



From a full buffet to a full bin - hotel managers' perspectives on food waste at breakfast buffets

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ABSTRACT

This study investigated food waste (FW) at breakfasts among local tourists from hotel staff perspectives. In-depth, semi-structured interviews with Israeli hotel managers and chefs were conducted, and content analysis was used to examine their understanding. Findings indicate that most interviewees identified guests' behavior as the primary driver of FW, besides hotel's overproduction and overserving. Despite this, the study identified practices that hotels use to reduce FW. Our analysis reveals that FW is perceived as caused by societal factors, diners' behaviors, hotels' practices, and regulations, demonstrating that the Theory of Social Practice and the Theory of Planned Behavior partially explain the phenomenon. This study introduces the concept of "pay riders" – the belief of maximizing the benefit of payment by loading more food- and the "fear of loss", contributing to behavioral theories. Additionally, it reveals the 'intersectionality in FW', and identifies women as "providers and romantic diners" tasting and wasting more food.

1. Introduction

Food waste (FW), "the food and the associated inedible parts removed from the human food supply chain" (UNEP-United Nation Environment Programme, 2024, page XV), is a social challenge that has attracted increasing interest and recognition in the last decade (Mbow et al., 2019). Since 2015, FW has received global acknowledgment and is included in the 12th of the 17 Sustainable Development Goals (SDGs) by the United Nations to promote responsible consumption and production (Lemaire and Limbourg, 2019). FW is responsible for 8–10 % of greenhouse gas emissions and generates waste in land, water, and biodiversity. It is estimated that global FW per year equals 1.05 billion tons, of which almost 60 percent is from households, 28 percent from food services (including hotels, restaurants and canteens), and 12 percent from retail (UNEP-United Nation Environment Programme, 2024).

At hotels, the buffet breakfast is one of the key experiences for tourists, but it is also known to waste a large amount of food (Goh and Jie, 2019; Juvan et al., 2018). Despite the recognized issue of FW within the hospitality industry, the specific challenges associated with FW at hotel breakfast buffets in general and especially in Israel, from the perspective of hotel managers and chefs, remain underexplored.

This understanding is essential for contributing to more effective reduction strategies and advancing environmental and business goals. It

is estimated that FW in the hospitality industry is growing, accounting for almost 12 percent of global FW (Dhir et al., 2020) and 9 % in Israel (Leket Israel, 2022). While global FW is alarming, and despite the excessive global attention directed at this issue, the specific challenges of FW within the hospitality sector, have received limited attention in academic discourse (Dhir et al., 2020; Filimonau and De Couteau, 2019a; Kasavan et al., 2022) particularly in Israel.

Researchers and national policies have developed methodologies for FW measurements (EC- European Commission, 2019; UNEP-United Nation Environment Programme, 2024). Nevertheless, data on the scope, measurement, and mitigation strategies of FW in the hospitality industry are limited. Furthermore, the knowledge of FW reasons, practices, and reduction policies is insufficient (Dhir et al., 2020; Filimonau and De Couteau, 2019a; Munir, 2022). Additionally, research on FW in Israel has primarily focused on households (Elimelech et al., 2019, 2023; Milman and Rabinowitz, 2017), leaving the issue within Israeli hotels largely unexplored. Israel, with a high proportion and diverse foreign-born population (DellaPergola, 2017), serves as an ideal case study for investigating FW in immigrant nations. Furthermore, although FW is often linked to the cooking phase, research on regular food services indicates that a substantial amount of waste stems from consumer behavior (Filimonau et al., 2020; Juvan et al., 2018). Although some studies exist on domestic FW in hotel environments (Çetin and Süren,

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2024; Wang et al., 2021), research on domestic FW at hotel breakfasts remains limited. These studies primarily used guest data and ignored managers' perspectives.

Thus, the objective of this study is to explore the domestic FW phenomenon at Israeli hotels from the perspectives of managers and chefs. Based on a grounded theory analysis, we aim to establish a basis for a theoretical framework that addresses this issue, identify practices employed by hotels to reduce FW and contribute to practical solutions. This study will serve as a foundation for subsequent studies aiming to corroborate patterns of FW, and to develop interventions. Thus, this research may have implications for the hotel industry. The article's structure includes a literature review, methodology, findings presentation, discussion, summary, and conclusions.

2. Literature review

2.1. The FW problem

FW is a global issue, shaped by economic and population growth, development levels, and dietary diversity (Barrera, Hert., 2021; Porpino et al., 2015). Annually, FW could potentially feed 783 million hungry individuals, representing nearly 30 percent of global agricultural output (UNEP-United Nation Environment Programme, 2024). However, despite its importance, FW remains under-researched in tourism (Gössling and Peeters, 2015). In addition, the research on FW from the perspectives of hotel managers and chefs is scarce (Sezerel and Filimonau, 2023; Filimonau et al., 2024), making it more difficult to contribute to waste reduction strategies.

Over the past decade, research on FW in Israel has been intensified including institutional waste data¹ (Bitterman et al., 2024; Millerd Givon et al., 2020). However, Israel has inadequately addressed FW reduction (National Obudsman Ministry, 2015). National incentives for food donations or FW reduction are scarce and limited, and are aimed principally to public institutions (Knesset Israel, 2024).

In 2021, Israel wasted 2.6 million tons of food annually, with 1.68 million tons lost during consumption. Institutional consumption accounted for 215,000 tons, including 25,000 tons of hotels. Consumption-stage FW constitutes 46 % of Israel's total FW, which is comparable to that of leading European countries (Leket Israel, 2022). Despite some recent research efforts (Elimelech et al., 2019, 2024; Milman and Rabinowitz, 2017), more methodologies, integrated national policies, and research are needed to understand FW, particularly in the underexplored tourism industry (Millerd Givon et al., 2020; Soh et al., 2024). This study aimed to address some of these gaps.

