

ANALYSIS OF FOOD WASTE MITIGATION STRATEGIES IN ROMANIAN RESTAURANTS

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Abstract

Food waste in restaurants (the HoReCa sector or hospitality industry) is a significant component of the global problem, with major economic and operational implications. At the European Union level, restaurants and food services generate approximately 12-16% of the total food waste.

Food waste systems from several sources, such as overproduction, poor inventory management, oversized portions, and food left uneaten by customers. This issue impacts the economy, the environment, and society, and restaurants can contribute to the solution through efficient resource management and by redistributing surplus food.

Similar to households, the food service sector is targeted by global sustainability goals. For example, the European Union has committed to reducing food waste per capita in retail, restaurants, and households by 30% by 2030. In this context, it is necessary to analyze the restaurant market, including the steps taken by Romanian restaurants in this area and the solutions found to mitigate this phenomenon.

Keywords: food waste, restaurants, HoReCa (Hotels, Restaurants, Catering), hospitality industry, mitigation strategies

JEL: Q180, Z310.

Sources of waste in restaurants are multiple, and the consequences are visible in the medium and long term, from the micro to the macro level. These can stem from cooking larger quantities of food than necessary, especially if the surplus cannot be redistributed, from the mismanagement of stocks, which leads to the expiration or spoilage of ingredients before they are used, or from the generous size of portions which can lead to unconsumed food on the plate, and the incomplete consumption of correctly cooked dishes generates leftovers that end up in the trash.

The concern of all parties involved in diminishing food waste is increasingly emphasized due to its impact both in the short and medium term, but also in the long term. Thus, regardless of the time horizon, we encounter several forms of impact in the market:

Economic impact through the wasting of food, which involves financial losses for restaurants and for the entire supply chain.

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Environmental impact through the production of wasted food that consumes resources such as water and energy, and its storage in landfills, contributes to pollution.

Social impact through the production of wasted food, while there are millions of people on the planet who do not have access to food. Reducing food waste could help redistribute the surplus to those in need.

According to a study by Edenred, HORA (The Employers' Association of Hotels and Restaurants in Romania), and Mastercard, conducted in 2022, 70% of food waste is associated with ingredients in the categories of fruits, vegetables, and meat, and prepared dishes represent 30%. 50% of food items that are about to expire are thrown in the trash, and over half of the restaurants in Romania have implemented measures to combat food waste, such as food donation, partnerships with platforms through which they sell remaining food at half price, or streamlining the management of raw resources.

Other specialists consider that the two major categories of food waste faced by restaurants are waste caused by food that did not end up being consumed because it expired or was the subject of human errors (the chef cooked a well-done steak for a customer who ordered one medium-rare) and waste caused by food left on the plate by the customer (estimates say this happens with 17% of a portion).

In the context of current unprecedented crises, with continuously rising inflation and an entire world under the sign of unpredictability, the most important is temperance. Not only from an economic perspective, but also from an ecological one, waste makes no sense. For the growth of a healthy business in public catering, it is essential to address the issue of waste, both from the perspective of education and the change of mentality. For the success of these endeavors, the support of the authorities is also needed to identify ways in which HoReCa operators (hospitality industry operators), instead of throwing food away, can redirect it to NGOs. For many operators, the food surplus represents an extra expense, but also a risk of infection if it is not destroyed properly.

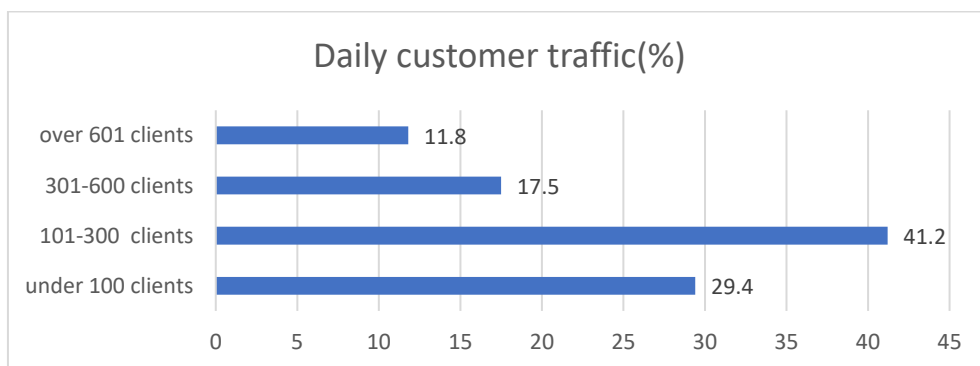
Food waste is one of the greatest challenges for restaurants. This represents a source of loss for businesses, as well as for the personal budget, and affects even the national economy. However, addressed correctly, both from the point of view of operator management and at the legislative level, food waste can be transformed, from a major vulnerability, into a standardized circuit, with multiple beneficiaries. One of the most frequently used methods of reducing food waste is the correct reporting between product demand and the purchase of raw materials. In other words, restaurants take into account the flow of customers in certain periods, to calculate the necessary raw material, so as to avoid the surplus that leads, most often, to a larger quantity of discarded food.

