



Mansoura University
Faculty of Tourism and Hotels

**REALITY OF ORGANIC FOOD WASTE SUSTAINABILITY
PRACTICES IN EGYPTIAN HOTELS**

By

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**RESEARCH JOURNAL OF THE FACULTY OF TOURISM AND HOTELS
MANSOURA UNIVERSITY
ISSUE NO. 15, PART ONE, JUNE. 2024**

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Reality of organic Food waste sustainability practices in Egyptian hotels

Abstract

This study aims to analyze the role of civil society organizations in achieving the sustainability of organic waste practices in hotels and identify the requirements, mechanisms, and benefits of the food donation process in addition to the challenges and factors affecting it. In order to achieve these objectives, a questionnaire form was developed and directed to a random sample of food and beverage managers and executive chefs in five-star hotels in Greater Cairo. A total of 40 questionnaires were distributed among them all questionnaires were valid. The obtained results indicated that the 42.5% of the hotel's motivations towards applying for food donations were instructions from external sources. According to the requirements of the food donation process, All respondents agreed with all the statements of the variable the statements," The hotel donates to a non-profit organization", has got the highest percentage of agreement from the respondents at (Mean=4.58). Donating surplus food can affect the reputation of the hotel as a result of the quality, freshness and reliability of the food products that will be donated as the main factors affecting on donating decision taking (mean= 4.15). Based on the results, some recommendations were proposed and addressed to hotels, creating a formal partnership between hotels and CSOs to establish regular food donation programs and establishing clear

communication channel between hotels and CSOs to ensure timely and efficient pick-up and delivery

Key Words: Sustainability, Hotel industry, Organic food waste, Food donation, CSOs.

واقع ممارسات استدامة المخلفات العضوية في الفنادق المصرية

الملخص

تهدف هذه الدراسة إلى معرفة واقع تحقيق ممارسات استدامة المخلفات العضوية في الفنادق من خلال التبرع بها الي مؤسسات المجتمع المدني والتعرف على متطلبات وآليات وفوائد عملية التبرع بالغذاء والتحديات والعوامل المؤثرة فيها. ولتحقيق هذه الأهداف تم اعداد استمارة استبيان وتوجيهها لعينة عشوائية من مديري الأغذية والمشروبات والطهاة التنفيذيين في فنادق الخمس نجوم بالقاهرة الكبرى، تم توزيع مجموعه مكونة من ٤٠ استبياناً وكانت جميع الاستبيانات صالحة للتحليل. أشارت النتائج التي تم الحصول عليها إلى أن غالبية الفنادق (٥٠.٦٪) تقوم بالتبرع بمخلفاتها العضوية الصالحة للأكل للجمعيات الخيرية وبنوك الطعام، ومن ناحية أخرى كان كسب تعاطف العملاء من خلال المشاركة المجتمعية في الفندق يمثل فائدة رئيسية لعملية التبرع بالطعام (بمتوسط = ٤.١٥). يمكن أن

يؤثر التبرع بفائض الطعام على سمعة الفندق نتيجة لجودة ونضارة وموثوقية المنتجات الغذائية التي سيتم التبرع بها كعوامل رئيسية تؤثر على التبرع باتخاذ القرار (بمتوسط = ٤.١٥). بناء على النتائج ، تم اقتراح بعض التوصيات وتوجيهها إلى الفنادق.

الكلمات المفتاحية: الاستدامة ، صناعة الفنادق ، نفايات الطعام العضوية ، التبرع بالأغذية ، منظمات المجتمع المدني.

Introduction

The hospitality industry is also associated with high food waste figures, with the food service sector generating 12 percent, or 11 million tons, of food waste in the European Union (Stenmark *et al.*, 2016). Many hoteliers have recognized the significance of reducing food waste because food and beverage expenses consume a larger portion of the budget and present a greater opportunity for resource efficiency (Sandaruwan and Gnanapala, 2016). There is a need to optimizing sustainability in food management in the hotels (Molina *et al.*, 2022). Marthinsen *et al.*, (2012) mentioned that avoidable food waste can be defined as organic waste which has its origin in food or inputs in food production, we can divide between avoidable and unavoidable food waste, Avoidable food waste was edible in the pre-disposal stage (slice of bread, plate residues. Donating healthy food for human consumption in the hotel and restaurant industry, businesses are at risk when donating food; however, they are eligible for tax benefits. Hotels should locate a food distribution

organization to partner with them (EPA, 2016). Hotel operators began implementing the following practices to reduce hotel waste: separating hotel waste by using clearly labeled containers and colored bins for recyclables; purchasing products with recycled content; collecting organic kitchen waste separately for soil composting; purchasing food and cleaning chemicals in bulk, adopting a donation program (donating food leftovers and linens to charity) and grinding the remaining guest soaps to use as laundry detergent (Han *et al.*, (2018).

Research aim

This study aims to analyze the role of civil society organizations in achieving the sustainability of organic waste practices in hotels by:

- Analyzing the hotel's motives towards food donations.
- Determining the requirements that should be met in CSOs and hotels to achieve the sustainability of organic waste practices in hotels.
- Realizing about the mechanisms of CSOs and hotels towards for achieving the sustainability of organic waste practices in hotels.
- Highlighting the benefits of implementing sustainable organic waste practices for CSOs and hotels.
- Recognizing the challenges and factors affecting the food donation process in hotels and the difficulties and obstacles that face CSOs and hotels towards achieving the sustainability of organic waste practices in hotels.
- Identifying the mechanisms for continuous improvement of food donations from the point of view of both CSOs and hotels.