2.2. Food waste at hotels and hotels breakfast

Hotel breakfasts play a significant role in shaping tourists' vacation experiences, as being ranked by guests as the top factor in their decision-making process when selecting a hotel (Leite-Pereira et al., 2019). However, hotel breakfast generates the most FW (Okumus et al., 2020; Priefer et al., 2016; Tomaszewska et al., 2021). Research on FW during breakfasts has been conducted in a few instances (Cozzio et al., 2021; Juvan et al., 2018) however, available data on this subject remains scarce.

Research on FW in hospitality services has identified three primary stages of FW: 1) food introduction into the kitchen, 2) food preparation, and 3) serving and consumption. The first two stages include issues of kitchen and customer management such as predicting guest numbers, their nationalities and food preferences, and managing food in a sustainable manner (Dhir et al., 2020; Filimonau and De Couteau, 2019a).

Several key factors contribute to FW during the serving and

consumption phases. These include the choice to discard rather than reuse leftover food (Filimonau et al., 2019b), the absence of menu adaptations for diverse age groups, and inadequate serving techniques and portion control. In addition, guest behavior significantly influences FW at this stage (Berkowitz et al., 2016; Kallbekken and Saelen, 2013).

2.3. Guests' characteristics, guest behaviors and FW

Researchers have identified a link between cultural and demographic characteristics of hotel guests and the generation of FW (Hassan et al., 2022; Juvan et al., 2018; Liu et al., 2022). The impact of gender on FW was examined in studies leading to mixed findings. For instance, women, especially young people, are more likely to waste food when dining out (Giorgi, 2013; Kuo and Shih, 2016). Research also indicates that women are more inclined to adopt relaxed behaviors during vacations, making decisions that they typically avoid in daily life (Berdychevsky et al., 2013; DeVault, 1991). On the other hand, women are often responsible for short-term household consumption decisions, leading to more sustainable patterns (OECD, 2021).

In addition, guest behavior during the consumption stage is influenced by religion, culture (Yoreh and Scharper, 2020), national identity (Dolnicar and Juvan, 2021; Filimonau and De Couteau, 2019a), and personal traits (Buccioli et al., 2014). The hospitality culture of religious groups promotes FW by emphasizing generous hosting during holy days (Piastra, 2021; Yoreh and Scharper, 2020), while national characteristics affect the quantity and type of FW (Juvan et al., 2018; Okumus et al., 2020).

Social norms and psychological factors such as shame influence FW patterns in buffet services (Buccioli et al., 2014). Higher FW occurs in group dining and less visible settings such as crowded or 'all-inclusive' hotel buffets (Gössling and Peeters, 2015; Juvan et al., 2018; Okumus et al., 2020).

2.4. The role of Business and the Government in FW

The national hospitality culture of hotels and the desire to meet guest expectations have also been found to be among the reasons for FW (Kasavan et al., 2019; Tomaszewska et al., 2021; Wang et al., 2021). Government and third-sector policies, including regulations, significantly influence consumer behavior and FW management by promoting and enforcing FW reductions (Chalak et al., 2018; Pinto et al., 2018). Several countries have enacted measures to decrease FW from businesses, including legislation in Italy, France, and Norway, mandating donations, FW reporting, and monitoring. Additionally, some nations in the Arab world have offered incentives to adopt technologies to reduce kitchen FW (Davis, 2022; Faolex 2016a, 2016b; The Norwegian Voluntary Agreement on Reduction of Food Waste – NVA, 2023).

2.5. Societal factors of FW

FW in Israel is also affected by social local factors. Israel is characterized as a heterogeneous society of immigrants (Semyonov and Gorodzeisky, 2012), acknowledging its multicultural composition, which encompasses diverse ethnic, national, and religious groups (Katz Gerro, 2021). The country is also noted for its population segments with intersectional identities (Frenkel, Wasserman, 2020; Keshet et al., 2015). The main population is divided between the Jewish majority (77 %) and the Arab minority (21 %) (CBS, 2024a). Among Jewish groups, 24.66 % exhibit high religiosity, including ultra-orthodox, very religious, and religious individuals; 27.42 % consider themselves as traditional, and 43.5 % adhere to secular lifestyles (CBS, 2024b). Two primary Jewish ethnic groups emerged after 1948: 'Edot Ha Mizrach' ('Sephardi' or 'Mizrachi') from North Africa, Asia, and the Middle East, and 'Ashkenazi' from Europe, Americas, and Oceania. The Mizrahi group, arriving later than the Eastern European immigrants, has faced ethnic disparities, including reduced educational and economic

¹ This includes dining in commercial and non-commercial places- security forces, events, workplaces, hospitals, school canteens, restaurants and hotels.

achievements (Cohen et al., 2021; Mizrachi and Herzog, 2013), reflected in varying consumption behavior patterns that persist today (CBS, 2021). Religious, ethnic or national traditions influence eating behavior in Israel. Among Jews, the tradition of hosting guests on Shabbat involves serving abundant dishes. Arab religious groups have a "Shufuni" culture, where hosts aim to impress through large quantities of food (Elimelech et al., 2023; Elshaer et al., 2021). 'Edot Mizrach' Jews are also known for preparing and consuming flavorful and plentiful meals. In contrast, Jews who grew up during austerity or are Holocaust survivors exhibit a greater preoccupation with food, potentially leading to obsessive eating and FW² (Avieli, 2012; Elimelech et al., 2024; Scharf, Mayseless, 2010). Additionally, Israeli hotel breakfast culture, derived from kibbutz breakfasts, traditionally features a wide variety of products and is further linked to significant FW (Grossman, 2004).

