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## Food Waste Management within Sustainability Perspective: A Study on Five Star Chain Hotels

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### Abstract

In our world, the natural resources are limited and the issue of “sustainability” has becoming more important each day. The tourism sector has a serious share in this issue with hotels operating and stand as one of the responsible of food waste. Therefore, the main problem is the absence of a holistic approach that underlies the problem in terms of institutional, employee or customer based food waste of the international chain hotels. The aim of this research is to analyze the existing food waste management policies of five star chain hotels, their related plans and projects for the future as well as to compare the current applications with global practices identifying the shortcomings of those implemented in Turkey while providing tangible suggestions for effective food waste management. The study population consists of 9 international chain hotels located in Ankara that undergo semi-structured interviews. The quantitative research methods, interpretations of the participant comments are the base while analyzing the findings. The research reaches striking results showing the high volume of food waste mostly due to inefficient customer awareness of those hotels against all institutional precautions on food waste.

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## **INTRODUCTION**

Increasing world population, growing consumption of individuals, technological improvements, the ease of transportation and the increasing displacement of the masses have caused natural resources to become limited and brought environmental problems forward. These environmental problems come on the scene in various ways such as global warming, climate change, greenhouse gas emissions, water and air pollution, the loss of soil productivity etc. The issue of food waste is added to all of these problems that are betting on global scale as a new one and deepen these existing problems. On the one hand, people in various parts of the world cannot reach enough food to feed themselves, but on the other hand, excessive amount of food is wasted each day in some other regions. Each year, approximately 10 million die of hunger and hunger-related diseases. The number of children in developing countries who were underweight still exceeded 140 million (UNEP, 2009, p.15). Food does not mean numerous kinds of delicious meals for more than 4 billion people who are feeding based on just three basic food like grain, corn and flour (EEA, 2012, p.5). The seriousness and prosperity of the subject lies in the fact that “eating” such a human consumption that continues to be carried out by all humans on earth at every day, any hour requires serious consideration of the problematic points and the production of needed solutions. Goldmann (1950, pp. 2-19) suggests that a homemaker should consider about the food three times a day, seven days each week and the satisfactory answer involves planning all the steps.

The tourism industry is seen as one of the responsible of climate change and it is known that 5 % of global carbon emissions are of tourism origin (UNWTO, 2013, p.14). The negative effects of tourism related transportation in the first place, energy consumption of accommodation facilities, heating, water consumption etc. are also reflected in the environment negatively. Food waste of tourism facilities which provide food and beverage services and sometimes preferred by customers solely for this service should be regarded within sustainability framework. Like the causes of food waste, the results and impacts are also diverse. In the related literature, it is stated that the carbon emissions or energy costs of food wastes are calculated Özkök's (2013), the equivalent agricultural areas of wasted foods is evaluated, the solid and liquid wastes are separately examined (Ukita, Imai and Hung, 2006, p.293) the amount of wasted food is measured by how many individuals can meet their calorie needs with this wasted amount (WB, 2014) or the monetary loss caused by food waste is underlined. This facts brings the issue to the agenda of both environmental and economic sustainability.

The concept of sustainability, which is mentioned more frequently due to increasing environmental problems and diminishing natural resources, has brought related global regulations, certifications and projects along. Like many other businesses, tourist establishments have tried to adopt these practices and reorganized their activities to gain the trust of their target customers. It is seen that some businesses have achieved positive results by adding the applications regarding food waste to their environmental sustainability practices.

While considering the subject in tourism sector, the selection of five-star international chain hotels stems from the fact that these enterprises set an example to other tourism facilities by appealing to a wide range of people with the help of their quality standards and brand recognition. Similarly, loyalty of the chain hotel customers and their tendency to revisit the other branches of the brand in different regions make their attitudes and actions towards food waste more generalizable. The original value of the research would be to create a holistic data on the extent

and consequences of food waste, the current practices for prevention, and their reflections in the chain hotels in a major metropolis. Thus, the interpretation of the findings and the suggestions for all other regions where these chains operate, can give a general idea for the other cities where these three elements are similar despite the changing location of the chain.

Through the study, the concept of sustainability is explained and sustainability regarding tourism sector is clarified. A theoretical framework of food waste and explanations on the causes and consequences of food are underlined. The interviews applied to 5-star international chain hotels in Ankara are used to examine the waste management in these enterprises and environmental and economic aspects of the issue within sustainability framework. Current situation and ideal applications are compared, prospective solutions are presented and future projections are tried to be stated.

## **CONCEPTUAL FRAMEWORK**

The concept of sustainability, which was introduced for the management of forests and wildlife about three centuries ago, was used in relation to fishing in the first half of the 20th century. Especially in the 1930's, debates on sustainable tillage methods in agriculture have begun for soil degradation and its prevention (Vehkamäki, 2005, p.3). World Commission on Environment and Development (WCED, 1987, p.8), defines Sustainable Development as “the process which meets the needs of the present without compromising the ability of future generations to meet their own needs”.

In addition to the use of ‘sustainability’ for various industries, the term started to be used for tourism sector. The tourism industry itself undergoes development with the help of globalization, changing desires and needs of the tourists or technological developments. Thus, there has to be a development which is sustainable which could be explained in line with Our Common Future report by World Commission on Environment and Development (WCED, 1987, p.8), defining Sustainable Development as “the process which meets the needs of the present without compromising the ability of future generations to meet their own needs”. Therefore, it is also essential to look at the definition of sustainable tourism. According to UNWTO and UNEP, (2005, pp.11- 12), sustainable tourism is defined as “Tourism that takes full account of its current and future economic, social and environmental impacts addressing the needs of visitors, the industry, the environment and host communities”. Why sustainable tourism should particularly be analyzed for urban cities is expressed by Timur and Gets (2008) as; although there is a large body of literature on sustainable tourism, its application to urban settings is relatively new. However, most of the world’s population lives in urban areas and the majority of travel happens in cities.

