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DETERMINANTS OF FOOD WASTE AMONG CONSUMERS: RESULTS FROM A CROSS-SECTIONAL STUDY

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Abstract

This study investigates consumer behavior in relation to food waste based on a questionnaire administered to 273 respondents from both urban and rural areas. The survey examined meal and shopping planning habits, food purchasing criteria, management of household food supplies, and practices related to preserving and reusing leftovers. It also assessed the frequency of discarding perishable foods, purchasing behavior during holiday periods, awareness of environmental impacts, and willingness to adopt preventive measures. The findings indicate that meal planning and regular grocery shopping are common practices, and food purchases are mainly driven by household needs. Many consumers report using food already available at home before buying new products. However, behaviors such as repurposing leftovers and consistently consuming foods close to their expiration date are less frequently practiced. Although most respondents consider reducing food waste important and express concern about the issue, preventive behaviors are applied inconsistently. The results highlight a gap between consumer attitudes and actual practices, emphasizing the need for educational initiatives and accessible information to promote sustainable consumption and reduce household food waste.

Key words: *environmental awareness, food preservation, food purchasing habits, household food management, sustainable consumption.*

INTRODUCTION

Food waste is a pressing global issue, leading to substantial economic losses while placing heavy demands on natural resources, food systems, and the environment. Globally, about one-third of all food produced for human consumption is lost or wasted, with households accounting for a significant share (FAO, 2013). The impacts of food waste extend beyond environmental consequences (e.g., greenhouse gas emissions, water use, and land degradation) to ethical and social concerns, including food insecurity and unequal access to resources (Papargyropoulou et al., 2014; Kibler et al., 2018).

In recent years, research has increasingly focused on food waste at the household level, where consumer behavior plays a critical role (Barnisca et al., 2024; Simões et al., 2022). Evidence indicates that food waste is not simply the result of poor storage or technical limitations, but arises from the complex interplay of planning habits, purchasing decisions, food management practices, and individual attitudes (Abdelradi, 2018; Aktas et al., 2018).

Factors such as meal planning, use of shopping lists, shopping frequency, and responses to promotions have been shown to influence the likelihood of over-purchasing and subsequent food disposal (Farr-Wharton et al., 2014; McCarthy & Liu, 2017; Ananda et al., 2021).

Household food management practices, particularly those related to leftover handling and food preservation, represent another important dimension of food waste generation. Previous studies highlight that ineffective leftover management and low levels of food

reutilization significantly contribute to avoidable waste (Aloysius et al., 2023; Dyen et al., 2021). Although consumers often express intentions to reduce waste, behaviors such as transforming leftovers into new meals or consuming foods close to their expiration date are inconsistently applied (Aydin & Yildirim, 2021; Farr-Wharton et al., 2014). This discrepancy points to a persistent attitude - behavior gap in household food waste reduction efforts.

Attitudes, moral norms, and awareness of environmental impacts play an important role in shaping food waste behaviors (Adams & Raisborough, 2010). Studies show that people who view food waste as morally wrong or harmful to the environment tend to generate less waste (Misiak et al., 2020; Ang et al., 2021). Yet, awareness and concern vary widely across populations, influenced by socio-demographic factors, cultural practices, and access to information (Hengi & House, 2022; Phasha et al., 2020). Social occasions, such as holidays and gatherings, are also linked to higher food waste, driven by social norms, hospitality expectations, and perceived moral obligations to provide abundant food (Aleshaiwi, 2023; Cavazza et al., 2011; Adams & Raisborough, 2010).

In Romania, recent research has highlighted the influence of socio-demographic characteristics (Defta et al., 2025), consumer perceptions, and communication strategies on food-related behaviors, including responses to promotions and sustainable consumption choices (Barbu et al., 2023; Defta et al., 2024). Despite this, there is still limited empirical evidence on how planning, purchasing, food management, and attitudinal factors interact to affect household food waste, especially from a consumer-focused perspective (Aiello et al., 2014).