3. Methodology

Semi-structured interviews were conducted with 24 hotel managers and chefs to gain insight into their perceptions of FW at hotel breakfasts using in-depth interviews, one of the five methods recognized by the European Union to research FW (EC- European Comission, 2019). Different research methods were considered for this study (for example surveys and ethnography). However, while they allow us to capture different aspects of FW, they are less suitable for capturing the depth and complexity of hotel FW dynamics, and the social, cultural and local contexts (Moreno et al., 2020). In addition, previous studies have also used in-depth interviews with hotel staff to explore FW causes and approaches (Amicarelli et al., 2022; Kasavan et al., 2019; Okumus et al., 2020).

The pilot phase of this study consisted of five open interviews with hotel managers and employees from the Israel Hotel Association and the Ministry of Tourism. The interview guide combined both structured and open-ended questions (see Appendix 1), allowing us to explore hotel and chef managers' views on the main causes of FW, to identify the characteristics of wasteful diners, to map barriers and strategies for reducing FW.³ The interviews encouraged interviewees to define FW in hotel breakfasts and their characteristics in their own words (Ryan and Bernard., 2003).

3.1. Data collection and analysis

The sample construction involved three primary steps: 1) the National Hotel Association and hotel managers from the pilot phase were asked to send introductory emails with our contact details to other managers to arrange interviews; 2) managers and chefs interviewed were asked to recommend additional interviewees; and 3) inquiries were sent to hotel managers (considering factors such as representation of a diverse range of hotel sizes, locations, ethnicity and gender). Hotel managers and chefs were specifically chosen as the primary source of data due to their unique position to observe, reflect on and influence both the production and disposal of FW, the decision-making processes around buffet management and, in most cases their direct interactions with guests' behaviors. Data collection was approved by the Ethics Committee of the University of Haifa (approval number: 259/23). Interviews were conducted in Hebrew, recorded and transcribed, and lasted 30–70 min. Following the analysis, themes and quotations were translated into English. Table 1 presents the interviewees' background information.

The decision to include 24 interviewees in the sample (pilot phase interviewees were excluded), was made after the 21 interviews when it

Table 1
Interviewees' background information.

Gender	N	Experience in the industry in years	
Men	22	1–5 years	0
Women	2	6–10 years	1
Age		11–15 years	2
30–44	5	16 +	21
45–59	10	Experience in the Hotel - In Years	
60 +	9	1–5 years	13
Ethnic Background		6–10 years	5
Arab	2	11–15 years	4
Jewish	22	16 +	2
Education of the interviewee		City	
High School	1	Eilat	6
Diploma/ Chef Diploma	9	Herzliya/Tel Aviv/Netania	8
BA/BA and Diploma	12	Jerusalem	9
BA, MA/+ Diploma	2	North	1
Job Title		Size of the Hotel	
Area Manager	4	Small - 70–170 Rooms	10
Manager	17	Medium 171–271 Rooms	7
Chef	3	Big 271 + Rooms	7

was observed that further conversations were yielding repetitive information, reaching the principle of saturation (Glaser et al., 1968).

The number also adhered to the principle of saturation in tourism research which is widely used (Juvan and Dolnicar, 2014). According to that, 24 interviewers is the average number of participants needed to reach saturation of the data. The limited representation of women in the sample stems from their low position in tourism as expressed by underrepresentation in management roles, as well as gender gaps (Carvalho et al., 2019; Hutchings et al., 2020), including in Israel (Kark and Waismel-Manor, 2016; UNWTO- United Nations World Tourism Organization, 2020).

The interview guide was developed using key insights from the pilot phase and questions from exploratory studies on FW in hotels and restaurants (Filimonau et al., 2019b; 2023b), some of which examined the issue of FW through the lens of the Theory of Social Practice (Reckwitz, 2002) due to the necessity to delve into the perspectives of employees in diverse contexts. The transcripts were analyzed using ATLAS.ti software,⁴ which supports the Hebrew language for content analysis of the data (Braun and Clarke, 2008), enabling the identification of recurring themes that address the research question. In addition, the data analysis approach was based on the analytical five-stage approach of "Grounded Theory" developed by Glaser et al. (1968) and Corbin, Stra.. (1990), allowing us to create new explanations from the collected information.

4. Findings

The findings include two analyses of data: 1) A focused analysis addressing factors contributing to FW is based on a specific research question on this issue (see Appendix 1). 2) A comprehensive analysis using all available data. The first analysis indicated that diners' behaviors and hotel's practices and conceptions were described as the primary causes, as reported by the majority and some of the interviewees, respectively. In addition, a very small proportion of interviewees cited the buffet system. Similarly, our analysis of all the data identified four primary explanations for FW at hotel breakfasts: 1) Societal factors, that is, expectations and values regarding hotel breakfasts; 2) Hotels practices; 3) Diners' behaviors; and 4) Policy and regulation. These categories extend across the food chain of hotel breakfasts in three stages: pre-meal, meal, and after-meal. The research findings based on all the data are structured around main themes, themes, and codes in Table 2.

To underscore the main themes covered in the second analysis, quotations from the interviewees (cited names are pseudonymous) are categorized by codes and presented under their corresponding themes. A

² Others sub- ethnic groups, within the Arab group, such as Druze were not included in this paper since they were not mentioned during the interviews.