Tourism sector’s relation on environmental sustainability could be underlined by Middleton’s (1998, p.148) statements. Tourism sector’s specific environmental impacts stems from the “Resource Depletion” by the use of energy generated from fossil fuels, use of non- renewable natural resources like oil, coal and natural gas for production of manufactured goods or heating. Alvarez, Özdemir, Yılmaz, Yalçın (2014) also analyzes the sustainability of an urban destination according to four dimensions, namely economic, environmental, social and cultural sustainability. However, all dimensions are linked to each other and the economic dimension of the subject is, again, based on environmental sustainability. This fact has prompted calls for ‘environmentally sustainable’ economic development. Edgell, (2006, p.32) supports all of these pre-mentioned ideas with the claim of economic

benefits also include profitable domestic industries such as lodging, transport systems, convention centers, restaurants, handicraft shops, entertainment, souvenirs and guide services.

If the subject of waste is considered in a broad sense, European Commission Waste Framework Directive (Directive 2008/98/EC) on waste outstands with its mission and operations through the world. The Directive lays down basic waste management principles which do not endanger human health and harm the environment. Similar to European Commission Waste Framework Directive, EPA also encouraged organizations, facilities and individuals all around the world underlining the hierarchy of preferred approaches to waste Reduction (Burke et al, 2000, p.461). Many source reduction techniques involve a change in procedural or organizational activities and tend to affect the managerial aspect of production and usually do not demand too much time and money investments.

As described by Gordon and Rensburg, (2002, p.3), food is an edible substance that gives people nourishment. Food is made up of different natural ingredients that have different functions such as providing flavor, aroma, nourishment and color. Similar to defining food, food loss and food waste have their own terminology. What 'waste' means in general can be defined according to the 1995 Environment Act as 'any substance or object which the holder discards or intends to discard'. In the UK, Waste Framework Directive also describes industrial waste as 'waste from factory premises including any industrial undertaking or organization. Examples include industrial waste producers from the manufacture of food products, textiles, wood products, chemicals etc. Hotels and restaurants, recreational, cultural and sporting activities are also mentioned within industrial activities producing waste (Williams, 1998, pp.55-60).

When it comes specifically to food waste, a distinction is required between the concept of food waste and food loss. Food and Agriculture Organization of United Nations (FAO, 2013) states that both food loss and food waste mean the decrease of food in subsequent stages of the food supply chain intended for human consumption. They both can occur throughout the supply chain, from initial production down to final household consumption by accidentally or intentionally. Tanic (2015) explains that whether uneaten food is categorized as "lost" or "wasted" depends on when it falls off the food chain. Food waste is witnessed by most people in their everyday lives. Consumers may throw out excess food, let it spoil, or develop other behaviors that waste food unnecessarily at the end of the food chain. However, food "loss" actually occurs earlier in the food chain. Food can lose nutritional value or even need to be discarded before it reaches to the consumer due to inefficiencies in food production and processing.

A study conducted for United States by Buzby and Hyman (2012) shows the distribution of food waste by top three food groups in terms of the value of food loss: meat, poultry, and fish (41%); vegetables (17%); and dairy products (14%).

Liquid wastes are another important dimension of food waste literature. Ukita et al. (2006, p.293) discloses that generation of wastewater in food processing industries may result from various reasons such as, meat processing, dairy products, seafood and fish processing, gluten and starch products, sugar processing, fruits and vegetable processing, bean products and alcoholic /non-alcoholic beverages. The water shortages would hinder the growth of

many economic activities, with industry, power generation, human consumption and agriculture increasingly competing for water which has crucial implications for food security. (UNEP, 2012, p.2).

Within the context of food waste, bread waste constitutes a crucial part in Turkey. Yıldırım et al. (2016) explains that total 4.9 million loaves of bread wasted daily in 2013, 3 million loaves (62.1%) are wasted at bakeries, 1.4 million loaves (27.7%) are wasted by households and 0.5 million loaves (10.2%) are wasted at restaurants, hotels and dining halls based on the studies conducted on bread waste in 2008, 2012, 2013. According to a research by Directorate General of Turkish Grain Board, it has been determined that 2.1 billion breads are wasted annually in Turkey. The amount of wasted bread per person was calculated as 16.2 gr per day and 5.9 kg per year (TMO, 2013, p.90).

### **Institutional Attitudes**

Why food waste management is important within the framework of chain hotels is also explained by Kozak (2014, p.174), chain hotels operating on the international scene also lead other tourism enterprises with their exemplary applications. With the use of dense technology, raw material waste and the technology use cause environmental pollution especially in manufacturing enterprises. Companies use eco – labels as means of legitimizing their efforts and as central components of eco branding strategies. Rather than a self – styled environmental symbol or statement by a service provider or a manufacturer, customers have more trust on a certified eco – label which defined by Global Eco Labelling Network (GEN, 2017) as “a label for specific products or services that have been independently determined to meet transparent environmental leadership criteria, based on life-cycle considerations”. As a conclusion, all institutions should undergo a process for the formulation of such standards and strategies in order to manage food waste as part of all additional environmental considerations.

