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A framework for managing food wastage: Strategies to promote recycling and sustainability in the hotel industry.

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Abstract:

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Title: A framework for managing food wastage: Strategies to promote recycling and sustainability in the hotel industry.

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Food waste is a significant concern for many hotels because they waste 1.3 billion tons of food annually. The purpose of the study is to identify the causes of food waste that Bahria Grand Hotel Lahore is facing and to devise a development plan to cater to the issue of food waste for the betterment of the environment and to promote sustainability. In order to accomplish this, semi-structured interviews were conducted with hotel managers Bahria Grand Hotel Lahore in Pakistan and Scandic Hotel Kajaani and Sokos Hotel Kajaani in Finland. After ensuring the reliability and validity of the preparation of interview questions, data collection, and analysis, the research findings indicate that food waste occurs most frequently during the preparation and consumption stages. Inadequate planning, managerial constraints, financial issues, government indifference, and inventory management mistakes are the primary causes of food waste. Loss of biodiversity, depletion of the planet's fertile land, a larger carbon footprint, and monetary loss are all consequences of food waste. Included among the strategies for reducing food waste are employee training, the use of appropriate equipment, improved menu planning, accurate demand forecasting, the donation of uneaten restaurant food, and the implementation of efficient storage practices. Providing customers with attractive, informative, and innovative portion guides can also reduce food waste resulting from over-ordering and over-consumption. Recycling is an additional method for reducing food waste. Food waste can be minimized using reduction and reuse techniques. There is no doubt that recycling can contribute to environmental sustainability. This study demonstrated that recycling and sustainability can assist nations such as Pakistan in eliminating food waste. In addition, Pakistan can learn how to manage food waste from other nations, such as Finland. Because, Finland has developed techniques for managing food waste to a considerable extent.

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1. Introduction

This chapter explained the background, thesis structure, research objective, and research question. In addition, it introduces Bahria Grand Hotel, the organization that commissioned the thesis.

Population growth, individual consumption growth, technological advancements, ease of transportation, and mass displacement have all contributed to the depletion of natural resources and emergence of environmental issues. These environmental issues manifest in numerous ways, such as climate change, global warming, carbon emissions, air and water quality, soil productivity loss, etc. On a global scale, food waste has added to all these problems as a new one that will exacerbate existing problems. On the one hand, people in various regions of the world are unable to obtain enough food to sustain themselves, while on the other, an excessive amount of food is wasted daily in other regions (Frayne, 2010).

The hotel and tourism industries in Pakistan face food waste issues. Food waste is an issue at the Bahria Grand Hotel Lahore. These factors contribute to the issue of food waste at the Bahria Grand Hotel: a lack of storage space, poor planning, and excessive purchasing. The Bahria Grand Hotel in Lahore also faces severe consequences because of food waste, which could be avoided by taking pragmatic and careful steps. By recycling, the Bahria Grand Hotel Lahore can reduce food waste. Recycling can assist in achieving sustainability.

As a result of rising environmental concerns and diminishing natural resources, the concept of sustainability has spawned a plethora of global regulations, certifications, and projects. As with many other businesses, tourist attractions have attempted to adopt these practices and restructure their operations to gain the trust of their target customers. Incorporating applications for food waste into environmental sustainability practices has yielded positive results for some businesses. When it comes to the tourism industry, the preference for Bahria Grand Hotel chain hotels stems from the fact that these establishments serve as a model for other tourism and hotel businesses by appealing to a diverse group of individuals through their high quality standards and brand recognition (Ilakovac, 2018).

1.1 **Background**

This research is about food waste. This research about food waste is important because approximately 10 million people perish annually from hunger and hunger-related diseases. Global food loss and waste totals approximately 1.3 billion tons per year, which is enough to feed 870 million people. More than 140 million children throughout the developing world were underweight (Charney,2009). Similarly, a large amount of food is wasted at Bahria Grand Hotel Lahore, all this, inferred that there is a dire need to devise a mechanism to cater food waste issues.

1.2 **Structure of the thesis**

The thesis has been divided into four parts. The research process includes preliminary research, conception and planning, data collection, and reporting. During the preliminary research phase, research opportunities and needs were identified, primarily based on the commissioning party's interest. As part of the preliminary research, the study structure was devised. A research proposal was also presented to the university, along with the thesis plan.

