

Determinants and Impacts of Practices Adopted in Restaurants Related to Food Loss and Waste: A Systematic Review

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Acknowledgements:

This study was financed in part by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - Brasil (CAPES) - Finance Code 001

Cite as:

Silva Alessandro, DE ALMEIDA LUCIANA (2022), Determinants and Impacts of Practices Adopted in Restaurants Related to Food Loss and Waste: A Systematic Review. *Proceedings of the European Marketing Academy*, 51st, (108178)

Paper from the 51st Annual EMAC Conference, Budapest, May 24-27, 2022



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Abstract:

Research on Food Loss and Waste (FLW) has been focused on the causes and quantification of waste, but there are few studies related to the practices adopted for its reduction. Restaurants, as part of the food chain, have their motivating factors and difficulties in adopting such practices and the institutional environment exerts a strong influence on this implementation. This article aims to identify the determinants for the practices adopted by restaurants to reduce Food Loss and Waste through a systematic review of the literature. Also, we identified the impacts of such practices. Results show that FLW practices in restaurants have an economic and environmental impact, and their actions depend on consumer behavior, on the actions of employees of the establishments and, on adequate public policies.

Keywords: Food Loss and Waste, Restaurant, Practices

Track: Retailing & Omni-Channel Management

1. Introduction

It is important to understand the determining factors for restaurants to take measures to reduce FLW. The food service industry contributes significantly to global food waste. Food service operations represent, on average, approximately 12% of wasted food in the entire food supply chain in the European Union (Fusions, 2016). Therefore, identifying how practices to reduce FLW in restaurants occurs is of extreme relevance.

The topic of reducing FLW has been extensively researched, but with a focus on specific points, such as the quantification and causes of waste, with little discussion on the practices implemented to reduce FLW (De Moraes *et al.*, 2020). Particularly in restaurants, waste reaches up to 32.9% (Ribeiro, 2020). This research analyses the practices for FLW reduction, verifying their barriers and the role of public institutions.

It is estimated that one in seven people on the planet does not have access to the necessary number of calories in their daily diet (Godfray *et al.*, 2010), while approximately one-third of the world's food is lost or wasted over time along the food chain (FAO, 2021). One of the UN's goals is, by 2030, to halve global food waste per capita in retail and consumer, in addition to food losses along production and supply chains, including post-harvest losses and waste by consumers (Johnston, 2016).

According to Thyberg and Tonjes (2016), making restaurants and food systems more sustainable is essential and urgent, achievements in all food systems are needed to moderate demand, produce more food, improve governance, and reduce food waste.

2. Method

It is necessary to transparently describe the review design process and the literature collection method (Snyder, 2019). Thus, it is important to define a clear protocol for the article selection process.

2.1 Definition of databases

The Scopus database was used to identify relevant academic research. The choice of this database as a source of scientific literature is due to its comprehensive coverage and rigorous criteria for indexing articles. Webster and Watson (2002) emphasize that a complete review must cover the relevant literature on the topic and cannot be limited to specific scientific journals.

2.2 Research strategy and data collection

For Paul and Criado (2020), the definition of keywords used in the research strategy must be carried out according to the researcher's knowledge, judgment, and experience.

For this research, the expressions 'food waste' and 'food loss' were used to identify the articles that deal with the themes of food waste and loss. For this survey, any of the terms were considered valid and the search string used was ("food wast*" OR "food loss*"). The use of the asterisk is for variations of the term, such as "food waste" or "food wasting", to be considered, thus allowing a broader coverage.

In order to delimit articles that specifically referred to the adopted practices, the same strategy was followed, using the string ("practic*" OR "polic*" OR "mitig*" OR "initiav*"). Additionally, the selection was delimited with the string ("restaurant*"), selecting only articles that had the term restaurant and word variants.

All terms were searched considering the title, abstract, and keywords, given that these fields present the main terms of the articles. The period adopted was of research published from the year 2012 until November 2, 2021, the date the survey was carried out, thus covering the period of 10 years, which is considered the appropriate time to analyze publications on a given topic (Paul; Criado, 2020; Vouga; Amatucci, 2015). Aiming to search only for works that have undergone double-blind review, the search was restricted to only research published in journals.

