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GAZİ UNIVERSITY
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**PH. D.
THESIS**

**FOOD WASTE MANAGEMENT WITHIN
SUSTAINABILITY PERSPECTIVE:
A STUDY ON FIVE STAR CHAIN HOTELS**

GÖZDE ÖZDEMİR

TOURISM MANAGEMENT

JUNE 2018



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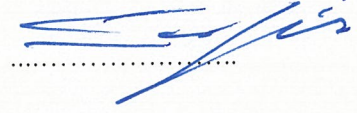
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INSTITUTE OF SOCIAL SCIENCES**

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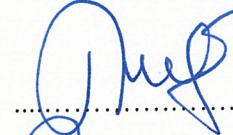
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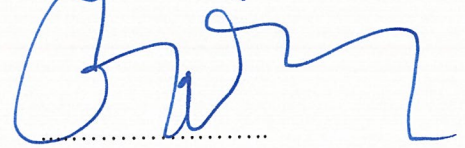
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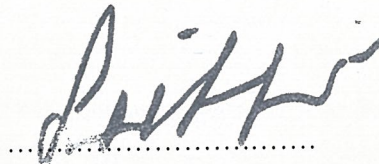
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FOOD WASTE MANAGEMENT WITHIN SUSTAINABILITY PERSPECTIVE: A
STUDY ON FIVE STAR CHAIN HOTELS

(Ph. D. Thesis)

Gözde ÖZDEMİR

GAZİ UNIVERSITY
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ABSTRACT

In our world where the natural resources are limited, 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 analyse 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 a semi-structured interview for managerial level participants and the questionnaire for 128 hotel employees in total. Both quantitative and qualitative research methods, interpretations of the participant comments and the use of computerized systems are the base while analysing 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.

Science Code : 116902

Key Words : Sustainable tourism, environment, food waste, chain hotels, economy

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SÜRDÜRÜLEBİLİRLİK PERSPEKTİFİNDE GIDA İSRAFI YÖNETİMİ: BEŞ
YILDIZLI ZİNCİR OTEL İŞLETMELERİNDE BİR ÇALIŞMA

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ÖZET

Doğal kaynakların sınırlı olduğu dünyamızda “sürdürülebilirlik” konusu her geçen gün daha da önem kazanmaktadır. Gıda atıklarının en önemli sorumlularından olan faaliyetteki otel işletmeleri düşünülürse turizm sektörünün bu konuda ciddi bir payı vardır. Temel sorun, uluslararası zincir otellerde kurumsal, çalışan veya müşteri bazlı gıda atıkları probleminin bütüncül bir yaklaşımla altının çizilmiş olmamasıdır. Bu araştırmanın amacı, beş yıldızlı zincir otellerin mevcut gıda atık yönetimi politikalarını, ilgili planlarını ve geleceğe yönelik projeleri analiz etmek ve Türkiye genelindeki mevcut uygulamaları küresel uygulamalarla karşılaştırarak eksiklerini belirlemek ve etkili bir gıda israf yönetimi için somut öneriler sunmaktır. Araştırmanın örneklemini, Ankara’da bulunan 9 otelin yarı yapılandırılmış mülakatına tabi tutulan yönetsel seviye katılımcıları ve anket formunu yanıtlayan toplam 128 otel çalışanından oluşmaktadır. Bulguların analizinde hem nicel hem de nitel yöntemler, katılımcıların yorumlarının incelenmesi ve bilgisayar sistemlerinin kullanımı temel teşkil etmektedir. Araştırma, gıda atıklarına ilişkin alınan tüm kurumsal önlemlere rağmen çoğunlukla bilinçsiz müşteri tutumlarından kaynaklanan yüksek miktarda gıda atığı var olduğuna dair çarpıcı sonuçlara ulaşmıştır.

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Anahtar Kelimeler : Sürdürülebilir turizm, çevre, gıda israfı, zincir oteller, ekonomi

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Turizm sektörüyle tanıştığım da henüz 13 yaşında bir kız çocuğuydum. Turizm meslek lisesinde başlayan yolculuğun il yaz stajında Ankara’da 5 yıldızlı bir otelin kahvaltı açık büfesinde sunulup hiç dokunulmamış üç katlı çikolatalı pastayı ellerimle çöpe atarken sorguladığım sisteme ve o gün kendime verdiğim söze en büyük ‘teşekkür’ü ayırmalıyım. Ardından eğitim hayatım boyunca üzerimde emeği olan tüm hocalarıma, desteğini her daim hissettiğim Prof. Dr. Perran AKAN’a ve sürdürülebilirlik konusuna ilk adımı atarken yanımda olan Prof. Dr. Maria Dolores ALVAREZ’e (Boğaziçi Üniversitesi), eğitim hayatımı sürdürmemde önemli payı olan Gürol KAYMAK (Avukat Gürol Kaymak Hukuk Bürosu) ve Işın KARATAŞ’a, (Bilgili Holding), samimi iletişimiyle danışmandan öte saydığım Doç. Dr. Evren GÜÇER’e (Gazi Üniversitesi), her zaman yapıcı önerileriyle tezime destek olan komite üyelerim Prof. Dr. Muharrem TUNA (Gazi Üniversitesi) ve Doç. Dr. Gül GÜNEŞ’e (Selçuk Üniversitesi), araştırma kapsamında ziyaret ettiğim otellerde bana elinden gelen tüm desteği sağlayan, fikirlerini paylaşan tüm aşçı – şef ve diğer gönüllülere, tez konumun hassasiyeti ve araştırmamın zorluğuna rağmen bana her zaman motive gücü veren dedem ve anneanneme ve son olarak yolumun turizmden geçmesindeki en etkili isim olduğunu bilemeden aramızdan ayrılan eski bir turizmciye teşekkür etmekten mutluluk duyuyorum.

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SYMBOLS AND ABBREVIATIONS

Some of the symbols and abbreviations used in this study are presented below along with explanations

Symbols	Explanations
\$	American dollar
€	Euro
CO ²	Carbon dioxide
Kcal	Kilocalories
Kg	Kilogram
Km ³	Kilometer
Lt	Liter
Mj	Megajoule
ml	Mililiter
TL	Turkish Liras
Abbreviations	Explanations
DEFRA	Department for Environmental Food and Rural Affairs - England
EEA	European Environment Agency
EPRS	European Parliamentary Research Service
EU	European Union
F&B	Food and Beverage
FAO	Food and Agriculture Organization (UN)
FCAN	The Food Chain Analysis Network
FLW	Global Food Loss and Waste
FUSIONS	Food Use for Social Innovation by Optimizing Waste Prevention Strategies
GDP	Gross Domestic Product
GEN	Global Eco Labelling Network
HACCP	Hazard Analysis and Critical Control Point
HR	Human Resource
HRM	Human Resources Management

Abbreviations	Explanations
ICCROM	International Centre for the Study of the Preservation and Restoration of Cultural Property
IHG	International Hotel Group
ISO	International Organization for Standardization
LCA	Level of Customer Awareness
LCA	Life Cycle Assessment
LCT	Life Cycle Thinking
LEA	Level of Employee Awareness
LIA	Level of Institutional Awareness
OSGB	Common Health and Safety Unit
SDG	Sustainable Development Goals
SPSS	Statistical Package for Social Sciences
SWR	Smart Sustainable Waste Management
TIES	The International Ecotourism Society
TISVA	Turkey Waste Prevention Foundation
TMO	Turkish Grain Board
TUYUP	Increasing the Adaptability of Employers and Employees in Tourism Sector Project
UN	United Nations
UNEP	United Nations Environmental Programme
UNWTO	United Nations World Tourism Organization
USDA	United States Department of Agriculture
WB	World Bank
WCED	World Commission on Environment and Development
WRAP	Waste & Resources Action Program
WRI	World Research Institute

1. 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 (United Nations Environmental Programme [UNEP], 2009: 15). European Environment Agency states that 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 (European Environment Agency [EEA], 2012: 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.

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 (United Nations World Tourism Organization [UNWTO], 2013: 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. It becomes very important to consider these enterprises operating in tourism which is one of the sectors where food wastes are observed intensively. When the causes of food waste in tourism enterprises are examined, many factors are emerging such as the mistakes in the food purchasing and storing processes, inaccuracies in the production process, inadequate knowledge and experience of employees, misuse of wrong and inefficient equipment, mistakes in menu and

portion planning, consumers' consumption habits and negative attitudes, lack of awareness at the institutional level etc.

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, the equivalent agricultural areas of wasted foods is evaluated, the solid and liquid wastes are separately examined, the amount of wasted food is measured by how many individuals can meet their calorie needs with this wasted amount 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. There is a need to create a more general picture and to have a holistic judgment rather than examining the positive practices or misconceptions of the businesses one by one.

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. First of all, the distinction between food waste and food loss is underlined and then the relationship between Institutional - Employee and Customer level awareness and food waste is tried to be considered in three main headings in order that food waste can be evaluated within the scope of environmental and economic sustainability. 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.

In the first part of the study, the concept of sustainability is explained, types of sustainability and sustainability regarding tourism sector is clarified. The second part continues with a theoretical framework of food waste and explanations on the causes and consequences of food waste. In the last part, interview results and surveys 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.

Research Problem

In our world, the natural resources are limited and “sustainability” has becoming more important each day. The relationship of food waste and sustainable use of resources is not well known. The tourism sector has a serious share in this issue with hotels operating in tourism sector and stand as one of the responsible of food waste. It is necessary to understand the food waste and its economic - environmental dimensions caused by all international chain hotels in a large metropolis. Existing regulations or applications adopted by these institutions remains inefficient. The suggested solutions generally target just one partner of the subject rather than considering the practices of both institutions, employees and customers. Therefore, the main problem is the absence of a holistic approach that underlies the seriousness of the problem and states the possible environmental and economic outcomes of food waste of these international chain hotels, which will affect all humans in the near future.

Objective and Importance

The aim of the thesis is;

- To analyze the existing food waste management of five star chain hotels, their related plans and projects for the future,
- To compare the current applications with global practices identifying the shortcomings of those implemented in Turkey.
- To calculate the costs of food waste as concrete as possible
- To provide tangible suggestions for effective food waste management to those institutions.

Waste minimization has gained greater importance as environmental considerations and scarcity of the natural resources coming to the agenda more seriously. The tourism sector has a large share in the subject with the nature of the operations of tourism facilities. As serving numerous customers, chain hotels witness large amount of food losses both resulted from inefficient supply, storage, preparation and service phases of foods and unconscious customer attitudes. The food waste, which is not in an allowable degree, not only causes environmental problems but also triggers long-term economic losses affecting the whole society.

Global brands have started to fulfill the necessary environmental arrangements to meet the customers' sustainability concerns. Many certifications around the world demonstrate institutions' appropriate and successful applications following sustainability criteria. Thus, well-known brands including chain hotels have begun their efforts to prove their precision about sustainability gaining competitive advantage among other institutions in order to attract customers' attention. When the international chain hotels located in the capital city of Turkey are analyzed, brands such as Hilton group, Swiss and Marriott, which are among the 25 biggest chains in Turkey are bouncing again. In this context, the data obtained from Ankara within the scope of the research, which is considered as an important source of urban tourism, will also be informative about the chains throughout the country as well as the worldwide. As a matter of fact, many policies, procedures and administrative practices applied in these chains which are spreading to various cities of Turkey or other countries are not independent of each other.

Consequently, this research will provide a good grasp of knowledge including the amount of food waste by chain hotels for specific nutrient groups, their cost of energy at specific time intervals. The original value of the research can be understood by looking at the concrete suggestions to prevent food waste, minimize the water consumption by separating the relevant process into steps. The inventive quality of the research is to reach up-to-date data on the subject incorporating institutional level applications of those hotels with the human factor such as employee and customer attitudes. The so-called hotels may have knowledge of the magnitude of the food loss, the seriousness of economic and environmental costs by looking at the research findings. So, they may be inclined to apply the concrete and practicable solutions proposed by this research.

The research questions that have emerged in the direction of the stated targets are as follows:

1. Does institutional attitudes affect food waste?
2. Does employee based attitudes affect food waste?
3. Does customer based attitudes affect food waste?
4. What is the environmental dimension of food waste?
5. What is the economic dimension of food waste?

The effect for Q1, Q2 and Q3 are tried to be measured on the basis of the responses reached by interviews and questionnaires. The term “attitude” is defined as “a tendency that organizes the feelings, thoughts and behaviors of people related to objects, ideas, institutions or events around. Attitudes could be measured by the interviews, behavioral observations or psycho-physiological measurements. It is also possible that the attitudes we gain through learning can change (Özkalp, 2005: 293). Thus, the term attitude for Q1, Q2, Q3 refers to positive and negative behavior of related groups. While research hypothesis are being developed, positive attitudes of those groups have been associated with subject (food waste) awareness of related groups. The level of consciousness is measured by various techniques such as related questions that are explained in data collection part. Level of Institutional Awareness (LIA), Level of Employee Awareness (LEA) and Level of Customer Awareness (LCA) are investigated in order to understand its relation with the quantity of food waste.

The study hypotheses revealed in the direction of the research questions and the determined aims are as follows:

- H₁:** There is a negative relation between LIA and the amount of food waste.
- H₂:** There is a negative relation between LEA and the amount of food waste.
- H₃:** There is a negative relation between LCA and the amount of food waste.
- H₄:** Food waste causes negative environmental consequences in terms of sustainability.
- H₅:** Food waste causes negative economic consequences in terms of sustainability.

The research model for the hypotheses is given in Figure 1.

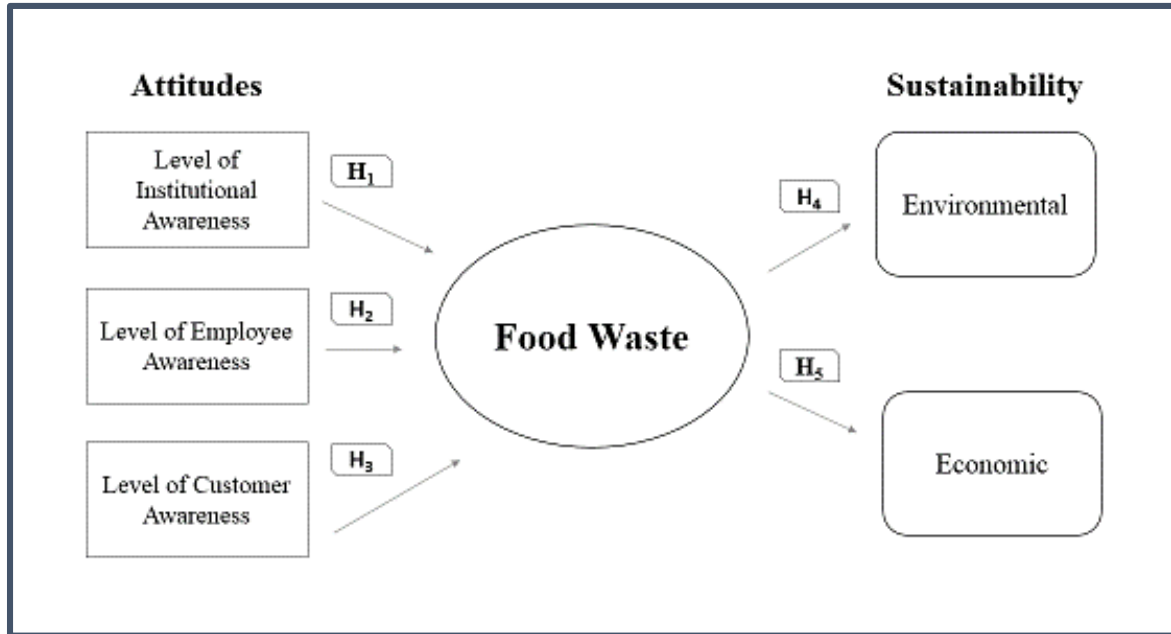


Figure 1.1. Research model

Assumptions

The various assumptions that cover all the processes of this research are as follows;

- It is predicted that the results of the research on the international chain hotels in Ankara will provide a good grasp of information about the industry.
- Prior to data collection period, it is assumed that the hotel employees will understand the subject - the research problems and will formulate some suggestions based on their experiences in addition to providing necessary answers to the relevant questionnaires. This assumption could be approved by considering the whole data collection period and the intensity of the communication with the participants.
- Some of the hotels have already some practices or projects to prevent food waste. Therefore, this research will be informative for the institutions making the comparison of relevant literature with the actual applications.
- Initially, it is estimated that the hotel managers will want to receive information about the research findings and suggestions after the completion of the study. The study participants who request to being informed about the development of this research is informed about the process. The article published with the help of this thesis is sent via e-mail to those participants. As a result, all these hotel employees including the managerial level respondents not only express their appreciation but also continue sharing additional information such as some hotel documents about their food waste practices, the material

of their sustainability trainings or other suggestions that they find effective. Therefore, this pre-assumption also turned to a reality after the compilation of the research.

Scope and Limitations

Within the scope of the research, food waste by hotels is intended to be investigated within sustainability framework. The capital city of Turkey, Ankara is chosen due to the convenience of data collection by the researcher's access and re-visits of these institutions when there is a need for more detailed info, crosscheck or some corrections. There is a number of hotels, which differ in their capacities, qualities, management structures or star ratings. In addition to chains such as Hilton, Sheraton, Swiss that have been operating in Ankara for many years, chains such as Movenpick and Marriott have had a short history spanning five to ten years in Ankara. Most of these chain hotels are clustered in places like Çankaya and Çukurambar that are close to the touristic areas in Ankara and have easy access to the city center. Collecting the relevant information from each of those hotels located in Ankara via questionnaires and face-to-face interviews is assumed to be time consuming and costly. On the other hand, for the sake of research specificity, research universe is limited to five star international chain hotels in Ankara. Although there are both national and international hotel chains in the capital, the scope is limited to international chains. Because; international chain hotels spread over different locations with similar policies, applications and managerial decisions, research findings facilitated by these chains is assumed to be similar for other branches of the international chains located in other cities of Turkey or different countries of the world. Likewise, the research results regarding the international chain hotel customers is expected to cover the other branches of these chains due to loyalty of chain hotel customers who tend to revisit these chains and present similar attitudes.

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. In case of the existence of more than one hotel belonging to the same brand, it is accepted that accessing one of them is enough to provide the data for this chain. As a result, the scope of the research is five star international chain hotels in Ankara listed as follows;

Table 1.1. Five star international chain hotels located in Ankara

1- ANADOLU HOTELS DOWNTOWN ANKARA	YENİMAHALLE
2- ANKARA HILTONSA & HILTON GARDEN INN ANKARA	ÇANKAYA & YENİMAHALLE
3- ANKARA VARAN / MÖVENPICK OTEL	YENİMAHALLE
4- CROWNE PLAZA ANKARA	YENİMAHALLE
5- HOLIDAY INN ANKARA ÇUKURAMBAR	ÇANKAYA
6- JW MARRIOTT ANKARA	ÇANKAYA
7- SHERATON LUGAL A LUXURY COLLECTION HOTEL & CONVENTION CENTER	ÇANKAYA
8- SWISS OTEL ANKARA	ÇANKAYA
9- WYNDHAM ANKARA	YENİMAHALLE

Source: The table is compiled from the file "Tourism facilities with tourism operation certificate by class - (May 31, 2017)," by TC Ministry of Culture and Tourism - General Directorate of Investment and Operations Web: <http://yigm.kulturturizm.gov.tr/TR,9579/turizm-tesisleri.html>, accessed on June 23, 2017.

