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Exploring Front-of-House and Back-of-House Manager Perceptions, Attitudes, and Motivations of Restaurant Food Waste Mitigation: A Qualitative Study

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Abstract: This qualitative study explored and compared the perceptions, attitudes, and motivations towards restaurant food waste mitigation among front-of-house (FOH) and back-of-house (BOH) restaurant managers. Semi-structured, one-on-one interviews were conducted with FOH (n = 6) and BOH (n = 7) managers at restaurants in the southeast of the United States. The findings indicated that the participants were highly aware of restaurant food waste and its contribution to food waste; furthermore, they displayed negative sentiments towards it. Additionally, most participants' awareness was heightened upon acquiring foodservice management positions. Cost reduction was found to be the primary motivation to reduce food waste among most participants; however, most BOH participants were highly motivated by an appreciation for and involvement with the food itself. Guided by the Upper Echelons Theory, the findings provide insight into the underlying cognitive base and values behind restaurant managers' perceptions, attitudes, and motivations towards restaurant food waste mitigation. Theoretical and practical implications are discussed in detail.

Keywords: restaurants; food waste management; motivation; upper echelons theory; qualitative study



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1. Introduction

Approximately one-third of food produced for human consumption is wasted each year globally, with this figure ranging from 30 to 40% in the United States (US) [1,2]. With this immense amount of waste comes severe implications that impact both the environment and the economy, not to mention social repercussions [3–5]. Environmentally, the decomposition of food waste in landfills is a leading contributor to greenhouse gases [6,7]. Economically, food waste costs the global economy approximately USD 936 billion each year [8]. From the social standpoint, the paradox of hunger and food insecurity, poor nutrition, and food waste is an issue of global magnitude [9,10].

While the causes of food waste are complex in nature, the restaurant industry is a particularly wasteful sector. In fact, the U.S. restaurant industry alone accounts for approximately 25% of the food wasted across the U.S. food chain, equating to 22–33 billion pounds each year [11,12]. In addition, a reported 84% of restaurant food waste is directly sent to landfills [13]. Several studies have assessed restaurant food waste, with the current restaurant food waste literature mostly focusing on restaurant consumer-generated food waste, or “client waste” [11,14,15] and food waste produced by the back of house (BOH), or “kitchen waste” [16,17]. While client waste and kitchen waste are critical areas to investigate, there appears to be a lack of literature that assesses the contribution each operational area has towards the overall restaurant food waste. In fact, most studies disregard the front-of-house (FOH) operational area completely, though this operational area is also responsible for restaurant food waste—for example, servers making errors when ringing in orders [18],

or over-serving guests [19,20]. A more targeted research approach is required in order to provide a more comprehensive understanding of the phenomenon of restaurant food waste [15,21].

In addition, there is a need to further investigate the role of restaurant managers in food waste mitigation [22]. Restaurant managers oversee the employees, activities, and processes of a restaurant; thus, the decisions managers make are immensely influential on the outcomes of their organization, particularly the culture towards food waste. Therefore, gaining a greater understanding of the awareness, attitudes, and motivational drivers of restaurant managers is essential for the effective management of food waste and determining the speed at which restaurants can adopt a greener approach [23–25]. The existing research has investigated the motivations of restaurant managers to reduce restaurant food waste, with key motivators being profitability, personal and moral reasons, and reducing environmental footprints [26,27]. While these findings are inherently valuable, understanding differences and similarities in the awareness, attitudes, and motivational drivers of managers of distinct restaurant operational areas will provide an in-depth understanding of restaurant food waste.

To the best of the researcher's knowledge, no other studies investigate potential differences in FOH and BOH managers' awareness, attitudes, and motivations regarding restaurant food waste based on the functional area they manage. By bridging the gap in understanding between the FOH and BOH operational areas of a restaurant, this research not only sheds light on the unique dynamics of restaurant food waste but also paves the way for strategies that can holistically address this current issue within hospitality.

To fill this research gap, this study aimed to qualitatively explore and compare BOH and FOH managers' awareness, attitudes, and motivations regarding restaurant food waste. While a quantitative study can provide information in a more generalizable manner with a breadth of insight [28], a qualitative study can deliver a depth of understanding of why participants feel the way they do [29]. The Upper Echelons Theory (UET) was utilized as a theoretical lens to examine the underlying characteristics of FOH and BOH managers as they relate to restaurant food waste [30]. This study addressed the following research questions:

- (1) Are FOH and BOH restaurant managers aware of food waste and the movement to reduce it?
- (2) What are the attitudes of BOH and FOH restaurant managers towards food waste in restaurants and the reduction of food waste?
- (3) What are the motivations for FOH and BOH restaurant managers to reduce food waste?

2. Literature Review

2.1. Restaurant Food Waste

Restaurant food waste is frequently categorized into two main types: client-generated food waste and kitchen-generated food waste [15,31–33]. It is estimated that client-generated food waste accounts for 30–35% of restaurant food waste, while kitchen-generated food waste accounts for 45–65%, although these figures can fluctuate significantly depending on restaurant type and location [34].