In the first chapter the purpose of the research, the research questions are explained, the commissioning party that took place at the Bahria Grand Hotel. The second chapter discusses the factors that lead to wasted food. In chapter 3, we discussed the repercussions of wasting food; in chapter 4, we discussed the difficulties associated with wasting food; and in chapter 5, we discussed the management of food waste in hotels. The sixth chapter discusses strategies and techniques for the reduction of food waste, and the seventh chapter delves into sustainability, which is an essential topic for the upkeep of this planet. The topic of discussion in chapter 8 is materials and methods, the questions that were asked by the manager of the commissioning party at Bahria Grand Hotel have been analyzed thematically in

chapter 9. The discussion is covered in Chapter 10. Similarly, development plan in chapter 11 and results, findings and recommendations in chapter 12.

The causes and effects of food waste are discussed in the first chapter. The study's data was gathered in the third phase. To gain a comprehensive understanding of food waste in Pakistan and Finland, as well as to answer the research question, primary and secondary data research was conducted. Looking into and using data and public records that were originally collected for a different purpose, such as industry content or research papers, is known as secondary data research.

The goal of the study is to figure out how to reduce food waste at Lahore's Bahria Grand Hotel. A study was planned in Pakistan to promote recycling and sustainability ideas. A study is also being conducted to compare and adopt useful recycling sustainability strategies used in Finland. The goal is to bring all of the issues surrounding restaurants, as well as their causes and potential solutions, together in one place. In addition, the study's goal is to alert authorities to take steps to improve hotels in Pakistan, such as the Bahria Grand Hotel Lahore, and then to recommend appropriate solutions to hotel-related problems. The results and discussion are the focus of chapter primary data research methods includes interviews with hotel managers, in which the research team gathers information directly from the managers. Most of the information for this study came from books and websites. Reporting is the last step in the research process, and it entails logging research findings, analyzing data, and writing a report. The data was analyzed using a unilabiate approach, which meant that each variable was looked at separately. Lastly, in Chapter 12, the conclusions and recommendations were discussed.

1.3 **Purpose of the research**

It was found that Bahria Grand Hotel Lahore is facing food wastage issues. Owing to lack of information to manage food waste at hotels, Bahria Grand Hotel Lahore decided to execute a large demand study to manage food waste. The goal of the research is to handle food waste through recycling and other approaches. Therefore, objective of the study is to give development plan to Bahria Grand Hotel Lahore

to food waste issues at its hotel's chains. With research research-based information Bahria Grand Hotel Lahore will develop a plan to control food waste; this plan will be devised through integrated ways to maintain sustainability.

1.4 **Research Question**

Meanwhile, every night, 800 million people go to bed hungry (De Clercq, 2018). That equates to one in every nine people on the earth being hungry or malnourished. The following questions about food waste can be raised:

1. What are the Causes of Food Waste?
2. What are the Consequences of Food Waste?
3. What are the Challenges of Food Waste?
4. What are the Approaches to Manage Food Waste?

2. Commissioning Party: Bahria Grand Hotel

The thesis is commissioned by Bahria Grand Hotel Lahore. All hotels in Pakistan face food waste problems; Bahria Grand Hotel is no exception. It is a hotel and resort in Lahore. Because this hotel is extensive and has enough space to accommodate researchers, we will find it useful to consider it as a commissioning party. Along with this, as this hotel receives a high volume of visitors, it can assist scholars interested in sustainability and recycling (bahria grand, 2022).

Location: The central position of the Bahria Grand Hotel is ideal for both business and pleasure travelers. It is located on the main Bahria Avenue in the secure premises of Bahria Town Lahore. Bahria Grand is located in the heart of the industrial district, adjacent to various colleges and enterprises (bahria grand, 2022).

Design: Bahria Grand is an example of true brilliance. The hotel is created in the finest sense of grandeur, from the extravagant outside to the beautiful interiors. Outside, lush green fields and a stunning mini-golf course are plotted out to add to the exterior's majesty. Modern and spacious accommodations, world-class restaurants, cutting-edge boardrooms, and expansive banquet facilities combine to produce a work of art in elegance and refinement (bahria grand, 2022).

Accommodation: Bahria Grand's rooms and suites are designed to feel more like a luxurious house than a short-term retreat. The rooms and suites integrate unrivalled attention to detail and unrivalled extravagance, allowing customers to make yourself at home in the most stylish and convenient way possible (bahria grand, 2022).