These hotels operates in tourism sector that is human intensive and subject to very busy workflow. This fact becomes the limitation of the research when it comes to data collection phases from operational departments of the hotels such as kitchen and service. Some of the target participants who are assumed to participate to interviews or answer the questionnaires or make related comments - suggestions on the subject could not find time due to their workflow. Another constraint results from the fact that such operational departments are not suitable for long- term monitoring by nature. These research limitations are tried to be overcome by prudent manipulation of the respondents, revisits of the hotels for more suitable periods and appropriate reminders. Consequently, an adequate number of the participants are reached and after they are convinced about the importance of the research, they provide very valuable information and made comments – suggestions on food waste.

Another limitation of the research is related with the data analyses. The nature of the collected data prohibits some of the statistical methods to be conducted. The research hypothesis, which is related with the attitudes of participants, have been associated with the awareness of related groups on study topic (food waste). The level of consciousness is measured by various techniques such as related statements, which ask the participation level of the respondents. Level of Institutional Awareness (LIA), Level of Employee Awareness (LEA) and Level of Customer Awareness (LCA) are investigated and related conclusions are provided by this method. This limitation is overcome by supporting the statistical tests' results with respondents own comments and explanations. Moreover, Tavşancıl (2014)'s work is benefited for the data analysis and the formulation of the conclusions. Tavşancıl states that there are various techniques to measure the attitudes such as, the measurements

of the respondents' own statements, explanations of the observable behaviors, the conclusions based on the reactions of respondents' to specific situations, analyze of the individuals' current actions by way of inferences". Because all of these techniques are used while deciphering the interviews and all the conversations with the hotel employees, this limitation segments could be said to be overcome.





2. THEORETICAL AND CONCEPTUAL FRAMEWORK

This part of the study illustrates a theoretical background and conceptual framework of the study. Some related concepts such as sustainability and food waste are described. The types of sustainability are explained in detail and reasons of food waste as well as the attitudes towards food waste in different categories are underlined.

2.1. The Concept of Sustainability

It will be appropriate to examine the concept of sustainability first as the research will examine the food waste in terms of sustainability. This part is divided for clarifying the sustainability by definition as well as examining different types of sustainability such as environmental, cultural, sociological or economic sustainability.

2.1.1. Definition of sustainability

The term “Sustainability” was first used in 1712 by the German scientist Hans Carl von Carlowitz in his book "Sylvicultura Oeconomica". 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: 3). The term is also explained as “a model that combines ecological equilibrium and economic growth, providing both effective use of natural resources and importance to environmental quality, as well as meeting today's needs without jeopardizing the needs of future generations” (Hayta, 2009).

Sustainability has not remained as only a definition but has also penetrated many different subjects. Development is also taken into consideration by facilitating the content of sustainability practices. World Commission on Environment and Development (WCED 1987: 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”. Participatory methods of sustainability are effective in situations in which the outcomes of a project or its continuation are emphasized (De Beer, 2000). A participatory sustainable development approach should be seen as a strategic process, in which strategies (Ornat 1997:

3) are defined as: “participatory and cyclical processes of planning and action to achieve three objectives such as economic, ecological and social”. Ntsime (2002), also underlines the *Sustaining Phase* as “a critical phase that represents the outcome of the all other processes” in Figure 1 (Lammerink et. All 1999). In this case, outcome refers to the impact of the project. Communities can improve techniques and tools they find obsolete, or learn best practices from other communities.

Table 2.1. Phases of participatory action development

DIAGNOSING	EXPERIMENTING	SUSTAINING
(a) Preparation by putting together a multi-disciplinary support team	(a) Experiential learning and capacity building	(a) Sharing results or twinning arrangements
(b) Orientation and induction of team	(b) Evaluating possible solutions	(b) Evaluation and impact assessment
(c) Identifying and selecting beneficiary communities		
(d) Identifying problems and possible solutions		

Source: Lammerink, M., Bury, P., Bolt, E. (1999). An Introduction to Participatory Action Development (PAD) - *PLA Notes, Issue 35, pp.29–33, IIED London.*

“Sustainable development depends on the ability to ensure cooperation and coordination among diverse stakeholders, which often have divergent interests, beliefs and priorities” (Bramwell, 2011; Bramwell & Lane, 2000). As it is seen, the term “stakeholder” is frequently confronted within the scope of the subject examined. As identified by Freeman, and McVea, (2001) “the stakeholder is any group or individual who can affect or is affected by the achievement of the organization’s objectives”.

In addition to the use of ‘sustainability’ for various industries, the term started to be used for tourism sector. Therefore, it is also essential to look at the definition of sustainable tourism. According to UNWTO and UNEP, (2005: 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”. Tourism activities can take place in many settlements ranging from urban areas to small cities, from coastal places to villages. Tourism industry related consequences within the framework of sustainability also vary accordingly. 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. Urban tourism market is rapidly expanding triggering city planners to make the tourism and hospitality industry development an important part of urban policy. The growth of tourism in urban destinations causes various challenges such as protection of environment, conservation of heritage, preservation of social fabric and cultural values, and maintenance of a desired quality of life for residents.

The importance of stakeholders for sustainability is mentioned and in order to underline stakeholders specifically for tourism sector Swarbrooke's (2001) work could be helpful; "stakeholders of tourism sector is divided into five main categories: governments, tourists, host communities, tourism business and other sectors". Participation of all those so called stakeholders is vital for sustainability considerations. Sustainable tourism requires a participative action facilitated by *sustainability networks*, which refers to the interactions of multiple and various stakeholders with different goals and varying degrees of interest and power in sustainable tourism development (Timur and Gets, 2009).

As it is noted so far, sustainability encompasses sustainable development, underlines the importance of stakeholders' participation, has relations with various industries and has subgroups mainly as environmental, social, cultural and economic sustainability.

2.1.2. Types of sustainability

Sustainable tourism debate has become more holistic since the early 1990's, Holden (2008: 158) asserts that, "sustainable tourism covers not just environmental issues but also socio – cultural, economic and political dimensions". In the 21st century, the field of specifically tourism studies can no longer ignore the global, but interrelated issues of environmental degradation, human disadvantage, climate change, poverty alleviation and clear ethical principles to guide research and practices are imperative. "It is very crucial to develop such a framework of ethical principles for an integrated approach for the development and management of tourism at the local-global level" (Dangi and Jamal 2016).

2.1.2.1. Environmental sustainability

Sustainability concept first emerged with the realization of the worlds' scarce resources and the appearance of environmental problems. Therefore, environmental sustainability is the first and mostly recognized type of sustainability that also has effects on the other concerns such as cultural – social and specifically economic sustainability. In order to define environmental sustainability, the document “Making Tourism More Sustainable: A Guide for Policy Makers” by UNEP-UNWTO (2005) could be facilitated. Environmental sustainability is defined as conserving and managing resources, especially those that are not renewable or are precious in terms of life support. It requires action to minimize pollution of air, land and water, and to conserve biological diversity and natural heritage.

If the historical landmarks important organisms of the subject is briefly analyzed, the rise of environmental consciousness firstly started in developed countries and World Conservation Union was established. In 1957, global challenges are focused by the International Global Year. The World Wide Fund for Nature was formed in 1962. The series of global environmental concerns of UN was officially illustrated at the Stockholm Conference on Humans and the Environment in 1972. During this time period, many important publications started to underline environmental sustainability (Hardy et al., 2002).

After mentioning the subject within global framework it is vital to analyze the situation for Turkey where the research universe is formed. Environmental concerns and sustainability issue also constitutes the government's agenda of laws and policies in. Agricultural Law No: 5488 states that there is a need for policies about sustainable use of natural resources such as land or water. Within the 24th Legislative Period, legislative survey proposals for the environmental issues composed by 218 proposals in the “Food Supply” category with the highest rate of 36,7 % among other environmental subjects (Global Balance, 2016: 57 -81).

Tourism sector's relation on environmental sustainability could be underlined by Middleton's (1998: 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. Conspicuous consumption in areas for swimming pools or golf course irrigation. In addition to resource depletion, “Pollution” by tourism sector could be examined

by considering its contribution to global warming and acid rain due to energy consumption. The use of transportation directly or by visitors travelling to destinations and the import of goods – services that visitors' need, the use of halons all contribute to ozone depletion. Moreover, the discharge of sewage, untreated wastewater from laundries, guest rooms or kitchens causes the pollution of watercourses. Production of solid wastes for landfill sites and landscape deterioration from illegal dumping are other sector related responsible for pollution.

2.1.2.2. Social sustainability

Another sustainability type is known as social sustainability. If a general dictionary definition is analyzed, it is defined as the ability of a community to develop processes and structures, which not only meet the needs of its current members but also support the ability of future generations to maintain a healthy community (Business Dictionary). Within a broad perspective, social sustainability could be seen as sustaining the whole societal well –being. This perspective also has its roots in the milestone document adopted by UN in September 2015 titled “Transforming Our World: the 2030 Agenda for Sustainable Development”, with 17 Sustainable Development Goals (SDG) for the period of 2015-30. Among the SDGs, Goal 11 (the ‘Urban Goal’) to “make cities and human settlements inclusive, safe, resilient and sustainable” (E. Yıldırım, 2016). A well –organized tourism destination can benefit area residents by exposing them various ideas, languages, people and other cultural traits. The restoration and preservation of the historic sites can add to the richness of the residents` experiences and provide opportunities for local people to learn about themselves (Edgell, 2006: 73).

Social sustainability also notes some questions related with the linkages between social, capital and economic growth, social policies and institutions, the linkages among inequality, social capital, and economic performance. Subjects such as democracy, education level, inequality and insecurity or globalization are all relevant with social sustainability (Helliwell, 1998).

The tourism sector's relation to environmental issues are mentioned with the concept of “Ecotourism” in the literature. Even though ecotourism deals with the environmental impacts of tourism, it is seen that social and cultural themes are always included. Even the definition of ecotourism comprises the social dimension of sustainability. As defined by The International Ecotourism Society (TIES, 2015), the oldest organization dedicated to

ecotourism around the world, ecotourism is "responsible travel to natural areas that conserves the environment, sustains the well-being of the local people, and involves interpretation and education". Education is meant to be inclusive of both staff and guests uniting conservation, communities, and sustainable travel. Among the five principles of their operations, providing financial benefits and empowerment for local people and raising sensitivity to host countries' political, environmental and social climate are striking within social sustainability framework (Collin and Collin, 2009: 175).

When the main recovery of social sustainability within tourism perspective is analyzed, Alvarez, Özdemir, Yalçın and Yılmaz (2014) includes some topics such as "Education of local community and visitors, Increased quality of life of the local people, Participation of disadvantaged social groups in tourism and Participation of the local community in decision-making".

2.1.2.3. Cultural sustainability

As the term sustainability has identified beforehand, firstly it is better to understand what `culture` means in order to have an idea on cultural sustainability. Webster`s II New College Dictionary defines culture as "The arts, beliefs, customs, institutions, and other products of human work and thought considered as a unit, especially with regard to a particular time or social group". Cultural sustainability can be defined as "the ability to retain cultural identity and to allow change to be guided in ways that are consistent with the cultural values of a people" (Berkes, 1998).

Cultural sustainability also encompasses all the issues related with cultural heritage. Heritage has been created by and for people and the world is a better place for the richness, that cultural heritage brings. Individuals and their contribution to cultural heritage as the heritage places considered to be a 'living' part of the community, engagement brings advantages to both the heritage and the community alike (International Centre for the Study of the Preservation and Restoration of Cultural Property [ICCROM], 2017). Similar to social sustainability, if the UN's 17 (SDG) for the period of 2015-30 is analyzed, the thematic scope of the SDGs is organized and within 169 'targets', Target 11.4 refers to the 'Heritage Target'. It stands for to "protect and safeguard the world's cultural and natural heritage" (E. Yıldırım, 2016).

Cultural sustainability is could also be analyzed within sustainable cultural tourism as cultural tourism has its roots in all above mentioned heritage and living part of the society. Therefore, the principles of sustainable cultural tourism also has clues as to what cultural sustainability requires. How visitor journeys should be considered gradually with sustainable cultural tourism perspective is exemplified in below figure starting from pre-visit messages to after-visit position of the tourists. Moreover, some of the principles summarized by European Union (EU) Sustainable Tourism Guidelines - European Association Historic Towns and Regions (2009: 8) could be listed as;

- Cultural tourism should maintain authenticity and distinctiveness and respect the dignity, beliefs and rights of the local cultures.
- Municipalities should attach an intrinsic value to the culture and heritage of historic towns and cities.
- Cultural Tourism should contribute to conservation of the cultural and heritage assets.
- Benefits should be provided equitably to the local community.
- Cultural tourism should evolve continually and should be managed responsively to change (EU) Sustainable Tourism Guidelines - European Association Historic Towns and Regions, 2009: 8).

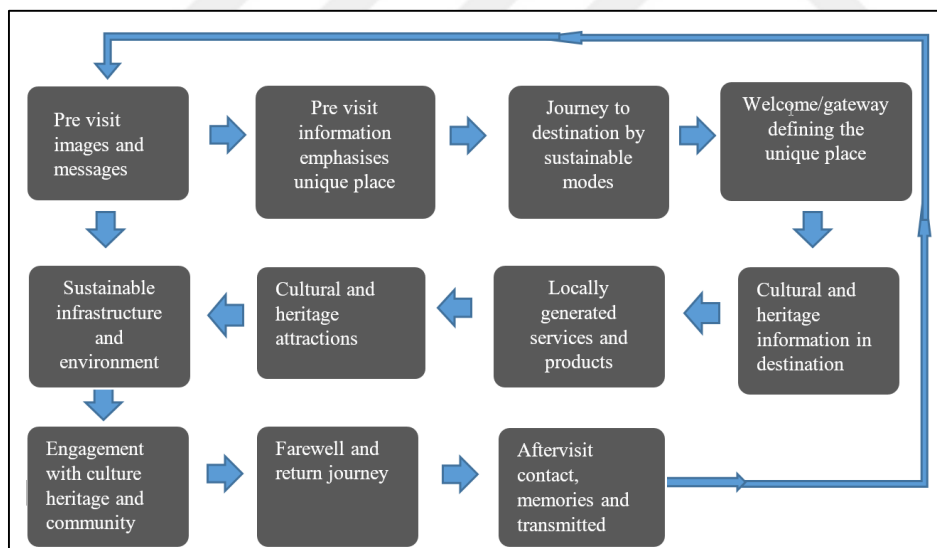


Figure 2.1. Sustainable cultural tourism and the visitor journey

Source: Adopted by EU Sustainable Tourism Guidelines, European Association Historic Towns and Regions, 2009, p. 13.

Related literature underlines an important irony on the fact that cultural sustainability is ignored and more emphasis often is given to tourism's effects upon environment and economy. This might be explained by the difficulties inherent in studying human behavior and perceptions. However, as mentioned throughout the study, even the definition of

sustainable development by WCED, (1987) stresses the needs of local communities. Therefore, the concept should be address the local community to the same extent as the economy and the environment (Hardy et al, 2002).

2.1.2.4. Economic sustainability

The last type of sustainability analyzed as Economic dimension also has interrelations with the other types of sustainability. Especially, the environmental concerns are also the subject of economic considerations in the long run. To exemplify this idea, Daly's triangle in Mensah and Castro's (2004) work is presented. The 3 E's approach Environment – Equity and Economy as seen in below figure represents Environment as the 'Ultimate Means'. Therefore, the natural resources are seen as the precondition for decent human life. The next layer is illustrated as Economy including technology, politics and ethics serves as a vehicle to achieve ultimate ends. Equity the 'Ultimate End' is placed at the top refers to the wellbeing of the humans. The main theme of the triangle is the success of the economy which could only be possible that it conserves and restores the environment and enables the achievement of ultimate ends.

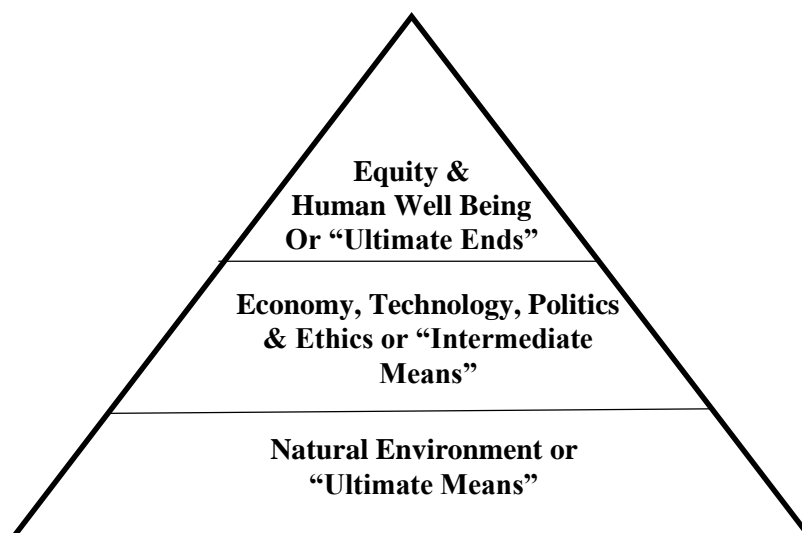


Figure 2. 2. The triangle of equity – economy – environment

Source: Daly, H. E. (1990). Toward Some Operational Principles of Sustainable Development. *Ecological Economics*, 2 (1) 1-6.

As the term sustainability generally has some mentions with the term green within environmental perspective, the economic dimension of sustainability is again to spoken as green economy. UN's (2012: 10) report on sustainable development considers green

economy in the context of sustainable development and poverty eradication as one of the important tools for achieving sustainable development. Sustained economic growth is underlined with its role to enhance social inclusion, improving human welfare and creating opportunities for employment and decent work for all, while maintaining the healthy functioning of the Earth's ecosystems.

Alvarez et al. (2014) also analyzes the sustainability of an urban destination according to these so called four dimensions, namely economic, environmental, social and cultural sustainability. However, the research highlights that sustainability is generally focused on by economic gains and other aspects of sustainability, such as environmental concerns, cultural and social sustainability are subject to lack of knowledge or being neglected. However, all dimensions are linked to each other and the economic dimension of the subject is, again, based on environmental sustainability. As Barbier (1987) justifies the overall goals of environmental conservation and economic development are not conflicting but can be mutually reinforcing. This fact has prompted calls for 'environmentally sustainable' economic development. Edgell, (2006: 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". Large number of international visitors attracted by tourism also generates foreign exchange providing benefits to rural areas where employment maybe insufficient facilitating wider job base, capital investment and new demand for agricultural produce. Studies show that increasing number of tourists who are interested in seeing and doing more are willing to stay longer and spend more money in areas that sustain culture and environment (Edgell, 2006: 32).

What literature tells us is the fact that sustainability is a 4-legged mechanism. The economic success will not be achieved without sustainable environmental, cultural and social policy, which will also help to affect whole societal well-being and tourists' satisfaction that again result in higher economic gains like a circle in this mechanism.