Against this background, the present study provides new insights based on a cross-sectional survey of urban and rural consumers. It has two main objectives: (1) to analyze consumers' food planning, purchasing, and household management behaviors to identify practices that lead to food waste, and (2) to assess their awareness, attitudes, and preventive measures regarding food waste reduction. By examining both behavior and attitudes, this study aims to deepen our understanding of the drivers of household food waste and to inform targeted educational campaigns and policy measures that promote sustainable consumption

MATERIALS AND METHODS

This study employed a quantitative, cross-sectional research design to examine the determinants of food waste among consumers. This approach was selected to capture self-reported behaviors, attitudes, and practices related to food planning, purchasing, and household food management at a single point in time. The cross-sectional design enables the identification of prevailing patterns and associations between consumer behaviors and food waste-related outcomes, in line with the study objectives.

Data were collected using a structured questionnaire developed specifically for this research. The questionnaire was designed based on relevant literature on household food waste and consumer behavior and consisted of three main sections:

a. socio-demographic characteristics of respondents;

b. consumer behaviors related to food planning, purchasing, and household food management;

c. attitudes, awareness, and preventive measures regarding food waste. The instrument included both Likert-scale items and multiple-choice questions to ensure comprehensive coverage of the studied constructs.

The study sample comprised 273 respondents from both urban and rural areas. Participants were selected using a non-probabilistic sampling approach, and data were collected through voluntary participation. This sampling strategy allowed for the inclusion of diverse consumer profiles, facilitating the exploration of behavioral differences across socio-demographic contexts (Table 1).

Table 1. Distribution of respondents by socio-demographic characteristics

Characteristics	Share in the Sample	N	Ratio (%)
Gender	Female	175	64.1
	Male	98	35.9
Age (years)	18–30	105	38.5
	31–40	68	24.9
	41-50	46	16.8
	51-60	31	11.4
	Over 60	23	8.4
Education level	High school education (ongoing/completed)	16	5.9
	Post-secondary education (ongoing/completed)	5	1.8
	University education (ongoing)	134	49.1
	University education (completed)	97	35.5
	Postgraduate education (ongoing/completed)	21	7.7
Household monthly net income (RON)	Under 1500	82	30.1
	1501–3000	77	28.2
	3001–5000	58	21.2
	5001–5500	32	11.7
	5001–8000	16	5.9
	Over 8000	8	2.9
Residence	Urban	146	53.5
	Rural	127	46.5

Data Analysis

Collected data were coded and processed using Microsoft Excel. The analysis was conducted using descriptive statistical methods, including frequency distributions and percentage calculations. The results were subsequently presented in the form of tables and graphical representations to facilitate interpretation and to support the discussion of key findings in relation to the research objectives.

RESULTS AND DISCUSSIONS

Identifying the factors that drive food waste among consumers is essential given the substantial economic, social, and environmental implications of this phenomenon

Objective 1. To analyze consumers' food planning, purchasing, and household food management behaviors in order to identify practices that contribute to food waste.

Specific objectives and associated items:

O1.1. Planning and purchasing behaviors

Items:

a. How often do you plan what you are going to cook before going shopping?

The results show that approximately 45.4% of respondents always plan what they are going to cook before shopping, while 31.9% do so most of the time. In contrast, 19.4% report planning rarely and 3.3% never plan their meals in advance. These proportions indicate that although meal planning is common among consumers, a segment of the population still engages in limited planning, which may contribute to higher levels of food waste (Figure 1).

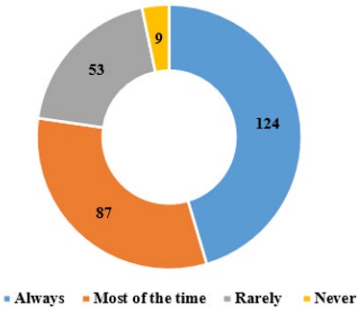

Figure 1. Frequency of meal planning prior to grocery shopping

b. When purchasing food, how often do you use a shopping list?

The results indicate that approximately 24.9% of respondents always use a shopping list when purchasing food, while 53.5% do so sometimes. In comparison, 12.5% report using a list rarely, and 9.2% never rely on one. These proportions suggest that although more than half of consumers use shopping lists occasionally, consistent use is less common, which may influence the likelihood of unplanned purchases and potential food waste (Figure 2).

