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Tackling Food Waste in All-Inclusive Resort Hotels in Egypt

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Abstract: Food waste remains a serious economic, environmental, and ethical problem, whether globally or at a national level. The hospitality industry is responsible for more than one-third of food waste. This study investigated the tackling of food waste in all-inclusive hotels from an employee perspective. It explored employees' perceptions of the causes and driving factors behind food waste, and considered why food waste occurs, and how best to reduce waste to the minimum. A total of 47 semi-structured interviews were conducted with managers and chefs employed in all-inclusive hotels in Hurghada, Egypt. Critical insights that emerged from the findings include that guest behavior, background, and eating habits, along with the nature of the unlimited pre-paid services offered by all-inclusive programs, are the main drivers for food waste. Furthermore, the operation's routine and the practices of all-inclusive hotels contribute to food waste, with a lack of technology employed to tackle food waste practices. In addition, inappropriate practices of all-inclusive hotel employees during the food service cycle contribute negatively to food waste. The low room rate package of all-inclusive hotels obliges hotel managers to purchase food raw materials of inadequate quality. Consequently, the final products are below guest expectations and increase the level of food waste. The findings also indicate that guest attitudes and preferences are perceived as key drivers of food waste. This research presents an examination of staff perspectives of the causes of food waste and how to effectively reduce it in the context of an all-inclusive resort. The results have theoretical implications and implications for practitioners.

Keywords: food waste and loss; all-inclusive hotels; reduction practices; guest behavior

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1. Introduction

The hospitality industry has a potentially positive economic and social impact on host communities which has long been recognized [1]. However, because of increased energy and water consumption [2], land-use changes [3], and the production of food waste [4], the industry has a negative impact on local populations. Food waste is not only a complex ethical issue, but it is also a major sustainability challenge [5]. Globally, food waste incurs negative economic, social, and environmental costs, as a result of food waste generation and disposal [6] (Figure 1). Globally, 1.2–2 billion tons of food are wasted yearly [7]. In absolute terms, this amounts to one-third to a half of food produced [8,9]. Food waste is estimated to be worth almost 1 trillion USD per annum [10]. Simultaneously, it is difficult to reconcile food waste with increased food insecurity [11]. Furthermore, a large proportion of food (34%) is wasted in NENA regions [7]. Given this, the topic is one of the Sustainable Development Goals of the United Nations [12]. The topic has received increasing attention globally from scholars, policymakers, and industry professionals.

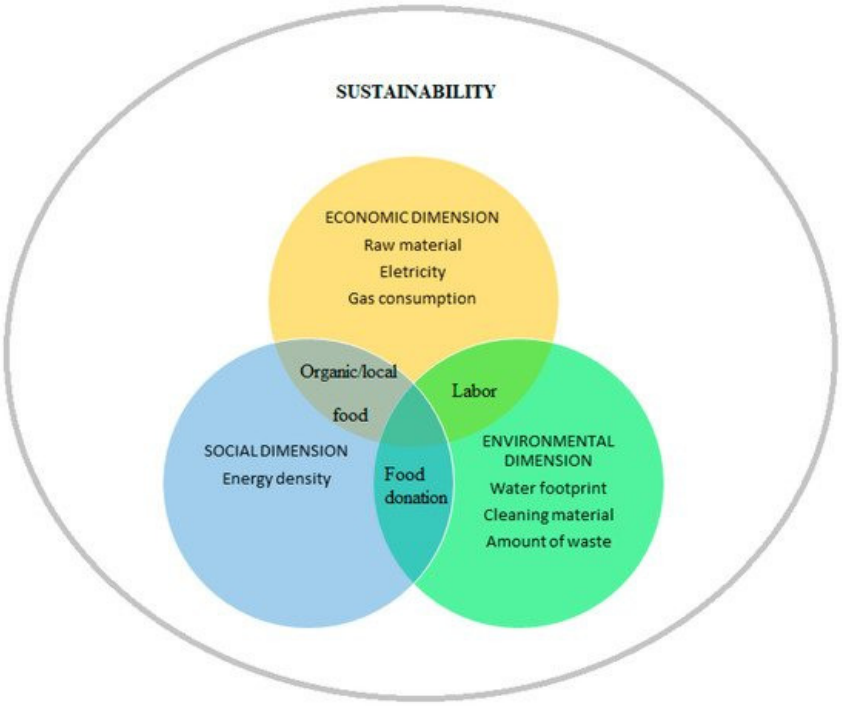

Figure 1. Impacts of food waste in foodservice [13].

Food waste in the hospitality industry is rapidly becoming a major concern, with the sector accounting for over 14% of total waste in the recent past [12]. Hotels contribute to the food waste problem in guest destinations by producing very large amounts of food waste, and are high consumers of energy, water, and non-durable resources [14]. Okumus [15] argued that food waste is particularly high in accommodation enterprises implementing all-inclusive systems in comparison to others that do not apply the concept. The all-inclusive programs was first launched in 1930 but, by 1997, all-inclusive vacations had become a rapidly growing segment of the overall vacation market [16]. Due to Egyptian comparative pricing, where four- and five-star hotels are sometimes priced similarly to three-star hotels elsewhere, the "all-inclusive" concept has become popular in Egyptian destinations, especially in Sharm Elshikh and the Red Sea region [17]. Pre-paying for accommodation, food, beverages, and most hotel services, allows tourists to relax more [18], because guests do not need to worry about spending extra money at the point of service [19].

In terms of the environmental impact of the hotel industry, according to the International Hotels Environmental Initiative, on average, each guest generates 0.8–1.2 kg of waste per day [20], which doubles on check-out days [21]. Food waste accounts for a significant portion (more than one-third), with about 75% still being edible [22]. Furthermore, Tekin and Ilyasov [23] confirmed that guests in all-inclusive hotel resorts often waste more food and beverages than others because they will not pay for extra consumption; moreover, all-inclusive hotels often serve their guests using an open buffet. Addressing the issue of tackling food waste in all-inclusive resort hotels is a complicated issue [24,25]. Food waste is frequently regarded as an unfortunate consequence of the all-inclusive philosophy, where food is prepared and served on a near-constant basis at serving outlets located throughout the hotel [24]. Thus, this research aims to explore the mass food loss and waste and the key stages in which it occurs from the perspective of relevant managers and responsible employees in an all-inclusive resort, with a range of practical and theoretical implications. The guiding research questions for this study were:

1. How and why FLW emerges within and across the food service cycle, comprising procurement, menu planning, receiving, storage, preparation, food service and waste disposal?
2. What are all-inclusive hotel mangers' perceptions of the causes of FLW?

3. How could FLW be reduced in all-inclusive hotels to the minimum level?
4. How do all-inclusive hotels incorporate technological innovations in tackling FLW?