³ An additional question at the conclusion of the interview facilitated the exploration of potential future interventions.

⁴ <https://atlasti.com/>

Table 2

Main themes, themes and codes emerged from the interviewees.

Main Themes	Themes	Codes	N ^a	H ^b	
Societal factors	Hotels' conceptions	1. Buffet should look full at all times	24	14	
		2. Buffet should be varied	16	11	
		3. Make satisfaction attitude, fear of lack and customer complaints	20	12	
	Guest's attitudes and norms	4. I paid - I deserve it	54	19	
		5. Greater expectations of quantity and variety among local tourist	71	19	
	Education	6. "Open the table"	37	19	
		7. The problem and solution is education	37	13	
	Practices as Drivers of overproduction-serving	8. It is impossible to educate guests	23	12	
		9. Throw away food – in the kitchen and after meal	22	11	
		10. Lack of Skills, awareness, or proper personnel to measure FW	22	9	
Hotel's practices	Practices preventing FW	11. Control of the Kitchen, experience and staff work	34	15	
		12. Forecasting	31	13	
		13. Food Cost measurement	33	18	
		14. To prepare fresh food on demand	30	12	
		15. Management of the "end of the breakfast"	30	18	
		16. "Less is more"	23	10	
		17. Recycle food for the next meal or leftovers food or go to staff	61	20	
		18. Small plates	30	20	
		19. Small portions	17	11	
		20. Quality control	6	5	
Diners' behaviors	Psychological and sociological reasons	21. Women as 'providers' and 'romantic' (curious) consumers	45	15	
		22. Eating with the eyes	37	15	
		23. Fear of hunger – B&B clients	30	9	
		24. Scarcity/The fear of "food ending" and war	36	13	
	Demographic and cultural reasons	25. Elderly, adults and families	23	11	
		26. Religious people waste more for religious motives	22	13	
		27. Mizrahi Jews and Arabs - Culture of abundance	22	9	
	Policy and Regulation	Attitude to Regulation	28. Not re-use food due to fear of poisoning, claims, and difficulty to recycle	30	9
			29. Don't donate – fear of poisoning and claims	17	12
		Governmental policy	30. Difficulties to recycle and to donate –equipment and regulation	30	15
31. Donation should be developed - FW is painful			20	8	
32. Donate – food or skip Ministry of Health guidelines (MoH)			7	7	
Total cites		33. Work by MoH	23	13	
	963 cites (67 %)				

^a Number of quotes that the topic was coded^b Number of hotels' interviewees

list of interviewees, identified by their pseudonyms as referenced in this chapter, is provided in [Supplementary Material, Appendix 2](#).

4.1. Societal factors

4.1.1. Hotels' conceptions

Interviewees observed that guests' expectations of hotel breakfasts and managers' views on food services were shaped by the hospitality sector's history. In the 1980s, the King Solomon Hotel chain rapidly introduced buffet-style breakfasts in Israel, starting in Eilat, the southernmost city in Israel, followed by others. The popularity of Turkish hotels offering "all-inclusive services" and workforce shortages facilitated the shift to buffet-style breakfasts. By the 1990s, Eilat had emerged as a significant resort city, and the diverse, abundant buffet breakfast had become integral to diners' and managers' perceptions of breakfast as essential for the vacation experience across generations.

The codes '**Buffet should be full and varied**' and '**Big expectancies**' (of local guests) were emphasized by most interviewees, reflecting the own expectations of hotel managers. Aharon stated: *"It's problematic for diners to see a half-empty buffet, and then you will complain. So, I must ensure there is always plenty of food"*. Arik highlighted the need for diversity: *"You have to make it a show... Food should be varied and well presented"*. Eitan described consumer expectations: *"If you do not offer a variety of dishes, from croissants to salted fish and three types of cornflakes, it does not qualify as breakfast"*.

Like the pre-meal stage, FW has also been reported during the meal stage. Many interviewees attributed this to the hotel managers' approach to prioritizing **consumer satisfaction**, resulting in overproduction and overserving due to fear of food shortages and complaints. Tzion explained that the fear of running out of food keeps chefs and hotel general managers awake: *"If we prepare 100 breakfasts, we can easily accommodate 150 to 180 breakfasts. We know this but do not limit ourselves to cooking for just 100 guests"*.

4.1.2. Guests' attitudes and norms

The majority of interviewees described the diners as feeling entitled to consume as much food as they wanted to because they had paid the hotel sufficiently. Amit highlighted this point: *"There's an issue of I paid, I deserve it, I have to make the most of it..."*. Abdallah illustrated consumers' expectations: *"They want 200 % benefit. Not 100 % for the price"*. In addition, almost all interviewees reported the '**open a table**' culture of eating. This culture assumes that certain behaviors are considered acceptable such as the provision of dining services in hotels, which resembles the hospitality offered in private homes, featuring a diverse selection of menu items. Specifically, guests expect the opportunity to organize their table as a small-scale buffet, mirroring the hotel's larger offering. Shlomo stated, *"...she (the mother) opens a table at her house and loads up all the goodness she prepared and cooked... And when she arrives at a hotel, she behaves the same way. ...and whatever is left ends up in the trash immediately"*.

4.1.3. Education

Interviewees believed that the solution to these attitudes lies in household practices and **education**, but it should be started at home, as Shlomo explained: *"... if the mother teaches the child from the first time he goes to a hotel with her, that you have to taste everything and throw away because it is allowed because we paid, until it changes [family education] it will not help"*.