Client-generated restaurant food waste refers to the edible food not consumed by restaurant customers after finishing a meal [32]. Approximately 17% of meals served to consumers in restaurants are left uneaten; of those uneaten meals, roughly 45% are taken home as leftovers, and the rest is discarded into the trash [35,36]. It is important to note that this client-generated food waste can be due to consumer preferences—adverse hedonic reactions to the food a consumer has purchased [37]. In this instance, consumer behavior can significantly contribute to restaurant food waste by prioritizing personal satisfaction over environmental concerns when dining out [17].

On the other hand, kitchen-generated food waste refers to the food waste generated in the restaurant kitchen during the storage, preparation, and production stages. This food waste is often due to over-production, over-cooking, improper storage, portioning,

preparation, and cooking [15]. Many of these issues, however, can be directly traced back to managers, particularly their food waste awareness [22]. It has been found that managers with a higher awareness of food waste are more likely to implement food waste mitigation procedures [15,22]. Little research has focused on the contribution of FOH operations to generating food waste in restaurants. Of the few studies that have included FOH food waste, it has been found that the specific styles in which restaurants serve their food can contribute to higher waste yields. According to the literature, the most wasteful style of service is buffet style [33,38]. The scope of the current research study encompasses food waste generated in both the kitchen (BOH) and the dining room (FOH) of restaurant operations, helping to fill the existing gap within the literature.

2.2. Food Waste Mitigation in Restaurants

Many restaurants implement systems to reduce high levels of food waste. Menu design being a primary system, chefs and managers intentionally design dishes that have ingredients overlaps and make sure to utilize leftover ingredients [21,31]. Overproduction is one of the leading causes of food waste in restaurants [38]; thus, demand forecasting is a key operational system for managing food waste in restaurants. While it is challenging to accurately forecast demand at restaurants, it can aid managers to prepare adequate quantities of foods and, in turn, minimize waste. Additionally, implementing a structured inventory management system and thorough training systems are cited as effective ways of reducing restaurant food waste [15,27,31,38–40]. Simply monitoring food waste is one way to estimate food waste and identify the sources of food waste, thereby aiding in food waste reduction more accurately [38]. Lastly, raising food waste awareness has been demonstrated to improve practices and behavior around food waste [41].

The Role of Restaurant Managers in Restaurant Food Waste Management

A myriad of factors can contribute to restaurant food waste; however, managers play a crucial role in restaurant food waste. A lack of food waste awareness among restaurant managers is often referenced in the literature, as many operators do not view the problem of food waste as their responsibility [24,42]. Managers oversee essential functions such as prepping, stocking inventory, menu planning, and food waste monitoring; therefore, managers' awareness and behavior have a substantial, direct impact on how kitchens and dining rooms operate [15,22]. Moreover, a lack of managerial awareness regarding restaurant food waste can trickle down to other restaurant employees. Since restaurant employees typically handle food throughout the shift at a restaurant, employee awareness is another crucial aspect of food waste mitigation [43,44]. Managers' lack of awareness concerning food waste may make employees less likely to consider food waste when performing work-related tasks [22]. A case study concerning food waste in U.S. restaurants found that 34% of restaurant operators did not view food waste as an issue, with 38% ignoring their restaurants' food waste altogether [17].

Additionally, managers who are unaware of food waste can manifest themselves as failing to monitor and measure food waste. A Shanghai study investigating the perspective of restaurant managers regarding food waste found that restaurant managers could provide an exact estimation of their food waste [45]. In fact, restaurateurs tend to underestimate how much food their operations waste, resulting in a lack of motivation to reduce it [46]. It has also been found that managers may prioritize the customers' satisfaction over their efforts to reduce food waste, eventually impacting how the employees perform in the kitchen [16,47].

Several studies have investigated the motivations of restaurant managers to reduce food waste in restaurants. For the most part, financial reasons are cited as the leading motive among managers [25,26,43,48]. This is not surprising, as restaurants already have a thin profit margin, and food waste only further diminishes such margins [27]. In addition, the hospitality industry has begun to recognize the need to proactively control its negative environmental footprint [49]. Studies have also shown that restaurant managers have

moral reasons for not wanting to waste food—such as the environment, social climate, and feeling a sense of “guilt” when disposing of uneaten, edible food [31,50].

2.3. Theoretical Foundation

This study employed the UET, developed by Hambrick and Mason in 1984 [30], as a theoretical framework to analyze the awareness, attitudes, and motivations of FOH and BOH managers relating to restaurant food waste mitigation. According to the UET, managers have an underlying set of characteristics that serve as a filter when perceiving a situation. These characteristics are referred to as “upper echelon characteristics” and comprise both psychological and observable characteristics. The psychological characteristics include one’s values and cognitive base, which includes factors like cognitive processes, personalities, beliefs, and the ethical norms that shape one’s personality and ultimately determine one’s values. Observable characteristics include factors such as age, socioeconomic background, work history, education, etc. It is important to note that an individual’s observable characteristics impact an individual’s psychological characteristics; for example, an individual raised in a rural area may have different values to an individual raised in an urban area. The theory states that how a manager perceives a situation depends on the upper echelon characteristics a manager possesses. According to Hambrick and Mason [30], a manager’s perception of a situation leads to a strategic decision being made to handle that situation.