2. Literature Review

2.1. Food Waste and Loss

Referring to the food waste literature, the term "food waste" does not have a universal definition [26]. The term has been defined in a variety of ways by different authors. For example, Okazaki et al. [27], p.2483, defined food waste (FW) as "any by-product or waste product from the production, processing, distribution, and consumption of food". Okazaki et al. [27] further considered food waste as food that was prepared for human consumption but was removed from the food chain for a variety of reasons, the most common of which being retailer and consumer behaviors. The FAO [10] defined "food loss" (FL) as "the wastage or loss of edible food at the harvesting, production and transportation stages of the food chain". In summary, FW comprises food that is thrown away or ruined at the consumer end [28], whereas FL refers to a decline in food quality during preparation [29]. Taking both points of view into consideration, we have treated food loss and waste (FLW) as the same. Pirani and Arafat [4] have described FW in the hotel industry as food that is undesired and discarded, which includes both leftovers on guest plates and inedible components produced during meal preparation. FLW occurs at four major stages: agricultural production; (2) after-harvest handling and storage; (3) commercialization, including processing, packaging, and distribution; and (4) (non)-consumption [30].

FLW reduction is an important and growing concern globally because of its direct link to sustainable development. Hence it is gaining more global attention from policymakers, practitioners, and academics [31]. According to some predictions, FW is anticipated to rise by 60% by 2030 (to 2.1 billion tons), causing a loss of about USD1.5 trillion [32]. The massive social and economic consequences of the global COVID-19 pandemic have focused attention on the intertwined challenges of food security and FLW and the need to address them now more than ever [10]. At a national level, the FAO [7] has warned about the increased rate of FLW in Egypt which has reached approximately 1.5 million tons/per annum, impacting on food security. Hence, the challenge of food security will not be solved solely through greater production, but also through the preservation of produced food by prevention of waste and loss [33]. FLW is more common in developed countries at the consumption stage, being primarily the responsibility of consumers, reflecting their eating habits and attitudes towards food [34]. Although policymakers, experts, and scholars are paying more attention to FLW, considerable amounts of food are still lost or wasted as a result of improper preparation, distribution, and non-consumption [35]. Given this, to reduce FLW, it is important to investigate how each of the key stages could be enhanced [36]. Given the magnitude of the problem and the lack of research devoted to it [15], we focus on all-inclusive hotels as an example of the hospitality sub-sector and the economic and environmental impact of FLW.

2.2. FLW in the Hotel Industry

Guest satisfaction is a key challenge and the main target for any hotel management [37,38]. The variety of food, the service type, and culinary skills, in concert with other service factors, help enable hotel managers to achieve guest satisfaction [39]. However, while culinary creativity, dinner buffet shows, and round-the-clock food service can improve guest satisfaction, such facilities represent economic and environmental risks and threats due to the very large amount of waste generated that could have been avoided [40]. In the context of all-inclusive hotels, they prefer to serve guests using a buffet service style that generates a high amount of FLW in comparison to other service types [4]. For example, Tomaszewska [25] found that hotel guests were not able to consume all the breakfast buffet's items; on a daily basis, the breakfast buffet had an average of 3.6 kg of unconsumed food for each in-house guest. While the hotel business contributes to food

and energy consumption, it is hampered by the cost challenges associated with bulk food processing [41]. To conclude, the hospitality industry is the second-largest source of food waste after household use [42]. Thus, finding effective recycling, reduction options, and improved waste management is important [15].

According to the California Environmental Protection Agency [43], FLW in the hospitality industry mostly occurs during the stages of (1) planning, (2) storage, and (3) product handling/food preparation. However, there is insufficient data to assess the amount of FLW during the service and post-serving stages in the hotel industry [44]. Menu planning is the initial step in the food service cycle, and typically reflects sustainable business practices [26]. Therefore, menu planning plays a critical role in minimizing FLW. Variety in menu items is appealing to consumers, but menus require more inventory, planning, and employee engagement [45]. Furthermore, storage is as important as planning, because improper distribution, handling, and storage methods can cause fresh dairy products to deteriorate [46]. Menu engineering is important in encouraging less wasteful meal choices, and can influence guests' decisions in favor of more ecologically friendly and socially responsible options [26]. Procurement is the second stage in the food service cycle. The chief purpose of procurement is to obtain the right quantity, thus improper procurement could lead to extensive food waste by over-ordering through deterioration, while low quantity ordering may result in menu items being unavailable [26]. As a result of guests' high expectations, food procurement in the hotel industry can be a challenge, leading to buying decisions that might have a harmful environmental impact.

The receiving phase refers to the process of inspecting the supplied food items for quantity and quality specifications [47]. Food deliveries are usually accepted only after standard checks have been passed. Receiving procedures are aimed at waste reduction [47]. Proper storage methods and standard storage policies in hotels, such as FIFO (first-in-first-out), and maintaining appropriate storage conditions and correct stock levels, as well as controlling temperature and humidity, all contribute to decreases in food wastage [48]. The next stage of the food cycle is preparation, which involves activities such as washing, cleaning, filleting, peeling, pre-cooking, and holding food until it is ready to serve. According to a report produced by the Waste Resource Action Program [49], the preparation stage is the highest FLW contributor, creating approximately 45% of food waste in the hotel kitchen. There is also much food waste that occurs through food contamination, chiefly with perishable foods, due to improper handling, preparation problems, and not following food safety rules [28].

Further, improper cooking and serving, over-preparation, and large portions all contribute to FLW [15]. FLW can also be influenced by service style. Buffet service, especially, has been observed to contribute significantly to food waste due to overproduction and excessive portion sizes [4]. Buffet as a service style generates a significant quantity of FLW in comparison to other service styles [41]. A particular issue is that with buffet service it is not possible to reuse and donate excess food due to food legislation and health restrictions. Hence, factors such as oversized portions, poor menu choices, negative staff attitudes, kitchen culture, unpredictable needs, negative guest behaviors, and the normalizing of discarding of "leftovers", all contribute to increasing the extent of FLW in the hotel industry [15].

Factors such as appropriate portion sizes, positive guest attitudes, and employee behavior, can help minimize FLW and reduce its environmental impact [50]. FLW can also be reduced through careful purchasing and menu planning. The gathering of daily feedback from guests can be critical for engineering suitable menus [48]. Effective waste reduction initiatives and practices could be a boon to the hotel industry [51]. While a growing number of hotel establishments are working on decreasing food costs and enhancing the efficiency of their operations, food-waste-related losses are continuing to climb. Exploring staff perceptions of FLW can help ensure effective kitchen operations and waste management programs in an all-inclusive hotel by identifying the various causes of FLW.

2.3. FLW Management Practices in the Hotel Industry

Many organizations are actively modifying their operational procedures to reduce resource consumption and their negative impact on the environment. Waste disposal is costly, usually exceeding the expenditure associated with energy usage in the industry [52]. Some governments have raised taxes to lessen the cumulative impact of waste [53]. Nevertheless, solid waste management, particularly in hotels, is not usually considered to be a strategy that can contribute to sustainability [54]. In this context, a study conducted by Ball and Taleb [55] argued that while some waste management strategies have been successful in reducing waste disposal in Egyptian hotels, present legislation needs to be modified to improve the efficacy of these activities. To do this, tackling FLW requires to be viewed as a strategic goal to produce a realistic long-term solution that can be implemented by hospitality managers [56].

There is widespread understanding that hotels and restaurants should work together to implement effective waste management systems [15] (Figure 2). Along with strategies to address factors that contribute to FLW described earlier, effective communication methods can be used to influence guest consumption behaviour, for example, creating awareness of consumption behaviour [57], seeking feedback, and utilizing media campaigns [58]. Moreover, sustaining collaborations with organizations, recognizing challenges, promoting sustainability, transitioning towards green organization, monitoring, employee engagement, and appropriately involving guests, all translate into profitability and the efficient management of resources [59].