Research Problem

Many studies have discussed the topic of civil society organizations in many sectors, such as the social, religious, and political sectors, as a result of the emergence of models of civil society organizations that differ in their fundamental interests and issues according to the needs and problems of society, the study will focus on civil society organizations and their role in the practices of sustainability of hotel organic waste.

It is clear from the above that there is no study discussed the topic of civil society organizations in hotels sector on food donation practices in Egyptian hotels with CSO, and here lies the research gap in the absence of a study on the dimensions and variables of the current study, hence the problem of the study.

Research Questions

- 1-What are the hotels' motives for applying food donations?
- 2-What are the requirements that should be met by hotels to achieve the sustainability of organic waste practices in hotels?
- 3-What are the mechanisms of hotels towards achieving the sustainability of organic waste practices in hotels?
- 4-What are the Benefits of the Food Donation Process of hotels in achieving the sustainability of organic waste practices in hotels?
- 5-What are the challenges and factors affecting food donations in hotels? practices?

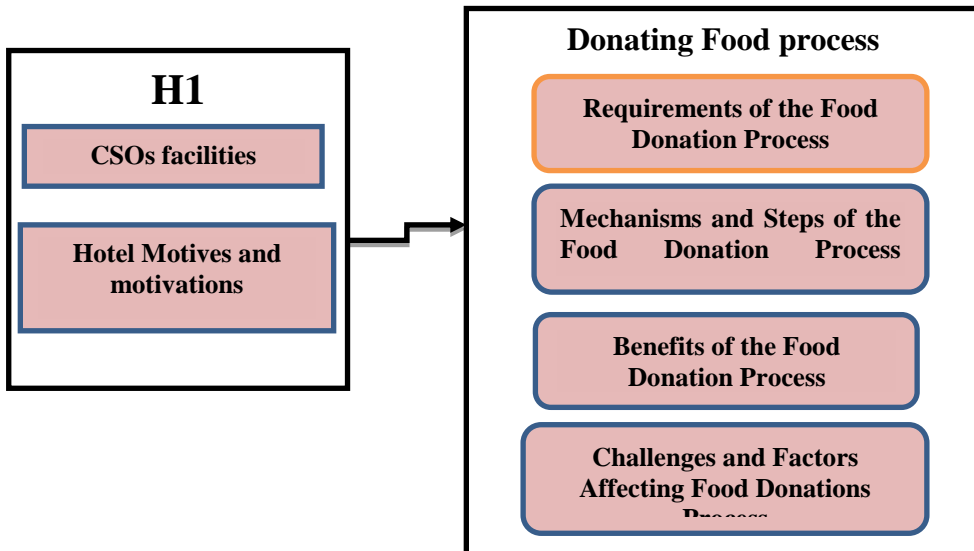
6-What are the mechanisms for continuous improvement of food donations from the point of view of hotels?

Research hypotheses

Based on the researcher's reading about the subject of hotel donations, it could be set some hypotheses. These hypotheses emanated from the objectives of the study and its importance. Hypotheses of the study were as follows:

Hypothesis 1: There is a statistically significant effect on 0.05 degree for the facilities provided by CSOs on encouraging hotels to donate food.

Hypothesis 2: There is a statistically significant effect on 0.05 degree for the motives and motivations on encouraging hotels to donate food.



Review of literature

1-An Overview of the Hotel Food Donation

The most preferred strategy is to feed the hungry by donating excess food to organizations that serve food-insecure communities (**Harvard Food Law and Policy Clinic**, 2015). However, the role of food surplus redistribution in achieving sustainable food is being questioned (**Schneider**, 2013; **Midgley**, 2014). Since there is so much food waste from hotels, restaurants, and shops, their purpose is to feed as many people as possible through a good system that eradicates hunger through good food management and redirection of that waste to those in need (**Lovrenčić**, 2017).

A variety of events can result in excess food (e.g., an unexpected decrease in the number of clients, limited stocks which cannot be used all in time before the closure of the establishment for holidays, etc.). Not all foods, however, can be donated. Food must be safe for human consumption in order to be suitable for donation, and it must therefore comply with all relevant food hygiene and safety legislation. Consumption dates and time limits must always be followed (**HOTREC**, 2017).

Table (1): Definitions of Food Donations

Authors	Definitions
Townsend, et al.,(2020)	Food donation is defined as" food which is longer desired by the generator but is still fit for human consumption and is prevented from end-of-life disposal. The food is recovered by being directed to service organizations with the intent to feed food insecure people. As food donations

	are items that are no longer at risk of being treated by traditional methods of disposal, and are reused, also known as recovered, we use the terms food donations, food recovery, and source reduced interchangeably".
Lovrenčić, (2017)	"The food donation system is a component of charitable activities that are typically organized by civil society organizations and are occasionally supported by state or local governments".

2-Importance and benefits of food donation

According to **Mason *et al.***, (2011), Food that is donated to food charities can be consumed by both humans and animals, making it avoidable food waste. Given that it has been saved from the landfill and is now being used as food by a variety of welfare organizations, edible food donated to food charities is frequently referred to as "rescued".

According to **ReFED** (2018), Use food donations to track and manage surplus food, and the visible reminder of surplus food kept for pick-up can help change the products prepared for pick-up, reducing the amount of food that goes unsold, organizations that match donations can swiftly match leftover food with a recipient organization, relieving chefs and general managers of the responsibility of organizing pickups.