Few previous researchers have applied the UET to hospitality and tourism research. Mensah and Ampofo [51] applied the UET to determine whether small hotel managers’ environmental attitudes were reflected by hotel waste management practices. Their findings showed that managers’ environmental attitudes strongly influence the waste management practices implemented at the hotels. Similarly, Sozen et al. [52] applied the UET to examine the interaction between the green consumption values, environmental attitudes, and environmental proactivity of craft brewery owners. It was found that craft brewery owners’ green consumption values had a positive, significant effect on environmental attitudes and proactivity. Thus, previous researchers have demonstrated how using the UET in a hospitality and tourism management setting can provide an in-depth understanding of the interaction between upper echelon characteristics and decision-making surrounding green practices like food waste mitigation, thereby leading to organizational outcomes.

Furthermore, the UET is highly relevant to the current study comparing and contrasting the upper echelon characteristics of managers of two distinctively different operational areas in a restaurant, FOH and BOH. Managers of these operational areas require unique competencies, skills, knowledge, training, and experience to perform their jobs. Both areas involve a significantly dissimilar engagement with the food itself. BOH managers physically interact with food during preparation, while FOH managers rarely physically touch the food. As such, it is reasonable to assume that FOH and BOH managers may have varying psychological and observable upper echelon characteristics based on their engagement with food in the restaurant setting. Similarly, how these managers engage with food waste differs, with BOH management predominantly exposed to ‘kitchen waste’ and FOH managers primarily exposed to ‘client waste’. Using the UET as a theoretical foundation to analyze FOH and BOH restaurant managers’ awareness, attitudes, and motivations, this study may shed light on the antecedents of their cognition, values, and perceptions that govern their decision-making and strategic choices relating to restaurant food waste mitigation.

3. Materials and Methods

A qualitative research design (semi-structured, one-on-one interview) was implemented for the current study for several reasons. First, this study is exploratory in nature, as there is limited information within the literature pertaining to FOH and BOH restaurant food waste, particularly from a management perspective. A qualitative design is deemed most appropriate for studies that are exploratory, as it enables a more thorough, deep

understanding of the topic [53]. Second, this study is focused on the different perspectives of FOH and BOH restaurant managers. As stated in several studies, to accurately document, analyze, and discuss someone's perspective, a qualitative approach is necessary, as these perspectives can rarely be measured, counted, or quantified [29,53,54]. This qualitative approach involves several key steps, which were followed in this study: (1) gathering information (semi-structured interviews), (2) asking open-ended questions, and (3) analyzing the data to form themes or categories [29].

3.1. Population and Sampling Method

The target population of this study was restaurant managers located in the Southeastern US with at least one year of experience. The eligibility criteria for participants were that they were currently working as either a BOH or FOH restaurant manager. A convenience sampling method was utilized to recruit most participants, whose contacts were acquired from previous industry research or professional networking. One participant was also recruited via a phone call to their restaurant. The sample included independent and chain restaurants, and the restaurant operation segments included fast food, fast casual, casual, and fine dining. The variety presented a better understanding of food waste across the various sectors of the restaurant industry.

3.2. Protocol Development

A semi-structured interview protocol was developed to address the study's main research questions [55]. An interview protocol was developed after an extensive review of the relevant literature on restaurant food waste and the Upper Echelon's Theory. Interview topics included the participants' personal and professional outlooks on food waste in general and restaurant food waste, food waste awareness and where this awareness was derived from, and their motivations to reduce food waste within their operations. Each member of the research team reviewed the initial interview protocol, and a pilot interview was conducted with one FOH manager to uncover any required modifications, to ensure all research questions were answered thoroughly and identify questions that may elicit the same or similar answers. As a result, only minor adjustments were made to the initial order of questions in the interview protocol. Therefore, the data generated in the pilot interview were included in the data analysis. Once this was completed, the remaining twelve semi-structured interviews were conducted.

3.3. Data Collection

A total of 13 restaurant managers (6 FOH, 7 BOH) participated in the semi-structured interviews (Appendix A). Three sets of participants (1 FOH manager and 1 BOH manager) within the sample worked at the same restaurant, with all other participants coming from different restaurants. For a qualitative study, it has been found that 12 or more in-depth interviews provide more than enough information to reach data saturation [56–58]. Participation was completely voluntary, and no participants were compensated for their time. All interviews were conducted in person at the participants' place of work, through Zoom video meetings, or by phone call. All interviews lasted 25–35 min. Once data saturation was achieved, data collection was ceased [59]. Following an analysis of the first round of data collection, a set of additional questions were developed, to allow for more thorough and in-depth answers in the remaining interviews. Every participant agreed to participate in a second interview, including the participant from the pilot study. The second round of interviews lasted 10–15 min.