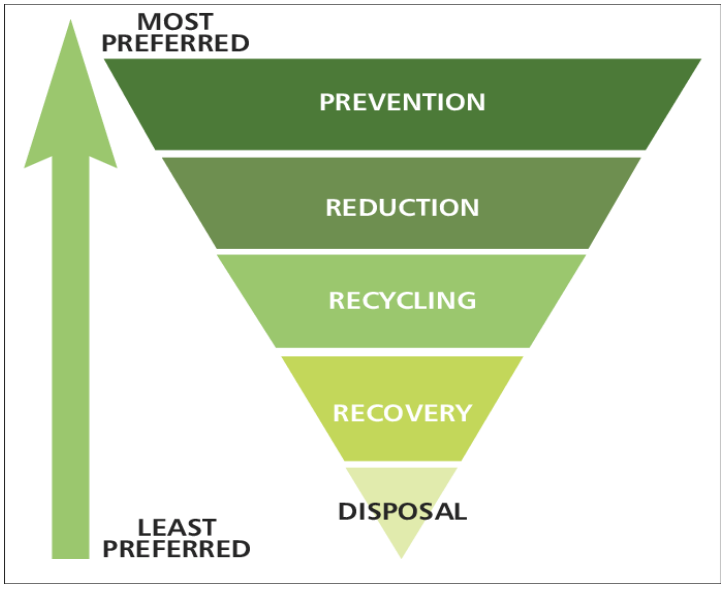

Figure 2. The waste management hierarchy (Adapted from UNEP, 2011).

3. Methodology

To achieve the study objectives, a qualitative research technique was employed. In contrast to a quantitative research design, it was felt that a qualitative approach would enable richer and more detailed exploration [60]. A mixture of purposive and snowball sampling was used with appropriate employees responsible for food in all-inclusive hotels [61]. A series of semi-structured interviews were conducted with employees in all-inclusive hotels who were able to supply realistic, accurate, and up to date information about the characteristics of FLW in their hotels, located in the city of Hurghada in the Red Sea region, Egypt.

According to the Egyptian Hotel Association [62], Hurghada has approximately 28 hotels rated as five-stars; there are no official figures with regards to how many of these properties can be classified as 'all-inclusive'. TripAdvisor was selected to reveal the closest probable approximation of the numbers of five-star hotels that serve all-inclusive programs in Hurghada. Data derived from TripAdvisor [63] indicated that there are

29 hotels classified as five-star hotels and serving all-inclusive programs. Of the 29 five-star and all-inclusive hotels in Hurghada, data was collected from 18. The selected hotels were a sampling of all-inclusive programs in the city more generally and were consistent in terms of service, facilities, size, and quality.

Hurghada is one of the 100 most-visited destinations worldwide [64]. Although Hurghada city attracts tourists from around the world, Russian, German, French, British, and Ukrainian tourists are considered to be the most numerous [63]. Hurghada was considered an appropriate destination as one of the research team had previous hotel industry career experience in the city. In addition, the research team has a strong relationship with industry professionals in the region, which facilitated access and engagement with potential respondents. A purposive (i.e., judgmental or convenience) sampling technique was employed to select general managers, quality managers, food and beverage managers, executive chefs, restaurant managers, and other relevant staff who were approached to participate in the research, with interviews conducted on-site. Using a similar approach, Cresswell and Plano Clark [61] reported that in purposive sampling, researchers should select participants: (1) who have experienced the phenomenon under study, (2) who can communicate their experience of the phenomenon as freely as possible from embarrassment and bias, and (3) who can represent their knowledge, beliefs, and common understandings about the phenomenon. In this research, all of these criteria were taken into account when selecting the study sample. Regarding snowball sampling, the researcher asked interviewees to recommend other participants whether at the same hotel or in other all-inclusive hotels in Hurghada (Figure 3).

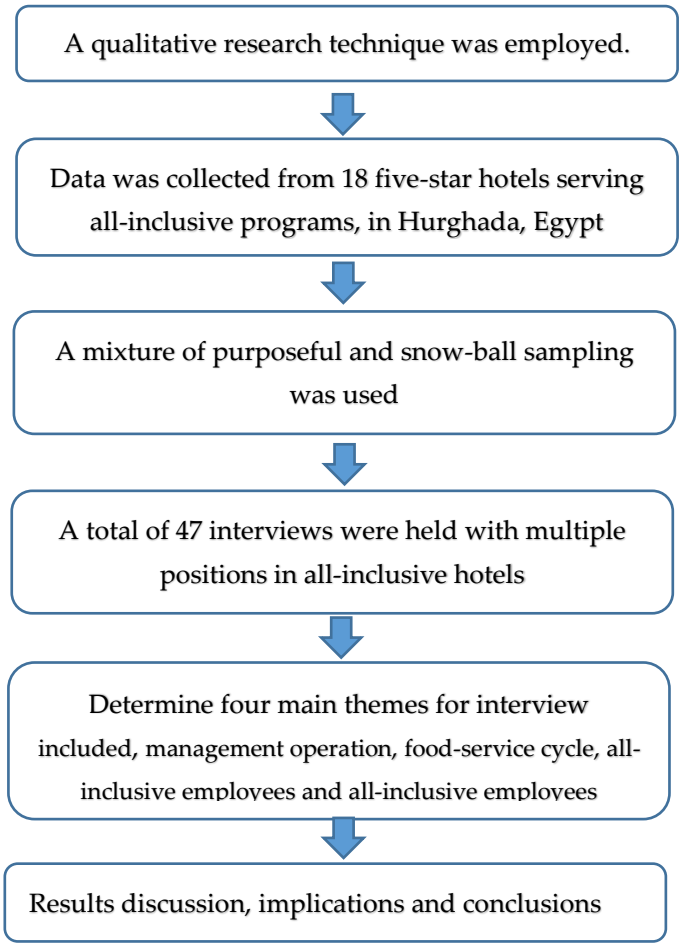

Figure 3. The framework of research methodology.

In-depth semi-structured interviews took place using open-ended questions to encourage interviewees to feedback regarding FLW using their own words with examples [61]. Interviews were set up at a mutually convenient time for the interviewees. Participants were provided with a clear outline of the purpose of the study. A digital voice recorder was used to record the interviews to diminish the risk of misinterpreting the answers to the questions. Interviews were conducted in Arabic and were then translated to English; translation was reviewed by two professors of English. Four main interview themes were discussed with participants in the interviews. Each theme contained multiple sub-themes. Table 1 provides a detailed overview of the template of themes.

Table 1. Interview themes.

Main Themes	Sub-Themes
Management operation	The availability of an effective reduction plan Staff hiring process and training Awareness and motivation Characteristics of all-inclusive operation Impact of food safety in food waste Kitchen operation
Food-service cycle	Menu Planning Food Procurement Receiving and Storage Food Production Food Service
All-inclusive employees	Staff behaviors Staff awareness
All-inclusive guests	Guest attitude Guest awareness

Participants were assured of the confidentiality and anonymity of their responses, as recommended by Krueger and Casey [65]. The interviews lasted approximately 45–60 min. A total of 47 semi-structured interviews were conducted at the close of the data collection phase. The interviews focused on: catalysts of FLW; the importance of reducing FLW; drivers of FLW; reduction barriers, practices, policies, and strategies; and FLW reduction management. Qualitative content analysis was the technique used for data analysis which can be described as a research method for the subjective interpretation of the content of text data through the systematic classification process of coding to understand the research issues [66].