Starting from these analyses, a study was conducted on a sample of 72 public catering units. The field research was carried out with the help of a

questionnaire, in the online environment, by distributing it to the staff of public catering units in Romania, located in different positions, from entry level to top management. The units were of the type of classic restaurants (82.3%), fast food type (5.9%), but also of the cafe or teahouse type (5.9%), and catering units with deliveries (5.9%). Regarding the form of organization of the unit, 64.7% were responses from units operating in hotels, and the remaining 35.3% from independent units.

For the most accurate radiography of the sample, the study identified that 58.8% of those interviewed carried out their activity in units with over 5 years of activity in the HoReCa field, 17.5% of the businesses had between 3 and 5 years of activity, 17.7% under 3 years of activity, and only 5.9% had over 10 years of activity.

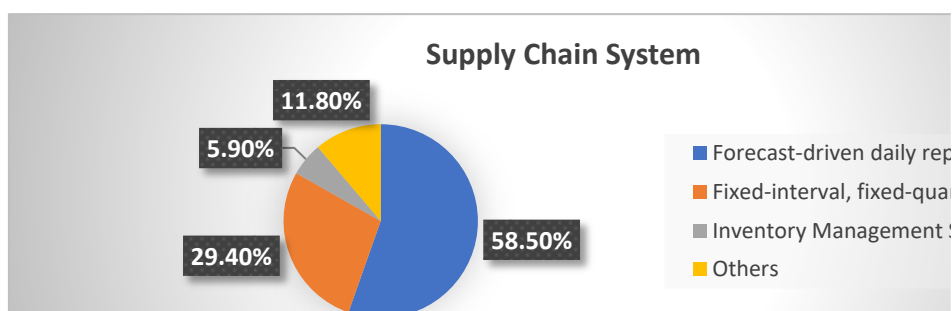
Regarding the volume of the business, at the question concerning the number of customers per day, the answers indicated in the highest weight small and medium-sized businesses, 41.2% having between 100 and 300 customers per day and 29.4% receiving up to 100 customers daily, while 17.6% responded that between 300 and 600 customers enter the restaurant door, and only 11.8% have large-scale businesses with over 600 daily customers.



Source: Elaborated by the author (based on the survey results)

The study indicated that in approximately half of the units, the average budgets spent by a customer in the restaurant fall within the range of 101–150 RON (52.9%), and only in 11.8% of them do customers spend over 151 RON per meal, while in 35% (in total), customers consume less than 100 RON. In delivery-based catering units and fast-food outlets, expenditures are also below 75 RON per order (17.7%).

58.8% of the restaurants participating in the interview are positioned in the urban center or even the historical center, whereas only 17.6% are located on the urban periphery.



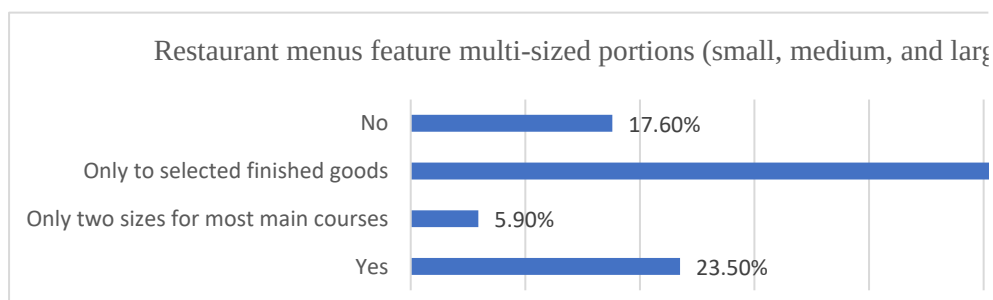
Source: Elaborated by the author (based on the survey results)