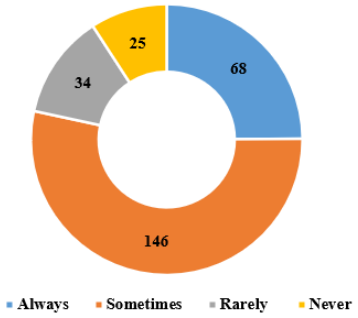

Figure 2. Frequency of shopping list use during food purchases

c. How do you decide which foods to buy?

The results show that 53.5% of respondents decide which foods to buy based on household needs, while 15.8% rely on discounts and promotions. Additionally, 21.6% make decisions according to the recipes they plan to prepare, and 9.2% follow other criteria. This indicates that practical household requirements are the primary factor guiding food purchase decisions (Figure 3).

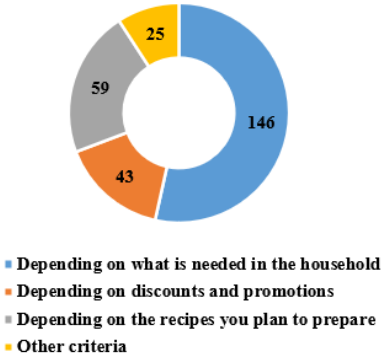

Figure 3. Distribution of respondents according to food purchase decision criteria

d. How often do you go grocery shopping?

The results indicate that grocery shopping is predominantly a frequent activity, with approximately 81% of respondents shopping once a week or more often. This high frequency suggests that consumers tend to restock their households regularly, which may help maintain food freshness but can also increase the risk of over-purchasing if shopping is not well planned (Figure 4).

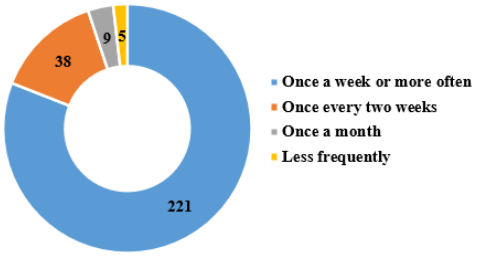

Figure 4. Distribution of respondents by grocery shopping frequency

e. How often do you purchase food products during holidays?

The findings indicate that 54.3% of respondents maintain their usual frequency of food purchases during holidays, while 45.3% report buying more than usual. A small minority, 5%, purchase less than usual. These results suggest that holiday periods are associated with either sustained or increased food purchasing, reflecting heightened consumption needs or festive behaviors (Figure 5).

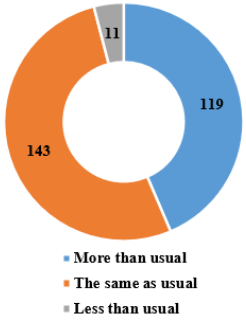

Figure 5. Frequency of food purchasing during holidays

O1.2. Household food management and handling of leftovers

a. How often do you use the food you already have at home before buying new items?

The results show that 55.3% of respondents use the food they already have at home before purchasing new items most of the time, while 35.9% always do so. Only a small proportion use existing food rarely (6.2%) or never (2.6%). This indicates that the majority of consumers make a conscious effort to utilize available food, which may help reduce household food waste (Figure 6).

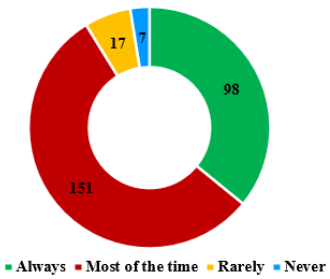

Figure 6. Distribution of respondents by frequency of using food already available at home prior to new purchases

b. What measures do you take to preserve fresh food?

The results indicate that 46.5% of respondents use airtight containers, 37.4% freeze food, 7% label and date items for proper rotation, and 9.1% apply other measures. This suggests that the majority prioritize practical methods to extend the shelf life of fresh food (Figure 7).

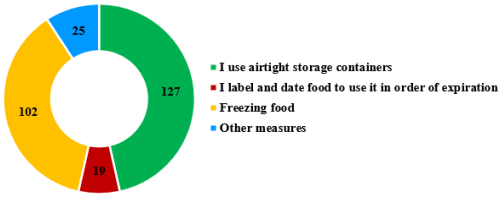

Figure 7. Distribution of respondents according to fresh food preservation practices

c. What do you do with the food after consuming the first portion?