2.2. The Concept of Food Waste

If we consider the subject of waste in a broad sense, European Commission Waste Framework Directive (Directive 2008/98/EC) on waste outstands with its mission and operations through the world.

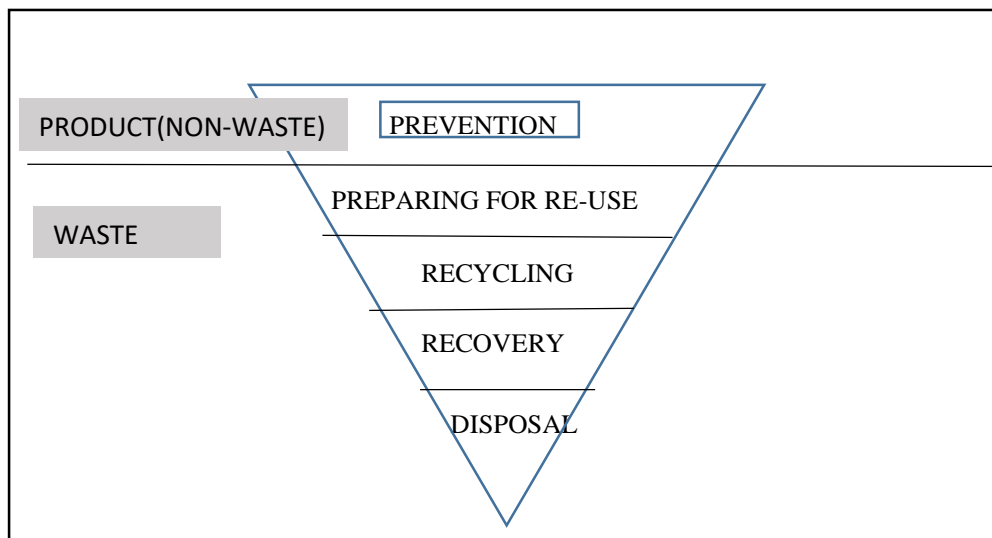


Figure 2.3. Waste management hierarchy

Source: European Commission Waste Framework Directive (Directive 2008/98/EC) Web: <http://ec.europa.eu/environment/waste/framework/> retrieved on 14 March 2017.

The Directive lays down basic waste management principles, which do not endanger human health and harm the environment. Policy of EU Member States and waste legislation requires the application as a priority of following waste management hierarchy;

Within the framework of `Wastes`, the term `Reuse` has a broad sense which includes

- The reuse of components and products that means any operation by which products or components are used again for the same purpose for which they were conceived,
- Recycling: Refers to the production of a fresh supply of the same material,
- Down –cycling: Refers to the production of new materials or products of lesser quality and reduced functionality,
- Up-cycling: Refers to the production of new materials or products of better quality or higher environmental value (EU, 2013: 14).

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 as shown in below figure (Burke et al. 2000: 461).

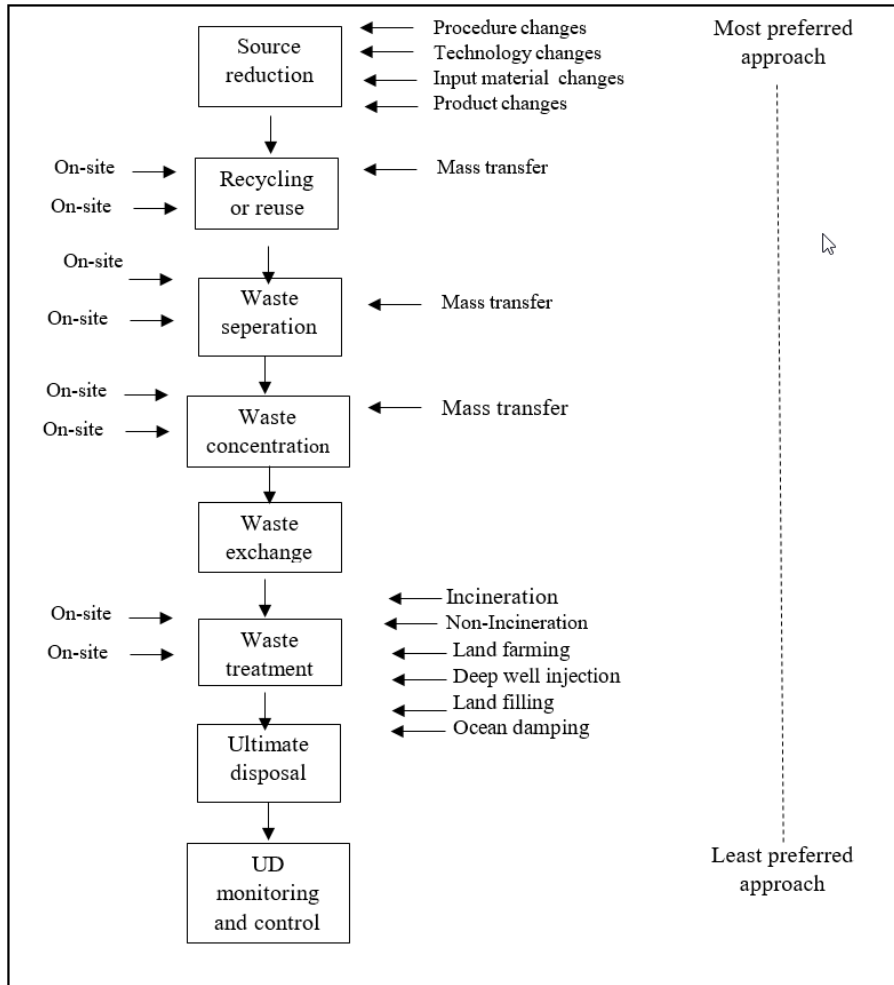


Figure 2.4. Waste reduction hierarchy

Source: Burke et al. (2000). *Handbook of Environmental Management and Technology* (Second Edition). USA: John Wiley Sons Inc. p. 463.

As one proceeds down the hierarchy, more waste is prevented, recycled or treated thereby reducing the amount of waste generated or released to the environment. The primary approach, source reduction consists of reducing the volume of wastes initially generated and becomes the most preferred method of environmental protection. 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. Based on the EPA's hierarchy, the subject of waste could be regarded specifically from food waste and it could be suggested that food waste should be addressed starting from the organizational policies and practices. Production techniques as well as inside environmental trainings which educate the employees on food production should be managed in a way that minimize food waste in the preliminary stages without much need for recycling or reuse phase.

2.2.1. Definition of food waste and food loss

The concept could be better understood if food waste and food loss is explained after having a mention of what 'food' is in definition. As described by Gordon and Rensburg (2002:3), "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 loss 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: 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) 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. Food loss may result from the problems in harvesting, storage, packing, transport, infrastructure or market / price mechanisms, as well as institutional and legal frameworks.

H. Yıldırım et. al. (2016), put similar explanations supporting the previous ideas presented. They claim that "food loss and food waste differ on the fact that food losses refer to the part

of food that is lost along the supply chain before reaching final consumer while food waste represents the waste of food by final consumer”.

If the worldwide wasted food groups are examined, the mostly wasted groups are found to be fruit and vegetables constituting 44 % of the total food waste. Root and tuber plants follows with 20 % and grains compose the 19 % of worldwide food waste. Dairy products have 8 %, meats have 4 %, oily seeds have 3 % and fish – seafoods have 2 % share of the food waste pie (Gustavsson et al., 2011). Another study conducted for United States by Buzby and Hyman (2012) also 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%).

If the streams against food waste is analyzed, related literature on food waste has adopted the phrase known as “Farm to Fork, Gate to Plate” (from agricultural production to consumption), which tell the story of the food we eat, similarly conjure up an image of what stages of the life cycle are being presented (European Commission 2010: 27). This concept supports the idea of highlighting the farms, restaurants, organizations and individuals that contribute to the local culinary and agricultural landscapes. Fresh, seasonal or organic food is focused and the environmental and economic impact of food waste is tried to be minimized by embracing sustainable agriculture, use of local ingredients, direct sales relationship and local distributors.

Liquid wastes

UNWTO (2013:14) draws attention to tourism sector’s negative impacts on waste in particular. Local pollution of land and water from poor treatment of solid and liquid waste by tourism businesses is underlined.

Liquid wastes are another important dimension of food waste literature. Ukita, Imai and Hung 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. In order to reduce water consumption, reducing and reusing the water used for washing the raw materials or reducing the amount of water used for

washing the tanks and containers after operations might be helpful. (Ukita, Imai and Hung, 2006: 293).

Fresh water is already scarce in many parts of the world and water supplies are predicted to satisfy only 60 per cent of world demand in 20 years' time. 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, 2012:2).

When there is a choice of wastewater treatment strategies available, the decisions are taken solely on a financial basis. In rapidly industrializing countries, the structure of the economy plays a crucial role in governing any waste water management policies. For example, tourism is a major sector of the economy in many developing countries; therefore, in order to attract the tourists the environment has to be maintained in a reasonably clean state (Parr and Horal, 1996).

Wasted Bread

Within the context of food waste, bread waste constitutes a crucial part in Turkey. H 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 (Turkish Grain Board [TMO], 2013: 90).

2.2.2. Reasons of food waste

Although the subject's prominence has increased in recent years, it has been emphasized in the literature that is older than half a century. For example, Goldmann (1950: 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". Menus must be planned and changed with the seasons, careless shopping must be reduced to limit needless duplications of food already bought, a suitable storage and skilled people for the preparation of the food

are all necessary, attention must be given to the mechanics involved in preparation, standardized recipes should be found and the “eye appeal” should be considered for the aesthetic appetites of the people who consume them.

Tarhan (1999: 119), analyzes the reasons of food waste during the food preparation phase and concludes that the misapplications of the personnel who prepares the food and the effort of not to refuse the customer with inefficient food is the main reasons of food waste. In addition, the quantity and appearance of the food served, the use of inadequate equipment, ignoring the number of people served or the distaste of the meals by the customers are observed among the other reasons.

Attitudes

The term “attitude” is defined as “a tendency that organizes the feelings, thoughts and behaviors of people related to objects, ideas, institutions or events around. Attitudes could be measured by the interviews, behavioral observations or psycho-physiological measurements. It is also possible that the attitudes we gain through learning can change (Özkalp, 2005: 293).

2.2.2.1. Institutional attitudes

In addition to food waste by households, institutions, which serve food and beverage, constitute a crucial part of the research subject. Institutional attitudes as stated as a first reason of food waste could be considered as a roof for the other following reasons that are mentioned in this part such as employee attitudes, wrong equipment use, menu planning mistakes or customer attitudes. The institutions determine the way these other elements have their positions in the subject of food waste by transmitting their policies, regulations, standpoint to both customers and employees. The below figure by Davis and Stone (1991:83) exemplifies the complete F&B control system which could be considered as a general operational summary for the institutions. In order to reach the performance standards in the establishments, targets are set for revenue, profit margins and cost levels. Achieving these performance levels could be possible by preventing wastage of materials caused by such things as poor preparation, over production or failure to use standard recipes etc. At this point it is important to have the complete F&B control system.

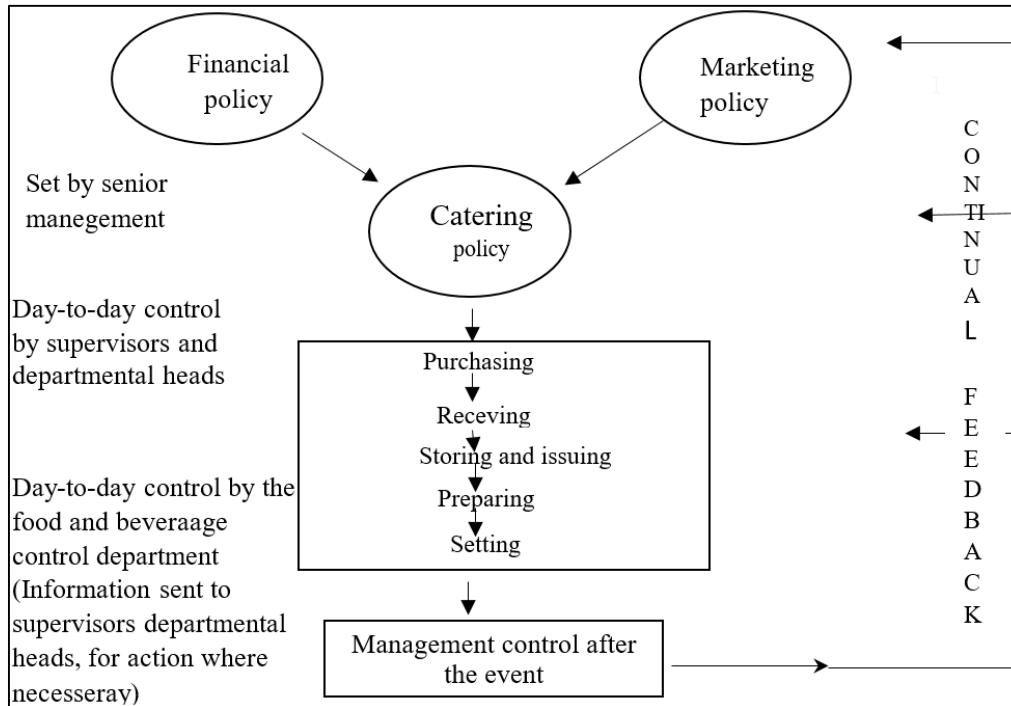


Figure 2.5. The complete food and beverage control system

Source: Davis, B. and Stone, S. (1991). *Food and Beverage Management* (Second Edition). England: Butterworth – Heinemann Ltd., p.83

As illustrated in the figure, both financial – marketing and catering policy of the institutions are interrelated with the F&B processes starting with food purchasing and followed by receiving – storing and issuing – preparation and selling phases. All these processes require continual feedback and the control by management at the end. Therefore, the issue of food waste should be considered by the institutions from the beginning of the system while setting the institutional policies.

Tourism sector's relation to food waste could not be neglected due to the fact that all touristic accommodations are serving food and beverage to numerous customers, even some of these institutions are preferred solely to benefit from food service by the customers. Why food waste management is important within the framework of chain hotels is also explained by Kozak (2014: 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". Institutions must choose environmentally friendly technologies and should not avoid the necessary investments in order to prevent this situation. For this reason, "the creation of a clean environment is both a goal and a constraint for businesses" (Akdemir, 2006: 70).

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) as “a label for specific products or services that have been independently determined to meet transparent environmental leadership criteria, based on life-cycle considerations” (GEN, 2017). Type I eco- labelling is based on multi party criteria agreement set by industry and consumer for the environmental performance of products and services during a transparent consultative process. Type III eco labelling stands for the acceptance of a standard / label by all parties. According to the International Organization for Standardization (ISO) only Type I (14020) and Type III (14025) are considered as eco – labels (Orsato, 2009: 101). Below figure exemplifies the eco – differentiation standards and strategies for institutions.

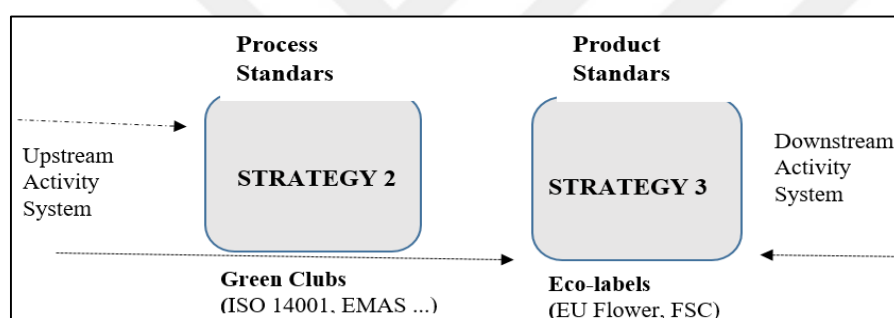


Figure 2.6. Eco- differentiation standards and strategies for the organizations

Source: Orsato, R. J. (2009). Sustainable Strategies: When does it pay to be green? London: MacMillan, 100.

As seen in the figure, the standards are mainly associated with the upstream activities and industrial processes whereas eco labels also involve downstream product stewardship activities for recycling. 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.

2.2.2.2. 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. It should be noted that the attitude of the employees is almost totally affected by the management attitude and the environmental climate in which they are working. Besides these factors, 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 (David and Stone: 1991:32–33). If employees manage to understand their market segment and their preferences, then the F&B institutions could be able to produce efficiently and determine irrelevant purchase or excess production that will lead to food waste again.

In order to build a long lasting business with an overarching sustainability goal can provide a greater purpose beyond profits by giving employees a chance to serve something larger than them-selves. Thus, employees could expose leaky roofs before they become Katrina – sized catastrophes. Based on this point of view, Werbach, (2009:129) 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.

Generally, F&B Manager is the one who is responsible for food and beverage department in large hotel establishments. The necessity of having a 24-hour open room service in these hotels requires the hotel kitchen to be open and related employees to work in shifts. Therefore, an F&B manager needs an Assistant under and a night manager for food & beverage responsibilities in the hotel. Having the possible job title differences in mind, typically a restaurant manager, a banquet manager, a room service manager, kitchen chefs and a chef steward are employed in big hotels. The equipment in use of these personnel is also important; for example, the automatized machines that adjust the standardized service portions could be helpful to deter waste and control the inventory. (Gönen and Ergun, 2008). Consequently, these personnel should be educated for the use of service scoops and dishes, which enables the service portion standardization according to the standardized recipes. The education level and qualifications of all these employees are important in minimizing food waste with the help of equipment use related mistakes and inefficiencies.

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 garbage etc. Commonly used for food safety, HACCP (Hazard Analysis and Critical Control Point, is a reliable food

production and presentation control system that is also effective in preventing food losses (Kabacık, 2008).

After having mentioned about the education level of employees as well as the related trainings given them by the institutions it is important to understand their level of awareness on sustainability issue.

It is already known that people born after the 1st World Day in 1970 received environmental education in grade school in USA. However, sustainability does not work for businesses unless it first and foremost solves employees' problems they experience their lives. In order to understand to what extent a company's sustainability strategy engages the employees, some basic questions could be pointed out by picking up some employees at different levels in the company (Werbach, 2009: 119);

- What are the top three priorities of the company?
- What are the three greatest challenges the company faces?
- What is the biggest risk facing the core product or service of the company?
- Do these challenges and risks make sense to you?
- Are you working towards resolving these issues?

Therefore, the institutions could have an understanding about the employees' level of engagement on sustainability strategies and related inefficiencies that should be reinforced. Within the framework of this research, such an analysis might be helpful for five star international hotel employees and their attitudes towards sustainability with respect to food waste management.

The employee attitude in food waste management is also interrelated with the wrong equipment use, which is given a place in the coming sections of this study.

2.2.2.3. Storage errors

Following the purchasing process, the storage stage is important in terms of food waste. The foods are stored in various places according to the purpose of usage and the usage timing. They can be stored in the suitable storages for daily use, dry storage places, cold storage rooms, freezers, display cabinets etc. As stated by Latimer, 1985, it is not enough to rely on cold storage at the hotels but there should also be cold storage for the producer, cooperative

or wholesaler who can recoup their costs by buying during a surplus and selling during a scarcity.