3.4. Data Analysis

Each interview was recorded and transcribed verbatim by a member of the research team. Once transcribed, the transcripts were then uploaded to NVivo Qualitative Analysis Software version 12 (QSR International Inc., Burlington, MA, USA). Following each interview, an inductive thematic analysis was conducted on each transcript [53]. This

process consisted of two researchers first familiarizing themselves with the data. Once familiarized, each researcher independently analyzed the data for any existing patterns, with no predetermined themes or codes in mind. Researchers organized direct quotes from the transcripts into overarching themes, with corresponding subthemes that presented themselves within the data. This process was repeated several times following each interview, with many themes being deleted, reworded, restructured, and created [60]. Two researchers individually analyzed the interview data and then compared the final analyses to establish their validity, adopting a theory triangulation approach [54]. The researchers then reconciled and discussed the themes until an agreement on the central themes addressing the primary research questions was reached [53].

4. Results

4.1. Participant Demographic Information

A total of thirteen interview participants participated in this study, and the demographic information is presented in Table 1. All the participants were male (100%). One interview participant was Asian ($n = 1$, 8%), one was Hispanic ($n = 1$, 8%), and eleven were Caucasian ($n = 11$, 84%). The interview participants have worked in restaurant management positions for an average of nine years. Most interview participants ($n = 11$, 84%) represented independently run restaurants, and others ($n = 2$, 16% of participants) represented chain restaurants. For the purpose of this study, a chain restaurant is defined as a restaurant with ten or more locations [61]. Regarding the restaurant industry segments, one restaurant can be classified under the fast food segment ($n = 1$, 8%), two under the fast casual segment ($n = 2$, 16%), five under the causal segment ($n = 5$, 38%), and the remaining under the fine dining segment ($n = 5$, 38%).

Table 1. Participant demographic information.

Variable	n	%
<i>Gender</i>		
Male	13	100
Female	0	0
<i>Race/Ethnicity</i>		
Caucasian	11	84
Asian	1	8
Hispanic	1	8
<i>Restaurant operational area</i>		
Front of house	6	46
Back of house	7	54
<i>Restaurant type</i>		
Independent	11	84
Chain	2	16
<i>Restaurant Segment</i>		
Fast food	1	8
Fast casual	2	16
Casual	5	38
Fine dining	5	38

4.2. Overall Results

This study elucidated insights from restaurant managers about their perceptions, attitudes, and motivations toward food waste mitigation. Through the process of thematic analysis, three overarching themes emerged: food waste awareness, food waste attitudes, and motivations to reduce food waste. These themes, along with their corresponding subthemes, are detailed in the subsections below. Additionally, Table 2 displays these themes, subthemes, and some examples of direct quotations from interview transcripts. Further excerpts from the participants are provided in the subsections below.

Table 2. Themes, subthemes, and sample excerpts of FOH and BOH restaurant managers regarding food waste mitigation.

Theme	Subtheme	Sample Excerpt
Attitudes	Negative sentiments	<p><i>"It's sad that there is so much food waste"</i> (Participant 2, BOH, Fast Casual Restaurant)</p> <p><i>"People get pretty upset when we throw away food"</i> (Participant 13, BOH, Casual Restaurant)</p>
	Source of awareness	<i>"My grandparents stressed [limiting] food waste"</i> (Participant 2, BOH, Fast Casual Restaurant)
Awareness	Increased from restaurants	<i>"I've been in kitchens for ten years now, it [food waste] is something they showed me in the first kitchen I ever worked in and it's stuck with me ever since"</i> (Participant 13, BOH, Casual Restaurant)
	Increased from management role	<i>"inherently knowing the costs associated with that [food waste] as a leader certainly makes a bigger impact"</i> (Participant 4, FOH, Casual Restaurant)
		<i>"The bottom line definitely makes you more aware"</i> (Participant 13, BOH, Casual Restaurant)
	Kitchen culture	<p><i>"It's so routine for the kitchen to be on top of reducing waste. It's a part of how you run a good kitchen"</i> (Participant 1, FOH, Casual Restaurant)</p> <p><i>"As a chef, you wanna [want to] utilize your waste as much as possible"</i> (Participant 13, BOH, Casual Restaurant)</p>
Motivations	Costs	<p><i>"The more we can get out of every piece of food that comes into that building, the less we have to purchase, and the more money we can make"</i> (Participant 1, FOH, Casual Restaurant)</p> <p><i>"[food waste] affects the bottom line if you look at the books. We pay for that ingredient, and we've gotta [got to] utilize it the best we can"</i> (Participant 2, BOH, Fast Casual Restaurant)</p>
	Personal values	<p><i>"I hate throwing food away. . . It's an affront to me personally."</i> (Participant 5, BOH, Casual Restaurant)</p> <p><i>"it's wasteful in a world where people don't have enough to eat"</i> (Participant 6, FOH, Fast Food Restaurant)</p> <p><i>"you wouldn't just constantly waste food when there's starving people all around you"</i> (Participant 11, BOH Manager, Fine Dining Restaurant)</p>
	Respect for product	<p><i>"for me, it's respecting the product. . . I have a lot of respect for the product that we use and I don't want to waste it"</i> (Participant 9, BOH Manager, Fine Dining Restaurant)</p> <p><i>"it doesn't even start as a financial thing for me, it starts as a respecting the product thing"</i> (Participant 13, BOH Manager, Casual Restaurant)</p>