Lovrenčić (2017) stated that food donations to non-profit organizations, rather than to individuals, are tax deductible. But in the majority of countries, there exist contracts or at the very least an IT connection between non-profit organizations and businesses. The majority of nations have set up a food donation system with food banks, which

implies that these organizations are responsible for the transportation and pay for it. A tax deduction is one of the benefits from the donation of food, but it is applicable, only when donating to qualified charities. Tax deductions can't be made if the food is given on a private initiative, but most go through qualified charities. Qualified charities include: (religious organizations, Organizations that help the neediest people nonprofit charitable organizations, and nonprofit hospitals.

3-Requirements for food donation

A sound understanding of food donation policies is necessary to implement a successful food donation program and to realize enhanced tax deductions. Food donation programs can also be a tool to track where and how to prevent food waste elsewhere in the business claims (Cochran *et al.*, 2018).

According to **lovrencic** (2017), donated food products should be safe, compliant, and fair. Products that are likely to create a safety risk should be excluded (raw meat and seafood, non-repacked foods, and strongly damaged packaging). Non-perishable or unspoiled perishable foods can be donated to local food banks, soup kitchens, pantries, and shelters. Food bank donors typically include manufacturers, grocery store chains, food service entities, hotels, restaurants, wholesalers, and farmers (EPA, 2014).

It will involve close coordination between all stakeholders, including donors, acceptors, regulators, and facilitators, to maximize the use of food losses for food

donations to economically disadvantaged people. Harmonizing and professionalizing the donation and acceptance chain should be a priority. Here, facilitators play a crucial role in ensuring that knowledge and communication about (legal and food safety and hygiene) reach all charitable groups that take donations (**De Boeck et al.**, 2017). Think of collaborating with a charity that matches food donations. They frequently help restaurants receive better tax deductions by helping them discover suitable food donation recipients depending on when and what they can donate, collecting and shipping the food for them, and making sure the nonprofit adheres to all relevant food safety regulations (**Cochran et al.**, 2018).

Hospitality businesses should keep internal records of every donation made. This is necessary to guarantee the complete traceability of food goods and, if applicable, any potential tax deductions. Additionally, this will make it possible to identify recurring sources of waste and losses and, consequently, take remedial action going forward. Last but not least, the partner group must also obtain all the information required by law regarding the food donated (**HOTREK**, 2017).

4-Mechanisms and Steps of food donation process

Bierma et al., (2019) According to John, stated seven typical steps in the food donation process as follows:

1. **Identify surplus food:** When a food item is no longer appropriate to be served or sold, it must be determined whether the item is safe to donate or whether it must be discarded. This decision is not simple and can involve

judgments about expiration dates, how the food has been held, and whether it will be frozen prior to donation.

2. Repackage/label/store: All goods must be labeled with their contents, package date, and disposal date if they are not prepackaged (if appropriate). Some food supplies come in bulk and should preferably be repackaged in sizes suitable for a pantry. Food for donation should be stored at the right temperature, without the possibility of contamination.

3. Retrieve and transport: The distribution of donated food involves several critical steps, including transportation. Contamination and time/temperature control are major obstacles. According to donors, some locations occasionally decline donations at the time of pick-up due to the state of the interior of the car. Some contend that TCS meals should only be transported in refrigerated trucks. For instance, Starbucks has given subsidies to various regions to ensure that TCS items are picked up from their stores using refrigerated vans. Others contend that refrigerated cars are useless due to the repeated openings required for food pickup at numerous stops. The food must be kept in coolers with ice packs in order for Food Donation Connection to accept pick-up in a non-refrigerated vehicle.

5. Repackage/label/store: Some pantries are open only once per week, and culling expired inventory can be lacking. Pantries sometimes repackage bulk foods that were not repackaged by the donor. Cold storage is a concern, as many pantries do not have commercial refrigeration equipment.

6. Display: Even if a pantry has sufficient cold storage, it may not have the necessary cold display equipment to utilize when it is open. The staff will rotate food products

back into storage before they have been out for too long, so TCS foods may be presented at room temperature.

7. Reassess: Foods that are still available must be evaluated to see if they will be suitable for consumption the next time the pantry is open. Some food banks have told us that they get donations of food from other food banks that no longer want to store the food. Starbucks stipulates that food banks receiving its TCS products shall not transfer the food to other food banks and must dispose of it if it was presented without adequate refrigeration.

5-Food donation problems

Up to 60% of manufacturers admit that obstacles to food donation are what make them wary when it comes to food waste donation. They frequently suffer from legal obligations for food donation quality, a lack of refrigerated storage for donations, inadequate staff understanding of food saving initiatives, and a lack of knowledge about organizations or resources that accept and distribute donated food (**Hower**, 2014). Redistribution of food is not a common practice. Collaboration between many organizations that are directly involved in the production and handling of food, as well as between organizations and people involved indirectly in the recovery of surplus food, is necessary for this to happen. Therefore, advancements in the efficient redistribution of perfectly edible food may be greatly hampered by a lack of teamwork (**Brancoli et al.**, 2017).

Iovrencic (2017) mentioned some of the problems with donating food, including:

-Convenience and proximity to food service businesses - the distance between donors, charities, and/or recipients of food assistance may make transporting and/or properly handling food surplus difficult, and a lack of knowledge of such elements may cause trouble.

-Types and frequency of donated food products: Frequently, the surplus food available does not vary enough to assist in preparing a nutritious meal, so charities and community organizations in charge of providing direct food distribution to those in need must purchase the additional ingredients. Frequency can also be a problem because food surplus may not always be available to assist charities or community organizations in providing three meals a day every day.

- Possibility of facing charges relating to potential health effects-FSC stakeholders are hesitant to contribute excess food because they run the danger of being accused of having negative health effects.