### **Employee Attitudes**

The staff should complement the meal experience of the customers and they are able to do this in various ways such as their social skills, their age and sex, their uniform, the tempo of the service etc. requirements and expectations of the customers are important for the production of the right product by asking basic marketing questions of who are the customers and what they want (Davis and Stone, 1991, pp. 32–33). If employees manage to understand their market segment and their preferences, then the F&B<sup>1</sup> institutions could be able to produce efficiently and determine irrelevant purchase or excess production which will lead to food waste again. Werbach, (2009, p. 129) asserts that sustainability is a virtuous cycle; it fosters engagement’ which fosters sustainability again. Sustainability provides a fresh conversation for soliciting employee input, supporting employee creativity, reorganizing leadership skills and driving innovation all of which further engage employees.

Commonly used for food safety, HACCP (Hazard Analysis and Critical Control Point, is a reliable food production and presentation control system, which is also effective in preventing food losses (Kabacık, 2008). The education level of employees becomes important due to various reasons behind food loss resulting from the application of wrong preparation technique, the deterioration of food due to the failure to follow hygiene rules, the food spoilation after being stored in the wrong heat, bacterial growth of the foods stored near close to kitchen

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<sup>1</sup> Food and Beverage

garbage etc. (Gönen and Ergun, 2008). Importance of standard recipes for all menu items is again crucial. In order to control the amount of ingredients efficiently, the use of A-la Carte menus is more suitable, whereas open buffet system is likely to be a malfunction.

### **Customer Attitudes**

It is vital to understand the customers' consumption habits, their preferences, needs and wants in order to address the food waste resulting from customer based reasons. Hausman, (2000) claims that nearly 90 % of people do unplanned shopping. According to this research, between 30 – 50 % of the total purchases of the consumers occur as unplanned. This fact shows the necessity of informing and educating customers for more conscious consumptions. According to research findings by Unilever (2011, p.1), globally, 84% of participants stated that they are concerned with the amount of food that is thrown away everyday in out-of-home dining establishments. This concern appears to be even higher in Brazil (96%), Turkey (92%) and China (91%).

Marketers play a crucial role in shaping the world of sustainability in terms of managing customer attitudes by way of various marketing processes and techniques. Stated by Mohr et al. (2016, p.52), customers are brought in to the collaboration with attention to how to align them more closely with nature.

### **Food Waste and Sustainability Relation**

As stated by Arvanitoyannis (2008, p.841), Product Life Cycle Assessment (LCA) considers the potential impacts of a product or a service system through its life; production – use and disposal. The environmental burdens associated with a product or wastes released to the environment and the impact of those energy and material are subject to evaluation by LCA. The wasted amount of food could be seen as a crucial amount of time – money and resource waste. The raw material and all agricultural components, the energy used in the production of the foods, the fuel used in transport and logistics are again wasted if we have a mention of food waste. Indirect impacts of wasted food should also be assessed and addressed.

According to FAO (2013, p.6) the carbon footprint of food that is produced but not eaten is assumed to 3.3 billion tons of carbon dioxide which makes up food wastage as the third top emitter after the United States and China. According to Department for Environmental Food and Rural Affairs – England (DEFRA), for every 10 tons of food waste recycled, we would save 4.9 tons of carbon. This is equivalent to driving from London to Edinburgh 46 times (SWR, 2016). According to Özkök's (2013) explanations, statistics show that the energy consumed by a hotel guest is 130Mj (megajoule) per day and the CO<sub>2</sub> emission equals to 20.6 kg. per day. Whereas, guests of other types of tourist facilities consume 98MJ energy and 15.6 kg CO<sub>2</sub> emissions per day. This shows that, among all types of touristic facilities, the hotels are the serious energy-consuming constructions. The precautions on waste management taken by especially the chain hotels could generate positive results. More planning is required for suppliers from local sources. Similarly, local specialities and the cuisine add to the quality of a tourist venue and these should be promoted by the tourism office (Latimer, 1985).

In areas where malnutrition is high, such as Africa and South Asia, food loss is equivalent to 400 to 500 calories per person per day. The figures are more striking in the developed countries where there is a foodloss equivalent to 750-1500 calories per day (WB, 2014). Yıldırım et al. (2016) also mentions that the average daily

discard per household was 816.4g and 318.8g per person according to a study conducted on 500 people in Ankara in 2005. When it comes to equivalent energy of wasted food, studies show that wasted food per person per day equals to 215.7 kcal in Turkey. Namely, more than 10% of average daily energy requirement (2000 kcal) per person could be met by this wasted amount of food.

### **Economic Dimension of Food Waste**

As stated by FAO (2013), one third of the food produced in the world goes to the garbage and this amount which is equal to more than 10 percent of world energy consumption constitutes \$ 750 billion economic burden. When the land, human effort, transportation costs and all other components to produce and transfer the food to the final customers are considered, it should be noted that the waste of food is also means the waste of all these components. Thus, the monetary loss becomes more comprehensive rather than the prices of wasted products per unit or menu prices of wasted food items. At this point another point of view is the imported foods which again increases the monetary loss. If those imported food which is unable to support the local economy wasted, then its negative economic consequences will be higher. Bélisle (1983) shed a light on this topic stating the that as food accounts for approximately one –third of tourist expenditure, the amount of food imports for tourist consumption can affect the economic and social impact of tourism. If food is imported for tourist consumption, there is a crucial loss of foreign exchange as well as a loss of opportunity to expand, diversify and modernize local food production sectors. Additionally, there is a corresponding loss of potential employment and income in local food production which will be higher if farmers fail to take partake of the economic benefits.