Tarhan has crucial findings related with the storage practices of hotels based on the research conducted in some hotels. Some of the striking facts are listed as;

- Some of the foods were found to be stored without any cover on top.
- Some foods continue to be used when the expiration date has passed.
- It was determined that the meat was indiscriminately held in cold storage.
- Some of the cleaning materials were left near the breads (Tarhan, 1999:147).

All of these above mentioned determinations are constructions for possible food loss in the hotels. Due to improper storage, food is lost before reaching the final consumers during the storage stage.

As Gürsu (1996) states, “the use of computers is not only practical for various purposes by most of the hotel departments, computerized systems are also facilitated for storage records by 64 % of the F&B institutions”. It has been found that use of computers also support the efficient menu planning.

2.2.2.4. Wrong equipment use

As Lundberg (1989:301) states, a kitchen could be anything from one-burner stove to a complex and elaborate food processing plant. Kitchen can be seen as a warehouse, a factory, a distribution point, a waste treatment plant, a testing laboratory, a processing plant, an artists’ studio, a sanitation establishment, a place of diverse skills and trades and a boulevard of broken dishes and dreams. Similarly, today there is a variety of kitchen equipment like broilers, microwave ovens, fryers, steam-jacketed kettles or griddles. The equipment used and how it is used plays a part in making the food pleasing both to the eye and the palate. As it is understood from these explanations, the kitchen and the equipment used there are both very determining the process of food waste as well as the amount of the waste.

“Arranging the kitchen or incorporating ‘inclusive design’ principles is important to enable accessibility to the kitchen. Making the kitchen fit the users; using tools that fit the users, reducing potential causes of strain will help to cook comfortably” (Mitchell, 2017: 14). The employees should be trained about the routine maintenance of kitchen equipment.

Depending on the size and technological conditions of the establishments, the number and complexity of kitchen utensils and equipment increases. For this reason, it is important to ensure that the equipment is used most efficiently and possible failures should be reduced with an effective internal control system. “If there is an efficient internal control system for the employees and the kitchen materials for inputs and outputs, then the embezzlement of the equipment in the name of employees is not required” (Ömürbek and Altay, 2011).

2.2.2.5. Menu planning mistakes

The menu is defined by Gordon and Rensburg, (2002: 235-293) as the statements of the food and beverage items provided by a food service establishment primarily based on customer needs and demands and designed to achieve organizational objectives. Similarly, menu planning is described as “the process by which menus are planned taking into consideration all aspects of the food service system and acceptable items by both management and the customer. The menu communicates the image of operation and contributes to the overall dining experience for the guests and also dictates what foods must be prepared by the employees. The information from the menu should also be used for portion planning and control as well as the use of standard recipes.

Importance of standard recipes for all menu items is also underlined by Gönen and Ergun (2008), “during the internal control processes, the ingredients that actually appears to be used may be more than the amount of standard ingredients”. Some of the reasons of this fact can be listed as;

- Use of ingredients which is more than the amount specified in the recipes, or service in larger portions than specified,
- Food loss due to failure to comply with cooking methods and duration,
- Food waste,
- Some of the food which is remained unsold (Gönen and Ergun, 2008).

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.

2.2.2.6. Customer attitudes

One of the components affecting customer behavior is organizational factors. The attitudes and behaviors of the people providing the service, the service environment, physical atmosphere as well as the abstract elements peculiar to the service institution all affect the consumer behavior. It is also necessary to focus on the non-visible elements of the organization in which the service is offered (Torlak, Altunışık and Özdemir, 2007: 81).

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 the researches, 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 (2011:1), 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 %).

To mention a useful aspect of this subject, there is a new concept called “Doggie Bag” which is defined as a container for leftover food to be carried home from a meal eaten at a restaurant (Merriam Webster Dictionary, 2017). This concept as have been mentioned in the Guardian, started to spread over United States. Taking the uneaten food from a restaurant to the house is considered as the height of civilization by many people. However, some customers might feel uncomfortable asking the restaurants to pack the uneaten food due to some common perceptions like it's a sign of stinginess or rudeness (Rayner, 2008). Even though, there are no strict rules and regulations to follow in such cases, it is very beneficial to have this concept. The possibility of spreading this new formation called Doggie Bag to many other countries might be very crucial to minimizing food waste resulting from customer attitudes.

A study conducted in Arizona with 852 individuals focusing on customers' opinions about environmentally responsible business practices has important results enlightening the customer opinions, which will also lead to their attitudes. The study results show that customers especially the nature – based tourists put importance to environmentally friendly business practices. The below table shows the customers' perceptions on some

environmentally friendly efforts of tourism businesses and the customer valuation levels put on each segment by percentages. Most of the practices listed are considered as “extremely valuable” (Andereck, 2009).

Table 2.2. Customers’ perceptions on specific environmental efforts at tourism businesses

Special efforts	Not valuable (%)	Slightly valuable (%)	Valuable (%)	Quite valuable (%)	Extremely valuable (%)	Means
Landscaping with native plants	1.4	4.3	19.2	29.4	45.6	4.1
Energy efficient systems/energy conservation	1.1	5.3	21.5	30.5	41.5	4.1
Recycling programs	1.4	6.3	24.0	27.5	40.8	4.0
Renewable energy systems	1.3	5.4	23.9	30.6	38.7	4.0
Gray-water systems	1.5	8.4	21.0	31.7	37.4	4.0
Architecture compatible with the local environment	2.2	6.9	23.5	31.1	36.3	3.9
Items made of recycled materials	2.9	9.7	27.8	27.0	32.6	3.8
Recycling items such as maps, trail guides	3.5	10.6	30.6	26.7	28.6	3.7
Water use reduction programs	3.3	10.8	26.6	30.0	29.3	3.7
Composting toilet systems	5.2	13.2	30.9	25.7	25.0	3.5
Items made from natural/organic materials	6.2	17.8	31.7	22.8	21.5	3.4

Source: Andereck, K. L. (2009). Tourists’ Perceptions of Environmentally Responsible Innovations at Tourism Businesses. *Journal of Sustainable Tourism*, 17 (4), p.494. ISSN 0966-9582.

This research is also a sign that customers generally put importance on environmentally friendly activities, which increase the probability that their attitudes will be parallel when food waste is considered as part of environmental sustainability practices.

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. (2016:52), customers are brought in to the collaboration with attention to how to align them more closely with nature. Relational marketing can be directed to managing a mutuality of relationships among customers, nature and the firm rather than considering these as tradeoffs. The extent to which companies are partnered with nature-based NGOs in their sustainability efforts and whether firms that exhibit more radical collaboration perform better on sustainability metrics should be analyzed.

2.3. Food Waste and Sustainability Relation

First of all, to underline the food waste and sustainability relation it could be beneficial to examine specifically SDGs Target 12.3 which is the global development agenda by 2030, focusing attention on the opportunities that will allow for more a sustainable future. The SDGs discussed with the cooperation of 150 world leaders in New York to adopt a set of global targets intended to end extreme poverty, fight inequality and injustice, and curb climate change. SDG will call for the world, to cut per capita food waste in half by 2030 and thereby boosting food security as well as improving livelihoods, reducing greenhouse gas emissions and saving land and water. Shortly, curbing food waste is both a goal in itself and a means of achieving other SDGs (Lipinski, 2015).

To understand the relation of waste in general means and sustainability, the statement of Arvanitoyannis (2008: 841) could be helpful; everyday people make choices that will affect the environment directly or indirectly. Manufacturers choose from different products, suppliers or production methods and customers, for their part decide to use or not to use products. If those groups want to make environmentally responsible choices, Product Life Cycle Assessment (LCA) which 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.

Parallel to these information, the below figure by European Commission, (2010:6) represents a holistic approach showing the various phases of resource use. How this continuous circle impacts the environment is illustrated by energy, materials and land use which may result in

climate change, toxic pressure or eutrophication unless the process is managed efficiently. Life Cycle Thinking (LCT) adopts a broader perspective considering the environmental impacts of the processes within our direct control. Attention is also given to the raw materials used, supply chains, product use, and finally the effects of disposal and possibilities for re-use or recycling. Therefore, if the food waste is regarded as a part of this cycle, 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 been assessed and addressed.

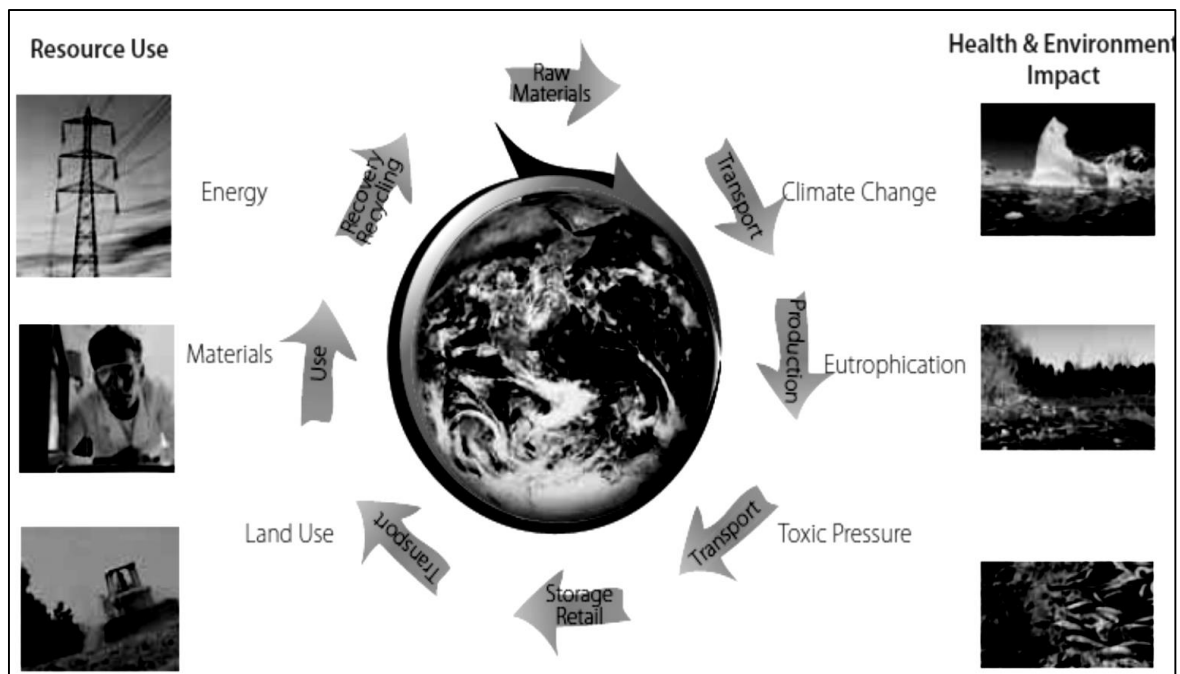


Figure 2.7. Life cycle thinking

Source: European Commission (2010). *Making Sustainable Consumption and Production a Reality* Luxembourg: Publications Office of the European Union, p.6. ISBN 978-92-79-14357-1, doi: 10.2779/91521

Another important point in consideration of food waste and sustainability relation is the fact that the recycling of food wastes is regarded as part of the long – term sustainability of agriculture. Because, food processing industries occupy a crucial position economically and generate large volumes of mostly biodegradable wastes, the emergence of recent technologies relating to food wastes has been inevitable. Along with not getting into the details, it would be good to have a mention of these technologies underlined by Ukita et al. (2006: 291). These are examples of Fermentation Factories, Reduction and Reuse of

Wastewater, Cassava Starch Industries, Resource Recovery by up- flow anaerobic sludge bed reactor, zero- emission beer breweries or technology for garbage recycling.

While analyzing the food waste and sustainability relation, composting as a way of managing food waste constitutes an explanation itself. As defined by Williams,

-Composting- is the aerobic biological degradation of biodegradable organic waste such as garden and food waste. It takes 4-6 weeks to reach a stabilized product and large scale composting being developed where food waste is collected from households”. By this way, the degraded product added to soil to improve its structure acting as a fertilizer to improve nutrient content and retain the moisture in the soil. As seen from the process, the food waste helps to environmental sustainability in the long run if it is managed properly (Williams, 1998: 383).

2.3.1. Environmental dimension of food waste

According to the document called “Roadmap to a Resource Efficient Europe” by European Commission (2011), the food and drink value chain in the EU causes 17 % of direct greenhouse gas emissions and 28 % of material resource use, with people’s consumption patterns having global impacts, in particular related to the consumption of animal proteins. It is a major user of high-quality water, which is essential for its success. However, in the EU alone, totally 90 million tons of food or 180 kg per person is wasted every year. Much of this is food, which is still suitable for human consumption.

2.3.1.1. Various facts for environmental impact of food waste

Carbon Footprint

Tourism sector’s negative impacts on environment is illustrated in various aspects. For example, “tourism is a significant and growing contributor to climate change, currently accounting for around 5 % of global CO² emissions, mainly generated by transport but also by the operation of tourism facilities such as accommodation” (WTO, 2013: 14).

According to FAO (2013:6) “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 ... Similarly, the blue water footprint (i.e. the consumption of surface and groundwater resources) of food wastage is about 250 km³ that is equal to the annual water discharge of the Volga River.

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”. (Smart Sustainable Waste Management [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 CO² emission equals to 20,6 kg. per day. Whereas, guests of other types of tourist facilities consume 98 Mj energy and 15,6 kg CO² 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.

Talu (2014: 37) underlines an important fact based on Gunhild Stordalen’s explanations in EAT Stockholm Food Forum; 20 % to 30 % of human-derived greenhouse gas emission occurs during the food production process. In the year 2050, 60 % more food than existing production will need to be produced.

Agriculture

Negative consequences of the industry within an agricultural perspective could be lessened by some corrective actions. 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).

FAO (2013:6) explains that “produced but uneaten food vainly occupies nearly 1.4 billion hectares of land which represents close to 30 % of the world’s agricultural land area”.

Specifically in Turkey, the physical and economic losses incurred by the inefficient transportation and storage of fruits and vegetables are very large. Resulting from various reasons, these products are reduced by wastage starting from harvesting products to the delivery to final consumer. Research reports indicate that these wastes are rising up to 40% in products such as onions and potatoes (Guner, 1975: 293).

Amount of Wasted Food and Equivalent Calorie

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 food loss equivalent to 750-1500 calories per day (WB, 2014).

H. Yildirim 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.

2.3.2. Economic dimension of food waste

Environmentally sustainable projects and plans are economically profitable itself when they are considered in the long run. Therefore, the subject is underlined globally and economic gains with the help of eco-innovations in the European Union. Eco -industries provides some opportunities as follows;

- Turnover €227 billion
- Turnover 2,2% of GDP
- Create 3,4 million jobs (European Commission, 2009: 5).

Without environmentally friendly solutions, existence of eco industries or well-planned projects and strategies there are various negative consequences in economic terms. As all environmental concerns, the subject of food waste has its own consequences, which could be evaluated within economic framework. Implied by Desbiolles (2011), “we live in an era when the key issue is unsustainable human demand on a finite environment that is also supported by the irony of market economy – in favor of development at the expense of the environment. There is a parallel dilemma, which makes the food waste threatening the economy”. As states by Burke et.all (2000: 583), “economic considerations of environmental issues includes the balancing of costs, costs and dollar valuation of benefits or environmental impacts and economic consequences of control costs”. This part is divided to the economic impacts of food waste and some related calculations.

2.3.2.1. Various facts for economic impact of food waste

Monetary Loss

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 insight, 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. As stated so far, wasted food could constitute higher load conomically.

Researchers from World Research Institute (WRI) and Waste & Resources Action Program, (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. Moreover, as understood from the report named 'The Business Case for Reducing Food Loss and Waste, which was released on behalf of Champions the Sustainable Development Goals', there is a financial evidence that reducing food loss and waste is the right thing to do for bottom lines and people's pockets. I hope that will remove one of the barriers to tackling food loss and waste. By way of driving forward innovation, our food

system becomes more sustainable, businesses thrive and we all save money (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. Each year, totally 7 million customers are hosted in these hotels. 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.

In addition to this example from Scandinavia, it is also important to examine a similar project in Turkey in order to prevent food waste. Unilever Food Solutions Turkey General Manager Önder Arsan explains that tourism sector is assumed to witness 325 000 tons of food waste per year according to pilot studies in Turkey. The pilot studies considering hotels, restaurants and catering companies shows that the amount of waste both occurring in the kitchen and the uneaten food from consumer plates goes from 70 grams to 200 grams, or even reaches to 300-400 grams in all-inclusive system accommodations. “Generally researchers do not examine the customer plates while calculating the food waste although the waste on the tablets are very crucial showing customer satisfaction. It is vital to understand customer satisfaction by examining what they ate, what they do not” (Ozkan, 2014).

Unilever and Paloma Hotel group (The Paloma Oceana Resort Hotel, Renaissance Antalya Beach Resort & SPA, Sentido Perissia 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 TL¹ savings during the year to the hotels” (Gıda Gündemi, 2013).

By looking from the monetary dimension of wasted bread in Turkey, the monetary allowance of 2,1 billion annually wasted breads in Turkey equals to is 1,5 billion Turkish Liras. After a campaign organized by Turkish Grain Board General Directorate of Crops Office to prevent bread waste in 2013, 2.8 billion Turkish Liras savings to the economy is reached on that year (TMO, 2013:89).

2.4. Global Framework of Food Waste Practices

Since the importance of food waste is noticed in a global scale, many organizations – actions – funds – projects and plans are formed in order to manage the problem of food waste. Although there are various organizations on a global, regional or national scale, the organizations which form a base for the general actions globally are illustrated in below table with their structural information.

Table 2.3. Global organizations for food waste

Organization	Structure
SAVE FOOD	It is being carried out from 2011 by FAO and Messe Düsseldorf. The program has four aims; Awareness raising; Cooperation with the entrepreneurs; Policy, strategy - program development and Support for all stakeholders in the food chain.
Think Eat Save Campaign	It is a campaign by UNEP, FAO and Messe Düsseldorf as part of a global SAVE FOOD program. Consumers, retailers and hotels are targeted to reduce wastage at the global, regional and national level. Inspirational ideas and solutions are spread through a website http://www.thinkeatsave.org/
The Food Chain Analysis Network (FCAN)	It is launched in December 2010 by the Working Party on Agricultural Policies and Markets of the OECD. The aim is to solve the problems in the food chain on a broad dialogue platform that includes analytical work and policy experiences. The stakeholders composed by government officials, international organizations, industry stakeholders, consumers, experts from universities and NGOs.
The Global Food Banking Network (GFN)	It is an international nonprofit organization that fights world hunger by creating, supporting and strengthening food banks around the world, in countries outside the US. They work in more than 30 countries. https://www.foodbanking.org/
The Global Food Loss and Waste (FLW) Protocol	It is a partnership, which has developed the global FLW Standard for quantifying and reporting on food and/or associated inedible parts removed from the food supply chain. Consumer Goods Forum, FAO, UNEP, FUSIONS, World Business Council for Sustainable Development and WRAP are the FLW stakeholders. http://flwprotocol.org/

Source: The table is composed by the study of Dölekoğlu, C., Gün, S. and Giray, F. H. (2014). *Poverty and Spiral of Food Waste*. 11th National Congress on Agricultural Economics – Congress Proceedings, Samsun: Erol Matbaacılık, 172 – 183.

¹ 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.