4.2. Hotel's practices

4.2.1. Practices as drivers of overproduction and overserving

Some interviewees indicated that their hotels did not quantify FW during the pre-meal stage, citing insufficient skills, appropriate personnel, or awareness. Tzion attributed this to: *"a decline in professional manpower"*, while Yuval exemplifies:

"You have to be with them because they do not know. They not only do not know, but they do not care either... They do not care, they work here, it is not their money ...arrive new cucumbers, and there are cucumbers from yesterday, they will take the new ones ...they do not care about it".

Furthermore, many of the hotel interviewees reported **discarding food**, and one-third of all hotels reported disposing of food from buffets after the meal service. Shlomit stated: *"Look, Leket Israel (a national NGO in Israel working on food rescue) takes products in their raw state. Vegetables, fruits, and unprocessed foods. We are talking here about food that is processed because as soon as we prepare salads for breakfast, at the end of the meal everything that is left we throw away. Yarden argued: "We are obligated in accordance with the guidelines of the Ministry of Health, and that's fine, it makes the most sense, do not keep food. We throw away the food. No donations, no this".*

4.2.2. Practices preventing FW

The interviewees identified eight primary non-FW practices implemented in hotels during the pre-meal and meal stages. According to that, nearly all interviewees employed the **'food cost'** measurement method where chefs manage budgets per consumer (receiving bonus for saving money), reported using **small guests plates and small serving plates** and indicated that **'leftover food (raw materials) was recycled for subsequent meals'**. The majority of the interviewees managed the food supply during the last hour of breakfast through partial refills, termed **'managing the end of breakfast'** and implementing **'kitchen control routines'** to minimize FW. They also utilized **'food forecasting and customer data.'** Many participants reported they used various **'cooking or serving methods at the moment,'** such as à la minute to reduce FW and **'serving small portions.'** It is noteworthy that a **'less is more'** practice was reported by small- and medium-sized hotels. This practice involves serving a reduced quantity of higher-quality food items such as high-quality cheeses in a boutique style serving.

4.3. Diners' behavior

4.3.1. Psychological and sociological reasons

Our study identified two main categories of diners reported by interviewees as likely to waste more food. The first group is influenced by psychological and sociological factors, while the second group is shaped by cultural (self-identity) and demographic factors. Within the first group, a significant subgroup, **'Women as food providers'**, was notably represented in interviewees' narratives as contributing to FW. During the interview, Shlomit indicated this group while recounting her experiences from the same morning: *"Her husband took something for himself and sat down. She repeatedly got up, walked around, and returned...preparing and bringing food to them [her children]. Large amounts of food...."*. This theme overlapped with 54 % of the other subthemes, including religious people (12 %) and Jews from Mizrahi communities (12 %).

A significant theme is that women tend to waste more food because of their open-mindedness, in contexts, such as on-group vacations. Tomer stated: *"If a group of men comes together...They are less likely to leave food untouched. In contrast, women take more desserts".* Hotelier Aharon argued that women are more curious and willing to try or offer new tastes to relatives: *"Women are more adventurous in seeking new tastes. You [women] are more romantic about food."*

Within the psychological-sociological reasons, most interviewees identified three linked themes. These are **'eating with the eyes, scarcity, and fear of hunger'**. These groups shared an emotional response: a fear of food scarcity or being overwhelmed. Amit associated some of these behaviors with people from economically disadvantaged groups, stating that *"those who can afford it eat based on appetite and satisfaction, not need 'eyes to eat'".* Shlomo attributed similar behaviors to *"a culture of scarcity... The entire previous generation, such as those who survived the Holocaust, and immigrants from less developed countries. Thus, there is a constant need to experience abundance..."*. Yonathan explained that this

theme also reflects the fear of having nothing to eat after breakfast: *"I don't have lunch in the arrangement and even if I had, I would take [food]. Again, it is the fear that I will be hungry someday".*

4.3.2. Cultural and demographic characteristics

Among the groups shaped by cultural and demographic characteristics, many interviewees identified **religiously motivated individuals** as wasting more food. Tzion explained: *"A religious guest stays longer in their room, eats more, and likely consumes more because they do not go to the pool".*⁵ Yaakov added: *"On weekends, during Shabbat, religious people eat three times as much as a regular Israeli as part of Oneg Shabbat".*⁶

Several interviewees identified **Mizrahi communities** as wasting more food than Ashkenazi groups due to **cultural preferences for food abundance**. Uri described a typical Mizrahi meal: *"At a Moroccan house, you will see 10 types of salads on the table... not all of which are eaten".* Hanan noted another aspect: *"Mizrahi communities waste more due to a feeling of food shortage".* Arik, from a Moroccan background, described the intersection between Mizrahi communities, age, and women as a factor in FW: *"... it is the adults and the Mizrahi communities. The wives lay a table for their husbands. It's unbelievable. They place seven croissants on their plates... You know, a lot of food is wasted..."*.

Some interviewees observed that Mizrahi's behavior resembled that of Arab guests, especially in their preference for abundant meals and similar FW behaviors. Oded observed that FW is common among Israeli guests in general but highlighted the influence of Arab eating on Israeli eating: *"When we talk about the Arab sector, as far as I'm concerned, I also come from the Sephardic side. It is a type [of eating] that originates from Arabic culinary tradition. I mean, yes to see abundance, yes to see a lot".*

4.4. Policy and regulation

4.4.1. Attitude to regulation

Despite hotel efforts, most interviewees expressed **frustration with food regulations from the Israeli Ministry of Health (MoH)**, describing them as being **excessively strict and obstructive**. For example, Yaakov highlighted the difficulties in recycling: *"The MoH disapproves of putting buffet food left outside back into the fridge, so I have to throw things away..."*.