Regardless of the restaurant's profile, to the question regarding the regular verification of stocks to avoid product expiration, all respondents (100%) answered affirmatively, which indicates an intense concern regarding food safety. The FIFO (First In, First Out) method in inventory management ensures that the oldest stock is sold or utilized first, which minimizes obsolescence and waste, especially for perishable goods [13]. Throughout the study, it was identified that the FIFO (First In, First Out) principle is regularly used during storage for all raw materials by 88.2%, while 11.8% responded that they do not apply it to all products.

To the question regarding collaboration with local suppliers to reduce large quantities of packaging and diminish losses, 64.7% answered "yes" and 25.3% answered that they resort to this only for certain raw materials.

Regarding the adaptation of the menu to efficiently use ingredients (for example, the same ingredient in multiple dishes), 52.9% responded "yes," 41.2% responded "partially," and 5.9% responded negatively.

Following the present study, it emerged that Romanian restaurants also use the technique of including different portion sizes in the menu (small/normal/large, or at least, normal and large) to reduce food waste.



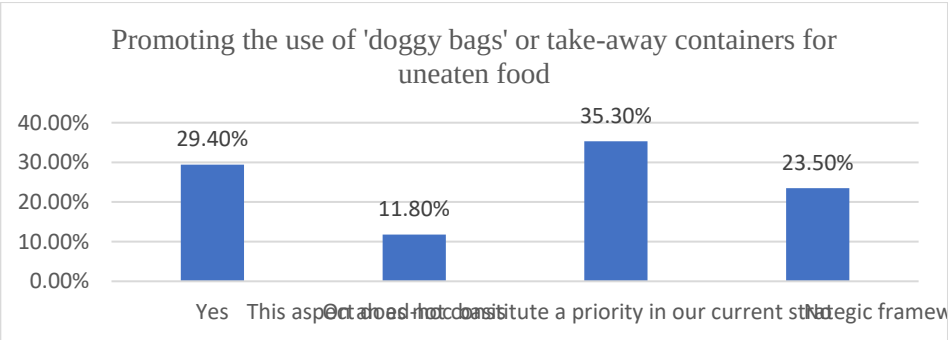
Source: Elaborated by the author (based on the survey results)

Another method for diminishing food waste is the technique of creatively reusing safe surplus ingredients (e.g., soups, sauces, special menus). Thus, the

restaurants were asked if they utilize these practices, and the responses were largely positive: 52.9% answered "yes," 29.5% stated they use this technique but only occasionally, and 17% do not utilize it.

Portion control systems in the kitchen are a procedure implemented in the vast majority of restaurants worldwide. In the case of the surveyed restaurants, 82.4% of these units have fully implemented this system, while only 17.6% have partially implemented it.

As the consumerist era wanes and the era of responsibility and conservation becomes apparent, restaurants encourage customers to take remaining food to go as an alternative for diminishing food waste.



Source: Elaborated by the author (based on the survey results)

Responses regarding the promotion and encouragement of customers to take home unconsumed food from the restaurant indicate a lack of concern among Romanian establishments in this regard, as only 29.4% propose this to customers. Furthermore, 23.5% do not recommend it, and 35.5% state that it is not a strategic priority. This suggests that restaurants may prefer to generate more waste from unconsumed food rather than encouraging customers to take it home. This fact may be attributed to the additional expenses incurred by restaurants, specifically for containers, bags, and other take-away equipment.

Another procedure, practiced by 47.1% of the interviewed units, consists of informing restaurant customers about portioning options to avoid food waste. At the same time, 35.3% do not engage in this practice. Monitoring the amount of food returned from the dining area to adjust the menu or portions is a known operational procedure practiced by 58.8% of the restaurants participating in the study. In contrast, 17.6% do so only occasionally, and 23.5% do not monitor it at all.