Table 2 summarizes the profile of interviewees, i.e., gender, age, education background, type of hotel management, job position, and career experience. The interviewee profile was analyzed using SPSS version 25. Most respondents were male (95.7%) and only (4.3%) were females, reflecting the dominance of men in the Egyptian hotel industry, consistent with Sobaih [67]. Interestingly, 68% of the respondents held bachelor's degrees, 14.9% had a Master's degree, and 10.6% had a Ph.D. degree. Interviewees held a variety of positions relevant to the research issues, such as general managers (17%), food and beverage managers (25.5%), executive chefs (17%), and restaurant managers (14.9%). As most of the interviewees occupied high level management positions, the majority were above 36 years old and had extensive career experience either in their current hotel or elsewhere. Interviews were held in different types of hotel with respect to their management approach. This enabled a diversity of perceptions to emerge, providing a holistic perspective on FLW drivers within all-inclusive resorts, reflecting the diversity of all-inclusive practices between hotels [63].

Table 2. Interviews profile (n = 47).

Item		Frequency	%
Gender	Male	45	95.7
	Female	2	4.3
Age	From 25–35	5	10.6
	From 36–45	22	46.8
	From 46–60	20	42.6
Education Background	Bachelor's degree	32	68.1
	Postgraduate diploma	3	6.4
	Master's degree	7	14.9
	PhD degree	5	10.6
Type of hotel management	International corporate chain	7	38.9
	National chain	8	44.4
	Independent	3	16.7
Job Position	General manager	8	17.0
	Food and beverage manager	12	25.5
	Quality assurance manager	4	8.5
	Training manager	2	4.3
	Executive chef	8	17.0
	Sous chef	3	6.4
	Restaurant manager	7	14.9
	Duty manager	3	6.4
Hotel career experience	1–5 years	3	6.4
	6–11 years	13	27.6
	12–15 years	14	29.8
	More than 20 years	17	36.2
Current hotel experience	1–5 years	7	14.9
	6–11 years	23	48.9
	12–15 years	7	14.9
	More than 15 years	10	21.3

4. Results and Discussion

All-inclusive hotels provide comprehensive amenities, recreational services, and food and beverage services to their guests [68]. Furthermore, most all-inclusive services to guests are pre-paid [69]. All-inclusive hotels generate a substantial amount of FLW [15]. There is a small body of studies into the drivers and stages of FLW in relation to all-inclusive hotels. Earlier studies e.g., [26,56,69] discussed how sub-phases of pre-and post-consumption stages contribute to FLW in the food sector more generally but not specifically in all-inclusive hotels.

4.1. Theme One: Management Operation

1. The availability of an effective reduction plan

General managers interviewed reported numerous benefits of tackling FLW, such as cost-saving, gaining a competitive edge, and aiding environmental protection [4,70]. FLW reduction strategy is the main responsibility of high levels of management in all-inclusive hotels since they are responsible for clear definition of staff roles, the setting of incentives, and reduction strategy. For example, one of the interviewee general managers stated:

> *Senior management is required to define many attributes related to tackling food waste such as strategies and practices of reduction, staff hiring, training, and engagement, cascading the reduction culture, and awareness between hotel employees and guests.*

However, some of the all-inclusive hotels had a reduction strategy but there remained issues, such as inadequate staff awareness, and lack of commitment and training, which may be attributed to a lack of hotel leadership. All manager interviewees were aware of the

ethical, economic, and environmental impact of the FLW problem, but few hotels had an effective plan for tackling FLW or a dedicated person responsible for coordinating efforts.

2. Staff hiring process and training

In relation to the all-inclusive hotels' employees, most interviewees confirmed that staff play a critical role regarding the extent of waste and whether it is reduced or increases [4]. Unskilled and untrained staff at any hotel will produce unavoidable waste. For example, one of the GM explained:

> *Senior management is responsible to set the strategies to reduce food waste, while hotel employees whom responsible to apply the strategy. In Hurghada, especially in the high summer season we had to recruit enough employees in different hotel departments and usually, they are unqualified enough and there is no available time to train them. Consequently, these employees are the main drivers of food waste in kitchen operation.*

The employee hiring processes in Hurghada all-inclusive hotels were inadequate for different reasons, including seasonality and high levels of employee turnover, which are critical factors that lead to hiring unqualified employees during the peak season [17]. Moreover, there is no time available to train them well. Such factors influence the level of food waste especially in departments such as the restaurant and the kitchen. For example, one of the general managers stated that:

> *In the last five years, the Egyptian hotel industry witnesses' dramatic circumstances whether a political issue or the impact of COVID-19, therefore, most of the qualified employees shifting their careers. Consequently, we had to hire inexperienced employees with lack many required skills. Moreover, lack of time, as well as training costs, decrease the quality of training courses.*

In sum, interviewees confirmed that certain factors, such as seasonality, lack of profitability, lack of time, and cost, contributed to inadequate hiring decisions and lack of training [71], with the consequence of increased food losses and waste caused by staff behavior.

3. Awareness

All interviewees reported that senior management had the responsibility to raise awareness of hotel employees about the impact of the FLW, whether environmental, ethical, or economic. Awareness can be enhanced by different methods, including awareness campaigns, internal boards, communication meetings, booklets, and brochures [15]. Staff awareness alone is not enough, motivation drives should supplement awareness-raising. One of the quality assurance managers stated:

> *There are some sequences to reduce the level of food waste, first, the management must engage hotel employees in their objectives and practices. Second, awareness of the problem and its impact. Third, conducting an effective training and create motivation drive for employees such as bonuses, gifts, salary increases. The fourth, financial penalty for improper practices.*

To that end, senior managers must set the FLW reduction plan, engaging hotel employees in reduction practices supported by awareness and motivation initiatives [54]. Daily communication between senior management and employees is required to discuss the progress the level of reduction or obstacles to achievement [4]. Finally, observation and monitoring are necessary to ensure proper application of practices to achieve FLW reduction.

4. Characteristic of all-inclusive operation

All participants confirmed that FLW at the all-inclusive hotels was higher than traditional hotels because food and beverage operations in the all-inclusive hotels were different. Around the clock, food and beverages are available for guests through different outlets (e.g., swimming pool, beach, kid's area, recreational area, etc.). These findings support those of Okumus et al. [15]. Additionally, pre-payment for hotel services has an impact on consumption attitude [18]. These arguments were evident in the illustrative comments of two restaurant managers:

I feel that all-inclusive guests do not care about their level of food consumption since they already paid in advance a fixed price. Also, we have a lot of guest nationalities with different cultural background and eating habits, thus, breakfast, lunch, and dinner buffets have different food items with enough to satisfy the guest. A lot of waste is produced due to the nature of the all-inclusive concept.

During the peak season, the quality of some items may be below guest satisfaction due to the low room rate of all-inclusive hotels, consequently guests will order a different item and the first one will throw into garbage. For example, at my hotel the all-inclusive programs have 3 grades, guest belong to first and second grade are not authorized to consume the imported wine so guests had to test different kinds of local wine. The same situation could happen in a food item, therefore all-inclusive hotels generate more waste food than the traditional one.