4.4.2. Governmental policy

Donation challenges were significant, with half of the interviewees reluctant to donate due to food poisoning concerns. Tomer remarked: *"Regarding the Ministry of Health, I cannot donate leftovers from the buffet... it is a thorny issue. If someone takes food from me and gets an upset stomach... they could sue me".* Hotel management personnel reported challenges in food donation, attributing these difficulties to regulatory constraints and inadequate resources such as refrigerated transportation vehicles. Oded explained: *"The method is not sufficiently clear. What can I do and how can I do... It's not fully deciphered".* Additionally, some hotels believed that **donations should be developed and improved** by governmental authorities.

As previously described, FW at hotel breakfasts is influenced by factors at various stages of the food chain. Among these factors, the **'diners' behavior'** theme emerges as the central explanation. This factor was reported to be influenced by the overproduction and serving practices of hotels and by the guests' attitude and conceptions of society that were formed along with the historical development of hotels. The **'diners' behavior'** theme encompasses primary identities associated with significant FW behaviors. These identities sometimes intersect,

⁵ Although there are different positions on this issue some, religious interpret that swimming on Shabbat is prohibited for religious motives.

⁶ Oneg Shabbat means delight of the rest day, according to the Jew Religion. The tradition is to celebrate this day having fine food and wine, a lecture and or a program of song on Friday evening or Saturday.

such as among religious and Mizrahi women, which reinforces FW tendencies.

A few hotels (one-third) reported FW from kitchens, but most of them implemented preventive or reductive practices. Reported FW was attributed to overproduction and overserving to avoid guest complaints and meet expectations of offering novel food, linked to a lack of work-force skills and awareness regarding FW measurement and prevention. Additional FW causes were related to post-meal buffet waste, influenced by the buffet system, and hotel employees' interpretation of MoH restrictions and regulations on post-breakfast donation and recycling.

5. Discussion

This study aimed to explore the FW problem among domestic guests at hotel breakfasts as perceived by hotel managers and chefs. In our analysis, we discuss the relationship between the various factors represented in interviewees' narratives as influencing FW and their links to the literature and propose or expand concepts and explanations. Following this perspective, the study's findings are discussed through the lens of four main themes emerging from our analysis.

5.1. Societal factors

Previous studies have identified the **consumer satisfaction approach** as a cause of **overproduction and overserving** by the hotel staff. While earlier research has highlighted hotel managers' motivation to **satisfy foreign guests** as a reason for FW (Kasavan et al., 2019; Tomaszewska et al., 2021; Wang et al., 2021), we propose an alternative interpretation based on our findings. We argue that this motivation is also a reaction to the **fear of complaints from domestic guests**.

Several themes that emerged from the analysis demonstrate a certain correspondence with the components of the Theory of Planned Behavior (TPB; Ajzen, 2015). According to that, a person's behavior can be predicted based on: 1) information about their attitudes toward behavior; 2) subjective norms that guide them and; 3) the control of their perceived behavior. Thus, for example, the concept 'Pay riders' relates to the TPB's component of 'attitudes'; themes such as 'open the table' correspond to 'social norms,' and 'eating with the eyes' align with the 'control of perceived behavior' component (due to the fact they have already paid, guests perceive no negative consequence of FW behavior). However, additional diner's motivational behavior (such as 'fear of ending food', 'fear of hunger', etc) challenges the TPB by adding the fear of lack of control as a motivator for behavior.

In addition, our finding '**I paid, I deserve**' attitude is consistent with other empirical findings (Gössling and Peeters, 2015; Kuo and Shih, 2016). It relates to existing theories on behavior like the 'free rider' concept (Olson, 1971), which refers to benefiting from a shared resource without contributing fairly to its cost or maintenance. However, we suggest that this concept may extend to situations where individuals have paid for services, such as breakfasts, but expect to maximize their benefits. Hence, we suggest local guests' behavior at hotel breakfasts can be viewed through the lens of a new concept- the '**pay riders**'. This term could align with theories of behavioral economics such as the theory of "loss aversion" (Tversky, and Kahneman, 1991), which argues that people prefer to avoid the loss of money (which is psychologically felt more intensely) over receiving an equivalent gain. In the same way, when meals are included in the overall price of the hotel, guests feel the need to take more food to avoid losing out on the meal they already paid for, leading to overconsumption.

5.2. Hotel's practices

In our study, we identified eight positive practices utilized by managers and chefs to minimize FW. It can be claimed that a great part of these findings align with previous studies (Kasavan, 2022) and are consistent with the Theory of Social Practice (Reckwitz, 2002) which

can explain environmental behavior patterns by altering existing practices to be more environmental. Therefore, the theoretical concept of 'competencies' corresponds to the interviewees' report of utilizing skills that were necessary for preventing FW such as the management of the 'end of the buffet'. In terms of the "materiality" concept, we identified several practices to reduce FW using for example smaller serving platters. The concept of 'meanings' within the theory is exemplified by interpreting practices that adhere to the 'less is more' principle. This approach signifies a sustainable and economical strategy for interviewees.