The Bahria Grand's 28 premium rooms are designed to feel more like an extravagant house than a transitory stop. Marble floors, large mirrors, a rain shower with a seamless glass enclosure, triple-sheeted bedding, and a flat-screen TV, and a fully stocked mini bar add to the room's modern feel.

Executive and Junior Suites: The 8 spacious apartments have been created with the greatest in luxury in mind. Featuring a rich combination of Arabic, Mughal, and modern motifs, as well as the use of rich materials and lavish colors. Fine wood trims, as well as Italian marble, have been employed on the

flooring and ceilings. Silk linen, the softest pillows, curtains made of the finest silks, velvet sofas that complement the gold leaf used in the mirror panels, and so on.

Restaurants:

- The Golden Palm restaurant: Serves traditional Pakistani cuisine as well as Continental and Oriental fare. The combination of tasty meals and a magnificent view of the Mini-Golf field provide a strong lasting experience.
- Grand Café: A fine dining establishment that offers a diverse choice of cuisines to satisfy your taste buds. It also has a great interior and a lovely outside terrace where you can sit and enjoy the fresh wind while looking out at the lush green mini golf course.
- Panini café: The Panini café is a great place to meet up with friends for a cup of coffee. There are dozens of Brazilian coffee types to pick from, as well as traditional patisseries.
- In-Room Dining: In-Room Dining at Bahria Grand provides a world of exquisite delights comparable to those found in our restaurants and cafe. The large in-room eating menu, which is available 24 hours a day, caters to guests of all ages. Experience our acclaimed cuisines from the comfort of your accommodation, whether for breakfast, lunch, supper, or a quick snack.

Keeping our valued guests' comfort in mind, the assistance desk at Bahria Grand Hotel provides comprehensive business services to ensure a smooth and effective business for them. Relax in the Business Services Lobby to concentrate on work or use the Internet.

As this hotel is widespread and has enough scope to entertain researchers, therefore, it will be quite beneficial for us to consider this as commissioning party. As this hotel deals large number of visitors, so, it can help researchers who want to work on sustainability and recycling (Bahria, 2022).

“The causes and implications of food waste that Bahria Grand Hotel Lahore is experiencing will be discussed in the following paragraphs. Furthermore, careful and practical techniques like recycling to reduce food waste at hotels will be explored”.

3. The Causes of food waste

This chapter looks at the factors that lead to restaurants and hotels throwing away perfectly good food. In addition to this, a particular emphasis will be placed on the factors that contribute to the loss of food at the Bahria Grand Hotel in Lahore. The hotel industry generates a large amount of food waste daily, including stale breakfast croissants and discarded dinner leftovers. Food waste in hotels is a serious issue with three major causes, overproduction, inaccurate forecasting, and the lack of knowledge. These three factors are the main cause of food wastage in hotels (Trvalik, 2019).

While previous studies have indicated that the majority of food waste at Bahria Grand Hotel Lahore occurs at the consumer level, researchers have developed fresh theory regarding why hotels produce so much food waste and how it might be further decreased. Inappropriate storage and temperature conditions lead to food rotting, which results in food waste in hotels. The shelf life of perishable foods such as rice, eggs, and fruits is a leading cause of restaurant losses in hotels. Additionally, guests who order an excessive amount of food and do not finish it are significant cause of food waste in restaurants (Bharucha J. , 2018).

Typical causes of food waste:



Fig 1: Causes of food waste (de Morais Watanabe, emerald, 2021)

Customer error and Restaurant meals left unfinished: In Bahria Grand Hotel Lahore customers error in order become the cause of food waste. Customers may request more food than they can comfortably

consume. A consumer may wish to try a range of menu items or be unsure about how much to order. In any case, clients are typically eager to pay for leftover food, so do not try to save money by ordering too much for them. This kind of error at consumer end may cause food waste (Reynolds, 2019).

Additionally, it has been seen at Bahria Grand Hotel Lahore that it serves far more food than its customers can consume. This is especially true at buffets and salad bars, where customers' quantities are rarely set. When a customer orders a salad bar, buffet, or any other non-plate-service meal, inquire about the cost of the bill if the customer does not finish their meal (Papargyropoulou E. S., 2019).