Thus, the complete search string adopted was (TITLE-ABS-KEY ("food wast*" OR "food los*" OR "FLW") AND TITLE-ABS-KEY ("restaurant*") AND TITLE-ABS- KEY ("practic*" OR "polic*" OR "mitig*" OR "initiav*")) AND PUBYEAR > 2011 AND (LIMIT-TO (SRCTYPE , "j")).

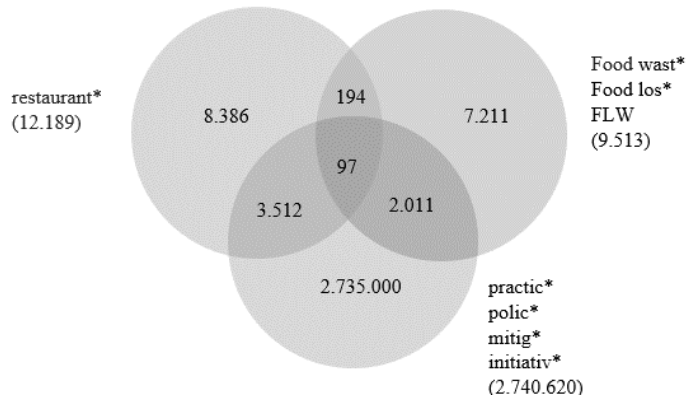
2.3 Analysis and interpretation of data

To meet the objectives of this research, the selected articles were imported to the Atlas.ti tool, where the analysis was performed. According to Lewis (2017), Atlas.ti is of great help in systematic reviews to codify themes, determine how studies are related, and synthesize results.

3. Results

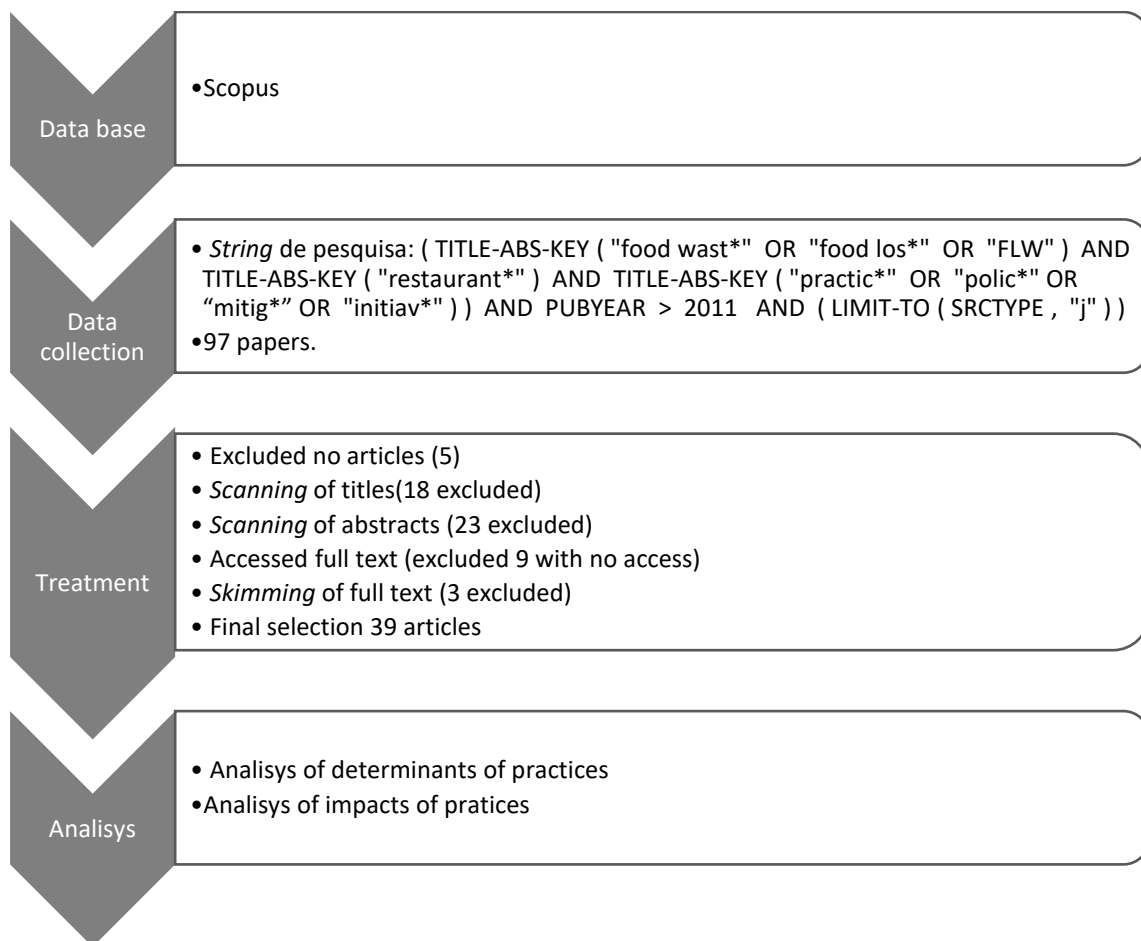
A total of 97 articles were selected considering all the previous criteria, as seen in Figure 1.

