, fresh food markets.	<i>Where?</i> Cash and carries, supermarkets, online, HoReCa suppliers.
	<i>When?</i> Every day.	<i>When?</i> Every day.
Food preparation	<p>Chefs' abilities are important to avoid FW.</p> <p><i>Waste from preparation</i> is destined with priority to animal feed, then to separate collection.</p>	<p>Three aspects can influence the FW: quality of raw ingredients, kitchen staff and the ratio price/quality.</p> <p><i>Waste from preparation</i> is for separate collection.</p>
Unconsumed food	<i>Wastes from guests' plates</i> are mandatorily destined to separate collection.	<i>Wastes from guests' plates</i> are mostly used for compost.
	<i>Unconsumed food</i> is mostly donated to the staff.	<i>Unconsumed food</i> is donated to the staff and reused for other dishes.

Source: Personal elaboration by authors

According to food purchase, unit 1 buys food at cash and carries and fresh food markets every day. They declared that: *"There is a strong communication with some sellers. If they have a huge quantity of fruit and vegetables, they ask us to pick it up with a particular discount"*. Unit 1 has created a well articulated network with local fruit and vegetable retailers, implementing a sort of industrial symbiosis. They work together to avoid unsold but still edible product from becoming waste, transforming fresh fruit into jam. In this way, FW is avoided at market places with related monetary benefits for both actors: sellers, who are not

forced to throw away food losing their revenue, and hotel managers, who buy food with an economic *advantage*. Unit 2 purchases raw ingredients and food primarily from Cash and Carries units, supermarkets, online and collaborates with HoReCa suppliers with a daily frequency. They self-prepare food inside the unit both from raw ingredients and edible unconsumed food. At the moment of disposal, managers of unit 1 pay attention to the difference between edible (for humans) and inedible food (for animals). It is possible to distinguish between FW at preparation and FW at consumption. In the first case managers give priority to animal feed (personal knowledge of local breeders) and later to separate waste. In the second case, leftovers from buffet are mainly donated to the staff and/or utilized for other meals preparation. Managers have declared: *“Leftovers are principally donated to the staff. Even if some of them are not on a working shift, we call them in order to ensure that food is not thrown away”*. FW from guests’ plates is mandatorily destined to separate collection, even if hoteliers are still skeptical towards it. In unit 2, managers and kitchen staff understand the difference between edible and inedible food and take actions following the national legislation. At the moment of disposal, they give priority to separate collection, then they provide the edible food to the staff and, if possible, use edible food to prepare other dishes. Regarding the inedible fractions, they are mainly used for compost. The authors interviewed also people working at food service (e.g. waiters and attendants), considering their observation skills. They judge buffet-service as more responsible of FW than à-la-carte one, since guests’ behavior is generally unsustainable towards the issue. The principal typologies of FW detected are fruits, vegetables and pastries. In addition, according to their perspective, Italian families with children are the less virtuous towards the issue, while old-aged people, foreign guests and business travelers the most virtuous ones. They also consider that an awareness campaign in the hotel would represent a good solution to mitigate FW. In this way, the hotel would inform guests about the consequences of FW stressing the necessity of pursuing a sustainable behaviour. Moreover, foodservice staff propose several actions to mitigate FW that can be adopted by the employees (e.g., depositing or freezing raw ingredients according to label specifications and level of freshness). Combining managers’ experience and waiters’ observations, the authors asked them to evaluate limits towards FW prevention/minimization and suggest possible solutions (even policies). In terms of limits, they criticize the lack of waste-audit and efficient separate collection, as well as insufficient communication with donation institution and local entities. Moreover, they complain the unsustainable behavior of a huge amount of guests and the lack of awareness/sensitization towards the issue. As suggestion, they propose: a) the implementation of an awareness plan within the unit; b) the introduction of policies which regulate the withdrawal of unconsumed food for human consumption and animal feed. Policies are still missing.

Discussions and conclusions

According to interview results, three critical steps of FW issue must be considered at hospitality level: a) control of guests’ attendance; b) communication and transparency with local markets and among department within the unit; c) purchase frequency and perishable food management. Forecasting the number of guests and their nationality seems to be fundamental to avoid FW at food service, as well as implementing transparency and communication outside the unit: an efficient communication between local fresh markets and hotels (or restaurants), and the creation of a preferential distribution channel between them, could avoid the production of FW at distribution stage, since fresh markets could easily sell perishable products at a cheaper price. Such communication must be implemented also between chefs, waiters and managers, since it has been demonstrated that managers who personally take care of the kitchen and are aware of FW issue, coordinating more than one department and knowing exactly how to prepare and to dispose food, are more likely to control and correct FW attitudes, converging towards more sustainable procedures in a shorter

time. Though, several obstacles should be removed, such as the lack of special software to calculate the “*number of guests-food required*” ratio, the lack in separate collection infrastructures, towards which some managers have declared to be skeptical, and the lack in awareness campaign addressed to guests. Some solutions have been proposed and could be deducted from interview results. Good practical examples are represented by the introduction of tasting plates, which allows guests – especially children – to taste small portions of food, since it is known that massive portions containing local food (usually not familiar to tourists) cause more waste. Other possible measures would be the reduction of the buffet room, since smaller areas are more likely to be controlled, or the implementation of specialized software to estimate better the quantities needed (currently carried out with rudimentary management systems). In terms of food leftovers, managers of the units have proposed the introduction of an online platform for donating food both for human consumption or for animals, and suggested the promotion of awareness campaign within each unit. Nowadays, as well known, the hospitality industry is facing a tremendous challenge due to COVID-19 pandemic: a huge numbers of hotels, restaurants and other venues, according to Government measures, have had to temporarily lock their businesses down with a sharp drop in the occupancy rate. Since people are cooking more at home increasing even more FW at households level, FAO has introduced new suggestions to minimize the issue in such critic times (e.g., “ask for smaller portions”, “love your leftovers”, “practice fifo: first in, first out”, “turn waste into compost”). Being the COVID-19 pandemic an economic, social and environmental issue, it could represent a fundamental watershed all around the world. Thus, taking advantage from such disaster, it will be possible to raise awareness on the previous unsustainable behaviours and start a new era of sustainability and consciousness, both at industrial and households level which could contribute to introduce managerial action and consumer behavior, as mentioned, capable of reducing FW generation. In conclusion, the hospitality sector has a significant opportunity to reduce the amount of FW it produces. In this context, some stakeholders in tourism started to take momentum and manage an action plan in order to mitigate the FW in their units and to implement more sustainable behavior. However, despite the lack of regulation, infrastructures, software and the delayed reaction of the European agencies, there have already been launched initiatives from the private sectors that help the industry to adopt measures with a high impact in terms of costs and environment.

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