5.3. Diners' behavior

In our study, the "guests' behaviors" emerge as a leading explanation of FW at hotels, similar to previous findings (Filimonau et al., 2020; Juvan and Dolnicar, 2014; Juvan et al., 2018). Some of our findings align with those of previous studies, such as the FW behavior of women as '**good providers**' (Evans, 2011; Visschers et al., 2016), women eating outside and wasting more food (Betz et al., 2015), religious group behaviors (Elimelech et al., 2023; Filimonau, et al., 2023a), ethnic groups (Okumus et al., 2020; Phasha et al., 2020), and people facing scarcity (Avieli, 2012; Scharf, Mayseless, 2010). A comparison of our results with those of other studies confirms previous findings on waste patterns and dinner characteristics, leading to new explanations as described below.

5.3.1. Gender

Our study offers two insights into gender differences in FW in the hospitality industry. First, mothers were described as generating more FW, consistent with previous studies reporting that women care for family and guests (Evans, 2011; Visschers et al., 2016) and that young women, sometimes mothers, who eat out waste more food (Giorgi, 2013; Kuo and Shih, 2016). Thus, women transfer norms as '**good providers**' (Evans, 2011; Visschers et al., 2016) to setting vacations (Morin, 2012).

Second, some interviewees perceived women as more expressive, '**romantic**' and, exploratory guests with food experiences during vacations, especially in female groups. These findings align with studies indicating that women exhibit more liberated behavior on vacations (Berdychewsky et al., 2013), in this case sampling larger quantities and varieties of food compared to intimate settings. This finding is novel not only by explaining the phenomenon but also the reason for women's behaviors and offering possible solutions such as testing menus.

5.3.2. Demographic groups

The intersection of minority⁷ group identities among women appears to intensify FW behavior. For instance, religious and older women from Mizrahi groups were reported more frequently to exhibit FW behaviors than other women. These findings align with the concept of **intersectionality** (Crenshaw's, 2013) which posits that the intersection of identities, such as class, gender, and ethnicity, influences the behavior of individuals subject to vulnerability. Both religious and older Mizrahi women in Israel exhibit more pronounced gender inequalities than other groups, such as Ashkenazi and non-religious women (Benjamin, Barash, 2004; Abu-Hasan Nabwani, 2023). Their characterization by interviewees assuming predominantly nurturing roles, such as serving food to husbands and feeding children, exemplifies the gender division within their households. Consequently, the focus on intersectionality in FW, specifically emphasizing women, religious, and ethnic groups, contributes a significant dimension to the understanding of FW patterns. However, it should be considered that these behaviors could be a genuine desire of those women, and an interpretation of these routines as an expression of limiting or oppression may derive from our biases based on our own cultural or personal perspectives (Williams-Forsion and Wilkerson, 2011). Thus, FW within women-only groups might be a

⁷ From demography and social aspects

contrary response to traditional expectations for women to take on care-taking roles during meals, particularly among gender-unequal minorities (Brines, 1994; DeVault, 1991).

5.4. Policy and regulation

This study found that insufficient incentives and policies for donating, recycling, or adopting technologies and equipment, as seen in other countries, (Davis, 2022; Faolex, 2016b) as well as a lack of regulatory awareness, can drive changes in service and consumption patterns. For instance, sustainable practices like the minimalist 'less is more' in cooking and serving small portions of food at buffets.

In conclusion, our analysis corroborates the relevance of several key theories in the study of FW, notably the Theory of Planned Behavior (Ajzen, 2015) and the Theory of Social Practice (Reckwitz, 2002), to our findings. However, they do not independently provide a comprehensive explanation for the issue of FW and fail to adequately address the place of hard regulations and uncontrolled behaviors, leading from 'full buffets' to 'full bins'. Fig. 1 summarizes the analysis, including the connections between FW drivers, sources, and suggested concepts.

Considering the limitations of this study, it is essential to acknowledge that the report on food management practices by hotel staff could be biased because of the interviewees' interest in showing a positive image. This limitation highlights the need for more empirical research to evaluate the effectiveness of reported practices. In addition, we could

not analyze the differences in conceptions between male and female hotel managers, as there are few female managers in the hotel industry and they were difficult to reach.

6. Summary and conclusions

This study provides several insights into the issue of FW at hotel breakfasts. From an empirical perspective, FW phenomenon was reported as mainly influenced by diner behaviors (psychological, sociological, demographic and cultural motivations), followed by hotel practices (those that promote and reduce FW practices), societal factors (guest's attitudes and norms, hotels' conceptions and education), and regulation and policies (difficulties and policy challenges). The primary cause of FW, as identified by managers and chefs, was plate waste, which could be conceptualized as progression from a 'full buffet' to 'full bins'. Factors contributing to the 'full buffet' include: guest expectations for diverse food options; hotels adhering to traditional buffet offerings; emphasis on guest satisfaction; kitchen practices leading to over-production; provision of excessive buffet options; and difficulty in dealing with regulations in a sustainable manner. Factors leading to 'full bins' after meals include: guest attitudes (e.g., 'pay riders' who perceive entitlement to consume more than they can eat); lack of education regarding FW; specific guest behaviors (related to gender, groups facing scarcities, religious and ethnic groups) and absence of clear policies for donating or recycling surplus food. Addressing these factors