Figure 1. Articles selection



Then a series of criteria were used in other to select the final set of articles. A content analysis was then applied.

Figure 2. Step by step of final selection and analysis



4. Discussion

According to the literature review, Food Loss and Waste practices in restaurants have an economic and environmental impact, and their actions depend on consumer behavior, on the actions of employees of the establishments, and adequate public policies.

Food waste represents a substantial economic loss of approximately 23% of the value of the food purchased, with the largest fraction of this loss occurring during the process of preparing the dishes (Papargyropoulou et al., 2019). The FLW reduction represents savings for restaurants and according to a survey carried out by Kallbekken & Sælen (2013), the savings can reach the order of nine dollars per kilogram of food whose waste is avoided. The economic, environmental and social impacts of FLW are recognized at the highest levels of global governance (Papargyropoulou et al., 2019)

The environmental impacts of FLW have been of great importance. People around the world are paying increasing attention to health, social, environmental and ethical issues (Erälinna & Szymoniuk, 2021). The problem of food waste is receiving increasing recognition due to its significant negative socioeconomic and environmental impacts (Filimonau, Todorova, et al., 2020). As highlighted by Camilleri (2021), wasted food results in negative effects on the environment.

Part of FLW is due to consumer behavior. According to Filimonau et al., (2020), irresponsible consumer behavior represents one of the key causes of food waste in restaurants. Consumer food waste in restaurants is one of the crucial sources of waste generated ‘outside the home’, and the majority of food waste comes from the food service sector, which highlights an important opportunity to change consumer behavior (Huang & Tseng, 2020).

Restaurant employees also have their share of responsibility. Neglect and indifference of restaurant employees regarding waste were observed, and some incentives should be offered to minimize it (Bharucha, 2018). Researchers Deliberador et al. (2021) suggest regular training for restaurant employees on correct preparation methods, thus minimizing avoidable and potentially avoidable waste.

Finally, public policies must be promoted to reduce Food Loss and Waste. The government should provide free specialized training to restaurant managers and employees on how to mitigate food waste that occurs in kitchens (Filimonau, Zhang, et al., 2020). Policies and regulations can also advocate for the development of voluntary and even mandatory strategies aimed at reducing and/or preventing food waste (Chalakov et al., 2018).

5. Conclusion

We can observe that for FLW reduction practices to be effectively adopted by restaurants, it is essential to observe their employees, i.e., the actions of the restaurant staff themselves have an impact on the adopted practices.

Likewise, the behavior of consumers plays an important role, and it is necessary to take actions for their education and guidance regarding food waste.

Public institutions are not left out, playing an active role so that restaurants can take the necessary actions to reduce FLW.

With these actions being taken, we verify that we will have positive impacts both from an economic and ecological point of view, that means a great impact on society in general.

This study used the methodology of systematic literature review, and we suggest for further research that a quantitative study be carried out with these findings to measure the strength of each of the specific determinants.

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