Some international actions could be useful. Founded in 2000 in England, WRAP focuses on the three priority areas namely Food and Drink; Clothing and Textiles; and Electricals and Electronics, all of which are underpinned by resource management. WRAP launched *Love Food Hate Waste* consumer campaign in 2007. Moreover, the 10 year producer to consumer voluntary agreement *Courtauld Commitment 2025* - to make food and drink production and consumption more sustainable is signed in 2016 (WRAP, 2017).

Funded by the European Commission Framework Programme 7, Food Use for Social Innovation by Optimizing Waste Prevention Strategies (FUSIONS) is another important project about working towards a more resource efficient Europe by significantly reducing food waste. Between August 2012 to July 2016, FUSIONS has 21 project partners from 13 countries, bringing together universities, knowledge institutes, consumer organizations and businesses. In addition, already more than 200 leading European a number of organizations from a variety of sectors have pledged their support to FUSIONS (EU – FUSIONS, 2016).

Some countries has their own practices for food waste. For example the “The Re-food Movement” which started in the heart of Lisbon, Portugal has been growing internationally, with people or teams working in the following cities to bring the benefits of the Re-food model to their cities. Re-food is powered by goodwill: all of the food is donated freely by food source partners including the hotels and other touristic facilities. The restaurant personnel invest a few minutes in rescuing their excess food instead of throwing it away. The volunteers complete their rounds daily picking up the rescued food from the partners by walking or riding around their neighborhoods. The rescued food is divided into family packs and distributed on the same night. Finally, a smaller number of people - who have no mobility - receive deliveries directly to their door. All of our rescued food is delivered to needy people (Re-Food Network, 2017).

In order to raise awareness on a specific subject, certain days – weeks and even a year could be attributed. Food Waste is also underlined globally by such efforts. The briefing published by the European Parliamentary Research Service (EPRS) shows that a staggering 89 million tons of food waste is generated in the EU each year. To mitigate that, the European Parliament has asked for 2014 to be designated as 'European Year Against Food Waste'. Food waste has a significant negative impact on the environment and on the economy. The EU has committed to halving the disposal of edible food by 2020, while a number of national

initiatives have been introduced by Member States to tackle the issue (European Commission, 2014).

Similarly, World Food Day celebrates the creation of the Food and Agriculture Organization of the United Nations (FAO) on October 16, 1945 in Quebec, Canada. First established in 1979, World Food Day has since then been observed in almost every country by millions of people. The week 9 – 16 October is mentioned as World Week for Food Waste and actions focus on the prohibition on food waste. The World Food Day Network includes over 60 organizations, universities and companies that are working to achieve a zero hunger world (World Food Day Global Site, 2015).

In addition to these organizations formed against food waste or related plans – projects and campaigns there is an application which is available for Android and Apple devices developed by the larger effort between United States Department of Agriculture (USDA) and the U.S. Environmental Protection Agency called the U.S. Food Waste Challenge. Launched in 2013, the Food Waste Challenge appeals to participants across the food chain – farms, agricultural processors, food manufacturers, restaurants, grocery stores, universities, schools, and local governments. This application called ‘Pantry’ offers users valuable storage advice about more than 400 food and beverage items, including various types of baby food, dairy products and eggs, meat, poultry, produce, seafood and so on. The application aims to recover food waste by connecting potential food donors to hunger relief organizations like food banks and pantries as well as recycle food waste to feed animals or to create compost, bioenergy, and natural fertilizers (Bernstein, 2015). Even though this application is very new, as all of the sectors are operating in the era of technology, this invention could be reinforced by additional features for the use of specifically the hotel sector. Therefore, institutions could facilitate to deter food waste, while keeping institutional records as well as helping the managerial level controls and feedback.

2.4.1. Food Waste Practices in Tourism Facilities

Having a mention on the whole environmentally responsible practices on food waste, specifically food waste practices of tourism facilities are examined at this part. There has been a trend towards eco – friendly applications which is also a response to the customers` perceptions. The study of Andereck (2009) put similar results claiming that visitors with a

strong nature orientation had more positive views of environmentally responsible practices by tourism businesses than other tourists and they consider such practices highly valuable and important. Therefore, tourism businesses can use their environmentally friendly practices as a marketing tool in addition to altruistic motive of environmental conservation and preservation.

The applications of multinational companies as they determine their environmental sensitivities could be summarized in main headings such as Employee Involvement – Environmentally Friendly Activities – Cooperation With the Related Non-Governmental Organizations and Activist Groups, Staff Trainings on Environmental Issues etc.

Human Resources Management (HRM) emphasizes that mechanical achievements can be made up of organic links. Identifying motivation and productivity of employees and approaching employees' education with continuity philosophy are some of HRM's goals. In order to enhance the business image, HRM tries to manipulate employee attitudes and behaviors by developing employees' knowledge and skills (Akdemir, 2006: 248 -250).

There are micro and macro scale measures, practices and projects addressing environmental issues or specifically related to the food waste management. 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. According to Increasing the Adaptability of Employers and Employees in Tourism Sector Project (TUYUP) (2014), the 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. This application is important not just because of raising an awareness of industry players such as hotel owners – entrepreneurs but also educates customers who are more environmentally conscious in their accommodation preferences.

Specifically in Turkey, there are also some practices, measures and projects related to the food waste management. 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.al. (2016), reaches vital results. According to the research, waste management is found to be generally directed by the technical director in 4 and 5 star hotels; In smaller enterprises and in boutique hotels, these activities are directed by business owners or managers. 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 uses 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.

Another research conducted in 43 five star hotels in Antalya - Turkey which analyzes the internal control systems providing the efficient use and control of the resources. Among all the different hotel departments like storage, purchase, F&B, managerial departments, front office or accounting that is investigated, F&B department is found to be the most problematic one in terms of internal control systems. Some deficiencies are defined as inefficient use of standard recipes for cooking which provides the minimization of food waste and standardization of food portioning. Similar misapplications are detected for the preparation period of alcoholic beverages and the use of standard portions to serve these items (Ömürbek and Altan, 2011). A similar 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. This fact could be interpreted by unsatisfactory training techniques or inadequate participation by the employees.



3. METHODOLOGY

At this part of the study, the research method used to interpret the collected data is explained by reminding the research model at the beginning with the help of research questions that form the base of study hypothesis. The research sample and related facts are also presented. Therefore, the function of this part is to prepare the reader to study findings and inform about the methods to reach all these important findings.

3.1. Research Model

The research targets forms the basis for the research questions and these questions generates the study hypothesis. It could be beneficial to remind the study questions as;

Q1- Does institutional attitudes affect food waste?

Q2- Does employee based attitudes affect food waste?

Q3- Does customer based attitudes affect food waste?

As stated in the introduction part, the measurement of the attitudes is made possible with the help of interviews, examining the statistical figures on respondents' participation level to statements measuring LEA – LCA and LIA. These questions are measured on the basis of the participants' responses to the interviews and questionnaires. Their participation level to the related statements are used to examine the hypothesis.

Q4- What is the environmental dimension of food waste?

Q5- What is the economic dimension of food waste?

The interviewees repeated comments are noted in interview forms for generalization and other participants' comments on the questionnaire forms are deciphered to explain Q4 and Q5.

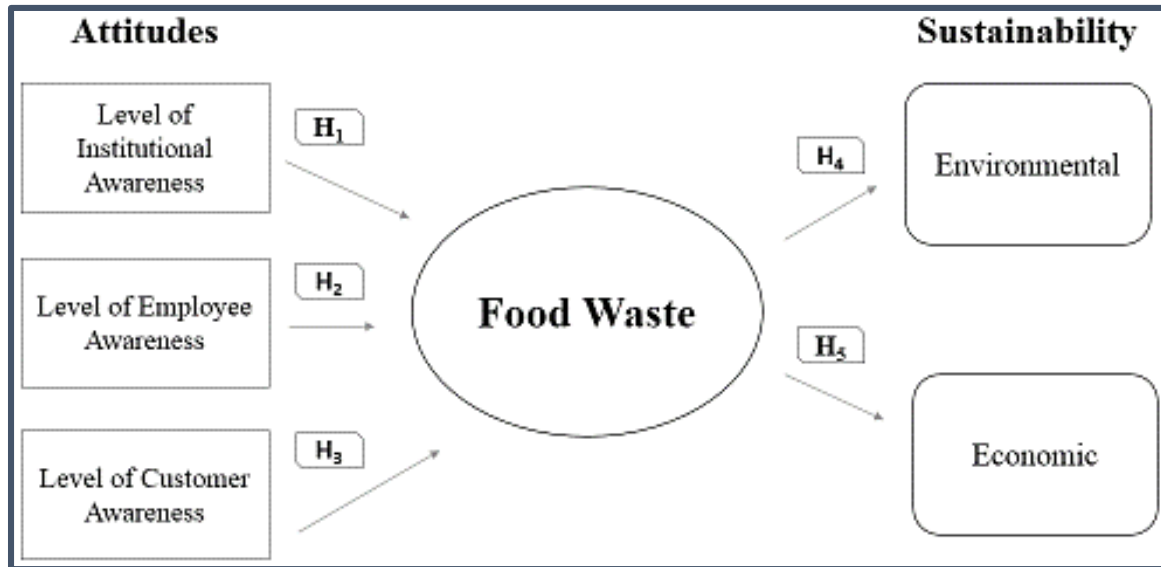


Figure 3.1. Research model

H₁: There is a negative relation between LIA and the amount of food waste.

The assumption of H₁ is the fact that if the hotels' institutional practices are effective to prevent food waste, if the employees are trained on sustainability related issues, if they re-use the food etc.; then LIA is accepted as relatively high and food waste decreases.

H₂: There is a negative relation between LEA and the amount of food waste.

The assumption of H₂ is the fact that if the employees working in various departments such as kitchen – service or purchasing are conscious on food waste or their education and professional experience is adequate; then LEA is accepted as relatively high and food waste decreases.

H₃: There is a negative relation between LCA and the amount of food waste.

The assumption of H₃ is the fact that if the customers are conscious about their meal orders, they are knowledgeable about food waste and sustainability, they do not have extreme food order habits of open buffet causing uneaten food; then LCA is accepted as relatively high and food waste decreases.

H₄: Food waste causes negative environmental consequences in terms of sustainability.

H₅: Food waste causes negative economic consequences in terms of sustainability.

The arrows seen in the figure representing research model mean that the H₁ – H₂ and H₃ might cause an increase on food waste, then this fact also affects environmental or economic sustainability negatively or these 3 hypothesis could be rejected causing a decrease in food waste and affecting environmental or economic sustainability positively.

3.2. Research Sample

The sample size is very important to explain; there are 9 different international chain hotels located in Ankara and the data for H₃ to understand LIA is collected by Human Resource Department representatives or any other knowledgeable employees. Therefore, one person from the total of 9 hotels is interviewed. Because of the limited number of participants in the interviews, counting without sampling method, which the whole universe is counted one by one, is applied and this part of the research has acquired a qualitative character. According to Altunışık, Coşkun, Bayraktaroğlu and Yıldırım (2007: 119), if each element of a group of people or an organization is searched one by one to gather information for that group, this method is called as *counting*. Fewer people is needed for the sample to approximate the population if the population is very homogenous on the characteristics that we want to study (Ray, 1992: 337). In this regard, the interviewees compose a homogeneous group of people who take place in managerial positions in the hotels and knowledgeable about the hotels' practices related with the study subject. According to (Ministry of National Education [MEB], 2011: 6), when detailed information is needed, it is necessary to make a full count. The counting method provides accurate and reliable data. On the other hand, questionnaire form represented in Appendix part address to collect data, which is used to investigate the entire research hypothesis, is conducted to so called hotels' employees from kitchen or service departments. There are various job titles for those departments such as Executive Chefs, Food and Beverage Directors, Banquet Chefs, Kitchen Managers, Sous Chefs, Kitchen Helpers or Restaurant Supervisors, Servers etc. Depending on the bed capacity of these hotels, the number of employees from those departments who are able to answer the related research questions are calculated as 20 for service and 25 for kitchen department on the average based on the preliminary interviews with the hotels. For the interviews, all of those 9 hotels' knowledgeable employees are reached. At this point, research universe is not assumed to be very large and sampling method is not applied. Interviews are targeted to be conducted with the participation of as many employees as possible on the basis of volunteerism. The collected data that subject to the integer process is analyzed quantitatively. When it comes to Questionnaires, 130 forms are delivered to the employees and 118 forms are found to be suitable for analysis. Interview forms and questionnaires made up 127 respondents' forms in total that undergo SPSS analysis.

3.3. Data Collection Technique

The previous studies related to the subject such as sustainability, sustainable practices of businesses, tourism facilities' practices, food waste and its economic dimension are examined with the help of a detailed literature survey including both domestic and foreign literature. The data obtained form the basis of the first part of the study. With the help of related literature (De Beer, 2000; Holden, 2008; Middleton, 1998; Ntsime, 2002; Timur and Getz, 2009; UNWTO and UNEP, 2005; WCED, 1987) and in the light of expert opinions, data collection tools are formed. As Özkalp (2005: 168) defines,

Interview is used to identify the emotions and thoughts of individuals reaching the information through face-to-face communications. *Questionnaire* is a list of questions prepared in a written format and presented to the participants to determine their attitudes, thoughts and suggestions while *systematic observation* allows observation of behaviors in a particular context under the conditions determined by the researcher.

According to Ray (1992: 329), “one of the advantages of face-to-face interviews is the open-ended questions that enable the researcher to probe for additional information if the initial response is brief or incomplete”. Thus, the interviews are benefited in this regard and various detailed information is gathered by extra questioning.

The research has three dimensions that the data is collected to investigate the awareness of the institution, employees and customers at the same time diversifying the data collection technique. An interview form and a semi-structured questionnaire are formed to be conducted for so called hotels. The data collection tools are divided into two according to its content and focus of analyze. The interview form is decided to be delivered to related hotels' Human Resource department representatives or other knowledgeable managers in order to examine the Level of Institutional Awareness (LIA). The first part of the interview form address personal characteristics of the participants while the second part of the form includes some open-ended questions give way to comments and suggestions. On the other hand, the Questionnaire is delivered to hotels' kitchen and service department staff, chefs or related managers in order to describe Level of Employee Awareness and Level of Customer Awareness. 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 main reason of measuring level of customer awareness in H₃ with

the help of the systematic observations and experiences of hotel employees is the fact that customers may not objectively evaluate themselves but are willing to give biased responses to questions about food waste. Employees of such department which could observe the hotel customers during food and beverage consumption process could comment on their eating habits, differences between customers' order and consumption amounts as they are constantly in contact with customers throughout the day. At the same time, this method makes it possible to interpret the relationship between the service type (open buffet / a la carte) and the customer's tendency to waste food with the help of those employees.

Forth part of the questionnaire form divided to measure LCA includes questions that daily wastage amounts are asked by different food groups. All the employees are given 7- 10 days of time to answer this part of the questionnaire. The study provided an opportunity for them to observe the amounts of specified food groups remaining on the customer platters or wasted by them due to various reasons. Thus, participants became able to give more concrete / reliable answers through their observations instead of hypothetically responding to this part. Likewise, it became possible to eliminate the hasty - inconsistent - wrong answers resulted from employees' workload by providing employees some time to revitalize and combine the food waste amounts from different parts of the hotel such as restaurant, cafeteria, room service or lobby.

In addition to interview's closed ended questions, all the suggestions and comments of the related participants are noted in order to enlarge the scope of data.

3.4. Data Analysis

The data acquired by way of questionnaires is analyzed quantitatively facilitating IBM SPSS (Statistical Package for Social Sciences) version 15.0. This predictive analytics software enables **statistical analysis** and reporting addressing the entire analytical process. In addition to this quantitative method of data analysis with a computerized system, in-depth interview forms are documented and the collected data are evaluated qualitatively. The data noted including respondents' comments and suggestions was subject to content analysis. The identification of matching comments and the submission of repeated explanations are regarded as being very descriptive. Additionally, crucial comments and suggestions of the interviewees are given through the study; they are interpreted in line with the previous

researches and assumptions of this study. Therefore, the research has an interpretivist philosophy, “which concerns validity, reliability, objectivity, generalizability and communicability of research results” (Leitch, Hill and Harrison, 2009:1). According to this literature “interpretivist entrepreneurship research is capable of producing rich data via respondents’ experiences, perceptions, and beliefs ... The key issue is not selecting between qualitative and quantitative research techniques, but more fundamental choice between interpretivist and positivist methodological perspectives”. In this context, related explanations of Myers (2008) could be helpful; “interpretivist philosophy emphasizes qualitative analysis over quantitative analysis. Interpretivism, involves researchers to interpret elements of the study, thus interpretivism integrates human interest into a study”. Similarly, “interpretive researchers assume that access to the given or socially constructed reality is only through social constructions such as language, consciousness, shared meanings, and instruments”. At this framework, the method used to understand respondents’ consciousness in this study gains a systematic base. This study facilitates different methods to derive conclusions from both observations, respondents’ answers and social reactions. Saunders, Lewis and Thornhill, (2012) explains this aspect of interpretivist approach stating, “it is important for the interpretivist researcher as a social actor to appreciate differences between people. Interpretivism studies generally focus on meaning and might employ multiple methods in order to reflect different aspects of the issue”. According to Van Maanen (1979: 539), “it is necessary to reclaim interpretivist methods for organizational research to portray more closely -the meaning, not the frequency, of certain more or less naturally occurring phenomena in the social world-”. Therefore, this study examines the hotels (the organizations) within their real operations in the social world without manipulations. Dudovskiy’s (2018) explanations tell the advantages of interpretivist philosophy as “thanks to adoption of interpretivism, qualitative research areas such as cross-cultural differences in organizations, issues of ethics, leadership and analysis of factors impacting leadership etc. can be studied in a great level of depth”. Some researchers also put forward their opinions that is based on the freedom of researchers to choose their own methods that they feel more effective while they are writing their articles. At this point, Xinping gives an example to illustrate a researcher's methodological choice.

This is similar to the case of an old person who is skilled in writing with a brush, who knows the wonders of pens and computers, but is reluctant and even hates to use such writing instruments in place of the brush (Xinping, 2014).

Table 3.1. Methodological differences between positivism and interpretivism

METHODOLOGY	POSITIVISM	INTERPRETIVISM
Focus of research Role of the researcher	<ul style="list-style-type: none"> *Concentrates on description and explanation *Detached, external observer *Clear distinction between reason and feeling *Aim to discover external reality rather than creating the object of study 	<ul style="list-style-type: none"> *Concentrates on understanding and interpretation *Researchers want to experience what they are studying *Allow feeling and reason to govern actions * Partially create what is studied, the meaning of phenomena
Techniques used by researcher	<ul style="list-style-type: none"> *Strive to use rational, consistent, verbal, logical approach *Seek to maintain clear distinction between facts and value judgments *Distinction between science and personal experience * Formalized statistical and mathematical methods predominant 	<ul style="list-style-type: none"> *Use of pre-understanding is important *Distinction between facts and value judgments less clear *Accept influence from both science and personal experience *Primarily non-quantitative

Source: Adopted from Carson et al. 2001, p. 6

Table 3.1. illustrates the interpretivist method's variances from positivism in terms of different segments such as the focus of research, researcher's role or techniques used. Similar to the explanations of Myers (2008), "interpretivism accentuates the involvement and personal interpretive processes involved in understanding and making sense of phenomena in specific contexts ... In positivism large samples may be used whereas interpretivist research uses small numbers" (Carson, Gilmore, Perry and Gronhaug, 2001, 6;7). This study also facilitates the personal experience and pre- understanding of the researcher on the study topic as illustrated by the last column of the above table.