Worldwide, gastronomy—both on a large and small scale—is adapting to the trend of doing business in the spirit of sustainability and waste elimination. Waste, specifically elements that cannot constitute a dish on their own, is slowly but surely becoming raw material. This trend is not only visible in gastronomy;

an extremely important aspect is that if restaurants focus on reducing waste within their own units, they can contribute to solving the global problem of food waste. In this way, restaurants will gain significant points with customers who are interested in these issues and social responsibility [11]. In this context, 70.6% of the respondents in the present study measure the quantities of food waste generated over a period of time (weekly/monthly).

The global recycling target for packaging waste will increase to 70% by 2030, and by June 2026, 26 new recycling plants are expected to be constructed [10]. Encouraging customers to recycle is another modern method of waste reduction. Customers are thus rewarded for recycling, a method increasingly adopted by coffee shop and restaurant owners in Romania. Consequently, many customers have begun purchasing their favorite coffee, lunch, or dinner in containers brought from home, thereby reducing not only packaging waste but also expenditures. For example, for a coffee purchased directly in one's own thermos, customers may receive a price reduction of 1 RON. In restaurants, customers most often bring small buckets, glass containers, or cardboard containers. Modern customers seek to minimize packaging consumption.

To maintain a responsible environmental attitude, many restaurants utilize food waste separation systems. Romania, as part of the European Union, already applies waste sorting norms in HoReCa activities. Nevertheless, only 82.4% of those interviewed apply them fully, while 17.6% admit to applying them partially. The fact that only 23.5% of units donate safe food products to charitable organizations and 52.9% do not do so may indicate either a legislative gap regarding distribution and food safety responsibilities or additional expenses related to human resources and transport logistics for these donations.

Periodic training and education of staff in food waste management are major concerns for HoReCa investors as well. According to the present study, 70.6% of restaurants have implemented food waste management and train their employees accordingly, while in 11.8% of units, it is in the process of implementation. Regarding a position specifically dedicated to a food waste monitoring officer, the situation differs; only 47.1% of units allocate budgets for such a post. In 52.9% of units, they are either in the process of appointing an officer or do not have this position.

Regarding quality, environmental, and food safety management certifications, 82.4% of the units hold various certifications. Regarding the application of legislative regulations on reducing food waste according to Law no. 217/2016, 41.2% responded unequivocally that they apply it, and the same percentage responded that they are in the process of application; thus, the majority (82.4%) of the Romanian HoReCa industry complies with the legislation and aligns with European regulations, indicating responsibility and professionalism.

Based on the present qualitative and quantitative analysis, the following measures can be deduced for implementation to diminish food waste in Romanian restaurants:

- Avoiding large stocks – achieved by weekly quantitative and qualitative verification of fresh ingredients and adjusting procurement lists based on this inventory.
- Correct food storage – using the FIFO (first in, first out) method when storing food in refrigerators or room-temperature storage ensures that older stock is at the front and used before it spoils.
- Focusing on seasonal ingredients – while a constantly changing menu may seem harder to manage initially, it is worth attempting for its long-term results.
- Regularly rethinking the menu – identifying unpopular dishes and replacing them with creations made from ingredients more appreciated by customers. This ensures a higher turnover and, consequently, less waste. The era of bulky and extremely diverse menus has passed.
- Utilizing weekly menus and special offers – challenging the kitchen team to a creative exercise (for example, by using ingredients with a shorter shelf life). Vegetables that have lost their vitality can become excellent purees or cream soups, and older bread can be used for French toast: one of the most beloved childhood desserts.
- Adjusting portion sizes – as customers tend to order more than they can eat, either due to miscalculating their hunger or a desire to taste as many dishes as possible. Chefs can assist by balancing portions, perhaps consulting a nutrition technician. Thus, guests can enjoy an appetizer, a main course, and maybe a dessert.
- Installing a reservation system – helping restaurants know the number of guests in advance, which assists in correct stock management and loss avoidance.
- Offering take-away packaging – although many customers are embarrassed to ask, they may appreciate the initiative if offered at the end of the meal. This is a win-win situation, as restaurants reduce waste and customers leave with a fresh snack for later.
- Organizing staff training – leading to responsible employee behavior. Annual training on food waste and recycling (the reduction of single-use plastic is also an inexhaustible topic) can encourage employees to take responsibility and propose better ideas for stock management or creating zero-waste plates.
- Donating remaining meals – which can be achieved with increasing success, as even with the best inventory and reservation management, restaurants will still have cooked food left at the end of the day. Fortunately, mobile applications have begun to appear in Romania, such as bonapp [4], which allows for listing remaining food at half price. Although Romania has had legislation

regarding the reduction of food waste since 2016, the application norms do not provide a clear procedure through which restaurants can donate cooked food to social NGO beneficiaries [12].