5. Impact of food safety on FLW

All participants in interviews confirmed that food safety was the priority in every feature of food production because it is directly related to guests' health and is required by government regulations [72]. Food safety starts from the procurement stage and applies through to the service stage. Some factors that contribute to foodborne illness in hotel operations include: inadequate temperature of food storage, improper food preparation, contaminated equipment, inadequate temperature of bulk-cooked food, and poor personal hygiene. These findings are in agreement with Chawla [26]. One of the food safety regulations is that the food items on a buffet should not be left for periods longer than 4 h—even if it is not consumed it should be thrown away, as it is considered unsuitable for human consumption [73]. Food safety is one of the main drivers of food waste in all-inclusive resorts because the main style of food service in most of the hotel outlets is a buffet. These findings agree with [4,74].

Furthermore, all the interviewees stated that food safety regulation prevented guests from consuming food surplus or to have food items from the buffet in a "doggy bag" because it was too risky [75]. In addition, to meet food safety regulations, the policies of many hotels prohibited donation of surplus food to charitable organizations [76].

6. Kitchen operations

Regarding kitchen operations, some participants contended that normally these are under strict control by the executive chef and other relevant positions. Thus, kitchen operation should not significantly impact FLW. This finding is in agreement with Okumus et al. [15]. Other participants stated while there were monitoring practices for kitchen operation to minimize wastage level, factors such as food preparation error by unskilled employees and over-ordering could increase the level of FLW [1,4]. According to some participants, kitchen operations contributed 10–20% of total FLW. This argument is evident below:

Compared to our guests, kitchen operations waste less food. I believe that guests waste food between 40–50% of total FLW while kitchen operations might contribute 10–20% by the maximum from total FLW.

4.2. Theme Two: Foodservice Cycle

1. Menu Planning

Menu planning is the first stage in the food service cycle and plays a critical in FLW. It is under the control and monitoring of food and beverage managers and executive chefs. Consequently, they are aware of the critical role of efficient menu planning and engineering towards FLW. Menu design requires attention to multiple factors, such as food cost, selling price, portion size, item stocks, purchasing, food seasonality, and guest satisfaction [39]. Interviewee managers argued that these factors are much easier to apply in the traditional hotel, but are more complicated to apply in all-inclusive hotels [15]. Menu engineering can assist in reducing the quantity of FLW, especially in cyclic menus by avoiding less-liked and unusual buffet items [39]. For example, one of the executive chefs explained:

Certainly, menu design has the biggest impact on FLW, especially in all-inclusive hotels. Because all-inclusive main restaurants serve a cyclic menu for buffet. Buffet cyclic menus produce an excessive amount of waste because the surplus cannot be served the next day. On contrary, on 'a la carte'menus we can manage better menu planning by trying to have a similar menu between different outlets. Admittedly, menus engineering could help to reduce FLW from arising.

Certainly, the low room rate of all-inclusive hotels influences on menu planning, because we are trying as much as possible to avoid the imported items and we are depending on national items. Like these practices increase the level of waste because the European guests haven't eaten before the local foods hence thy might try to test too many items and vice versa for Egyptian and Arab nationalities.

2. Food Procurement

Procurement is the second stage of the food service cycle and is aimed at keeping hotel food stock at an acceptable level [77]. Most interviewees indicated that bulk purchasing is the norm for several reasons, such as lower transportation costs, overheads, and economies of scale. These findings are in agreement with Cousins et al. [47]. Participants often stated that they feared running out of menu items especially in high season; thus, executive chefs preferred to purchase excessively rather than using their judgment about what quantities were adequate. This practice leads to an increase in the level of FLW. The food purchasing decision is driven by factors such as lower cost, better quality, and an efficient delivery system. Most of the participants did not consider the environmental footprint of the food they procured. This finding is inconsistent with Cavagnaro [78]. As two of the food and beverage managers commented:

Economic and operational reflections rather than sustainability ones chiefly drove purchase decisions. All-inclusive hotels have a high operational cost so savings achieved by a cost-efficient procurement system were valued more than the losses accrued due to wastage.

Because Hurghada city is far away from the capital and food supply company, usually, executive chef ordering extra stocks to minimize the risk of food shortfalls and consequent impact, such this leads to an inability to use surplus stock which increases spoilage waste and purchasing costs especially on the dairy products, vegetables, fruits, and fresh juice.

3. Receiving and Storage

Most of the interview participants confirmed that they have a quality standard and check against this for acceptance or rejection of purchased items. A receiving committee has the responsibility to receive the items of a specified quantity and quality [47], and to apply quality standards so that the FLW level is minimized at this point. Following the relevant receiving procedure, all items are then moved directly to different types of storage. Interviewees stated that they have standard stock control practices and that they apply basic storage practices, such as FIFO. Moreover, they use electronic systems to control storage stock and, in the case of food, overstock can be used in the staff restaurant. Participants added that FLW at the stage of storage might occur at a minimum level. For example, one quality assurance manager explained:

FLW might occur in the storage stage in few cases such as the poor condition of store equipment, improper food temperature, or in case the storekeeper did not follow standard stock control practices.

4. Food Production

According to most interviewees, food production and preparation make a significant contribution to FLW in all-inclusive hotels. Bulk cooking and pre-cooking are the most common method of food preparation in all-inclusive hotels, as these practices have advantages, such as decreasing the risk of food shortfalls, reducing labor cost, and minimizing service time [26]. However, bulk cooking practices might contribute to surplus food production,

while pre-cooking leads to waste because the food quality may worsen over time. These findings are in agreement with Filimonau and De Coteau [39]. During the food production stage, unqualified kitchen employees, inadequate tools, and poor equipment also contribute to FLW because the quantity of unavoidable inedible food losses can be higher than acceptable. This result is consistent with Papargyropoulou et al. [74]. Overproduction of cooked food is a source of FLW. The consequences of these practices for FLW were evident:

> *In all-inclusive hotels, we are serving food around the clock buffet style to serve all in-house guests. Therefore, kitchen staff usually have a stock of cooked food for buffet refile and to avoid food shortfall. at the end of dinner time, we have unconsumed food in the kitchen as well as in the buffet. For hygiene and company quality standard such this is food considers as wastage.*

5. Food Service

All restaurant managers interviewed confirmed that they serve food buffet-style for breakfast, lunch, dinner, and snacks. Participants reported some benefits of using a buffet-style such as lower labor cost, ease of service, and more satisfaction for patrons [26]. However, the buffet is the main source of FLW in an all-inclusive hotel. This finding is in agreement with [4,26]. For example, one of the food and beverage managers stated that:

> *Despite the buffet service is more fit and suitable for guests and the F&B team, but the buffet is the main driver of food waste. Buffet should be full of food items up to last minutes, certainly too much food will not be consumed and too much food will go to waste.*

Participants identified several reasons for the significant amount of FLW driven by buffet services including that guests do not consume all the buffet food items, while the hotel was obliged to provide enough food for all-inhouse guests [4]. Furthermore, some of the food and beverage managers stated that the amount of FLW depends primarily on the size and type of buffets, as well as whether lunch, dinner show items offer local items (e.g., dairy products, ice cream, fresh juices, salads, and hot meals) because these items are frequently wasted during buffet service [42,74]. To conclude, food waste is dictated by the serving style, with buffets contributing more waste than an 'a la carte' menu. This is because 'a la carte' items are frequently created by guest order, whereas buffets require large-scale food production with little advance information as to what will be popular.