4. RESEARCH FINDINGS

The study underlined various facts and crucial calculations related to the impact of food waste in terms of economic and environmental dimensions. After all these detailed information, this part is divided to the research findings in order to investigate how the sample shows parallel results as well as how it differs from the pre-mentioned information and assumptions.

First of all, it is useful to analyze the demographics of the study sample which is included in the research with the help of interviews and questionnaire forms delivered to these nine hotels. Interviews with hotels' managerial departments reached the full count sample; thus, all of these nine hotels completed the interviews with face-to-face meetings. When it comes to second collection tool; questionnaires, from 210 forms delivered to the hotels 130 forms are collected and 127 forms are found to be suitable for analysis. The below table summarizes various characteristics of the respondents comprehensively.

Table 4.1. Demographic summary of the participants

Gender		Frequency	Percent	Valid Percent
Valid	Male	83	64,8	64,8
	Female	45	35,2	35,2
Age				
Valid	18-30	85	66,4	66,4
	31-50	38	29,7	29,7
	50 +	5	3,9	3,9
Marital Status				
Valid	Married	55	43	43
	Single	73	57	57
Education Level				
Valid	Literate	1	0,8	0,8
	Primary Education	7	5,5	5,5
	High School	50	39,1	39,1
	Undergraduate	67	52,3	52,3
	Graduate	3	2,3	2,3
Professional Experience				
Valid	1-5 Years	54	42,2	42,2
	6-10 Years	37	28,9	28,9
	11-20 Years	24	18,8	18,8
	21+ Years	13	10,2	10,2
Experience in this institution				
Valid	Less than 1 year	29	22,7	22,7
	1-5 years	75	58,5	58,5
	6-14 years	17	13,4	13,4
	15 -30	7	5,6	5,6
Work Position				
Valid	HR Manager	1	0,8	0,8
	HR Employee	4	3,1	3,1
	Executive Chef	4	3,1	3,1
	Chef	26	20,3	20,3
	Kitchen Staff	39	30,5	30,5
	Service Staff	50	39,1	39,1
	Other	4	3,1	3,1
	Total	128	100	100

The study participants are composed by 83 male and 45 females. 55 of them are married while the rest is single. In terms of age distribution, the sample is mostly composed by 18 – 30 years old hotel employees with 66 % and there are 38 interviewees between 31- 50 age level and 5 of them are found to be above 50 years old. The education level of the participants also differ from just literate to graduate level; however, most of the employees have undergraduate degree with 52 %, and the high school education level participants follow them with nearly 40 percent. The distribution of work positions is summarized in the below table. The majority is from service staff and this position is followed by kitchen employees with 30 percent, 26 chefs from both departments, 4 HR employees 4 employees from various departments such as technical service, food engineer or purchasing department and a HR manager.

In addition to position based dimension, it is also crucial to explain the experience level of the participants. Generally, employees have 1 – 5 years of professional experience with 42 percent, 37 interviewees have 6-10 years of experience, 24 of them have 11-20 years of job experience and the rest stated that they spend more than 21 years in sector. These figures are showing the general professional experience of the participants; however, the study also investigated their experiences specifically in these nine hotels.

29 employees constitute the majority with less than 1 year of experience in these institutions while the approximate 56 percent of the interviewees are working in these hotels for 1- 5 years. Between these 127 staff in total, 7 of them are found to have detailed information with the ability of commenting on research questions about these hotels since they spend more time (15 – 30 years) working in these hotels.

The study has 2 different data collection techniques composed by an interview form and a questionnaire form. First one is delivered to just one knowledgeable responsible from each nine hotels and it is beneficial to analyze the interviewee profile specifically for this group. 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 considering the related differences. 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 based on June / July 2017 figures. Except one hotel having 19% occupancy for this period, the rest of the hotels' occupancy rates are more than 60 percent.

4.1. Institutional Attitudes Towards Food Waste

After the general view to underline all the hotels' common characteristics, this part specifically, examine the institutional attitudes towards food waste. The second part of the interview is dedicated to the questions that are investigating hotels' sustainability consciousness considering environment related activities. The question 10.a that asks "is there any environmental sustainability policy that the hotel / chain implements" provides a very hopeful results. Within these nine hotels, all of the hotels stated that they have sustainability related implementations. For example, all of the interviewees stated that the hotel turned to led-lamps within last two years and applied different kinds of energy saving precautions. More details is given through the study in within related parts.

Table 4.2. The distribution of the hotels having green star or green key

	GREEN STAR	GREEN KEY
EXIST	A – B – C –D –E –F –H – I	B – H –I
DO NOT EXIST	G	A – C – D – E –F – G

Source: The data composed by the researcher based on interview results.

As seen in above table, except one hotel, 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 International Hotel Group (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 their orientation program for the new employees, while some of the hotels have 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 three hotels who have the Green Key also have the trainings on the Principles of Green Key for their employees.

The hotels share common characteristics considering some specific dimensions. The statements shown in below table are voted as positively by most of the hotels. The value-1 stands for 'Yes' answer of the interviewees and as seen in the table, the mode (mostly repeated answer) of all these four statements is '1'. This result might be explained as some precautions implemented by the hotels are inevitable to stay sustainable. Another reason might be the fact that, these applications are very general ones that all hotels could implement without the requirement of too much effort, time and money.

Table 4.3. Statistics indicating similar results for study sample

		Existence of an environmental sustainability policy	Existence of any application / precaution for food waste?	Re-service of the uneaten & eatable food for the hotel employees	Existence of any sustainability / waste management training for hotel employees
N	Valid	128	128	128	128
	Missing	0	0	0	0
Mode		1,00	1,00	1,00	1,00

Although there are similar applications conducted by study hotels, some differences are also noted during the data collection period at the hotel visits. After one of the executive chefs has mentioned about the blend chiller machine and its function to prevent food loss, the other hotels are also questioned about the existence of this equipment. To clarify what a blend chiller machine is, Calm (2005)'s explanations are vital.

Chillers are refrigeration machines that cool water, other heat transfer fluids, or process fluids by a vapor-compression, absorption, or other thermodynamic cycle. Their most common use is in central systems in large buildings or complexes, such as offices, campuses, shopping centers, hospitals, hotels, and military installations (...). By their nature, both efficiency and reliability are critical attributes of chillers (Calm, 2005).

After having knowledge about the operation of these machines, hotel kitchens were visited and it was observed that some of the study hotels did not have this equipment. The kitchen chefs have explained the underlying reason of this fact, as the hotel management do not buy these machines because they are very costly. Within nine hotels, two chains still do not have this equipment while a hotel has two different size of blend chiller and another one has 3 chillers due to their high operational volume.

The interviews provide specific information on these hotels' food waste management practices. Accordingly, each hotel is surveyed 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. This method is said to be used for the production of biodiesel and to prevent the negative effects of oils directly poured to the sink. These 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 is 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 plates 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 leave 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 considering these two hotels. 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 (Image 4.1.). 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.



Image 4.1. Uneaten but eatable breads are dried as breadcrumbs

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. Three Blend Chiller and a Vacuum Machine exist in the kitchen that help to keep the food fresh preventing the early deficiencies (Image 4.2).



Image 4.2. The Blend chiller machine in hotel B.

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 provide 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 three 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 (Sustainability – Enterprise – Reporting – Assessment – Management Tool). SERAM Quick Reference Manual is used for staff trainings on environmental issues. In line with SERAM 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 practice 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 Common Health and Safety Unit (OSGB) 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 understand whether the fruit and vegetable peels are wasted inefficiently during the preparation processes.

The Hotel E has a Green Star Policy Booklet formed in 2016 and the technical service manager shared the soft copy of this material (ppt format) for the sake of this study and mentioned some specific applications during the interview. The hotel adopts the principle of serving local food at breakfast buffets such as Ankara Simidi (bagels), Ankara Pear and some local honey in open buffet. Moreover, the fresh dry apples places in room for the customers' use are grown in Kızılcahamam, dried in natural environment. The hotel also keeps and presents the invoice receipts as evidence (Image 4.3.). All the facts and figures included in the hotel's Green Star Policy material could be regarded as very beneficial due to the fact that the hotel takes environmental issues seriously and records all the applications with statistics for the future projections.

I- 119 The Principle of Serving At Least Two Local Products at Breakfast Buffets



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FAHRETTİN ÖZDEMİR
 TAZE KURU GIDA SANAYİ VE TİC. A. Ş.
 MÜDÜR



- Ankara Simidi
- Local honey and
- Local Ankara Pear is served in Breakfast

YAZIYI GÖZLE	MİNİ TARTIŞIRM	HEKİMİYAT	TUTANAK
66594920206 QURU DÜNEY AKIET BEVALI ELMI	301,6 KDET	1,00	300,00
		TOPLAM :	300,00
		İNDİRİM :	0,00
		ARA TOPLAM :	300,00
		KDV % 1 :	24,00
		KDV % 8 :	24,00
		KDV % 18 :	24,00
		GENEL TOPLAM :	372,00

Fresh - dry apples in the rooms are grown in Kızılcahamam (Near to Ankara) and dried in natural environment.



Image 4.3. The principle of local food service by hotel E.

Moreover, Hotel E has an organic vegetable garden within the facility where the products are organized and maintained in accordance with organic farming principles (Image 4.4). This attempt could be regarded as environmentally friendly considering environmental sustainability.



Image 4.4. An organic vegetable garden within the facility of Hotel E

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 mentioned that, food waste amount is tried to be under 10 percent in the hotel. The interviewee also gave information 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 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 similar to other hotels. Another beneficial precaution mentioned by the hotel’s employees is related with the open buffet breakfast service. The hotel uses an iced system for milk and cheese buffets to prevent rancidity. The milk pots used for tea-coffee breaks are also served with ice.

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 figures that are more efficient. 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 to other hotels such as 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 same 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 three 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 (Image 4.5).



Image 4. 5. A notice card example placed to restaurant tables by Hotel I

Moreover, the specified service personnel is also controlling the plates and organizing the transportation of them to the related animal shelters.

The Hotel I 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”*.

At the same hotel, some warning notes about food waste were placed on the walls where the hotel personnel frequently come and go such as personnel cafeteria. These notices are attempted to inform their staff about the striking facts about food waste and become more aware and develop their attitudes towards food waste accordingly (Image 4.6.).



Image 4.6. A warning note example placed to personnel cafeteria by Hotel I

The data collected via interview form enables the research to reach the hotels' amount of food wasted within specific groups per one week including weekdays and the weekend operations. This part is used to provide some similarities with the related literature. According to SWR (2016) which is mentioned previously, DEFRA states that we would save 4.9 tons of carbon for every 10 tons of food waste recycled and this is equivalent to driving from London to Edinburgh 46 times. This statistics is taken as the base and similar calculations are provided for this study sample. First, the distance is calculated via an up to date online engine and London to Edinburg is found to be 332 miles (DistanceFromTo, 2018). Driving this route for 46 times is equal to 15 272 miles. The similar air distance for Turkey is exemplified with driving from Ankara to İzmir with 324 miles, which equals to 15 228 miles if driven 47 times. Therefore, the below table showing the nine 5 star chain hotels' approximate one week of food waste figures by kilograms during summer period of 2017 reaches 1249 kg of food waste in total. This could be projected by these hotels' 8 weeks of operations with similar customer occupancy equals to 10 tons of food that reaches the same calculations with SWR's investigations ($1249 * 8 \text{ weeks} = 9992^2$) As a result if the amount of food which is wasted during 2 months of these nine hotels operations is recycled we could drive from Ankara to İzmir more than 46 times. Moreover, the waste calculations does not include the liquid wastes taking only the kg figures into consideration.

² 1 ton is equal to 1000 KG.

Table 4.4. The total amount of waste by study hotels / per week

HOTEL	Weekly bread waste	Weekly Meat Waste	Weekly Fruit & Veg. Waste	Weekly Rice & paste Waste	Weekly Pastry Waste	Weekly Milk & Dairy Waste	Weekly Solid waste	Weekly Liquid Waste
A	19	19	27	7	10	28	77	178
B	103	121	61	21	7	9	261	209
C	18	7	17	16	14	16	77	346
D	19	66	42	28	28	27	185	292
E	12	4	5	11	11	15	60	435
F	58	66	70	20	55	70	228	415
G	17	16	19	9	6	7	66	92
H	23	50	61	28	33	25	217	275
I	13	18	30	8	15	17	78	237
TOTAL	282 KG	367 KG	332 KG	148 KG	179 KG	214 LT	1249 KG	2479 LT

The above table summarizes the food waste amounts for different food groups by nine study hotels as well as their weekly liquid waste amounts that include milk and dairy wastes and waster waste in total. Although most of the hotels have some precautions for bread and pastry group via reuse of these groups at personnel cafeterias or turning uneaten breads to breadcrumbs etc., the figures showing weekly total bread waste of the hotels are again cannot be underestimated. Bread waste could reach up to 103 kg (Hotel B) per week and 282 kg in total. Parallel interviewee comments to the above table could be worth mentioning. The participant from Hotel I states that *“The weight in grams of packaged bread - dough group products is very high and this increases wastage, they could be packaged with smaller amounts. Furthermore, since the cost of pastry – dessert group is too much; this group should be served just as portions in the open buffet”*. Similar to this suggestion another participant from Hotel F suggests, *“The amount of portions placed on the customer tables should be less, especially a crucial amount of the appetizers are thrown away”*. Considering the liquid wastes, a significant information is given by Hotel D, *“Each guest wastes approximately 33 ml of water per person in a day. The waste of every 10 customer makes up one full glass of water. Balloon cups used in water service becomes more than necessary, they should not be filled until the end unless ordered by the customer”*.

The results itself is very striking; because, only the hotels within the focus of this study generates a crucial amount of food waste which could be turned to additional value to the country’s economy if recycled. If we consider the fact that, there are more than these nine five star chain hotels operating in the country including the ones, which do not have sustainability policies, then the conclusion will be the economically higher burden due to

food waste. Additionally, the outcomes of food waste in terms of agricultural degradation, wasted amount of food's corresponding transportation carbon footprint with the help of previously mentioned literature, then; H₄ stating, "food waste causes negative environmental consequences in terms of sustainability" becomes operative.

In addition to examining study findings on the amount of food waste in terms of corresponding fuel amounts, it is beneficial to evaluate the food waste amount of study hotels in terms of corresponding calories with the help of pre-mentioned literature. The amount of weekly food waste has been previously mentioned. These statistics are turned to daily wasted amounts by dividing the related figures by 7 (7 days in a week). As a result the below table is formed by the daily food waste amounts of the hotels by kilograms.

Table 4.5. The calculation for the food waste amount and calorie compensations

	Weekly Food Waste	Daily Food Waste	
			318,8 g food waste 215,7 kcal
HOTEL A	77	11	Hotel E: 9000 g ? kcal
HOTEL B	261	37,28	$9000\text{g} \times 215,7 \text{ kcal} = \underline{1\,941\,300} = 6090$
HOTEL C	77	11	318,8
HOTEL D	185	26,42	$6090 \div 2000 \text{ kcal} = 3 \text{ people}$
HOTEL E	60	8,57	
HOTEL F	228	32,57	318,8 g food waste 215,7 kcal
HOTEL G	66	9,42	Total 178 000 g ? kcal
HOTEL H	217	31	$178\,000\text{g} \times 215,7 \text{ kcal} = \underline{38\,395\,600} = 120\,435$
HOTEL I	78	11,14	318,8
Weekly Total	1249 Kg	178,42 Kg	$120\,435 \div 2000 \text{ kcal} = 60 \text{ people}$

If Yıldırım et al. (2016) findings are remembered, average daily food waste per person is said as 318.8 g according to a study conducted in Ankara with 500 participants. This amount of waste is indicated as corresponding 215,7 kcal which is more than 10% of the individuals average daily calorie requirement (2000 kcal). Therefore, some projections could be derive from the results of this study. For example, if just Hotel E is chosen having the lowest figure for the amount of food waste, 9 kg of daily food waste could be turned to 9000 g in order to resemble the literature. 9000g of food waste equals to 6090 kcal ($9000\text{g} \times 215,7 \text{ kcal} = 1\,941\,300$ and $1\,941\,300 \div 318,8 = 6089,3$. $6090 \div 2000 \text{ kcal} = 3$) which could met more than 3 individuals daily calorie need. Even the most conscious hotel in terms of food waste

amounts is found to be wasting more than 3 people's daily nutrition requirement. The results could be more striking if the same calculation is made considering the food waste of all nine hotels. The study hotels have 178 kg daily food waste in total. This means, each day the amount of food that could meet 60 individuals' daily calorie requirement is thrown into garbage by the study hotels. ($178\ 000\text{g} \times 215,7 = 38\ 395\ 600$. $38\ 395\ 600 \div 318,8 = 120\ 435$. $120\ 435 \div 2000\ \text{kcal} = 60,2$). Overall, the results could underline such a reality that just nine hotels that are known as environmentally friendly due to existing precautions could again witness such a food waste result causing crucial environmental damage as well as economic loss. However, there are more than these nine international chains operating not only in Ankara but also all over the country or world. The assumptions on food waste amounts and corresponding calories that could feed the people / hungry children become worse.

Another economic consideration stems from the exported products presented in hotel menus to the customers. These products are very costly for the hotels due to higher transportation costs or currency differences. However, if the wasted food groups are those exported products, then the economic loss of the institutions increases. At this point one of the interviewees from hotel D states that “the restaurant menu includes many products such as Italian pasta, cheeses such as Roquefort cheese, parmesan or risotto that are bought from foreign countries, the hotel should have a policy to serve local brand and specific products to decrease the costs”. Another kitchen responsible asserts similar opinions “the hotel management orders a specific brand of a bottled water to comply with the chain’s international policies, however I observed the storage rooms for a while and realized that the customers do not order this product and all the purchased products continue to become waste after their expiry dates. The hotel management should listen our suggestions and change this policy to recover such clear costs”.

All the results and interviewee comments given place at this part make it possible to derive conclusions for the first study question “Does institutional attitudes affect food waste?” As seen by the institutional applications, precautions or inefficiencies, hotels’ managerial decisions directly affect their food waste positions. These facts are also easily observed by departmental chefs or the other hotel employees leaving them a criticism right if there is misapplications. The H₁ could be validated by looking at the findings of the research and the participants' expressions. H₁ assumes that if the hotels’ institutional practices are effective to prevent food waste, if the employees are trained on sustainability related issues, if the hotel

has enough and efficient equipment to prevent food waste, if they re-use the food etc; then LIA is accepted as relatively high and food waste decreases. The size of the study sample composed by nine hotels does not let correlational tests to be conducted. However, the interpretivist approach provides very detailed conclusions. Therefore, without a need for a comparison of wasted food amounts, every beneficial application is found to decrease food waste while every insufficient prevention or misapplication rise the wasted amount of food.