-Reputational considerations: Willingness to donate excess food since contributors' reputations may be impacted by the quality, freshness, and dependability of donated food products.

-Accessibility (structural, organizational, technological) – This refers to businesses that may not be structurally equipped to handle food excess storage, transportation, or handling, as well as the incapacity of FSC stakeholders or individuals to use the technical tools to give or access food (Iovrencic, 2017).

Patel *et al.*, (2021) Also stated are a number of obstacles that prevent food providers and recipients of food aid from transacting, including:

-Actions taken to protect the brand reputation or compete for market share can have the opposite effect, resulting in an increase in food donations.

-Some FSC stakeholders are discouraged from making food donations. Due to the potential for accountability and responsibility for food safety, as well as the fact that it is more financially appealing for them to maximize profit from selling food products than to avoid disposal costs through donations.

The main barriers mentioned by donors are the administrative burden, financial burden (donation cost should not exceed waste disposal cost), lack of storage capacity at the donor to set aside food losses if not immediately picked up by the food banks/food charities, lack of (cooled) transport (capacity) at the acceptor side, and inefficient communication because food banks/food charity organization frequently work with volunteers (**De Boeck et al.**, 2017). Additional obstacles to distributing surplus food include closeness, which can prevent donations, especially when it comes to fresh items with a limited shelf life (such as fresh fruits and vegetables and ready-to-eat composite products) (Bio by Deloitte, 2014); distribution of cooled or frozen food; Volunteers' lack of structure, organization, and food hygiene knowledge; donors' financial and administrative burdens (**De Boeck et al.**, 2018). One explanation for this could be that they need to take into account potential hygiene issues, such as giving victims food poisoning. Hotel food waste was occasionally donated (**Srijuntrapun et al.**, 2022).

Research methodology

In order to achieve the research aim, food and beverage managers and executive chefs in five star greater

Cairo hotels were surveyed. A total of 40 questionnaires were distributed randomly in the investigated hotels (20 hotels) during May to July 2023, all questionnaires were valid to analyze. The questionnaires were returned and the results then analyzed. The questionnaire consisted of three sections. The first section intended to The Objective data. The second section intended to Explanatory Data, this section included 18 attributes covering the four investigated dimensions (requirements, mechanisms, benefits and factors affect). The respondents were asked to answer these questions by using a five-point Likert-type scale (Strongly agree = 5, agree =4, neutral = 3, disagree = 2 and strongly disagree = 1) to determine the levels of agreement with the statements investigated. The Statistical Package for the Social Sciences (SPSS) version 26.0 was used to analyze and compute the collected data. The third section about Proposals for continuous improvement of the food donation process.

Reliability Analysis

Table 2: Reliability Analysis

Number of Statements	Alpha
36	0.86

Table 3 indicated that alpha coefficient of the questionnaires dimensions was 0.86 (higher than 0.70) (Pallant, 2007). This result indicated to the reliability and validity of the questionnaires for using in the study.

Results and Discussion

The results involved four main stages. Descriptive analysis was used to discover participants' responses, variance analysis for respondents' answers and correlation analysis were conducted to examine the relationship between independent variables and dependent variable. Pearson's correlation, coefficient and simple regression were used to test the study hypotheses. The results obtained were computed and analyzed in the following tables.

Table (3): Answers of respondents on the hotel's motivations towards applying food donations

The hotels' motivations	Frequency	Percent
Hotel Policies	7	17.5
As a result of a cooperation protocol with civil society organizations	9	22.5
As part of the hotel's community engagement	7	17.5
Instructions from external sources	17	42.5
Total	40	100.0

The result of this question showed that the hotel's motivations towards applying food donations where 42.5% of the hotel's motivations towards applying food donations were instructions from external sources. This is followed by, 22.5% of hotel's motivations towards applying food donations were As a result of a cooperation protocol with civil society organizations. In addition, 17.5% of hotel's motivations towards applying food donations were as part

of the hotel's community engagement and from hotel Policies. This result is agreement with CNE (2017). The result's that Hilton, one of the world's largest hospitality companies, has partnered with the Egyptian Food Bank (EFB) to donate meals to those in need in accordance with the instructions of the Chamber of Hotel Establishments. A total of 11 of the 18 Hilton hotels in Egypt participated in the donation initiative, providing a total of 4,283 meals worth approximately EGP 150,000, which is focused on fostering opportunities, enhancing communities, and protecting the environment in the markets where the firm conducts business.

Table (4): correlation between outcome variables and its dimensions

Dimensions	Pearson's correlation	P-value	Statistical significance
Requirements of the Food Donation Process	.877**	0.000	Highly significant
Mechanisms and Steps of the Food Donation Process	.720**	0.000	Highly significant
Benefits of the Food Donation Process	.954**	0.000	Highly significant
Challenges and Factors Affecting Food Donations Process in Hotels	.904**	0.000	Highly significant

Table (4): illustrates the correlations between the outcome variables and their dimensions where they are ranged

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between (0.720-0.954) with p-value 0.000 which is less than level of significance e.g. highly significant and satisfying the internal validity of the outcome variables.