Researchers from WRI and WRAP, evaluated cost and benefit data for 1,200 business sites across 700 companies in 17 countries and found that nearly every company had a positive return on their investments to curb food loss and waste in operations. Half realized a 14-fold or greater return meaning for every \$1 invested in things like training staff to lose less food in production, \$14 or more were saved. (Goodwin, 2017). The estimated total value of food loss at the retail and consumer levels in the United States as purchased at retail prices was \$165.6 billion in 2008. Looking more closely at the estimates for the consumer level, the annual value of food loss is almost 10% of the average amount spent on food per consumer in 2008. This consumer level loss translates into over 0.3 kg of food per capita per day valued at \$1.07 per day (Buzby and Hyman, 2012).

Talu (2014) defines that, there are 170 hotels in Nordic Choice which is one of the biggest hotel chains in Scandinavia. Cathrine Dehli, the corporate social responsibility manager of the hotel, found that one-third of the three meals served at the hotel were crushed. This means that, an extra cost of about \$ 8 emerges per each kilogram of wasted food. As a simple precaution, the portions are kept the same and the plates are become smaller. By just doing so, there is a 20% decrease in foodwaste. That means, yearly 600 tons of food, \$ 4.7 million money and 1160 tons of carbon saving. Dehli argues that with the help of this precaution, 20% carbon emissions (equivalent to 2.5 million tons of food or emissions of one million vehicles) can be saved in the EU.

Unilever and Paloma Hotel collaborated on the prevention of food waste. As a result of the project, there was a reduction of approximately 10-12% (50-75) kg per day in the waste returned from the pallet at the Paloma Group. With the separation of organic wastes from other wastes, the Paloma Group has begun to cooperate with animal shelters. By collecting the wastes in a single container, trash bags are saved and the consumption of daily trash

bags per hotel is reduced by about 40-50. This fact is assumed to provide 25,000-30,000 TL<sup>2</sup> savings during the year to the hotels (Gıda Gündemi, 2013).

### **Food Waste Practices In Tourism Facilities**

Considering the subject by Turkey's perspective, for example "Green Star" which is an 'Environmental label' given to environment friendly accommodation enterprises within the scope of 'Sustainable Tourism' and 'Environment-Friendly Accommodation Enterprises' initiated by Ministry of Culture and Tourism. Green Star is given under the Communiqué for the Certification of Environment - Friendly Tourism Establishments, (No: 2008/) which entered into force after the announcement in Official Gazette on 22.09.2008 No: 27005. The number of Green Star hotels in Turkey is totally 121 in 19 different provinces (TUYUP, 2014).

Tosun and Özdemir (2015) states that institutions attempts to produce energy from the wastes, to use adjustable equipment to eliminate water consumption, to use electronic bills and assess food waste to animal shelters located in the neighborhood. Another study conducted in Mardin – Turkey by Özaltaş et.all (2016), reaches vital results. When some practices of these facilities are analyzed, disposable foods (cheese, jam, honey, butter, etc.) and foods served on the plates are used together for breakfast. Some of these hotels use bread-slicing machine to prevent the bread waste. Regarding the recycling, some authorities collect kitchen oils and send them to the contracted companies, which are converting the waste oils into bio-diesel. The rest of the hotels give waste oil to the waste oil collection unit of the municipality.

A study to analyze food safety knowledge level of the kitchen staff working for 4 and 5 star hotel kitchens was conducted on 377 employees. The research results show that, 88.3 % of the employees had inset training. (Kabacık, 2008). Although the percentage of employees who are trained related to the subject is relatively high, the results and applications still found to be inefficient considering food waste management.

Based on the current literature, the research questions that have emerged in the direction of the stated targets are as follows:

1. How does institutional attitudes affect food waste?
2. How does employee based attitudes affect food waste?
3. How does customer based attitudes affect food waste?
4. What are the common food waste management practices of the study sample?

### **METHODOLOGY**

With the aim of analyzing the existing food waste management of five star chain hotels and the effectiveness of these applications, the study is conducted in 9 international chain hotels located in Ankara. While forming the list of 5 star international chain hotels in Ankara, the document addressing the tourism facilities with tourism operation certificate by class (November 30, 2016) published every month by the T.C Ministry of Culture and Tourism - General Directorate of Investment and Enterprises has utilized. This list has been narrowed down to the enterprises within Ankara province and international chains have been selected.

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<sup>2</sup> 25.000 – 30.000 TL equals to 98,567 -118,281 \$ according to indicative exchange rates announced at 15:30 by the central bank of Turkey.



According to MEB (2011, p. 6), when detailed information is needed, it is necessary to make a full count. The counting method provides accurate and reliable data. Against the 24 hour of non-stop operational activities of those hotels and their employees, the study succeed to reach all of these 9 hotels in the study sample. Most of the hotels are very welcoming to the researchers' questions by answering the questions, accompanying them for during the visits to the related departments or areas such as kitchen, storage rooms, waste differentiation, allowing to take pictures and delivering related documents etc. This research is belong to non-probability sampling in accordance with the nature of the sample. The sample is composed of the stakeholders who are very knowledgeable in their field. For the sake this study it is more important to obtain accurate information from sector experts than reaching the sample randomly. Within this framework, this study follows purposive sampling which has a judgmental or expert sample that can be logically assumed to be representative of the population applying expert knowledge (Lavrakas, 2011). The study has an interpretivist philosophy which concerns validity, reliability, objectivity, generalizability and communicability of research results (Leitch, Hill and Harrison, 2009, p.1). The study employs semi-structured interviews based on the opinions, suggestions and sectoral experiences of interviewees and interpretations based on the literature review, researcher's personal experiences and academicians' conclusions parallel to study participants' evaluations. Interviews with hotels include 2 or 3 knowledgeable employees from HR<sup>3</sup> departments, hotel managers, food engineers or technical departments who knows the general food waste management state of the institutions as well as the executive chefs or any other managerial person from F&B departments. Totally 21 people interviewed from 9 hotels. The interviews were all approximately two hours in length and some hotels required revisits to gather detail information. In terms of time horizon, it is a cross-sectional study because data are gathered just over a period of months namely between July to September 2017.