4.3. Theme Three: All-Inclusive Employees

1. Staff behavior

Staff behavior has a crucial influence on the level of FLW. Employee behavior can either minimize or contribute to FLW [79]. Unethical staff behavior will certainly increase FLW during all stages of the foodservice cycle. Participants reported many unacceptable staff behaviors, for example, if storekeepers did not strictly follow the principles of stock control, such as FIFO, as a result, newer food items are used first and unused older stock is ultimately thrown out. Moreover, staff behavior impacts the level of food loss and waste during food production. For example, participating chefs typically explained that:

> *Chefs must use the entire package of beef when a recipe calls for four and a half kilograms of beef and a package of beef only comes in five kilograms. This act does not come with bad intentions, but it has resulted in a surprising amount of FLW.*

Improper personal hygiene of kitchen staff has a negative impact on food safety that contributes to the very high amount of FLW [73]. Positive staff behavior can reduce the level of guest waste at the service stage, as illustrated by the following comment,

> *In all-inclusive restaurants that offer 'a la carte'menus, the service team can recommend or guide guests to food quantities that are suitable for them. This is a kind of positive staff attitude to reduce the level of dish waste.*

2. Staff awareness

Lack of employee awareness of the economic and environmental impacts of food waste is also considered to be a crucial factor in reducing and tackling food loss and waste [72]. Awareness plays a vital role in changing negative staff attitudes to positive ones [54]. Entry-level and younger employees do not feel guilty regarding the very high levels of FLW, thus it is key to create awareness among the hotel's staff. Since a single person cannot change the whole system, tackling FLW is a process that requires effort and attention at all hotel levels [15].

Staff engagement and awareness is a necessity for tackling FLW, but senior management need to identify ways of motivating their employees to be involved because if employees feel there are no benefits in changing they will not be interested in participating and will not apply the management goals. This finding is consistent with Bohdanowicz et al. [80]. To conclude, all interviewees reported that tackling FLW in all-inclusive hotels is not the sole responsibility of management, employees, or guests, but staff are key to success [81]. These arguments were evident in comments, such as,

> *The hotel management should hire well-educated employees with the required skills. Besides, the senior management has a responsibility toward their employees such as promoting the FLW reduction culture between employees, conducting a sufficient training program, motivate their employees, cascading the awareness's of the problem, ensuring proper and effective communication between hotel staff, green appraisal . . . . etc.*

4.4. Theme Four: All-Inclusive Guests

1. Guest attitude

The guest is the third party in any hotel operation; interviewees stated that in many cases guests' behavior presented obstacles to tackling and reducing FLW [28]. A small number of hotel guests are aware of the extent and impact of FLW. Participants pointed out that the number of times a guest attends the buffet, as well as the inherent unrestricted nature of all-inclusive food service, increases FLW. Thus, the main driver of FLW is guest behavior in comparison to other wasteful drivers [15]. Nonetheless, some guests are more wasteful than others. For example, one participating general manager stated:

> *Egyptian, Arab, and Russian nationality are more food wasteful because they visit the buffet than needed to try different food items further to over-consumed portion size, while the European visitors are less wasteful. Women and seniors are more conscious than men and younger. All of this goes around the clock, the perception is "eat endlessly, serve endless".*

All-inclusive guests pay in advance for all hotel services including food and beverage. Buying a package service creates a negative attitude toward FLW [18]. Furthermore, all-inclusive guests consume any food quantity regardless of food price or cost. Consequently, guest behavior has a more negative effect on FLW in all-inclusive hotels compared to traditional hotels where guests pay for their choices from an 'a la carte' menu which encourages guests to take care to order suitable food items of reasonable portion size. These findings are an agreement with Okumus et al. [15]. The negative guest behavior relates to the massive food surplus of their 24/7 meals. One of the duty managers encapsulates this sentiment:

> *Our visitors come from a variety of cultural backgrounds, which influences their eating habits. They want to eat and drink without worrying about what goes into the garbage because they have paid in advance. If we want to reduce waste in all-inclusive resorts, we need to pay attention to consumer behavior. Adjusting buffet food items according to most of the in-house guest nationality and their desires for food.*

2. Awareness

Most of the interviewees reported that guests' interest and awareness of sustainability issues are relatively low. Consequently, there is significant FLW during the service stage. Guest awareness has a great impact on anti-wastage and minimizes FLW to the lowest level. Guests should be aware of the ethical, environmental, and economic impacts of the FLW problem. Promoting awareness campaigns for guests can have very beneficial consequences on their consumption behavior [4,42,76]. For example, two food and beverage managers stated:

> *Certainly, if guests are aware of sustainability and the different impacts of food waste, they will reduce the level of wastage. Proper communication with a guest can be done through awareness Champaigns and other ways such as toolkit for reduction, posters, brochures, and on-table cards. Consequently, guests will reduce their portion size from the buffet and will reduce food surplus.*

> *Guest awareness of environmental and ethical impacts of FLW will change guest consumption behavior. For example, we have a daily announcement of the level of FLW by sign in the main restaurant, so the FLW on buffet has been reduced*

4.5. The Common FLW in All-Inclusive Hotels

The vast majority of interviewees classified FLW into two categories: pre-consumption and post-consumption. They also assumed that the extent of FLW at the post-consumption stage was higher than the pre-consumption stage. This finding is in an agreement with Okumus et al. [15]. Even though the participants believed that it was impossible to determine the amount of food wasted every year, they estimated that 25–35% of food was wasted during a single meal. The amount of FLW depends on many attributes, such as seasonality, the background of guests, staff skills, and awareness [15,74,82]. Participants confirmed that stages such as procurement, purchasing, and storage make a limited contribution to FLW because these are well-controlled by the use of technological applications for material control, with well-trained staff to apply the quality standards and control checks. Participants confirmed it was more difficult to achieve zero waste in kitchen operations due to unskilled employees, improper machines, long working hours, bulk cooking, and heavy operations. Concerning the type of FLW in kitchen operations, a participant suggested that it arose from the use of fruit and vegetables because of improper preparation, such as cleaning, peeling, cutting, and human errors. Service-side FLW, according to participants, is a significant contributor to FLW because all-inclusive hotels are dependent on a buffet style to serve many guests [42,74].

Some of the participants suggested that the amount of FLW frequently depends on the size and type of buffets (breakfast, lunch, dinner show, fork buffet, snacks, etc.). Participants argued that certain types of food item contributed particularly to FLW (e.g., pasta, rice, cooked vegetables, salads, local dessert, soup, hot meals, different types of bakeries). Most interviewees confirmed that FLW increases during events such as gala dinners (e.g., a New Year's party), Spring festivals, Christmas Day, and other related events. To conclude, Table 3 summarizes the most wasted food in all-inclusive hotels either in the pre-consumption stage or during post-consumption.

Table 3. Commonly wasted food in all-inclusive hotels.