Table 5: Respondents' answers on the Requirements of the Food Donation Process

Statements	5-Point Likert - Scale					Statistics			
	1	2	3	4	5	Mean	SD	R	
The hotel donates to a non-profit organization	Freq.	0	0	0	20	20	4.50	.506	1
	%	0	0	0	50	50			
The hotel checks the accuracy of food its donations for perishable products by ensuring that CSOs are close to the place of donation	Freq.	0	0	1	25	14	4.33	.526	2
	%	0	0	2.5	62.5	35			
The hotel determines an appropriate recipient based on when and what the hotel can donate	Freq.	0	0	3	28	9	4.15	.533	5
	%	0	0	7.5	70	22.5			
The hotel has special food	Freq.	0	0	0	33	7	4.18	.385	4
	%	0	0	0	82.5	17.5			

donation policies in place to ensure that donations are made in accordance with food safety and health regulations									
The hotel makes sure that all non-profit organizations to which it will donate follow all food safety guidelines	Freq.	0	0	3	30	7	4.10	.496	7
	%	0	0	7.5	75	17.5			
The hotel develops and implements staff training on food safety procedures for what can and cannot be donated and the requirements for transporting the food that the hotel	Freq.	0	0	0	35	5	4.13	.335	6
	%	0	0	0	87.5	12.5			

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intends to donate									
The hotel maintains intensive cooperation with CSOs in order to optimize the use of food losses	Freq.	0	1	12	24	3	3.73	.640	8
	%	0	2.5	30	60	7.5			
The hotel keeps internal records of every donation made	Freq.	0	0	0	28	12	4.30	.464	3
	%	0	0	0	70	30			
General Mean and Standard Deviation							4.18	.312	-

N.B: 1=" Strongly disagree ", 2=" disagree, 3=" Neutral ", 4=" agree, 5= " Strongly agree", SD, "Standard Deviation" R=Ranking.

From the tabulated data in Table (5), it could be noticed that the perceptions of the investigated respondents towards the requirements of the food donation process in hotels show that the respondents agreed on all the statements in the dimension. These statements indicate that the respondents found that:

- "The hotel donates to a non-profit organization" (Mean=4.50)".
- "The hotel checks the accuracy of its food donations for perishable products by ensuring that CSOs are close to the place of donation" (Mean=4.33)".
- The hotel keeps internal records of every donation made (Mean=4.30)". This result agreed with

HOTREK, (2017) who stated that hospitality businesses should keep internal records of every donation made. This is necessary to guarantee the complete traceability of food goods. This will make it possible to identify recurring sources of waste and losses and, consequently, take remedial action going forward. "The hotel has special food donation policies in place to ensure that donations are made in accordance with food safety and health regulations" (Mean=4.18).

- "The hotel determines an appropriate recipient based on when and what the hotel can donate" (Mean=4.15). This result agreed with **lovrencic** (2017) who stated that donated food products should be safe, compliant, and fair. Products that are likely to create a safety risk should be excluded (raw meat and seafood, non-repacked foods, and strongly damaged packaging).
- "The hotel develops and implements staff training on food safety procedures for what can and cannot be donated and the requirements for transporting the food that the hotel intends to donate" (Mean=4.13).
- "The hotel makes sure that all non-profit organizations to which it will donate follow all food safety guidelines" (Mean=4.10). This finding agreed with that of **EPA** (2014) who clarified that Non-perishable or unspoiled perishable foods can be donated to local food banks, soup kitchens, pantries,

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and shelters. Food bank donors typically include manufacturers, grocery store chains, food service entities, restaurants, Hotels, wholesalers, and farmers.

- "The hotel maintains intensive cooperation with CSOs in order to optimize the use of food losses" (Mean=3.73).

In general, table (21) show that the majority of the sample agreed with all the statements of requirements of the food donation process in the hotel's dimension, for instance, the percentage of average answers of the respondents ranged between 3.73 and 4.50 and overall mean 4.18, with standard deviation 0.312. In this sense, it should be noticed that an understanding of food donation policies is necessary to implement a successful food donation program. Food donation programs can also be a tool to track where and how to prevent food waste elsewhere in the business claims (Cochran et al., 2018).

Table (6): Respondents' answers on the Mechanisms and Steps of the Food Donation Process

Statements		5-Point Likert - Scale					Statistics		
		1	2	3	4	5	Mean	SD	R
The hotel determines the surplus food it intends to donate	Freq.	0	0	6	31	3	3.93	.474	6
	%	0	0	15	77.5	7.5			
The hotel determines if the food is safe to donate or	Freq.	0	0	0	30	10	4.25	.439	2
	%	0	0	0	75	25			

should be discarded									
The hotel excluded any products that may pose a safety risk and are not suitable for donation	Freq.	0	0	0	25	15	4.38	.490	1
	%	0	0	0	62.5	37.5			
The hotel packages leftovers for donation	Freq.	7	2	3	21	7	3.48	1.339	8
	%	17.5	5	7.5	52.5	17.5			
The hotel places identification labels on all products with their contents, date of packaging, date of disposal, safe storage temperature, and information on reheating	Freq.	5	6	8	20	1	3.15	1.122	10
	%	12.5	15	20	50	2.5			
The hotel keeps the food it intends to donate until it is obtained by CSOs	Freq.	5	13	10	11	1	2.75	1.080	11
	%	12.5	32.5	25	27.5	2.5			
The hotel	Freq.	3	8	7	19	3	3.28	1.109	9

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determines how the food will be kept for donation and whether it will be frozen before donation or just refrigerated	%	7.5	20	17.5	47.5	7.5			
The hotel schedules donations by CSOs	Freq.	0	1	9	26	4	3.83	.636	7
	%	0	2.5	22.5	65	10			
The hotel verifies the safety of the existing procedures for the safe delivery of food	Freq.	0	0	1	37	2	4.03	.276	5
	%	0	0	2.5	92.5	5			
The hotel checks the condition of the donated food transport vehicles	Freq.	0	0	0	39	1	4.03	.158	4
	%	0	0	0	97.5	2.5			
The hotel determines the best ways to adjust the timing and temperature of food	Freq.	0	0	0	38	2	4.05	.221	3
	%	0	0	0	90	5			

handling									
General Mean and Standard Deviation							3.74	٣٥٠.	-

N.B: 1=" Strongly disagree ", 2=" disagree, 3=" Neutral ", 4=" agree, 5= " Strongly agree", SD, "Standard Deviation" R=Ranking.