Research limitations are tried to be overcome by prudent manipulation of the respondents, revisits of the hotels for more suitable time periods and appropriate reminders. With the help of related literature and in the light of expert opinions, data collection tools are formed. As Özkalp (2005, p.168) defines, "interview" is used to identify the emotions and thoughts of individuals reaching the information through face to face communications. The interview form is decided to be delivered to related hotels' HR department representatives or other knowledgeable managers in order to analyze institutional awareness and another interview is composed for the hotels' kitchen and service department chefs or related managers in order to analyze the Employee Awareness and Customer Awareness on food waste. Hotel customers are not assumed to objectively answer their level of awareness considering food waste, therefore, this justification is decided to be made with the help of hotel personnel who able to observe customer attitudes, orders and the quantity of food waste caused by customers.

The data acquired by way of face to face interviews are used to provide a holistic table that summarized all the duplicate comments of the sector experts. In this regard, data analysis is qualitative in general. In-depth interview forms are documented and the collected data are evaluated qualitatively. The data noted including respondents' comments and suggestions will be subject to content analysis. The identification of matching comments and the submission of repeated explanation makes the reseach a descriptive study. Additionally, ethnographic summary

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<sup>3</sup> Human Resource

technique is used which involves the quotations to support key issues derived from the examination of the data (Morgan, 1988). The critical evaluations of the respondents noted during the interviews and they are quoted within the to underline important findings. The name of the hotels are not given and they are labelled by random letters from A to I for 9 hotels composing study sample. The study findings are summarized in related tables that consist of both descriptive and statistical data as some required percentages and calculations are conducted with the use of a predictive analytics software tool, IBM SPSS (Statistical Package for Social Sciences) version 15.0 to enable statistical analysis.

## **FINDINGS ON FOOD WASTE MANAGEMENT IN FIVE STAR CHAIN HOTELS IN ANKARA**

### **Institutional Attitudes towards Food Waste**

When the interviewee profile of the study sample is analyzed, the respondents are composed by two HR Directors, two HR employees, two Purchasing Managers, a Food Engineer, a Technical Service Director and a Chef de Cuisine who are all knowledgeable about the research content. Education level of these respondents is also different; six of them are undergraduate while two have graduate level education and one of them is high –school degree. When it comes to occupational experience in general, the respondent from hotel A spend 29 years at this institution, another experienced respondent also spend more than 21 years in the sector and 6 years at the current institution. Three of the respondents are following this group with 11-20 years of general experience. The rest has 1 to 5 years of tourism experience who are relatively new for the rest of the group. However, all of these interviewees provided indebt information with the help of interior consultations to their coworkers when needed.

The bed capacity and the occupancy rates of the hotels are also investigated in order to comment on the changing volume of the food waste more accurately taking the related differences into consideration. Three of the hotels' bed capacity is less than 300 while the rest 6 hotels' bed capacities are ranging from 352 to 600. During the data collection period, the hotels provide information on their occupancy rates taking June / July figures. Except one hotel having 19% occupancy for this period, the rest of the hotels' occupancy rates are more than 60 percent. Within these 9 hotels all of the hotels stated that they have sustainability related implementations. All of them turned to led-lamps within last two years and applied different kinds of energy saving precautions. Except two hotels, the rest of them are certified with "Green Star" which is a national sustainability certificate. In addition to this national sign, three hotels have Green Key which is an internationally accepted sustainability certificate consisting of more detailed application – evaluation period. Some hotels asserted that they are following the related chains' Sustainability policies or computerized programs. For example, two hotels explained that they applied IHG Green Engage Project and fulfilling the required sustainability criteria. These hotels also calculates their carbon footprint based on the energy figures of the hotel operations. They provided the detailed documents showing the related calculations, processes and sustainability processes during the study interviews.

The existence of the trainings on sustainability the hotels provided for the employees is also investigated. According to the interviews, all of these nine hotels have trainings considering environmental issues for their employees. Some of them give place to sustainability within the orientation program for the new employees, while some of the hotels has periodical educations on this topic. Generally, these trainings are given by HR department;

however, three of the study sample have Food Engineers working for the hotel and they specifically have trainings on “food waste or food safety related trainings for F&B and Kitchen staff. Moreover an the interviewee from Hotel D admitted that *“the waste containers in the kitchen are subject to sudden controls by the executive chefs in order to be sure that peel of the fruits and vegetables are efficiently cut or there is no excess food thrown as waste due to employee insensibility. We are warning the inappropriate applications and the responsible employees during these inside controls”*. The 2 hotels who has the Green Key also has the trainings on the Principles for Green Key for their employees.