Stage		FLW Items	Reasons
Storage		Fish and seafood Meat and meat products Milk and dairy products Ice cream Butter	Improper storage temperature Improper storage equipment Over procurement Store-keeper does not follow standard stock control practices Expiration
		Vegetables and Fruit	Improper storage temperature and over procurement
		Pasta and starchy food	Improper storage conditions
Food production		Fish and seafood Meat and meat products	Improper cooking because of unskilled staff Over-production due to bulk cooking
		Vegetables Fruit	Improper cutting and peeling because of improper machines, manual handling, and unskilled staff
		Oil	Using one fryer for different cooking purposes, over-heating, and smoking.
During and post-service	Breakfast buffet	Bakery items	Surplus, excessive portions, quality of items below guest expectations.
		Dairy products such as Yogurt Collection of cheeses	Yogurt is served by the bowl, not by portion creating guest surplus Unacceptable taste of imported cheese for domestic tourists Unacceptable taste of local cheese for foreign tourists
		Salad, olives, and salad dressing	Generally wasted by international guests due to their different breakfast perceptions
		Eggs	
		Hot and cold items	Guest plates surplus Below guest expectation
		Fresh fruit	Leftovers, excessive portion size
During and post-service	Launch and dinner show Dinner show Buffet style	Rice and pasta	Overproduction and leftovers
		International food items	Not required by domestic tourists
		Local food items	Not required by international tourists
		Soup	Over-production and type of soup may be below guest expectations
		Sauce	Serving a variety of sauces and salad dressings that do not meet guest desires especially by domestic tourists
		Dessert, Fresh fruit	Over-size portions and surplus, Unacceptable quality with a variety of items
	Other service meal	A light meal such as mini pizza, burger, bakery items	Around the clock, there is food and beverage service, and guests may not be hungry but they pick up food to test as they have already pre-paid.

4.6. Recommendations for Tackling FLW in All-Inclusive Hotels

Participants were divided into two groups. The first group were those who already had effective strategies towards FLW reduction; all of these were part of an international corporate chain or hotels classified as green hotels. The second group had inadequate reduction plans and were mostly independent hotels. Both groups were aware, however, of the influence of FLW, whether environmentally or economically. All participants confirmed that cost reduction was the primary concern for all-inclusive hotels, especially in kitchen operations. Consequently, they are careful to buy inexpensive raw materials and food items with a view to reducing cost. Decreasing FLW should be cost-effective to lessen the

likelihood of using substandard food items. In parallel with cost issues, there are a variety of ethical and sustainability considerations which play a major role [83].

Most interviewees believed that it was impossible to operate all-inclusive hotels without any FLW, especially during high season. Moreover, they claimed that the hedonic nature of all-inclusive hotels, with excesses in contrast to guests' daily life, exacerbated the problem. However, most of the participants confirmed that proper management practices can reduce FLW to the minimum. Table 4 includes several significant areas where interviewees shared their personal experiences and recommendations for managing and reducing FLW in all-inclusive hotels. Participants emphasized the importance of balancing operational considerations with guest-related concerns, highlighting the importance of raising awareness to provide visitors with the necessary prior information to prevent FLW.

Furthermore, most interviewees suggested that tackling FLW in all-inclusive hotels started with reducing wastage to the minimum level. This finding is consistent with Papargyropoulou et al. [74]. Preventing FLW throughout the food service cycle requires attention from all stakeholders. Participants reported that to maintain efficient waste management in all-inclusive hotels, precise forecasting, and analysis of guest segmentation, as well as a grasp of the necessity of recycling, reuse, and composting methods, are required. Some interviewees stated that their kitchen operations were based on food and beverage reports which estimated how different guests' backgrounds and demographic status would affect their future behavior, as well as predicting which food items would be the most popular.

There was disagreement between participants regarding the reuse of leftovers. Some of the interviewees objected to the idea because it is against their company standards and food safety [75]. Others confirmed that kitchen leftovers could be reused in another recipe, such as soup and sauces. Most of the interviewees suggested donating the uneaten food on the buffet to charitable organizations, such as food banks. Some participants objected to the donation of overproduced or uneaten food to avoid the risk and responsibility for its safety. This finding is in agreement with Priefer et al. [76]. Leftovers can be used for animal feed, or in compost for the large areas of landscape around all-inclusive hotels instead of purchasing this.

The application of technology plays a vital role in food service provision as well as in wastage management [69,84]. All participants reported that integrating technological innovations through the food service cycle might reduce FLW to a minimum level. For example, a program such as a material control system can manage and control food stock to the proper level. Smartphone applications such as 'Wise UP on Waste' can help determine the extent and characteristics of FLW to develop sector-specific mitigation strategies. Several participants suggested using the smartphone application, 'Too Good to Go', under food safety regulations. Participants reported that this application is widely used in European countries with over 23 million users alongside over 44,000 food suppliers. Users of the program can buy hotel and restaurant surplus food for a small fee. Furthermore, FLW may now be composted, as well as transformed into useful objects, thanks to contemporary technologies instead of purchasing these for large areas of garden and landscape. Participants reported some obstacles to the incorporation of technology and equipment in their operations, such as infrastructure, lack of profit, lack of staff skills in technology usage, and cooperation of guests. This finding is in agreement with Martin-Rios et al. [69]. To conclude, participants in interviews confirmed that tackling FLW in all-inclusive hotels requires bold decisions because many operational practices will need to be changed, such as avoiding buying inexpensive, low quality food items, promotion of awareness amongst stockholders, and especially between hotel employees and guests, and the integration of technology into hotel operations.

Table 4. Recommendations for tackling FLW in all-inclusive hotels.

Management	Include strategy for tackling FLW among the hotel strategies
	The hiring process needs to be more rigorous, especially for food and beverage staff, and other skilled and educated staff required
	Regular training on reduction practices for relevant employees
	Monitoring staff behavior towards tackling FLW
	Increase the level of communication between departments and staff at all levels concerning proper food cycle
	Cascading awareness about the impact of FLW reduction among hotel employees
	Create the motivational drivers to encourage hotel employees to apply reduction strategy
	Sustain staff satisfaction by refining benefits to embrace the belief of "career" and decrease the turnover level
	Recognize the 4 Rs policy (reduce, reuse, recycle, and recover)
	Coordination/partnership with charitable organizations to donate unused food
	Using FLW for composting
	Separate the FLW into categories for environmental purposes
	Incorporate technological innovations in every aspect of the food service cycle with co-operation from technology providers
F&B Team	Use some ingredients in multiple recipes and across multiple food service areas
	Daily "dish of today" to use products that are close to expiry
	Have kids' menus with suitable portions. For a buffet, have a kids' corner with small dishes.
	Do not include a new dish without a test panel of staff and guests
	For storekeeper and kitchen staff, the proper use of quality control checks such as FIFO is mandatory
	Using technological equipment, applications, and programs to control procurement, storage, and cooking
	Avoid low-quality raw materials and food items
	Decrease bulk cooking to a minimum level
	Ensure the quality of cooked food through applying company standard recipes
	Serve set menus instead of buffet during the off and shoulder seasons
	Scale down large menus and plan menu items to suit the demands of most in-house guests whether international or local guests
	Frequently engineer menus to avoid the most wasteful items
	Serve food at the right temperature (hot to serve hot and cold to serve cold)
	Trimming and garnish to be at a minimum level, to ensure that dishes are entirely eaten
	Provide guests with accurate information about food items such as ingredients and taste
	Avoid buffet re-fill in the last quarter
	Using modern technology such as tablets over tables in restaurants to show food recipes and cooking steps for food items. Also, tablets can be used in awareness of the impact of FLW
Guests	Involving hotel guests by encouraging them to behave sustainably and ethically
	Provide guests with a small plate and a suitable portion
	Implement regular awareness campaigns using posters, toolkits, table cards, signs, and social media
	Educate and direct domestic guests about the flavor and taste of international food items
	Educat and direct international guests about the flavor and taste of local food items
	Frequently adopt buffet items matched with guests' nationality, demographics, eating habits, and cultural backgrounds
	Offering doggy bags or food-boxes to clients to collect surplus food, ensuring food safety for doggy bags