4.2.1. Food Waste Attitudes

The first theme that emerged from the data was food waste attitudes among the restaurant managers. This theme refers to both food waste in society as a whole and food waste generated by the restaurant industry. It was evident that many of the interview participants held a strong negative sentiment towards the issue of food waste in the restaurant industry and in society as a whole.

"I think it is a shame that there is so much food waste in general. . . Which is upsetting because being in that industry [restaurant industry], it [wasted food] kind of pulls at the heartstrings that you're part of the problem".

(Participant 1, FOH Manager, Casual Restaurant)

"Personally, I detest wasting food. It's one of my biggest pet peeves; I hate it both at home and at work".

(Participant 5, BOH, Casual Restaurant)

4.2.2. Food Waste Awareness

Where the participants' awareness and sentiments towards food waste were derived from was quite mixed. An awareness of food waste derived from past lived experiences prior to working in the restaurant industry was cited by five participants (one FOH and four BOH, 38%). These particular participants acknowledged food waste as a societal issue prior to obtaining knowledge from working in the restaurant industry. However, past lived experiences varied amongst these participants. Three BOH participants stated they were raised in households that encouraged reducing food waste; in contrast, this lived experience was not cited by any of the FOH participants.

"I come from a family where we don't waste food and it's how we were brought up".

(Participant 6, FOH, Fast Food Restaurant)

Additionally, two participants, one FOH and one BOH, cited that their past travels provided exposure to other cultures, thereby highlighting the paradox of wasting food while food insecurity is still a significant issue in many world regions.

"I ended up moving to and working in India. So, I got the chance to sort of see that [cultural difference in approach to food waste] first hand. See, I'm thinking about water right now, . . . the importance of saving the food and what we could do with this food and things like that. So, I would say traveling to other countries, seeing how some families have worked so hard to eat so little, and the daily portions and the general consumption of groceries compared to the US".

(Participant 11, BOH, Fine Dining Restaurant)

All participants (100%) were aware of food waste within the restaurant industry. Interestingly, a major subtheme that emerged from the data was participants developing an awareness of food waste in the restaurant industry from working in restaurants. In fact, six of the participants (three FOH and three BOH, 46%) credited the restaurant industry for their current awareness of the issue of food waste in the restaurant industry, citing that prior to working in the restaurant industry, they were not aware of the high levels of food waste that can occur in restaurants.

"Working in restaurants just kind of opens your eyes [to the problem of restaurant food waste]".

(Participant 1, FOH, Casual Restaurant)

Furthermore, 10 participants (5 FOH and 5 BOH, 77%) stated they developed an even greater awareness of food waste in the restaurant industry from working in management roles within the restaurant industry. This heightened level of awareness for restaurant-generated food waste was not surprising; it may be attributed to the greater operational responsibility and oversight associated with management positions in a restaurant. Additionally, in restaurants, FOH and BOH management are responsible for reducing or maintaining operational costs and maximizing profits for their respective operational areas in a restaurant.

". . . seeing the numbers side of it [food waste] now, I'm becoming more aware of the financial impact that it has".

(Participant 13, BOH, Casual Restaurant)

"Both chefs and people in my position [management], I think we're more aware of food waste. . . a lot of hotel chefs and F&B directors, hotels in general, are very much driven by food cost".

(Participant 4, FOH, Casual Restaurant)

Lastly, several participants (one FOH and four BOH, 38%) expressed that food waste reduction is an inherent aspect of the culture of professional kitchens.

“It’s [minimizing food waste] just been something that’s been drilled into me for a long time”.

(Participant 12, BOH, Fine Dining Restaurant)

4.2.3. Motivations to Reduce Food Waste

Motivations to reduce food waste were another central theme that emerged from the interview data. While it was apparent that each participant was motivated to reduce food waste in their operations, the driving factor of these motivations varied amongst FOH and BOH participants. To effectively showcase these differences among the participants, the frequency of the FOH and BOH participants that cited each subtheme is presented in Table 3.

Table 3. Comparison of FOH and BOH managers’ motivations to reduce food waste.