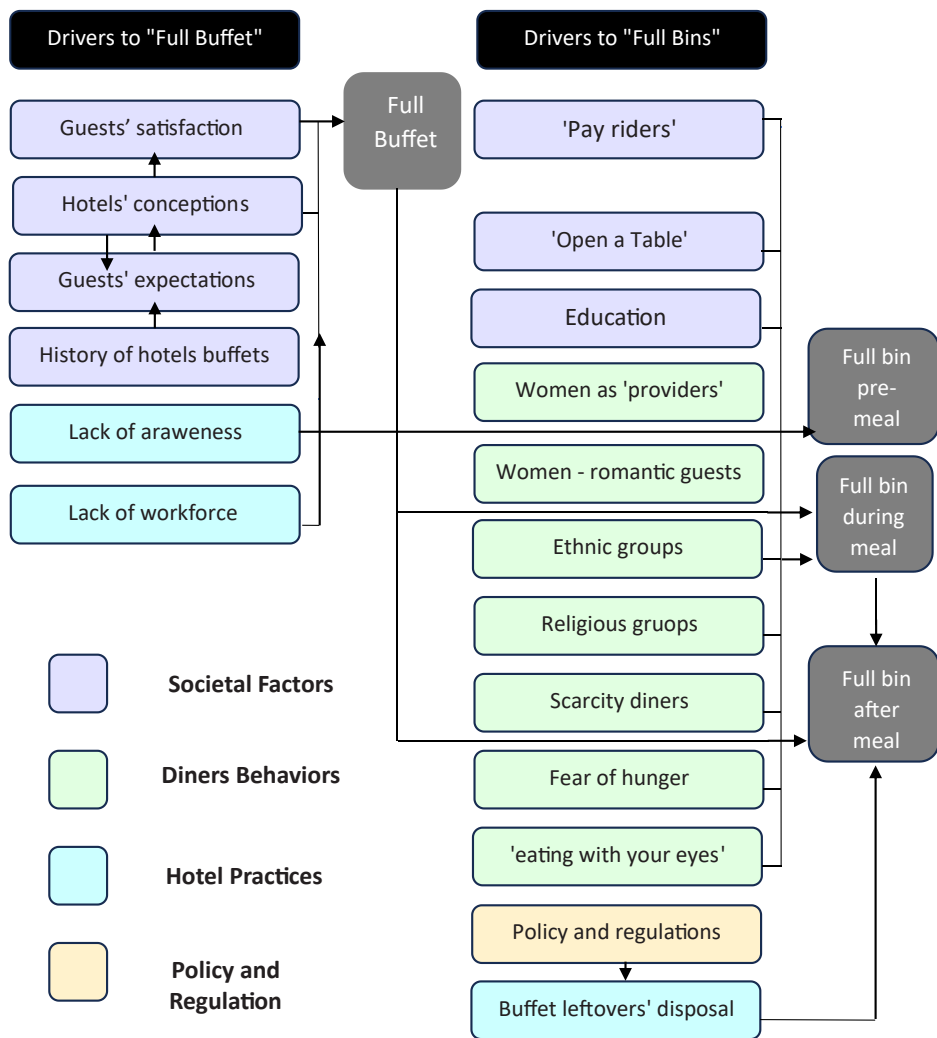


Fig. 1. FW at hotel breakfasts.

comprehensively could potentially reduce both the quantity of food offered and the amount of waste.

The theoretical contributions of this study combine a conceptual model based on existing concepts and new ones. First, we propose a model that outlines the interactions between diners' behaviors, hotel practices, societal factors, regulation policies and, FW outcomes. This model overlaps with certain concepts from the Theory of Social Practice and the Theory of Planned Behavior while integrating novel elements from psychology and policy and regulation aspects. Second, the interviewees identified guest groups that were perceived to exhibit higher levels of FW. In this context, the most prominent theme of this analysis, the 'pay riders' also offers a new framework for analysis. But, we suggest it could complement or expand economic behavior theories. This new insight, close to the theory of "loss aversion" (Tversky and Kahneman, 1991), could contribute theoretically to the understanding of FW patterns in the hospitality industry. Third, our findings reveal the link between innovative practices such as the 'Less is more' practice and the Theory of Social Practice (Reckwitz, 2002), suggesting that innovative practices due to regulatory constraints could add a new component to this framework analysis. Lastly, the study also allows us to examine the context of vacation and how waste patterns that are more prevalent among certain groups are replicated, enhanced or altered 'from routine to vacations'.

Our study contributes also from a practical point of view. First, the 'free-rider' concept, could help hotels reconsider their meal pricing strategies offering smaller breakfasts, smaller buffets or meal options (such as to order a la carte) at lower prices, emphasizing the 'loss to the environment' or tailoring the message of loss to different target groups. We suggest to offer "romantic dinners" tasting menus to cater to their desire for variety without leading to waste. Three, our study contributes to the understanding of the FW phenomenon also by illuminating effective management practices. Finally, we suggest considering policy reforms to facilitate food donation.

Further research is needed to explore the conditions under which individuals act as 'pay riders' (e.g the decision-making process). In addition, hypotheses on specific groups and their tendency to waste more food could be formulated, setting as a foundation for future interventional studies on FW patterns. Last, given the important role attributed to education by interviewees, future experimental studies are needed to explore how hotels can implement educational campaigns or communication strategies tailored to guest profiles identified in this study to influence guest behavior towards reducing FW, emphasizing the loss and gain aspects. Understanding the correlation between guests' characteristics, tailored solutions, and FW behavior will allow a better handling of FW in the hospitality sector.

CRediT authorship contribution statement

Appel Gabriela: Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Ayalon Ofira:** Writing – review & editing, Visualization, Supervision, Investigation, Conceptualization. **Collins-Kreiner Noga:** Writing – review & editing, Visualization, Supervision, Investigation, Conceptualization.

Declaration of Generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the authors used AI editing services in order to improve language and readability. After using this service, the author(s) reviewed and edited the content as needed and took full responsibility for the content of the publication

Declaration of Competing Interest

The authors declare that they have no known competing financial

interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.ijhm.2025.104276.

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