5. Conclusions

Food loss and waste is not only a socio-cultural problem, but is also an economic, ethical, and an environmental problem, whether nationally or globally. All-inclusive hotels offer non-stop food and beverage services around the clock; the concept of pre-paid "all-inclusive" generates a great deal of FLW. The current study sought to investigate how FLW can be tackled in all-inclusive hotels. The study investigated what causes FLW at all-inclusive resort hotels and why FLW occurs to such a large extent in all-inclusive hotels. The research examined the causes of FLW and potential reduction practices from the perspective of concerned employees. Though there have been numerous studies in the context of FLW e.g., [38,39,79], this is one of the first studies to examine FLW gaps in all-inclusive hotels based on employee perceptions. The research provides a first assessment of how employees perceive FLW in the all-inclusive hotel environment and identifies several factors that are strongly linked to FLW in one of the most famous tourist destinations in Egypt, the city of Hurghada.

The current study found that FLW occurs from the moment of determining hotel procurements to the post-guest-service stage. The results confirmed that the primary reasons for FLW are the nature of the all-inclusive model, alongside guest-related causes, and the lack of application of technology to tackle FLW. Regrettably, the extent of FLW has not yet been reliably quantified. This study sought to reveal employees' observations about FLW and to recognise their views on the process of wastage reduction. The results of this research have practical and theoretical implications.

5.1. Practical Implications

Based on the findings of this study, the following practical recommendations for minimizing FLW in all-inclusive hotels are suggested:

1. To overcome the cost of incorporation of technology, all-inclusive hotels should develop a long-term strategic plan containing sustainability-oriented innovation with multi-stakeholder collaboration including businesses, especially technology providers [69,85].
2. Track and quantify FLW across the food service cycle, then analyze the reason for waste. Separate and categorize FLW using different colored bins, whether in the kitchen or in restaurants, to identify the most common sections where FLW occurs.
3. Buffet service style can be changed to deliver individualized, high-value service. For example, instead, of offering food in chafing dishes, live a la minute cooking stations, can assist waste reduction by cooking meals according to guest orders.
4. Replacing buffet service with the set menu during off and valley seasons. The set menu should be designed in co-operation with guests or tour leaders.
5. Joining with charitable organizations (e.g., Egyptian food bank) to donate uneaten food or edible leftovers. To safeguard each participant from any potential liability, clear processes should be established.
6. Effective implementation of the '4Rs' (i.e., "reduce, reuse, recycle, and recover"). Several platforms (such as social media, television, and periodicals) should be utilized to highlight the importance of the 4Rs in the all-inclusive context.
7. Create detailed instructions for the crucial processes that lead to waste that can be avoided. This relies on frequent inventory and stock control, FIFO, and a reduction in the size of plates and cups.
8. Attention to FLW caused by hotel employees from the procurement stage until the post-service stage:
    A. Proper hiring processes and selection of educated and skilled employees.
    B. Conducting effective induction and training for reduction practices.
    C. During the high season, short training courses, or simulations and online courses, are required to engage part-time employees.
    D. Motivate hotel staff to apply the reduction strategy with the reward system. Hotel management can develop a concept of a 'saver of the day' between employees to reward them with a special bonus.

E. Organize a "green team" of employees to promote environmentally friendly business practices in the workplace.
F. Maintain constant communication within the team to guarantee policy compliance.
G. Make signs to promote savings and current progress. Keep it brief and concentrate on the most important information, such as cost savings or environmental improvements.

9. Emphasis on guest-related reasons for FLW (during post-service):
   A. Using different channels and methods to increase guest awareness and to help customers become more mindful of FLW. Channels such as social networks (e.g., Facebook, Instagram, Twitter, and YouTube), hotel websites, in-room information channels, booklets, mini table cards, signs, posters, and banners in restaurants and outlets, should be used to raise FLW awareness amongst guests.
   B. Co-operation with travel agencies and tour operators to engage and notify guests about the extent of FLW and what changes they might make to their behaviors to cut down on waste.
   C. Hotels can use a "heroes of the week concept," in which a draw is held on a weekly basis to award free services to the family to one lucky guest who leaves no leftovers on their plate.
   D. Adding signs in the lobby area to show the extent of waste the previous day and how much food this could provide, to alter guests' behavior toward FLW.
10. Integration and adoption of technological innovations and applications to assist in the management, control, quantification and categorization of FLW.

5.2. Theoretical Implications

The results of the current study have contributed to extant knowledge in numerous areas. Earlier studies confirmed that FLW occurs mainly by hotel employees during the food service cycle, while most of them neglected the impact of guests' attitude and behavior on the extent of FLW in all-inclusive hotels. All-inclusive hotels have special characteristics because they offer endless food service in a pre-paid package. The findings of the study confirmed that all-inclusive services (open buffet, dinner shows, 24/7 food services), alongside guests' behaviors, are contributing to FLW. Moreover, the study found that guests' cultures, demographics, and backgrounds affect the wastage level. For example, guests such as Russians and Egyptians are more wasteful than Europeans. Improper eating habits (e.g., visiting the buffet more than one time, testing most of the buffet items, oversize portions) contribute to increasing the extent of FLW. Therefore, the study suggests a need to re-design existing menus according to the desires of the majority of hotel guests, or to replace the main dish section of the buffet with living a la minute cooking stations.

The study highlights the need to communicate with guests regarding adopting sustainable behaviors. Awareness campaigns are very important to promote ideas and remind guests of the importance of sustainability. Using different channels, such as social networks, brochures, and posters may alter guest behavior. Hotel employees at food and beverage outlets can play a crucial role in educating and directing in-house guests regarding suitable portion sizes, ingredients, tastes, and increase guests' awareness in a friendly manner while ensuring guest satisfaction. Given this, the study found that staff training and awareness are essential, whether in back of house operations or front of house operations. The back of house operations can reduce the FLW by proper practice during storage of food items according to the correct procedures, alongside proper kitchen operations (e.g., avoidance of overproduction, ensuring correct food temperature, avoiding food losses during cutting and peeling, applying food recipes, and proper practices of food safety).

6. Limitations and Future Research

This study has investigated tackling FLW in all-inclusive programs of Egyptian hotels. The current study has some limitations and future research could address these. First, the findings of this study were based on data collected from a sample of all all-inclusive resort hotels in Hurghada, Egypt using a qualitative approach. Future research could be held in different regions using a quantitative approach or by combining qualitative and quantitative methods. Additionally, the findings of this study are based on hotel employees' perceptions. Future research may collect data from guests or investigate other stakeholders' perceptions. While the current study examined guest behaviors as drivers of FLW in all-inclusive hotels in general, future research may investigate guest behavior related to specific nationalities such as Egyptian, in comparison with other nationalities.

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