After all these crucial facts, it is more effective to comment on H₅ illustrated on the research model stating the fact that “food waste causes negative economic consequences in terms of sustainability”. Food waste is an economic burden for all the hotels operating in tourism sector. Table 4.5 has illustrated how striking the wasted food and liquid amounts are. The calculations on the corresponding calories of wasted food or the transportation options that could be possible by the conversion of wasted food to fuel (air miles) have also been presented. The figures and facts presented along with the study are enough to justify H₅ and conclude that each product wasted without providing profit to the hotels or going to garbage without saturating a customer’s hunger means a monetary loss.

4.2. Employee Attitudes Towards Food Waste

After examining the institutional level of awareness on food waste, it is essential to underline all the facts on employees attitudes as very crucial amount of food waste is known to be resulted by staff related ignorance / lack of knowledge. In order to investigate the employee attitudes working in related hotels towards food waste, the interviewees are also questioned on the awareness of kitchen and service staff regarding 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 gather 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 with “high” level while the rest of two 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 three of them considers that

they are sensitive with high level of participation and again the rest two 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. Six of the interviewees very highly participate to this statement while the rest three have also very high participation. This regard could be related to the fact that all of these nine hotels have periodical trainings for their employees on environmental sustainability or specifically on food waste. The below table adapted from interview form summarizes the hotels' institutional based participation level to the related statements with the use of capital letters A to I which mark the study hotels.

Table 4.6. Interviewees' participation level to the statements on employee attitudes

Hotels managerial level interviewees' participation to the below statements related with the EMPLOYEES based on their observations – assumptions and complaints.	VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
St.1: At our hotel, we are being careful about food waste during the food-purchasing phase.				H/D/F/C	A/B/ I /E/G
St.2: At our hotel, we are being careful about food waste during food storage phase.				H/D/F/C	A/B/ I /E/G
St.3: Employees working in Kitchen department are sensitive to food waste in production.			F/C	H/D	A/B/ I /E/G
St.4: Employees working in Service department are sensitive about food waste.			F/C	H/D/A	B/ I /E/G
St.5: Professional experience and knowledge of our hotel employees is sufficient to prevent food waste.				H/F/C	D/A/B/ I /E/G

This part of the study is again subject to double –check; in addition to interviewees opinions, the hotel personnel itself evaluated the same statements with the help of questionnaires. 128 respondents' evaluations are investigated by the use of SPSS statistics. The participant's level of participation to five statements about employee attitudes which takes place in the second part of the questionnaire form (8.2.) is analyzed one by one. The below table generalizes the degree of participation with the numbers and the mean levels which explains the average result of all participants including interviewees. The participation scale is indicated by 'very low - low- medium – high – very high' with the numbers that stand relatively for the scale as 1- 2- 3- 4- 5.

Table 4.7. Respondents' participation averages to all statements on employee attitudes

	St.1: At our hotel, we are being careful about food waste during the food-purchasing phase.	St.2: At our hotel, we are being careful about food waste during the food storage phase.	St.3: Employees working in Kitchen department are sensitive to food waste in production.	St.4: Employees working in Service department are sensitive to food waste.	St.5: Professional experience & knowledge of our hotel employees is sufficient to prevent food waste.
N	Valid 128 Missing 0	Valid 128 Missing 0	Valid 128 Missing 0	Valid 128 Missing 0	Valid 128 Missing 0
Mean	4,07	4,25	4,20	3,90	4,11
Median	4,00	4,00	4,00	4,00	4,00
Mode	5	5	5	4	4 ^a

a. Multiple modes exist. The smallest value is shown

As seen in the table, respondents mostly considers that the employees are sensitive about food waste. Four statements achieve mean figures higher than '4' standing for 'high level' participation. Employee attitudes during the purchasing or storage phases of the food production are also evaluated positively. The lowest remark belongs to the employee attitudes working in service department.

Table 4.8. Respondents' participation frequencies to all statements on employee attitudes

Statement	Frequency	Percent	Valid Percent	Cumulative Percent
St.1: "At our hotel, we are being careful about food waste during the food purchasing phase"				
Valid Low	7	5,5	5,5	5,5
Valid Medium	28	21,9	21,9	27,3
Valid High	42	32,8	32,8	60,2
Valid Very High	51	39,8	39,8	100
St.2: "At our hotel, we are being careful about food waste during the food storage phase"				
Valid Low	1	0,8	0,8	0,8
Valid Medium	24	18,8	18,8	19,5
Valid High	45	35,2	35,2	54,7
Valid Very High	58	45,3	45,3	100
St.3: "Employees working in Kitchen department are sensitive to food waste in production"				
Valid Very Low	2	1,6	1,6	1,6
Valid Low	2	1,6	1,6	3,1
Valid Medium	19	14,8	14,8	18
Valid High	51	39,8	39,8	57,8
Valid Very High	54	42,2	42,2	100
St.4: "Employees working in Service department are sensitive to food waste"				
Valid Very Low	3	2,3	2,3	2,3
Valid Low	10	7,8	7,8	10,2
Valid Medium	27	21,1	21,1	31,3
Valid High	45	35,2	35,2	66,4
Valid Very High	43	33,6	33,6	100
St.5: "Professional experience & knowledge of our hotel employees is sufficient to prevent food waste"				
Valid Low	5	3,9	3,9	3,9
Valid Medium	25	19,5	19,5	23,4
Valid High	49	38,3	38,3	61,7
Valid Very High	49	38,3	38,3	100
Total	128	100	100	

In addition to a generalized view on employee attitudes with above table, all the statements are examined separately in this part of the study. Firstly, St.1. “at our hotel, we are being careful about food waste during the food **purchasing** phase” receives ‘very high’ level of agreement by 51 respondents. The general participation level is found to be 4,07 (mean figure) that mostly corresponds ‘high’. Therefore, more than 80 percent of the participants consider that the hotel employees do not cause waste food during purchasing processes and their attitudes could be said as careful and conscious regarding food waste.

Table 4.9. Respondents’ participation level to the statement 1 on employee attitudes

St.1:“At our hotel, we are being careful about food waste during the food purchasing phase”	Frequency	Percent	Valid Percent	Cumulative Percent
Low	7	5,5	5,5	5,5
Medium	28	21,9	21,9	27,3
Valid High	42	32,8	32,8	60,2
Very High	51	39,8	39,8	100,0
Total	128	100,0	100,0	

The statistical results for the second statement enables to reach a result that hotel employees are very sensitive regarding food waste during the storage phase with the highest mean figure (4,25) showing all respondents average participation level in the main table. More than 45 percent of all employees consider that the staff’s attitudes during the storage phase is not a cause of food waste with ‘very high’ participation level to the statement.

Table 4.20. Respondents’ participation level to the statement 2 on employee attitudes

St.2: “At our hotel, we are being careful about food waste during the food storage phase”	Frequency	Percent	Valid Percent	Cumulative Percent
Low	1	,8	,8	,8
Medium	24	18,8	18,8	19,5
Valid High	45	35,2	35,2	54,7
Very High	58	45,3	45,3	100,0
Total	128	100,0	100,0	

The following table illustrates the attitudes of kitchen department employees towards food waste. Most of the employees consider that kitchen staff are sensitive regarding food waste during production phase with ‘high’ or ‘very high’ participation that make up almost 80 percent of all respondents. This fact could be explained by the hotels’ staff training on sustainability or the employees own sensitivity and experience level. Related with the

kitchen staff's consciousness on food waste, an interviewee from Hotel D gives a detail *“Equipment use of kitchen department is also very crucial, for example we sent all the knives for being sharpened within each 20 days. Otherwise, blunt knives become a reason for food waste while peeling the shells of food. Similarly, all the equipment should be kept in hygienic circumstances to prevent food deficiencies”*. Similar to this explanation, another participant from Hotel F states, *“All the service and kitchen employees are taken into consideration but stewards are underestimated regarding food waste. The workload and personal knowledge of these dishwashers have also very crucial effect on food waste. If stewards do not decompose the food that can be eatable between the dirty dishes coming from the restaurants to the scullery, this fact causes a huge amount of food waste”*. As understood by these explanations, an employee's knowledge on food waste may vary and some details may gain great importance.

Table 4.11. Respondents' participation level to the statement 3 on employee attitudes

St.3: “Employees working in Kitchen department are sensitive to food waste in production”	Frequency	Percent	Valid Percent	Cumulative Percent
Very Low	2	1,6	1,6	1,6
Low	2	1,6	1,6	3,1
Medium	19	14,8	14,8	18,0
High	51	39,8	39,8	57,8
Very High	54	42,2	42,2	100,0
Total	128	100,0	100,0	

In addition to kitchen staff, the sensitivity of service department personnel is very crucial when examining food waste. These are the ones who could prevent excessive orders, management of open buffet service and needles food presentations. In this section of the survey, this statement has the lowest mean figure (3,90) that could be interpreted as the attitudes of service employees has the biggest share if employees are found to be the one responsible of food waste. Even though this statement could not reach as high participation level as the others, again almost 70 percent of the respondents think that service department employees are sensitive on food waste.

Table 4.12. Respondents' participation level to the statement 4 on employee attitudes

St.4: "Employees working in Service department are sensitive to food waste"		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Low	3	2,3	2,3	2,3
	Low	10	7,8	7,8	10,2
	Medium	27	21,1	21,1	31,3
	High	45	35,2	35,2	66,4
	Very High	43	33,6	33,6	100,0
	Total	128	100,0	100,0	

The last statement considers LEA by questioning the sufficiency of the employees' experience and education level of hotel. Participants agree that the employees have the adequate professional experience and knowledge to prevent food waste with a mean figure of 4,11 that corresponds more than 'high' level participation. As remarked in the below table, 49 respondents highly agree; similarly 49 of them very highly agree to the statement.

Table 4.33. Respondents' participation level to the statement 5 on employee attitudes

St.5: "Professional experience & knowledge of our hotel employees is sufficient to prevent food waste"		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low	5	3,9	3,9	3,9
	Medium	25	19,5	19,5	23,4
	High	49	38,3	38,3	61,7
	Very High	49	38,3	38,3	100,0
	Total	128	100,0	100,0	

After the interpretation of these statistical figures shown in related tables, it is essential to support these numerical results with the interviewees' observations and comments. Most of the employees have positive comments regarding the attitudes of their colleagues on food waste. One of the respondents from hotel G adds, "*if the hotels operations are very busy and they do not have enough time for separation of eatable food from the open buffets for future use or personnel's consumption, food waste occurs due to their working conditions and business*".

Another comment from one of the interviewees contradicts with the statistical figures for the statement-1 regarding food waste during the purchasing phase. He underlines a crucial reality by his explanations "*there are some specific brands of cheese, bottled water and some frozen fish that the hotel management agreed to have in their menus, these products are not ordered by customers for a long time. As a result, they are purchased – stay in the storage*

rooms for a while and wasted due to expiration dates and this process circulates without any precaution”.

As a result, these statistical figures and personal comments of the respondents enable the researcher to conclude that the participants’ agreement on the statements regarding employee awareness determines the LEA. All of these five statements are positive sentences in general stating that hotel employees including kitchen and service departments are sensitive / well educated on food waste. Because the participation level to all of these statements are high, the LEA could be concluded as high. Although some criticism are noted during face-to-face conversations, these respondents’ votes are not enough to decrease the mean figures on the average. The H₂ claiming “there is a negative relation between LEA and the amount of food waste” could be considered as correct with the help of all tests – analysis and interviewee comments in this section. Respondents agree the statements that correlates the employee attitudes with the amount of food waste, but do not think that there is a lack of awareness / sensitivity problem caused by hotel employees that give a rise to the amount of wasted food. On the contrary, as the LEA is high, the amount of food waste is low; then this fact forms a negative relationship between these two variables. Interviewee comments deciphered and the questionnaire results examined via interpretive methods leave another conclusion as “irrespective of the cause of food waste, wasted food has a negative impact on the environment and the economy.” As a result, this point of view supports the validity of both H₄ and H₅.

4.3. 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.

The study assumes that customer attitudes affects food waste. H₃ assumes that “there is a negative relation between LCA and the amount of food waste”. This fact is tried to be investigated with the help of the questions taking place on the last section of the interview

form as well as the same content in Questionnaire form which interviewees also able to comment on. As described earlier in this study, LCA is investigated by interpretive methods similar to LIA or LEA. The interviewees' participation level to the positive statements illustrated with below tables or their comments noted in questionnaire forms become decisive on LCA. The participants' level of participation to four statements about customer attitudes is examined one by one. Indicated below, the first table shows the degree of participation with the numbers and the mean levels, which explain the average result of all respondents. The participation scale is indicated by 'very low - low- medium – high – very high' with the numbers that stand relatively for the scale as 1- 2- 3- 4- 5. The second following table summarizes the figures for all statements in a comprehensive way illustrating the participation frequencies by the customers to four statements presented to them. Starting with the first statement "customers are sensitive about food waste considering their food demand and consumption", respondents' participation level is found to be 3,02 (mean figure) that mostly corresponds 'medium'.

Table 4.14. Respondents' participation averages to all statements on customer attitudes

	St. 1: Customers are sensitive about food waste considering their food demand and consumption	St.2: While consumers are cautious about food waste in their a la carte orders, they are going extreme food consumption in the open buffet	St. 3: 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.	St. 4: The vast majority of the food consumers choose from the open buffet is left uneaten on the table.
N Valid	128	128	128	128
Missing	0	0	0	0
Mean	3,02	3,70	3,72	3,59
Median	3,00	4,00	4,00	4,00
Mode	3	4	5	3

Table 4.15. Respondents' participation frequencies to all statements on customer attitudes

St. 1: Customers are sensitive about food waste considering their food demand and consumption		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Low	15	11,7	11,7	11,7
	Low	26	20,3	20,3	32
	Medium	44	34,4	34,4	66,4
	High	27	21,1	21,1	87,5
	Very High	16	12,5	12,5	100
St.2: While consumers are cautious about food waste in their a la carte orders, they are going extreme food consumption in the open buffet”					
Valid	Very Low	8	6,3	6,3	6,3
	Low	10	7,8	7,8	14,1
	Medium	31	24,2	24,2	38,3
	High	42	32,8	32,8	71,1
	Very High	37	28,9	28,9	100
St. 3: “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”					
Valid	Very Low	4	3,1	3,1	3,1
	Low	13	10,2	10,2	13,3
	Medium	38	29,7	29,7	43
	High	33	25,8	25,8	68,8
	Very High	40	31,3	31,3	100
St. 4: “The vast majority of the food consumers choose from the open buffet is left uneaten on the table”					
Valid	Very Low	3	2,3	2,3	2,3
	Low	17	13,3	13,3	15,6
	Medium	43	33,6	33,6	49,2
	High	31	24,2	24,2	73,4
	Very High	34	26,6	26,6	100
	Total	128	100	100	

The statistics for the statement-1 shows that, there are also 41 respondents whose participation is low or very low level. Therefore, all the participants including hotels' managerial level employees believes that the customers are not highly sensitive considering their food demand and consumption.

Table 4.16. Respondents' participation level to the statement 1 on customer attitudes

St. 1: Customers are sensitive about food waste considering their food demand and consumption		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Low	15	11,7	11,7	11,7
	Low	26	20,3	20,3	32,0
	Medium	44	34,4	34,4	66,4
	High	27	21,1	21,1	87,5
	Very High	16	12,5	12,5	100,0
	Total	128	100,0	100,0	

When it comes to second statement, “while consumers are cautious about food waste in their a la carte orders, they are going extreme food consumption in the open buffet”, the main table indicates the average participation level as 3,70 (mean figure). This could be translated with the fact that respondents are more close to support the statement with ‘high’ level of participation. This statistical result could be also supported by the mostly repeated comments of the interviewees noted on the forms during hotel visits. Most of the kitchen chefs and F&B employees explain, “*Our food waste is minimum if the customers’ order is a la cart. They decide to pay what they desire and what they could consume, otherwise they do not care about the cost of the food presented on the open buffet and we just witness the food uneaten and left on the customers’ tables*”.

Table 4.47. Participants' participation level to the statement 2 on customer attitudes

St.2: While consumers are cautious about food waste in their a la carte orders, they are going extreme food consumption in the open buffet”		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Low	8	6,3	6,3	6,3
	Low	10	7,8	7,8	14,1
	Medium	31	24,2	24,2	38,3
	High	42	32,8	32,8	71,1
	Very High	37	28,9	28,9	100,0
	Total	128	100,0	100,0	

Another statement presented for interviewees' evaluations is statement three “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”. Participants mostly agree with this regard in line with the mean figures of the main table (3,72) and the frequencies of the below table. Out of 128 respondents, 40 support this statement with ‘very high’ level while the 55 percent has the parallel ideas. The mostly repeated answer is found to be ‘5’ (mode figure 5), which explains that customers are believed to be less cautious on

food waste. Likewise, this fact could be translated with the idea of “customers are more careful about the amount of F&B taking their prices into consideration if they pay their purchases on their own. Similarly, they become less cautious regarding their uneaten food if the food is not so costly or paid by someone else”.

Table 4.18. Participants’ participation level to the statement 3 on customer attitudes

St. 3: “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”		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Low	4	3,1	3,1	3,1
	Low	13	10,2	10,2	13,3
	Medium	38	29,7	29,7	43,0
	High	33	25,8	25,8	68,8
	Very High	40	31,3	31,3	100,0
	Total	128	100,0	100,0	

The last statement “the vast majority of the food consumers choose from the open buffet is left uneaten on the table” is supported by 43 respondents with ‘medium level’ and again 50 percent of the participants support this claim either with ‘high’ or ‘very high’ level. All the results considering the statements shows that the pre-mentioned literature by Hausman, (2000) claiming “nearly 90 % of people do unplanned shopping” is validated by this study results. The consumers of the study hotels are seen to have unplanned shopping tendency (unplanned food orders).

Table 4.19. Participants’ participation level to the statement 4 on customer attitudes

St. 4: “The vast majority of the food consumers choose from the open buffet is left uneaten on the table”		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Low	3	2,3	2,3	2,3
	Low	17	13,3	13,3	15,6
	Medium	43	33,6	33,6	49,2
	High	31	24,2	24,2	73,4
	Very High	34	26,6	26,6	100,0
	Total	128	100,0	100,0	

After analyzing all the respondents’ participation figures on the statements in general, it is also helpful to take a look at the interviewee comments specifically. The deciphered interviewee responses leave very crucial cues for the research. Three 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”*. Furthermore, another participant mentions, *“The most precious difference between the foreign customers (American and European origin) is that they request us to package their uneaten food to go. They are very respectful towards food and such an attitude should be imposed to all other customers”*.

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.

Similar to other two group of research findings, the attitudes of customers towards food waste is also interpreted with a comprehensive point of view. All the criticisms reached by interviewees or notes deciphered by questionnaire forms are found to be offensive to customers. The negative statements about customer attitudes are agreed by study participants. Therefore, such interpretations could made possible to accept LCA could decrease and this fact result in an increased amount of food waste. Consequently, H₃ becomes meaningful due to the negative relationship detected between the level of customer awareness and the amount of food waste.

After specificallt anayzing LCA and food waste relationship a holistic table could be given; all the study hypothesises becomes valid concerning interpretations. Related discussions are provided in the coming section of the study supported by some suggestions.