Motivational Subtheme	FOH (% of FOH)	BOH (% of BOH)	Total (%)
Costs	6 (100%)	7 (100%)	13 (100%)
Personal values	3 (50%)	5 (71%)	8 (62%)
Respect for product	0 (0%)	5 (71%)	5 (38%)

The most prominent driving factor of the participants’ motivations to reduce food waste was cost reduction, which was cited by all participants (six FOH and seven BOH, 100%). This subtheme highlights the impact reducing food waste within restaurants typically has on participants’ food costs, resulting in a higher profit for their restaurant.

“It’s really the financial side of it. Like where can we optimize cost and make that extra dollar any way possible?”

(Participant 8, FOH, Fine Dining Restaurant)

“It’s [reducing food waste] obviously in our financial interest; it drives down our food cost”.

(Participant 1, FOH, Casual Restaurant)

More than half of participants (three FOH and five BOH, 61%) stated their personal values were major motivations to reduce food waste. Several interview participants expressed a sense of guilt from wasting food in light of the significant level of food insecurity that exists in societies nationally and globally. In addition, several participants (two FOH and one BOH, 23%) expanded on this sense of guilt, attributing it to concerns of agricultural sustainability and the negative impact that food waste can have on the environment.

“It’s also a sustainability thing; we don’t want to throw away food that’s usable”.

(Participant 1, FOH, Casual Restaurant)

An interesting finding was the respect for the product (food) that the majority of BOH participants (71%) expressed as a critical motivation for food waste reduction. Moreover, this sentiment was not cited by any of the FOH participants. It appears that the BOH participants demonstrated an appreciation for the intrinsic worth of the food and the physical (labor) and environmental resources put into producing the ingredients at the agricultural level that they utilize in their menus. Furthermore, two BOH participants explained that this respect for the product derives from the personal relationships they have established with the local farmers and suppliers that produce the food they use.

“You feel bad throwing away, overcooking, or burning vegetables when you know the farmer and picked up the vegetables out of their pickup truck that morning”.

(Participant 9, BOH, Fine Dining Restaurant)

“Respecting the ingredients [is a motivation] because we get a lot of our produce from local farmers that have spent a lot of hard work growing that product, and we have good

relationships with them so for them to do all that hard work and us take the ingredient and just use half of it is kind of disrespectful. That's a key motivating factor".

(Participant 13, BOH, Casual Restaurant)

5. Discussion

Research questions 1 and 2 ask what the awareness and attitudes of managers towards restaurant food waste and the reduction of food waste are, and how they may differ among FOH and BOH managers. The results show that each participant, despite their operational area, demonstrated a strong awareness of the issue of food waste in restaurants. These findings are consistent with the previous literature, which indicated that the awareness of the issue of food waste has been increasing over recent years [17,62]. Additionally, several studies have emphasized the importance of restaurant employee awareness regarding food waste when the objective is to mitigate restaurant food waste [43,44]. The participants also appeared to display strong negative sentiments towards the issue of food waste. Stirnimann and Zizka [63] found that the cultural backgrounds of restaurant managers and chefs can influence their "approach to handling food", and in the current study, several participants cited their backgrounds (including upbringing) as the root of their food waste awareness.

A significant finding in the current study is that an awareness of restaurant food waste increased once the participants moved into management positions. It appears that the operational and financial oversight related to the management position is the reason for this greater awareness; mitigating food waste is a cost reduction opportunity. However, this finding also indicates that base-level (frontline) restaurant employees may not hold the same awareness as managers regarding food waste, possibly because they are not aware of its financial implications. In accordance with the UET, these experiences of managers working within the restaurant industry, and later progressing into management roles, can be categorized as observable upper echelon characteristics. These characteristics appear to have resulted in a heightened awareness regarding the issue of restaurant-generated food waste among the participants. Additionally, these observable characteristics lead the participants to make strategic choices to reduce their food waste, as they became aware of the typically narrow profit margins restaurants experience and the financial implications food waste can have on these margins. In turn, the participants were able to increase performance (profitability) within their operations.

Research question 3 delved deeper into the motivations of restaurant managers to reduce food waste and assessed how these motivations may differ among FOH and BOH managers. It was found that the primary motivation among participants to mitigate food waste within their operations was cost reduction (profitability), speaking to the UET. The managers' financial motivation to reduce food waste leads to the strategic choice to put operations in place that reduce food waste in their operations. This financial leverage ultimately impacts the performance of their companies, resulting in increased profitability for their operation. While financial motivations may be the key motivation to reduce food waste for many restaurant managers, the secondary outcome of an increased awareness of food waste can be viewed as a positive for the restaurant industry. Manager awareness of food waste has been found to have a direct, negative relationship with the amount of food waste a restaurant produces [22,43,64].