The results show that most respondents keep leftovers for later meals (51.3% always, 34.9% often). Freezing is less common, with the majority doing it sometimes (55.3%). Sharing leftovers is done sometimes by most (49.4%), while discarding food is infrequent, with most respondents throwing it away sometimes (46.9%) or never (35.6%). This suggests a general tendency to preserve or reuse food rather than discard it (Figure 8).

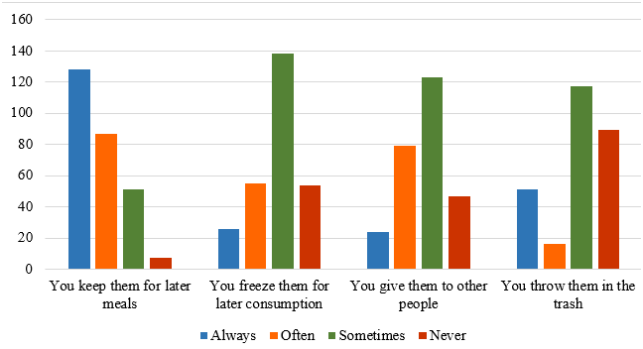

Figure 8. Distribution of respondents by practices related to leftover food management

d. How often do you try to transform leftovers into new dishes?

The results indicate that most respondents transform leftovers into new dishes infrequently, with 39.9% doing so rarely and 22.3% never.

Only a minority consistently repurpose leftovers, suggesting limited adoption of this food-saving practice (Figure 9).

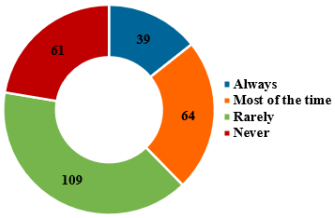

Figure 9. Frequency of transforming leftovers into new dishes

e. How often do you consume foods that are close to their expiration date?

The results show that the majority of respondents consume foods close to their expiration date at least occasionally, with 48.4% doing so sometimes and 22.3% always. A smaller proportion consumes such foods rarely (31.5%) or never (2.7%), indicating a moderate willingness among consumers to use products before they expire (Figure 10).

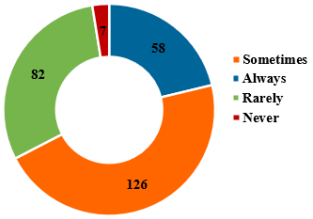

Figure 10. Frequency of consuming foods close to their expiration date

Objective 2. To assess consumers' level of awareness and attitudes toward food waste, as well as the preventive measures they adopt to reduce it.

Specific objectives and associated items: awareness, attitudes, and information sources

Items:

a. How important is it for you to reduce food waste?

The findings indicate that most respondents consider reducing food waste to be important, with 48.7% rating it as very important and 35.5% as moderately important. Only a small proportion view it as not very important (13.9%) or not important at all (1.8%), reflecting a generally high level of concern for minimizing food waste (Figure 11).

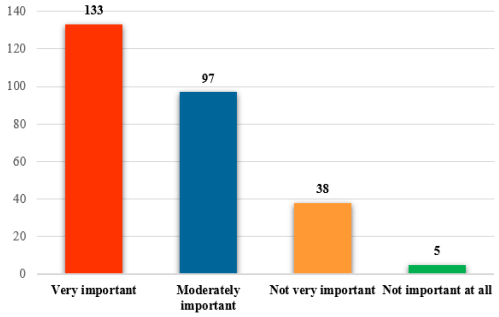

Figure 11. Importance of reducing food waste

b. How well-informed are you about the negative impact of food waste on the environment?

The data indicate that while a substantial proportion of respondents (50.4%) consider themselves moderately informed about the environmental impact of food waste, only a minority (24.2%) perceive themselves as very well-informed. Moreover, nearly one-quarter (25.2%) report being slightly or not informed at all. These findings suggest that, although awareness is present, there remains significant potential to enhance consumer knowledge regarding the ecological consequences of food waste, which could facilitate the adoption of more sustainable practices (Figure 12).