The interviews provide specific information on these hotels’ food waste management practices. Accordingly, each hotel is analyzed one by one and starting with Hotel A; the interviewee admit that *“the most important precaution for food waste is serving the excess / uneaten pastry food group such as croissants, cakes and cookies from the open buffets for customers to the hotel employees at the staff cafeteria during daily tea times”*. Another practice is the submission of kitchen oils after reaching a predetermined liter of oil savings to the accredited private firms by the Ministry of Environment and Urbanization by documenting the volume of the used oils. These method is said to be used for the production of biodiesel and to prevent the negative effects of oils directly poured to the sink. This two practices applied by Hotel A is found to be applied by all of the other hotels within the study sample after all the interviews completed. That’s a very hopeful finding considering the beneficial returns of these applications.

The hotel has open buffet service for breakfast and some special occasions. The size of the plated placed along these buffets are said to be downsized with the aim of preventing food waste by the customers who take too much food and remain them uneaten on their plates. This study finding is also found to be parallel to the previously mentioned literature; the hotels in Nordic Choice that has the same plate size precaution mentioned by Talu (2014).

The delivery of excess hotel food to the Elderly – Child Protection Homes or Animal shelters is told to be cancelled after some negative experiences. The executive chef of Hotel A gives striking details; *“Previously, we have agreed with an animal shelter and delivering considerable amount of food to this shelter. Due to transportation related problems, the related institutions witnessed food poisoning incidents. After the raise of some complaints, the hotel management decided to stop such social responsibility practices to save the brand’s reputation”*.

When it comes to the food waste management applications of Hotel B; both similarities and differences are observed taking these two hotels into consideration. For example, this hotel also applies the service of pastry group to the hotel employees or the uneaten bread group is turned to breadcrumbs for future use. The executive chef of this hotel also explains his cautiousness specifically for wasted bread. He showed a book on Bread Waste published by TMO and he is also one of the authors. This hotel also does not apply to the delivery of their excess food to any other institutions in need. However, the food is tried to be re-used within the hotel. The vegetable peels such as cabbage, carrot or tomatoes are used as the supplements of kitchen sauces, soups, salads or some appetizers. The existence of three Blend Chiller and a Vacuum Machine in the Kitchen that helps to keep the food fresh preventing the early deficiency of the food. The interviewee criticizes the downsizing of open buffet plate sizes. He admits, *“I*

*found it unfair to punish the cautious hotel customers due to some others who are not. We need to provide the best and the most comfortable buffet service to all of them”.*

The Hotel C has a permanent Food Engineer and an Environment Engineer. These responsible people provides a positive look for the food waste applications for this institution. They arranged by an agreement to deliver their food to an animal shelter and by this way the hotel has been facilitating the wasted food for more than 3 years. They are also feeding a cat in their hotel garden with uneaten meat or bones. The hotel has a specific waste management program called SERAM and in line with its principles, all the waste is divided into groups such as Organics – Plastics – Papers in different containers. The waste is also weighted by scales each day and these figures are used to provide monthly charts. The interviewee also mentions about another project related to study topic. The personnel collects the fruit stones such as apricot stones served in hotel’s Spa Center and these seeds are planted with the participation of hotel personnel during April and May. She adds, *“like last year we are planning to arrange the transportation service to the same planting area for our employees who are volunteer for the project this year”.*

Hotel D follows the environmental principles of Green Key and applies the Green Globe practices, which transmitted and controlled by their head office. The interviewee from this hotel asserts the similar comments with the one Hotel A with respect to delivery of the food to the animal shelters. Therefore, even though the hotel has been providing food for some shelters previously they cancelled this practices due to same reasons. The interviewee asserts, *“We are trying to purchase our food from domestic producers as much as possible rather than imported foods. For example, the pickles, tomatoes sauces or stuffed vegetables are purchased by housewives within the city”.* Even though the Hotel D does not have a permanent Food Engineer, each month a responsible from OSGB (Common Health and Safety Unit) visits the hotel for staff trainings on environmental issues.

The technical manager of the hotel E is very knowledgeable about the sustainability policies of the institution. In line with his explanations and the power point presentation of the hotels Energy Saving policies, the hotel has been recording all the different waste group such as plastics – paper – organics etc and send the related figures to the head office. The employees are educated each month on sustainability issues. Specifically, service and kitchen staff are subject to sudden controls on hygiene or food safety. The chain implements the secret customer controls all over the world each year. These controls provide information on the quality of the food, amount – standardization and the heat of the food served to the customers. Moreover, the freezers and heating systems and the hygiene of the ice machines are all detected by some devices. The interviewee adds, *“The hotel graded with the maximum point (100) for the Secret Customer Tests both for the year 2016 and 2017”.* The hotel has a permanent Food Engineer who has an award from the National Restaurant Association and proved by ServSafe International valid for five years. This hotel also delivers excess bread and meat bones to a predetermined animal shelter. The pastry group is again served to the hotel personnel during tea times. Some mornings, the kitchen staff undergoes quick trainings on food waste and safety by responsible managers. They are also controlled by sudden garbage checks in order to analyze whether the fruit and vegetable peels are wasted inefficiently during the preparation processes.

Hotel F has a specific environmental sustainability policy called Green Engage and based on its principles, the led labs are used all over the hotel, there are environmental warnings on water and energy use inside of the guest rooms and some special devices for taps providing water savings for 30 % used in hotel bathrooms. Three responsible kitchen chefs are said to be delivering specific trainings on food waste to the personnel. The interviewee also mentions about a volunteer project *“We went to the district of a popular shopping malls’ district to collect the garbage with our hotel personnel last summer. The brand always tried to stay up to date on environmental issues with the help of such practices and employee educations”*. This hotel also came first in Ankara by the results of the Meril Satisfaction Questionnaire for 2012 by International Hotel Group (IHG). Similarly, IHG also applies a bonus system for customers based on their environmental awareness according to the frequency of their laundry orders. By this way, hotel customers tend to keep their laundry orders in a sustainability frequent manner and waste less water and achieve discounts for room reservations. To prevent food waste, dog shelter visits the hotel upon call to collect their excess and semi eaten bread group. The rest of uneaten but good condition bread turned from customer buffets are becoming breadcrumbs for future use. The pastry group is served to the hotel employees at three o’clock in their cafeteria.