Conclusions

In conclusion, food waste represents a form of environmental aggression, and its mitigation can improve human quality of life, targeting involvement in responsible development, well-being, and the progress of local communities. The present research highlights that the Romanian HoReCa sector is in an advanced process of aligning with European sustainability standards; however, this process is marked by an asymmetry between internal operational efficiency and external social responsibility. The collected data reveal remarkable discipline in resource management at the kitchen level: the universal use of stock verification systems (100%) and the quasi-generalized adoption of the FIFO principle (88.2%) indicate that economic operators perceive waste reduction primarily as a strategy for cost optimization and food safety assurance.

The study underscores, however, the existence of structural barriers in the post-preparation stage. Although 82.4% of units apply portion control systems, a reluctance is observed in interacting with the final consumer: only 29.4% of restaurants actively encourage taking unconsumed food to go, with the remainder citing strategic barriers or additional logistical costs. This fracture in the waste-combating chain is compounded by a low rate of donations to charitable organizations (23.5%), suggesting the need for legislative interventions to simplify the procedures for redistributing food surplus that is safe for consumption.

From an academic perspective, the results indicate that sustainability in the Romanian hospitality industry is evolving from a voluntary action toward a strategic necessity imposed by inflation and regulations (such as Law no. 217/2016). Transforming food waste from an economic vulnerability into a competitive advantage depends on the capacity of managers to integrate staff education (already implemented in 70.6% of units) with innovative circular economy solutions, such as the creative reuse of ingredients or the digitalization of waste monitoring. Ultimately, the success of these endeavors is conditioned by a functional public-private partnership capable of transforming food surplus from a logistical expense into a valuable social resource.

References

1. <https://www.de-corina.ro/2022/01/22/unde-are-loc-cea-mai-mare-risipa-alimentara-horeca-retail-in-casele-noastre/>
2. <https://economy.ro/doar-55-din-restaurantele-din-romania-au-implementat-masuri-pentru-a-reduce-risipa-alimentara-cele-mai-aruncate-alimente-fructe-legume-carne.html>

3. <https://www.ceccarbusinessmagazine.ro/studiu-73-dintre-restaurantele-din-romania-s-e-confrunta-cu-risipa-alimentara/a/Sx3QIszOMIvcJjpyhqfK>
4. <https://bonapp.eco/blog/2024/05/14/ospitalitate-sustenabila-in-cativa-pasi/>
5. <https://www.avikofoodservice.ro/blog/gestionarea-creativa-deseurilor-din-restaurant>
6. <chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://hanuberarilor.ro/wp-content/uploads/2024/05/14.PLAN-City-Grill-Casa-Soare-2024-3.pdf>
7. <https://evamar.ro/ce-este-colectarea-selectiva-in-horeca-si-cum-se-realizeaza-corect/>
8. <https://universulalimentar.ro/2024/12/07/ghid-pentru-reutilizarea-resurselor-in-restaurante/>
9. <https://www.europarl.europa.eu/news/ro/press-room/20240419IPR20589/noi-normele-pentru-a-reduce-refolosi-si-recicla-ambalajele>
10. https://www.digi24.ro/stiri/sci-tech/natura-si-mediu/reciclare-cu-recompensa-in-cafelele-si-restaurantele-din-romania-cum-sunt-incurajati-clientii-sa-reduca-risipa-de-ambalaje-3120523?__grsc=cookieIsUndef0&__grts=58706906&__grua=2204ee63bef2f351470a66ffe1bb020e&__grn=1
11. <https://www.avikofoodservice.ro/blog/gestionarea-creativa-deseurilor-din-restaurant>
12. <https://www.oetker-professional.ro/noutati/cum-putem-gestiona-mai-eficient-risipa-alimentara-in-restaurante>
13. <https://www.slimstock.com/ro/blog/metoda-fifo/>
14. <https://horaromania.org/>