From the tabulated data in table (6), it could be noticed that the perceptions of the investigated respondents towards the mechanisms and steps of the food donation process of investigated hotels shows that the respondents are agreed on the statements in the dimension. These statements indicate that the respondents found that:

- "The hotel excluded any products that may pose a safety risk and are not suitable for donation" (Mean=4.38)".
- "The hotel determines if the food is safe to donate or should be discarded" (Mean=4.25)". This result agreed with **Bierma et al.**, (2019) who stated that foods that are still available must be evaluated to see if they will be suitable for consumption the next time.
- The hotel determines the best ways to adjust the timing and temperature of food handling (Mean=4.05)". Even if a pantry has sufficient cold storage, it may not have the necessary cold display equipment to utilize when it is open. The staff will rotate food products back into storage before they have been out for too long (**Bierma et al.**, 2019).
- "The hotel checks the condition of the donated food transport vehicles" (Mean=4.03).

- "The hotel verifies the safety of the existing procedures for the safe delivery of food" (Mean=4.03).
- "The hotel determines the surplus food it intends to donate" (Mean=3.93).
- "The hotel schedules donations by CSOs" (Mean=3.83).
- "The hotel packages leftovers for donation" (Mean=3.48).

On other hand, the managers and chefs were neutral of the following statements which mean that they not sure if:

- "The hotel determines how the food will be kept for donation and whether it will be frozen before donation or just refrigerated" (Mean=3.28).
- "The hotel places identification labels on all products with their contents, date of packaging, date of disposal, safe storage temperature, and information on reheating" (Mean=3.15).
- "The hotel keeps the food it intends to donate until it is obtained by CSOs" (Mean=2.75).

In general, table (8) show that the majority of the sample are agree with all the statements of the mechanisms and steps of the food donation process of investigated hotels dimension, for instance, the percentage of average answers of the respondents ranged between 2.75 and 4.38 and overall mean 3.74, with standard deviation 0.350. These results agreed with **Cochran *et al.***, (2018) who stated Adopt and exhibit a culture of food safety about recovered food. Create and implement protocols to make

sure food is handled throughout preparation, storage, transportation, and serving in a way that lowers the risk of a foodborne illness, teach staff members' safe food handling techniques .

Table (7): Respondents' answers on the Benefits of the Food Donation Process of the investigated hotels

Statements	5-Point Likert - Scale					Statistics			
		1	2	3	4	5	Mean	SD	R
Enables the hotel to measure and manage surplus food	Freq.	0	2	10	24	4	3.75	.707	6
	%	0	2.5	22.5	65	10			
Saving edible food instead of disposing of it as waste	Freq.	0	1	14	17	8	3.80	.791	4
	%	0	2.5	35	42.5	20			
Raising awareness of poverty and hunger relief issues	Freq.	0	1	13	21	5	3.75	.707	5
	%	0	2.5	32.5	52.5	12.5			
Greatly assist in achieving the UN Sustainable development Goals to end world hunger	Freq.	0	1	13	19	7	3.80	.758	3
	%	0	2.5	32.5	47.5	17.5			
Achieve a competitive advantage for the hotel	Freq.	1	1	7	10	21	4.23	1.000	2
	%	2.5	2.5	17.5	25	52.5			

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and protect the brand image									
Gain customer sympathy through community participation in the hotel	Freq.	0	1	4	10	25	4.48	.784	1
	%	0	2.5	10	25	62.5			
General Mean and Standard Deviation							3.97	.670	-

N.B: 1=" Strongly disagree ", 2=" disagree, 3=" Neutral ", 4=" agree, 5= " Strongly agree", SD, "Standard Deviation" R=Ranking.

From the tabulated data in table (7), it could be noticed that the perceptions of the investigated respondents towards the benefits of the food donation process in the investigated hotels shows that the respondents are agree on the statements in the dimension. These statements indicate that the respondents found that:

- "Gain customer sympathy through community participation in the hotel" (Mean=4.48)".
- "Achieve a competitive advantage for the hotel and protect the brand image" (Mean=4.24)".
- Greatly assist in achieving the UN Sustainable development Goals to end world hunger (Mean=3.80)".
- "Saving edible food instead of disposing of it as waste" (Mean=3.80).this result agreed with Mason *et al.*, (2011), who supported that food donated to charities can be consumed by both humans and animals, making it avoidable food waste. Edible

food donated to food charities is frequently referred to as "rescued."

- "Raising awareness of poverty and hunger relief issues" (Mean=3.75). This result agreed with that of **Fontefrancesco** (2019) who stated that food drives support UNSDG 2 "Zero Hunger" in two ways," by collecting and redistributing food, and intangibly, by raising awareness about issues such as urban poverty, unequal food access, and famine relief .
- "Enables the hotel to measure and manage surplus food" (Mean=3.75). This result agreed with that of **ReFED** (2018) who stated that using food donations to track and manage surplus food, and the visible reminder of surplus food kept for pick-up can help change the products prepared for pick-up, reducing the amount of food that goes unsold.

In general, table (7) shows that the majority of the sample is in agreement with all the statements of benefits of the food donation process in the investigated hotels dimension, and the overall mean is 3.97, with a standard deviation of 0.670.