A financial motivation to reduce restaurant food waste is consistent with the restaurant food waste literature. Hennchen [43] found that monetary drivers were the main drivers behind kitchen managers' efforts to reduce food waste. Similarly, Martin-Rios et al. [25] found that increasing profitability was one of the most powerful motivations for restaurant managers to reduce food waste, due to its impact on food costs. Moreover, other studies have found that more significant amounts of food waste are generated if managers do not perceive reducing food waste as a cost reduction opportunity [22]. Being profit-motivated yet failing to reduce food waste actively essentially means restaurants effectively pay for the food twice, first when purchasing the food and again when disposing of it [63]. In fact, there can be up to a 1300% return on investment from food waste mitigation practices

in restaurants [65]. Expressed as a 14:1 benefit-to-cost ratio, this represents a net positive financial return of USD 14 for every USD 1 invested in food waste mitigation.

Values also proved to be major motivations to reduce food waste amongst all participants, namely, concerns over food insecurity, agricultural sustainability, and the ecological impact of food waste. This supports the findings of Stirnimann and Zizka [63], who found that sustainability and ethics were cited as motivations to reduce food waste among Swiss and German restaurant managers. However, with that being said, per the fundamental principles of the UET, managers view their strategic situation through their own highly personalized lenses, with an individualized construal arising due to differences in experiences and values [66].

In the current study, it was evident that there were significant differences in the psychological upper echelon characteristics and the cognitive base of the values expressed towards food waste that existed between participants from differing functional tracks. In particular, respect for the product (food) appeared to be at the core of the food waste mitigation values BOH participants held. A considerably higher level of food involvement among BOH participants compared to FOH participants may explain this. The construct of food involvement, defined as the level of importance of food in a person's life, is underpinned by the Food Lifecycle Theory [67]. The Food Lifecycle Theory proposes five stages in the lifecycle of food: the acquisition, preparation, cooking, eating, and disposing of food [68]. Based on the construct of food involvement, it can be implied that food itself is more meaningful and important to BOH participants. They hold a significantly deeper connection with food throughout the entire food lifecycle—most notably, the preparation of the food that is innately involved in a chef's day-to-day life.

Furthermore, many of the BOH participants discussed how they were engaged in acquiring food, an earlier stage of the food lifecycle. Through the acquisition of food, profound relationships with the food suppliers and growers were formed, thereby exposing BOH participants to the physical labor and natural resources required to produce the food, resulting in an even greater respect and appreciation. In contrast, the differing cognitive base towards the values expressed by FOH participants may be attributed to their lesser gastronomic knowledge and involvement with food compared to BOH participants. Hennchen [43] found that a lack of appreciation for the products' intrinsic worth was an underlying reason for unnecessary restaurant food waste for non-culinary professionals.

5.1. Implications

5.1.1. Theoretical Implications

A significant theoretical implication of the study is the comparison of the awareness, attitudes, and motivations of FOH and BOH management in restaurants. While the UET has been applied in previous hospitality research [52,69,70], this study is the first to apply this theory to examine restaurant food waste, thereby contributing a more profound understanding of managers' awareness, attitudes, and motivations towards restaurant food waste to the body of literature on this topic. In doing so, the observable and psychological characteristics of managers were found to influence their awareness, attitudes, and motivations towards restaurant food waste mitigation. As is typical with an exploratory qualitative approach, patterns and themes emerged from an analysis of data outside the study's original scope. While the present study did not focus on constructs such as food involvement, it appears this construct could, in fact, be the underlying cognitive base for the BOH managers' values towards food waste. This important finding could be expanded on for future research through incorporating the construct of food involvement into research on restaurant food waste.

5.1.2. Practical Implications

As the literature states, food waste awareness is vital to its mitigation in society and restaurants. The current study's findings have shown that restaurant managers tend to obtain a greater awareness of restaurant food waste once they step into their managerial

roles. Therefore, increasing awareness of restaurant food waste among non-management restaurant workers is recommended to further mitigate food waste in restaurants. This may be achieved through offering regular training on food waste and food waste mitigation. Ideally, restaurants would conduct food waste awareness workshops bi-annually for their entire staff, as employees must be trained and re-trained for long-lasting, sustainable results [27,33,47,48].

Based on the study findings, there are several strategies proposed to tackle food waste. It is recommended that food waste training programs focus on three aspects of restaurant food waste to make it more meaningful for trainees and thereby impactful. First, making employees more aware of the financial impact of food waste on restaurant profit margins and highlighting how mitigating food waste can be a significant cost-reduction measure. Second, educating employees on the social dilemma of food waste. As found both in the literature and the current study, food waste triggers an emotional response from customers who are aware of the environmental and social implications of food waste. Providing awareness about global food insecurity, malnutrition, and the paradox of all this combined with immense amounts of food waste would likely serve as a motivation to reduce food waste among employees. Lastly, increasing involvement with the food itself may result in FOH employees developing a deeper appreciation for food and therefore making a more significant effort to reduce food waste. In particular, providing greater exposure to the early stages of the food lifecycle, namely, the acquisition and preparation of food, may increase food involvement and appreciation among FOH employees. This can be achieved by planned visits to farms and food producers to see food production and harvesting. A secondary impact of exposure to the initial stages of the food lifecycle may be the development of a more accurate understanding of the resources that go into producing food and, therefore, the negative environmental implications of wasting food. By being aware of the implications of food waste and knowledgeable about the skills required to work in a restaurant, employees should be more motivated to reduce food waste.