5. DISCUSSIONS AND RECOMMENDATIONS

The study aimed to generate some solutions considering sustainability, which has becoming more vital day by day. As the tourism sector standing as one of the responsible of food waste, economic and environmental dimensions caused by all international five star chain hotels in Ankara are examined. Efficiency of the existing regulations and applications adopted by these institutions are discussed. All the following solutions do not target just one partner of the subject but consider the practices of both institutions, employees and customers. Therefore, a holistic approach that underlies the seriousness of the problem and states the possible environmental and economic outcomes of food waste of these international chain hotels is developed.

The study interviews provided detailed information and specific suggestions not just because of the pre-determined study questions but because of additional comments of the interviewees. Moreover, their own welcoming attitudes to this research during the departmental visits to hotel kitchens, restaurants or garbage rooms served as the proof of what is underlined during the interviews. Some of the hotels 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 the research. The article written facilitated by this study results is shared with the responsible of all study hotels and this fact helped the study to gain a more positive concern in the eyes of the participants. As a result, additional support is gathered in the forms of ongoing recommendations, data shares or motivating e-mails.

Firstly, generalizing the study results to form a comprehensive framework is found to be very crucial. The stated targets of the research has given way to the research questions which examine whether institutional attitudes, employee based attitudes or customer based attitudes affect food waste or not. At the same time, both the environmental and economic dimension of food waste is searched. Consequently, based on the related justifications and statistical figures given through the study, all the research hypothesis illustrated by Figure 1 are attained validity.

According to the study, all of the hotels have an environmental sustainability policy and related employee trainings. Some of them has specific food waste policies and education on

food waste for the kitchen and service staff. Seven of the hotels have Green Star certification while three of them also have Green Key that 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 temporary food or environment engineers admit that they are working with some firms and inviting temporary engineers periodically on call. However, the researcher observations lead to a conclusion that permanent environment or food engineers are found to be more predominantly controlling all the processes. They provided more detailed information to research questions by giving examples facilitated by their previous experiences with other employees and hotel management. Temporary employees could not be able to observe the performance differences of the staff that they trained. Moreover, ongoing reminds or suggestions will also not be possible if these outsourced staff leave the hotel after the completion of the environmental trainings. Thus, the related suggestion to all institutions will be to give up hiring temporary staff for environmental training or food waste management educations and provide payroll employment for these very important positions. Environmental trainings including food waste management provided to hotel employees should not be limited to just orientation programs for new employees.

As much as the knowledge and experience of hotel employees and the workload and the number of the staff play a decisive role in food waste. The hotel management should not employ inadequate number of workers due to financial considerations. The result will not be an economic gain for the institutions in the case of hiring less employees to decrease the salary costs. These employees will probably be causing food waste, witnessing any other mistakes due to their excess workload, carelessness, or timing problems.

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 and the use of vegetable peels as the supplements of soups, appetizers or some sauces.

In addition to these common practices, some hotels have additional applications that should set an example for all other institutions. For example, just one hotel investigates and records the carbon footprint of their institution based on energy consumptions and educates their employees about carbon footprint and effective precautions to decrease the negative consequences. This action could be turned to a compulsory work to provide the required conditions for Green Star certification.

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. The related application illustrated by Image 4.4 conducted by Hotel I could be taken as an example to address food and material differentiation problems. 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. As one of the interviewees also suggests, 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 necessary performance that is subject to penalties in case of misapplications.

Another different application is noted in terms of equipment use of the study hotels. Even though the long-term benefit of blend chiller machines for industrial kitchens is above suspicion, some hotels' administration reject the purchase request of blend chiller machine by the kitchen department due to monetary reasons. At this point, the logical suggestion that put forward to these institutions could be to making a long-term cost analysis to understand the economic burden resulted from wasted food. The hotel management should envisage the risk of such an initial equipment expense to cover lifelong additional costs that will be indispensable. Likewise, all the other production and storage equipment must undergo periodical maintenance and repair.

Some hotels also conduct simple but crucial precautions that are found to be disregarded by other study hotels. It will be useful to generalize and suggest these beneficial and practical applications noted during the hotel visits to all other hotels serving food to their customers. When the recommendations of kitchen responsible are deciphered, their suggestions are found very easy and adaptable in a short period. For example, all the hotels should place a juice squeezer on the open buffets during their breakfast service. They can serve the pre-purchased, unused and softened fruits such as apple, banana, orange, mandarin or grapefruit on this breakfast buffet. By this way, customers could help themselves by squeezing the juices of the fruit as a soft drink accompanying their breakfast dishes. This application could also generate a healthy message for the customers who prefer to consume vitamin rather than coffee or tea for the breakfast. The weekly figures for wasted fruit and vegetable by these hotels is found to be 332 kg (Table 4.5.), which is not a promising picture if some effective solutions are generated and applied.

As illustrated in related parts, the water waste is not only caused by food and beverage orders but also caused by cleaning and hygiene related procedures. At this point, the precaution of Hotel D and Hotel I rewarding their customers based on the frequency of their housekeeping orders by informing them with the help laundry cards left in their rooms might be enlarged to whole other institutions. Some customers might already be aware of water consumption due to environmental considerations and some others could be also triggered via these kinds of a bonus system or promotion for their hotel reservations.

The hotels are found to be careful about their environmental sustainability practices in general. 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 three 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.

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.

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. By this way, if customers pick up excess of these products by boxes and feel like they are satisfied during the meal, these un-opened boxes could be collected by the service personnel for the future services.

The minimizing the plate sizes located in the buffet might be applied by all of the hotels that 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. All of the study hotels should apply the principle of purchasing local foods as much as possible. For example, the nutrients should be purchased by nearby locations such as Beypazarı, Kızılcahamam, Kırıkkale for this research. Local food groups such as tomato paste, pickles, Turkish ravioli, stuffed grape leaves, stuffed meatballs, Ankara Pear etc. Menu planning again becomes very decisive in the amounts of food waste. The customers' eating habits, the amounts of their orders and societal trends should be followed closely. Moreover, if customers are efficiently educated on the importance of local consumptions or focus is placed to some specific menu items by some promotions or special visuals of these local foods printed on the menus or suitable places inside of the restaurants, then customers'

orders could be manipulated somehow. One of the study interviewees from administrative department of the hotel has mentioned a contradictory procedure about purchase of local foods. Some HACCP criteria do not let institutions to purchase some specific foods from local producers. As a result, hotels witness a dilemma of following the HACCP chain criteria or supporting local economy by purchasing local food both attempt to be more sustainable. The authorized decision-making mechanisms should re-regulate the procedures to achieve HACCP certification.

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. The results regarding H₃ illustrated by the participation averages to the statements concerning customer attitudes do not leave positive insights at this point. This fact also brings a remarkable dilemma; even though customers prefer environmentally sustainable hotels for their travel plans, they continue their unconscious attitudes apart from their hotel choices. The customers as taking a large share being the responsible of food waste, they should be convinced 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.

Interviewees' comments and the researcher observations also underlies a very important detail about the customer - based reasons of food waste. The societal norms affect individuals' behaviors. Even though, food waste is not welcomed in Turkish culture, the research implies that customers generally hesitate to request service employees to pack their uneaten food for home take due to their afraid of possible criticisms. If the restaurant or the hotel is luxurious, then their probability to being shy for package request seems to increase. This reality leads to the following suggestion, citizens should never forget about the environmental consequences of food waste and focus on sustainability rather than their prestige or being threatened by others' criticisms.

One of the most essential suggestion stems from the fact that food waste could be prevented by effective applications by the institutions; however raising an environmental awareness for the future generations could only be possible by investing to today's students who will

manage the tourism sector in the long-run. There are some universities having bachelor degree courses on environmental considerations or master level programs for sustainable tourism. There should be additional departments within tourism faculties or the existing departments or elective courses should become more comprehensive focusing specifically on sustainable tourism – food waste management - environmentally responsible tourism – responsible tourists and stakeholders. Education system is suggested to be revised in line with the possible future problems that all universe might face.

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. This research gives information on non-coastal hotels, therefore the coastal hotels that are known with their high volume of food waste should be deeply focused. The food waste frameworks of those hotels that implement mostly open buffet, all included systems can be investigated and parallelisms – dissimilarities could be detected. This study examines the amount of food waste due to production related problems, employee related ignorance, procedural leakages due to reuse of the food and the customer related food waste such as excess orders and uneaten foods from the open buffets in a very comprehensive manner. However, future researches could focus specifically on customer related food waste and the institution related food waste, then related calculations could be made to compare the figures for wasted food amounts for these various reasons. 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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Appendix 1. Interview Form

Dear Participant;

The purpose of this work is to contribute to the relevant literature in the context of Food Waste and Sustainability by gathering information on food waste practices in hotels. Your answers to interview questions will be kept confidential and used purely for scientific purposes. Thank you for your time, interest and assistance in advance.

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Interview questions will be answered by Human Resources Department managers or any person who is knowledgeable about the subject in the hotel.

First Part

1. In which position are you working for?

HR Manager HR Chef HR Employee **Other**.....

2. Gender of the participant 1) Male 2) Female (The appropriate box will be indicated by the interviewer)

3. How old are you? (The appropriate box will be indicated by the interviewer)

1) 18 – 30 2) 31 – 50 3) 50 +

4. What is your marital status? 1) Married 2) Single

5. What is your level of education?

1) Literate 2) Primary education 3) High school 4) Undergraduate 5) Graduate

6. What is your professional experience?

1) 1-5 Years 2) 6-10 Years 3) 11-20 Years 4) 21 +

Appendix 1. (continue) Interview Form

7. How long have you been working at this institution? (Year / Month)

Second Part

8. What is the bed capacity of your hotel? (Please give information by learning from related departments such as Reservation / Sales)

9. What is the occupancy rate of your hotel in percentage? How do you anticipate the estimated occupancy rate over the past few weeks and next week?

(Please give information by learning from related departments such as Reservation / Sales)

%

10. Please answer the questions I will lead you by Yes / No. If your answer is ‘Yes’, please specify by providing more detailed information about the subject, the name of the current practice at your hotel.

a. Is there any environmental sustainability policy that the hotel / chain implements?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
b. Does your hotel have any National certifications / awards etc?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
c. Does your hotel have any International certifications / awards etc?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
d. Is there an application implemented for the food waste at this hotel? (Distribution of food waste to hotel employees, needy people/institutions etc.).....	Yes <input type="checkbox"/>	No <input type="checkbox"/>
e. Have hotel employees been trained on Environmental Sustainability / Waste Management? (Specify the name and date of the trainings).....	Yes <input type="checkbox"/>	No <input type="checkbox"/>

11. Please indicate your level of participation to the statements I will be reading to you about the sensitivity of your employees working in the departments such as service - kitchen – storage etc. regarding food waste. Your answers could be based on your observations / comments or complaints by others.

Appendix 1. (continue) Interview Form

The participant's level of participation to below statements will be indicated by the interviewer in the appropriate box;	VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
a. At our hotel, we are being careful about food waste during the food- purchasing phase.	1	2	3	4	5
b. At our hotel, we are being careful about food waste during food storage phase.	1	2	3	4	5
c. Employees working in Kitchen department are sensitive to food waste in production.	1	2	3	4	5
d. Employees working in Service department are sensitive about food waste.	1	2	3	4	5
e. Professional experience and knowledge of our hotel employees is sufficient to prevent food waste.	1	2	3	4	5

Do you have any additional explanations or observations about the subject?

.....

.....

.....

.....

.....

12. Please indicate your level of participation to the statements I will be reading to you about the sensitivity of your hotel customers regarding food waste. Your answers could be based on your observations and complaints or hearing by others.

The participant's level of participation to below statements will be indicated by the interviewer in the appropriate box;	VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
b. Customers are sensitive about food waste considering their food demand and consumption.	1	2	3	4	5
c. While consumers are cautious about food waste in their a la carte orders, they are going extreme food consumption in the open buffet.	1	2	3	4	5
d. Customers order more food than they can consume, if their food and beverage expenditure is paid by the institutions they are working or if some promotions exist etc.	1	2	3	4	5
e. The vast majority of the food that consumers choose from the open buffet is left uneaten on the table.	1	2	3	4	5

Appendix 1. (continue) Interview Form

Do you have any additional explanations or observations about the subject?

.....
.....
.....
.....

13. What are your suggestions / plans and projects to prevent food waste in your hotel?

.....
.....
.....
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.....
.....
.....

Appendix 2. Questionnaire

Dear Participant;

The purpose of this work is to contribute to the relevant literature in the context of Food Waste and Sustainability by gathering information on food waste practices in hotels. Your answers to this questionnaire will be kept confidential and used purely for scientific purposes. Thank you for your time, interest and assistance in advance.

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The questions will be answered by Kitchen or F&B Department employees such as executive chefs, sous chefs, F&B managers, waiters etc.

First Part

1. In which position are you working for?

Executive Chef Kitchen Chef Kitchen Employee
 Service Chef Service Employee **Other.....**

2. Gender of the participant 1) Male 2) Female

3. How old are you?

1) 18 – 30 2) 31 – 50 3) 50 +

4. What is your marital status? 1) Married 2) Single

5. What is your level of education?

1) Literate 2) Primary education 3) High school 4) Undergraduate 5) Graduate

6. What is your professional experience?

1) 1-5 Years 2) 6-10 Years 3) 11-20 Years 4) 21 +

7. How long have you been working at this institution? (Year / Month)

Appendix 2. (continue) Questionnaire

Second Part

8.1. Please indicate your level of participation to the below statements related with the INSTITUTION based on your observations – assumptions and complaints. VERY LOW – LOW – MEDIUM – HIGH – VERY HIGH	PARTICIPATION LEVEL				
	VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
a. Hotel's environmental sustainability practices are adequate	1	2	3	4	5
b. The food waste management precautions of the hotel are sufficient	1	2	3	4	5
c. The training on environmental sustainability for the staff is sufficient	1	2	3	4	5
d. The training on 'food waste management' for the staff is sufficient	1	2	3	4	5
e. The existing practices – precautions of the hotel to regain wasted food is sufficient	1	2	3	4	5
8.2. Please indicate your level of participation to the below statements related with the EMPLOYEES based on your observations – assumptions and complaints.	VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
a. At our hotel, we are being careful about food waste during the food purchasing phase.	1	2	3	4	5
b. At our hotel, we are being careful about food waste during food storage phase.	1	2	3	4	5
c. Employees working in Kitchen department are sensitive to food waste in production.	1	2	3	4	5
d. Employees working in Service department are sensitive about food waste.	1	2	3	4	5
e. Professional experience and knowledge of our hotel employees is sufficient to prevent food waste.	1	2	3	4	5
8.3. Please indicate your level of participation to the below statements related with the CUSTOMERS based on your observations – assumptions and complaints.	VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
a. Customers are sensitive about food waste considering their food demand and consumption.	1	2	3	4	5
b. While consumers are cautious about food waste in their a la carte orders, they are going extreme food consumption in the open buffet.	1	2	3	4	5
c. 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.	1	2	3	4	5
d. The vast majority of the food consumers choose from the open buffet is left uneaten on the table.	1	2	3	4	5

Appendix 2. (continue) Questionnaire

Third Part

10. Rate your level of participation according to the related statement's level of causing food waste. (Please sign only one box)

Please indicate your level of participation to the below statements VERY LOW – LOW – MEDIUM – HIGH – VERY HIGH	PARTICIPATION LEVEL				
	VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
a. Food waste occurs due to non-compliance - planning mistakes during the purchasing phase	1	2	3	4	5
b. Food waste occurs due to non-compliance - planning mistakes during storage phase	1	2	3	4	5
c. Food waste occurs due to inconsistency between the number of customers accommodated in the hotel and the food production at kitchen	1	2	3	4	5
d. Due to the fact that the service type is open buffet, the excessive amount of food presentation – order cause food waste.	1	2	3	4	5
e. Food waste occurs due to the ignorance / lack of knowledge of the kitchen staff.	1	2	3	4	5
f. Food waste occurs due to inadequate / poor quality kitchen equipment.	1	2	3	4	5
g. Other reasons of food waste (Please indicate and rate the other reasons of food waste that you can add to the above statements.	1	2	3	4	5

11. Please indicate the 'Service Type' applied in the hotel considering the timing and the meal classification.

	Weekdays Monday to Friday		Weekend Saturday and Sunday	
	A la carte	Open Buffet	A la carte	Open Buffet
Breakfast	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lunch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dinner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix 2. (continue) Questionnaire

Fourth Part

12. The questions in this section will be answered after 1 week of an observation period, which includes the weekdays and the weekend (the sum of Saturday and Sunday) of the hotel.

Indicate the amount of food waste (in liters or kilograms) for the following food groups considering various units such as restaurant, room service, cafeteria, extra orders, etc. regarding the sum of breakfast – lunch and dinner.	Weekdays Mon. to Friday 5 days Total Food Waste	Total number of customers served on Weekdays	Weekend (Sat and Sunday) 2 days Total Food Waste	Total number of customers served on Weekend
1. Bread Group(KG) CUSTOMERS(KG) CUSTOMERS
2. Meat Group (Chicken - Red Meat - Fish - Turkey etc.)	.....(KG)		.....(KG)
3. Fruit & Vegetable Group	.....(KG)		.....(KG)
4. Rice - Pasta - Pulse and so on.	.....(KG)		.....(KG)
5. Pastries and Sweets (Croissants - Bagels – Cookies - Cakes etc.)	.....(KG)		.....(KG)
6. Milk and Dairy Products	.....(LT)		.....(LT)
7. Water	.....(LT)		.....(LT)
Solid Food Waste (Between 1 – 5) TOTAL	Weekdays; 5 days Total Food Waste .....(KG)	Saturday / Sunday 2 days Total Food Waste .....(KG)		
Liquid Food Waste; Group 6 and 7 TOTAL	.....(LT)	.....(LT)	

13. Indicate your suggestions / plans and projects to prevent food waste in your hotel?

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RESUME

Personal Information

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Education

Level	School / Program	Graduation Date
Master	İstanbul University /Industrial Relations and Human Resource	2015
Bachelor	Boğaziçi University/ Tourism Administration	2013
High School	Bolu İzzet Baysal Anatolian Hotel &Tourism Vocational High School	2007

Work Experience

Date	Institution	Position
2017 - Continues	İstanbul Aydın UNIVERSITY	Lecturer

Foreign Language

English (Advance Level) French (Intermediate Level)

Publications

Gücer, E. and Özdemir, G. (2018). Food Waste Management within Sustainability Perspective: A Study on Five Star Chain Hotels. *Journal of Tourism and Gastronomy*, 6(1).

Konaklıoğlu, E. and Özdemir, G. (2016). An Evaluation of a Business Chain in an Emerging Economy: A Case Study of Starbucks – Turkey. *Journal of Economics, -Commerce and Management*, IV(4).

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Alvarez, M., Özdemir, G., Yılmaz, M. and Yalçın, M. (2014). “Stakeholders’ Perception of Istanbul's Historical Peninsula as a Sustainable Destination”, *Tourism Planning & Development*, 12(1), 87-98. DOI: 10.1080/21568316.2014.960596.
<http://www.tandfonline.com/loi/rthp21>

Hobbies

Archery, Theatre, Volunteer Works, Trekking



GAZİLİ OLMAK AYRICALIKTIR..