The hotel G is a hotel that does not have the Green Star or Green Key certifications; however, they are applying Green Engage system by detecting the hotels water, electricity, or gas consumption figures and calculating the carbon footprint for general areas – meeting rooms by room or by customer. This system provides the hotel action plans to reach more efficient figures. They do not apply the policy of delivering the excess food to any institutions in need. It is justified by the interviewee saying, *“All of these animal shelters do not accept the mixture of our uneaten food by customers and we do not have time to differentiate food groups during the busy service operations”*. The hotel management believes that the most important precaution for food waste is training both the employees as well as the customers. They have a temporary Environment Engineer visiting the hotel to train the employees by call. The vacuum machine does not exist in this hotel but the kitchen department facilitates blend chiller machine and the uneaten bread group is said to be turned into breadcrumbs and served as croutons with the soups.

The Hotel H and Hotel I both have Green Star certification. Some of their sustainability policies are found to be similar by the delivery of kitchen oil waste to the certified private firms, the use of led lamps for energy saving, the distribution of waste groups and the re-service of uneaten bread / pastry group for their customers at tea break times. The interviewee from Hotel H admits, *“According to the restaurant menus the hotel purchases some specific food groups and each month we detect that some of the products are not ordered by the customers waiting in the storage and wasted due to expiry dates at the end. There needs to be a change for those products purchase”*. The hotel I delivers their uneaten food group to 3 different Animal Shelters in Ankara such as Çankaya – Söğütözü and Yenimahalle Municipality shelters. They apply an efficient system by locating little cards with a cute dog figure on it warning the customers not to remain toothpicks, handkerchiefs or any unrelated objects in their plates for animals’ consumption. Moreover the specified service personnel is also controlling the plates and organizing the transportation of them to the related animal shelters. The hotel has a detailed carbon footprint education for the employees as started this calculation in 2016. The technique service manager of the hotel has very specific plans

for the coming years. He also explains a crucial fact by these words, *“Our hotel applies H.A.C.C.P principles in kitchen department, and however the rules within these principles requires the purchase of the specific brands from controlled institutions within the chain. However, there should be a solution which makes the purchase of local food from natives possible without breaking the H.A.C.C.P standards continuing the service of hygienic but local and cheaper foods protecting the native producers and farmers”*.

### **Employee Attitudes towards Food Waste**

In order to investigate the attitudes of employees of related hotels towards food waste, the interviewees also questioned on the awareness of kitchen and service staff on food waste as well as the sufficiency of their knowledge and professional experience for the prevention of employee based food waste. The reason of not to achieve related information directly from the employees but from the HR responsible is to have objective observations and comments free from bias.

According to the interview results, the 5 of the interviewee’s participation level to the statement of employees working in kitchen department are sensitive to food waste in production” is “very high”. Two hotels participate to the statement in “high” level while the rest of to have “medium” level participation. When it comes to the same investigation on the sensitivity of service department employees, four hotel considers that their service employees are very sensitive on food waste in production while 3 of them considers that they are sensitive with high level of participation and the rest 2 hotel have the medium level participation. This results might be interpreted that generally the hotel management has the idea of their employees are very sensitive on food waste while they are producing food for the customers in kitchen. This general idea is also valid for service department employees with a little decrease on their participation level.

Lastly, the hotel management has more positive ideas about the professional knowledge and experience of their employees in order to prevent food waste. 6 of the interviewees very highly participate to this statement while the rest 3 have also very high participation. This regard could be related to the fact that all of these 9 hotels have periodical trainings for their employees on environmental sustainability or specifically on food waste.

### **Customer Attitudes towards Food Waste**

As a very crucial cause of food waste, the customer attitudes are also investigated with the help of interviews with related hotels executive chefs or any other responsible who are able to observe customers food orders, habits and attitudes towards food waste. The reason of reaching data not from the customers but by the observers is again the prevention of biased answers, which is possible in case of directly asking the customers on their food waste attitudes.

In line with interviewee responses, 3 of them do not agree with the statement of “Customers are sensitive about food waste considering their food demand and consumption”. One of them also adds, *“Especially Arabic customers are the ones mostly causing food waste due to their irrelevant orders impossible to consume in a meal course”*. The rest of 4 hotels are partly agree to the statement while the others considers that their customers are sensitive about food waste. The ones who have such positive ideas support their claims with their target customers who composed mostly by business customers who are above a certain education and income level and order just what

they need to consume. Moreover, the interviewee of Hotel G stated that “we have customers who are very cautious about environmental sustainability and even 54% of the potential customers ask us about the carbon footprint calculations of our hotel in 2016”.

When it comes to customer orders, most of the interviewees consider that while consumers are cautious about food waste in their a la carte orders, they are going extreme food consumption in the open buffet. Generally, interviewees express similar ideas about the fact that open buffet service of the hotels is the most important reason behind the food waste due to customers’ inappropriate habits. The statement that is presented by the researcher as “the vast majority of the food consumers choose from the open buffet is left uneaten on the table” is also supported by the majority of the respondents.