Table (8): Respondents' answers on the Challenges and Factors Affecting Food Donations Process in Hotels

Statements		5-Point Likert - Scale					Statistics		
		1	2	3	4	5	Mean	SD	R
Insufficient food surplus for the hotel to prepare	Freq.	2	4	18	10	6	3.35	1.027	6
	%	5	10	45	25	15			

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nutritious integrated meals that can be donated and limited to certain types each time									
Donating surplus food can affect the reputation of the hotel as a result of the quality, freshness and reliability of the food products that will be donated	Freq.	1	1	10	7	21	4.15	1.051	1
	%	2.5	2.5	25	17.5	52.5			
Lack of flexibility in rules for hotels to facilitate the redistribution of surplus food	Freq.	0	16	15	8	1	1.85	.834	11
	%	0	40	37.5	20	2.5			
Risks of legal responsibility and responsibility for food safety and quality	Freq.	1	7	22	8	2	3.08	.829	9
	%	2.5	17.5	55	20	5			
The risk of liability for food-related	Freq.	1	5	19	13	2	3.25	.840	7
	%	2.5	12.5	47.5	32.5	5			

injuries is a barrier to hotel donating leftovers									
The difficulty of transporting surplus food because of the large distances between the hotel and CSOs	Freq.	1	6	13	16	4	3.40	.955	5
	%	2.5	15	32.5	40	10			
Donating surplus food is less attractive to the hotel financially because maximizing profits by selling leftovers is better than the costs of disposing of them through donations	Freq.	4	8	13	13	2	3.03	1.074	10
	%	10	20	32.5	32.5	5			
The administrative and financial burden on the hotel as a result of the cost of the	Freq.	3	9	12	13	3	3.10	1.081	8
	%	7.5	22.5	30	32.5	7.5			

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donation exceeding the cost of disposing of leftovers									
Lack of information on civil society institutions receiving leftover donations	Freq.	0	1	6	20	13	4.13	.757	2
	%	0	2.5	15	50	32.5			
Lack of hotel storage capacity leads to food losses if not collected immediately by CSOs	Freq.	0	3	3	24	10	4.03	.800	3
	%	0	7.5	7.5	60	25			
Lack of refrigerated transportation of food by food-receiving organizations is an obstacle for the hotel to donate leftovers	Freq.	0	1	12	21	6	3.80	.723	4
	%	0	2.5	30	52.5	15			
General Mean and Standard Deviation							3.38	.604	-

N.B: 1=" Strongly disagree ", 2=" disagree, 3=" Neutral ", 4=" agree, 5= " Strongly agree", SD, "Standard Deviation" R=Ranking.

From the tabulated data in table (8), it could be noticed that the perceptions of the investigated respondents towards the challenges and factors affecting food donations Process of investigated hotels shows that the respondents are agree on the statements in the dimension. These statements indicate that the respondents found that:

- "Donating surplus food can affect the reputation of the hotel as a result of the quality, freshness and reliability of the food products that will be donated" (Mean=4.15)".
- "Lack of information on civil society institutions receiving leftover donations" (Mean=4.13)".
- Lack of hotel storage capacity leads to food losses if not collected immediately by CSOs (Mean=4.03)".
- "Lack of refrigerated transportation of food by food-receiving organizations is an obstacle for the hotel to donate leftovers" (Mean=3.80).
- "The difficulty of transporting surplus food because of the large distances between the hotel and CSOs" (Mean=3.40).

In this sense, the managers and chefs were neutral of the following statements which mean that they not sure if:

- "Insufficient food surplus for the hotel to prepare nutritious integrated meals that can be donated and limited to certain types each time" (Mean=3.35).
- "The risk of liability for food-related injuries is a barrier to hotel donating leftovers" (Mean=3.25).

- "The administrative and financial burden on the hotel as a result of the cost of the donation exceeding the cost of disposing of leftovers" (Mean=3.10).
- "Risks of legal responsibility and responsibility for food safety and quality" (Mean=3.08).
- "Donating surplus food is less attractive to the hotel financially because maximizing profits by selling leftovers is better than the costs of disposing of them through donations" (Mean=3.03).

On other hand, the managers and chefs were disagreed of the following statement which means that they disagree if:

- "Lack of flexibility in rules for hotels to facilitate the redistribution of surplus food" (Mean=1.85).

In general, table (8) shows that the majority of the sample agrees with most of the statements of the Challenges and Factors Affecting the food donations process in investigated hotels dimension, for instance, the percentage of average answers of the respondents ranged between 1.85 and 4.15 and overall mean 3.38, with standard deviation 0.604. Up to 60% of manufacturers admit that obstacles to food donation are what make them wary when it comes to food waste donation. They frequently suffer from a lack of refrigerated storage for donations, inadequate staff understanding of food-saving initiatives, and a lack of knowledge about organizations or resources that accept and distribute donated food (Hower, 2014). Redistribution of food is not a common practice. Collaboration between many organizations that are directly involved in the production and handling of food, as well as between organizations and people involved indirectly in the recovery

of surplus food, is necessary for this to happen (**Brancoli et al.**, 2017).

Summary of the Results

-According to the hotel's motivations towards applying for food donations, 42.5% of the hotel's motivations towards applying for food donations were instructions from external sources. In addition, 17.5% of the hotel's motivations towards applying food donations were as part of the hotel's community engagement and from hotel Policies.

- According to the requirements of the food donation process, All respondents agreed with all the statements of the variable the statements , " The hotel donates to a non-profit organization", has got the highest percentage of agreement from the respondents at (Mean=4.58).