5.2. Limitations, Future Research, and Conclusions

First, with the nature of the study being qualitative, the sample size was relatively small and was only representative of a small portion of U.S. restaurants. The small sample size still resulted in data saturation, however, as many studies indicate 12 or more participants is appropriate for reaching data saturation in qualitative research [56–58]. Furthermore, the participants were recruited through a convenience sampling method, as the study required a sample with a specific set of characteristics. This method has been critiqued due to the sample being selected subjectively; therefore, it might not be fully representative of the intended population [71]. Additionally, when recruiting participants, the study faced a non-response bias due to chain restaurant managers not being able to obtain corporate approval to participate in the study. Therefore, a majority of the sample represented independent restaurants. There is a possibility that the type of ownership could have an impact on the amount of food waste produced, due to differences in budgets and leadership. Moreover, while the four main restaurant categories were included within the sample (fast food, fast casual, casual, and fine dining), fast casual and fine dining restaurants were disproportionately represented more than the others. The restaurant category could impact factors such as training resources, sustainability efforts, portion sizes, or the number of menu items, all factors potentially impacting food waste. Therefore, there is a possibility that the disproportionate representation of fine dining and casual restaurants may have influenced the findings, limiting the generalizability of our conclusions to all restaurant types.

This study was also focused on restaurants in the Southeastern U.S., while the participants' viewpoints may have been different if they were located elsewhere. The sample is also mainly comprised of white males, potentially highlighting the lack of diversity among restaurant professionals in the area. With these limitations in mind, a future study could be improved by the following. First, to reduce non-response bias, those working at the

corporate level of chain restaurants could be contacted rather than on-site managers, to obtain corporate approval. Second, the study could be conducted in a different region with a sample of more diverse demographics.

With regards to future research, this study has opened several potential avenues. First, the UET can be further utilized in the restaurant food waste mitigation literature. It is clear manager characteristics impact how their operations are run; therefore, studies could be conducted regarding manager cultural backgrounds, ages, and other characteristics. Secondly, the construct of the food involvement of restaurant managers could be applied, to further understand the relationship between managers and food waste mitigation in a mixed methods study (qualitative and quantitative). Additional variables such as environmental attitudes, environmental awareness, and social norms could also be investigated. Lastly, investigating client-generated food waste in addition to FOH and BOH food waste should be conducted, to provide a holistic understanding of restaurant food waste.

In conclusion, this study explored the perceptions of restaurant food waste among restaurant managers, categorizing them into their operational areas of FOH and BOH. The findings indicated that all participants were aware of the issue of food waste, whether it was from their own personal experiences or from working in the restaurant industry. Regarding motivations, profits and personal morals served as motivations to reduce food waste among most participants; however, perhaps the most interesting finding was that the BOH participants cited that respecting the product also served as a motivation. The key takeaways from this study are that food waste awareness must be increased among all restaurant employees, and that employees must be continually educated on the problem and on how to reduce it.

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Appendix A. Semi-Structured Interview Protocol

1. Generally and from a personal perspective, how do you feel about food waste in the hospitality industry?
2. Generally and from a business perspective, how does your company feel about food waste in the hospitality industry?
3. How long have you been aware of this topic?
4. What in particular has driven your awareness level as it relates to food waste?
5. How prevalent of a topic is food waste for your operation/company? Is it measured in any way? If so, how and how often?
 - a. How do you deal with inedible food waste?
 - b. How do you deal with edible food waste?
6. Do you collaborate with other restaurants in the area in disposing of edible and/or inedible food waste?

7. Does it feature in the strategic or operational planning efforts of your restaurant or company? If so, how?
8. What is the key motivation for doing so?
9. What would you describe as the biggest causes of food waste for your company?
10. What would you describe as the greatest benefits of reducing food waste for your company?
11. What methods/solutions are currently employed by your company to reduce food waste? Reduce/Reuse/Recycle?
 - a. Do you have a food waste team charged with reduction?
 - b. Has your menu ever changed as a means of reducing food waste?
 - c. Have you ever employed the use of smaller plates and smaller portions?
 - d. Is daily purchasing a factor on certain menu items?
 - e. Is there a proper rotation and inventory systems for perishable and nonperishable food items?
12. Does your company employ any form of donation or resale system for unconsumed food? If so, what?
13. If not, are there specific barriers that prevent you from doing so—for example liability concerns or local regulations?
14. Do you educate employees about food waste and/or being more sustainably oriented?
15. What is the culture amongst employees at your restaurant in regards to food waste?
16. What areas of the restaurant generate food waste?
17. How would you say your awareness and attitude towards food waste has changed when you became a manager as opposed to being a restaurant employee?

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