The last point is related with the difference between customer attitudes towards food waste depending on the responsible of the food purchases. The same majority of the interviewees have very high participation to the statement of “customers order more food than they can consume, if their food and beverage expenditures are paid by the institutions they are working or if some promotions exist or so on”. The ones that disagree with this statement explains their point of view by these words; “*our hotel is mostly serving to European customers as a well-known chain hotel in a large city preferred by Europeans. The Europeans are more sensitive about food waste compared to Asians or our Turkish customers*”. This research finding contradicts with Unilever conclusions (2011, p.1) saying that globally, 92% of Turkey participants stated that they are concerned with the amount of food that is thrown away everyday in out-of-home dining establishments.

## **CONCLUSIONS AND RECOMMENDATIONS**

The study interviews provided detailed information and specific suggestions not just because of the pre-determined study questions but with the help of additional comments of the interviewees. Moreover, their own welcoming attitudes to this research with the departmental visits to hotel kitchens, restaurants or garbage rooms served as the proof of what is underlined during the interviews. Some of them also allow to take the pictures of their certifications such as Green Key, Green Star, H.A.C.C.P. etc. or they copied hotel’s training documents or carbon foot print calculations for the use of researchers.

According to the study all of the hotels have an environmental sustainability policy and also related employee trainings. Some of them has specifically food waste policies and education on food waste for the kitchen and service staff. 7 of the hotels have Green Star certification while 3 of them also have Green Key which is an international certification with more requirements on environmental sustainability. Some of the hotels has permanent food engineers or environment engineers who are responsible for the environmental sustainability policy developments, research and development projects, recording of institutional waste figures and departmental educations. The hotels who do not have a these temporary engineers admits that they are working with some firms and inviting temporary engineers periodically. The common practices which are applied by all of these nine hotels could be listed as the delivery of kitchen oils to the accredited private firms by the Ministry of Environment and Urbanization, the service of uneaten pastry group in the personnel cafeteria during tea times, the use of uneaten breads as breadcrumbs or the use of vegetable peels as the supplements of soups, appetizers or some sauces.

The hotels are found to be careful about their environmental sustainability practices. The possible reason behind this fact might be the customers who become more cautious about environmental issues and affected by the corporate social responsibility practices of these chain hotels manipulating their accommodation plans accordingly. Another reason might be the fact that, similar to 3 of the hotel interviewees' comments, the hotels have very detailed calculations on their waste figures, organic or biologic waste recovery or their carbon footprints which convince them as being more environmentally friendly, they are also becoming economically advantageous. Even though, all of these hotels have some beneficial practices, they differ in terms of some waste prevention applications. For example, some of the hotels deliver their foods turned from customers' plates to the animal shelters while some others do not apply such practices or decided to stop due to some previous problems. For this regard, the suggestion could be the existence of a well-organized system which will prevent the hotels' or shelters excuses related to the differentiation of the food group within the hotels as well as the efficient transportation of them in a good condition. It might be also helpful to reach a governmental support or control system for the delivery of the food to the institutions in need. Because, the study shows that if a system is standardized and supported by the governmental bodies, then it is applied by all of the hotels such as the wasted kitchen oil delivery to the related private firms documented by signatures and submitted for the records of Ministry of Environment and Urbanization. One of the interviewees also suggests that "the government should control all of the hotels in terms of their food waste calculations, carbon footprint figures and sustainability trainings for staff. It should not be preferential but be a must that is subject to penalties in case of misapplications.

The research results have another crucial implication on the reason of food waste. The hotel managements, mostly considers that their kitchen or service department employees are well educated and their professional experience is enough to prevent food waste. Most of them explains that the purchase department as well other food production departments are working in cooperation with the hotel's reservation department which informs them on the hotel's occupancy level, the number of customers who has breakfast included room purchases, the banquets and the other special occasions. By this way, the food purchases and production is managed accordingly and the food waste is prevented. However, the interviewees generally admit that the food waste occurs mostly due to customer related attitudes or awareness problems. Based on the negative results related with customer attitudes such as inefficient food orders or open buffet food waste, it is possible to conclude that the customers should be educated about the consequences of food waste. Also it should be underlined that, it does not matter whether the open buffet service is pre-paid or the firms are paid their food orders or not, the wasted food is wasted anyway and will cause environmental problems in the long run.

In line with the interviewees' comments and observations, the possible suggestions to these international chains could be the application of a well- organized sustainability policy recording the hotels' different kinds of waste figures. Food waste related trainings should be given by knowledgeable responsible yearly, monthly weekly with some quick reminds by department chefs. The open buffet service related food waste could be minimized by the use of single use products such as mini butters, jams, packaged breads, small sized yogurts etc. The minimizing the plate sizes located in the buffet might be applied by all of the hotels which could be also able to present larger plates upon customer orders. The service of pastry group turned from customer buffets to the hotel personnel



practice might be enlarged with the use of other good conditioned food groups such as meats, appetizers, fresh fruits and vegetables could be used as the supplements for the meals served in personnel cafeterias. The purchase of local food by the native producers to these hotels neighborhood could be practical for the prevention of transportation related food waste and excess carbon footprint as well as the support of the local economy rather than higher expenses on imported food groups.

The suggestions for the related hotels is followed by the suggestions for future researches; this research which target the city hotels can be compared with the others conducted on coastal hotels such as Antalya, Muğla etc. The food waste frameworks of those hotels that implement mostly open buffet, all included systems can be investigated and parallelisms – dissimilarities could be detected. Last but not least, the food waste figures could be calculated by different food groups such as pastry, meat, fruit and vegetables by providing more specific data for the wasted food amounts by the hotels.

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