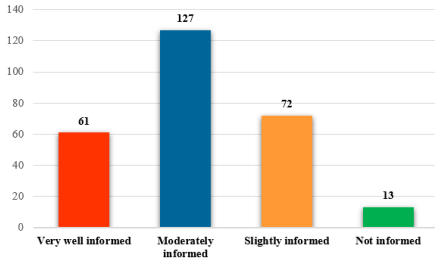

Figure 12. Distribution of respondents by level of awareness of the environmental impact of food waste

c. How concerned are you about food waste?

The findings indicate that the majority of respondents express concern about food waste, with 50.9% being moderately concerned and 23.3% very concerned. A smaller proportion are indifferent (9.0%) or have not considered this issue (4.2%). These results suggest that while most consumers recognize food waste as an important issue, there is variability in the intensity of concern, highlighting the need for targeted awareness initiatives to further engage less concerned individuals (Figure 13).

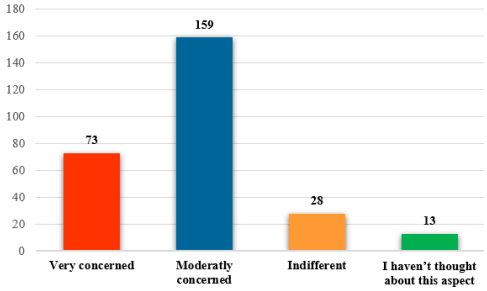

Figure 13. Distribution of respondents by level of concern about food waste.

The findings of this study reinforce the central role of consumer behavior in shaping household food waste outcomes (Silvennoinen et al. 2015). Consistent with previous research, the results indicate that planning practices, food management behaviors, and attitudes toward food waste are key determinants of waste generation at the household level (Abdelradi, 2018; Aktas et al., 2018, Vittuari et al. 2023). Although most respondents report a high level of concern regarding food waste and recognize the importance of reducing it, preventive behaviors - such as systematic meal planning, repurposing leftovers, or consuming near-expiration foods - are not uniformly adopted. This discrepancy confirms the persistence of the attitude - behavior gap identified in earlier studies, suggesting that awareness alone is insufficient to drive consistent waste-reducing practices (Aydin & Yildirim, 2021; Misiak et al., 2023).

From a behavioral perspective, the results highlight the importance of habitual actions embedded in everyday food - related routines (Silvennoinen et al., 2015). Frequent grocery shopping, occasional reliance on shopping lists, and limited transformation of leftovers into new meals may unintentionally increase the risk of over-purchasing and food disposal, especially during high - consumption periods such as holidays. Similar patterns have been documented in the literature, where social norms, convenience, and time constraints often outweigh intentions to reduce food waste (Aloysius et al., 2023; Aleshaiwi, 2023). These findings underscore the need for interventions that target not only individual attitudes but also practical skills and routines related to food planning and management (Chaboud, 2017).

In this context, marketing strategies can play a critical role in supporting food waste reduction by influencing consumer choices and behaviors at the point of purchase and beyond. Responsible marketing approaches - such as promoting realistic portion sizes, encouraging the purchase of "imperfect" or near-expiration products, and providing clear information on storage and leftover use - have been shown to positively influence waste-reducing behaviors (Ang et al., 2021; McCarthy & Liu, 2017; Chereji et al., 2023; Ögel et al., 2023). Furthermore, communication campaigns that emphasize both environmental and economic benefits, combined with nudges such as meal-planning tools or recipe suggestions for leftovers, may help bridge the gap between concern and action. Aligning marketing practices with sustainability goals can therefore contribute to fostering more responsible consumption patterns and reducing household food waste in the long term (Dyen et al., 2021; Papargyropoulou et al., 2014; Grapă et al., 2022).

CONCLUSIONS

Meal planning and use of shopping lists are common among respondents and help reduce food waste. Food purchases are primarily driven by household needs, reflecting a practical approach. Most participants store and reuse leftovers, though transforming or freezing food is less frequent. Consumers moderately use near-expiration products, showing some concern for waste reduction. While awareness and concern about food waste are generally high, preventive practices are only partially adopted, revealing a gap between attitudes and actual behaviors.

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