- The majority of the sample agreed with all the statements of the mechanisms and steps of the food donation process of investigated hotels dimension.

- The results show that the perceptions of the investigated respondents towards the benefits of the food donation process in the investigated hotels show that the respondents agree with the statements in the dimension.

-According to the challenges and factors affecting the food donations process in hotels, the statement "Donating surplus food can affect the reputation of the hotel as a result of the quality, freshness, and reliability of the food products that will be donated" has got the highest percentage of agreement from the respondents at (Mean=4.15)". Meanwhile, respondents disagreed the "Lack of flexibility in rules for hotels to facilitate the redistribution of surplus food" (Mean=1.85).

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-According to the mechanisms of continuous improvement of food donation operations to achieve the sustainability of organic waste practices in hotels, these suggestions as follow:

-Strengthening relations with civil society institutions for easy access to food.

-Civil society organizations must abide by hotel instructions to facilitate food donations.

-Civil society organizations must provide the necessary facilities to facilitate the donation process, such as the availability of an equipped means of transportation and adherence to donated food safety standards.

-Civil society organizations must comply with the means of transporting food and be equipped to ensure food safety

-Charities should be more qualified and spread to support the hotels in their donations.

-Civil society organizations wishing to take donations from hotels should take the initiative to request donations from the hotel, due to the lack of information that hotels have with civil society organizations.

-Qualified staff to assist with packing and transportation.

Table (9): T-test to study the effect of the facilities provided by CSOs on encouraging hotels to donate food

Coefficients^a					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		

1	(Constant)	4.004	.164		24.480	.000
	facilities provided by CSOs	.189	.110	-.268	-1.718	.044*

* Significance at 0.05 or less

From the T-test as shown in Table (9), it could be found that the significant impact of the independent variable (the facilities provided by CSOs) explain about (0.189) on the dependent variable (encouraging hotels to donate food) in the simple-linear model at a level of significance less than (0.05%). Then it is clear that the alternative hypothesis (H_{a1}) of the main hypothesis was accepted, and the null- hypothesis (H_{01}) was rejected. This result means that significant impact of the independent variable (the facilities provided by CSOs) on the dependent variable (encouraging hotels to donate food).

Table (10): T-test to study the effect of the hotel motives on donating food

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
		1	(Constant)	3.808		
	hotel motives	.024	.049	-.081	-.503	.018*

* Significance at 0.05 or less

From the T-test as shown in Table (10), it could be found that the significant impact of the independent variable (hotel motives) explain about (0.024) on the dependent variable (donating food)

in the simple-linear model at a level of significance less than (0.05%). Then it is clear that the alternative hypothesis (H_a2) of the main hypothesis was accepted, and the null- hypothesis (H_02) was rejected. This result means that significant impact of the independent variable (hotel motives) on the dependent variable (donating food).

Recommendations

Based on both the literature reviewed and the results of the field study, the recommendations in the following table were divided into three dimensions as follows:

- The first dimension includes the recommendation that researchers are recommended to implement.
- The second dimension includes the entrusted with implementation of the various recommendations.
- The last dimension includes mechanisms for implementing the recommendations:

Table (11): Study Recommendations

Recommendations	Entrusted with Implementation	Implementation Mechanisms
1-Creating a formal partnership between hotels and CSOs to establish regular food donation programs	-Egyptian Hotel Association (EHA) -The Ministry of Tourism and Antiquities	-Tax deductions for hotels that implement food donation program -Encouraging other hotels to speed up the implementation.
2- Scaling food donations through a strategic partnership	- CSOs Management	- Work with the hotel to develop best practices in

		<p>storing and handling food donations.</p> <p>-Provide food safety training.</p> <p>-requirements are being met after the program launch, and work with the hotel to maximize participation.</p>
3-Establishing clear communication channel between hotels and CSOs to ensure timely and efficient pick-up and delivery	<p>-Hotel Management</p> <p>-CSOs Management</p>	<p>-Mobile apps or online plat-forms, to streamline the food donation process and track donations over time.</p>
4-A special law must be issued for food donations from hotels	<p>- Ministry of Social Solidarity</p> <p>-Parliament</p>	<p>- Codification of the rights and duties of donors Recipients of donations</p> <p>- Provides the required protection for donors to remove their concerns against donations.</p>
5- Civil society organizations must provide the necessary facilities for hotels to complete the donation	<p>-CSOs Management</p>	<p>- Equipped transportation.</p> <p>- Qualified staff to assist with packing and</p>

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process		transportation. - Providing the necessary papers to complete the procedures of the donation process.
6 -Expand the donor base to obtain specific types of food that provide more nutrition	- CSOs Management	-find donors with a variety of healthy foods.
7 - Strengthening hotel confidence in civil society organizations to facilitate the implementation of donations	- CSOs Management	-promotional materials to encourage cooperation by showing partnerships - providing donors with data that show how much that branch donated for the last month, the number of meals.
8 - Urging hotels to the importance of food donations to civil society organizations	- Egyptian Hotel Association (EHA) - Ministry of Social Solidarity - The Ministry of Tourism and Antiquities	- Disbursing rewards for hotels that implement food donation process well. -Awareness campaigns for hotels and food donations in achieving sustainable

		development goals.
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Recommendations for further studies

- It is recommended to study the topic of hotel food donation in the context of low-grade hotels (four or three-star hotels) to cover the gap in this point.
- It is recommended to study the issue of donating hotel food in different places such as Sharm El Sheikh or Hurghada due to the large number of hotels and most of them provide open buffet service and therefore the percentage of food waste will be large.

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