Poor Inventory management: Inventory management is one of the leading causes of food waste in Bahria Grand Hotel Lahore. Bahria Grand Hotel Lahore has poor inventory management, which leads to the waste of food. The hotel does not keep track of what food is being used and what is not, so it often orders too much food, which goes to waste. In addition, the hotel does not have a system in place to donate unused food to local charities or food banks. As a result, much of the food that is ordered ends up in the trash. In fact, a Cornell University study revealed that simply having inventory control systems can save hotels up to 5% in an annual operating cost and more than 10% if those systems are connected with computerized ordering, billing, and reservations. Hotels without this level of supervision are more likely to buy too many or too few ingredients and goods, resulting in a lot of waste (Waldinger, 1997).

Inadequate planning: Food waste at the Bahria Grand Hotel in Lahore can be caused by inadequate planning. This can lead to problems such as mismanagement regarding large number of visitors, over-purchasing, poor storage conditions, and incorrect portion sizes. There is no denying the fact that, inadequate planning at Bahria Grand Hotel Lahore result into food waste. Bahria grand hotel Lahore is supposed to handle a large number of guests, but this is not always prepared to feed that many of them. Food is wasted when there is more than can be devoured by visitors. Chefs may also be unaware of dietary restrictions or preferences and prepare excessive amounts of food. Guests may also be unsure how to order less food or request that leftovers be packed. (Waldinger, 1997).

Poor Staff Training: One of the primary causes of food waste at the Bahria Grand Hotel in Lahore is poor staff training. Staff members are not properly trained in food handling and preparation, which leads to significant amounts of perfectly good food being thrown away. In addition, the hotel does not have an

effective system in place for dealing with leftovers, meaning that much of the food that is served goes to waste. As a result, there is a lot of potential to reduce food waste by simply educating the staff on proper food handling practices and by providing a better way to deal with excess food items (de Morais Watanabe, emerald, 2021).

Managerial and technological constraints: The causes of food waste at Bahria Grand Hotel are both managerial and technological. On the managerial side, there may be a lack of coordination between the kitchen and front-of-house staff. There may also be poor planning in terms of ordering and stocking ingredients. On the technological side, there may be issues with food storage or preparation that result in spoilage. The majority of technical issues stem from poor food storage temperatures. Inadequate refrigeration can cause bacteria to proliferate, resulting in health code violations and expensive fines for hotels (Bharucha, 2018).

4. Consequences of food waste

This chapter unveiled consequences of food waste. Food waste not only has a negative impact on environment, but it is also associated with a number of social and economic costs.

Globally, food waste contributes to the decline of biodiversity. In their pursuit of more fertile land to maximize agricultural output, landowners have increasingly pushed into wild areas, contributing to the extinction of species. When food is wasted, biodiversity declines, which means that certain species will eventually go extinct. This is because much of what is discarded ends up in landfills as trash (Dudley, 2017).

In the following paragraphs impacts of food waste in Bahria Grand Hotel Lahore will be discussed:

Environmental impacts of food waste:



Environmental impacts of food waste

Figure 2: Environmental impacts of food waste: Source: (Kibler, 2018)

Landfill: The Bahria Grand Hotel Lahore every day generates vast quantities of food waste, the vast majority of which is disposed of in landfills. This is problematic for a variety of reasons, including the following: To begin, the decomposition of food in landfills results in the emission of methane, a greenhouse gas that exacerbates the effects of climate change. Second, spoiled food is a magnet for rodents and other kinds of pests, some of which might carry diseases. Third, the leachate that is produced by landfills pollutes the groundwater and soil beneath them. Fourth, harmful algae blooms are caused by an overabundance of nutrients in the discharge from landfills (Karanjekar, 2015).

Fossil fuels: Food waste at Bahria Grand Hotel is linked with the use of fossil fuels, which has a direct impact on climate change. If we stopped wasting food, there would be less greenhouse gas emissions and greater environmental sustainability. An additional benefit of cutting back on food wastage is that it also helps to control hunger in communities where people struggle to get enough to eat. As a consequence of widespread deforestation in years gone by, nations all over the world are now confronted with new obstacles to overcome in terms of satisfying their requirements for sources of energy. This is due to the fact that the combustion of fossil fuels is a contributing factor in global warming and climate change, which in turn causes a variety of environmental problems that impact all aspects of life on earth. These include an increase in the frequency and severity of natural disasters such as floods, droughts, and heat waves; the melting of ice caps leading to rising sea levels that will flood coastal cities; and extreme weather conditions such as more intense hurricanes.

Water: Hotel guests at Bahria Grand Hotel generate a lot of food waste, and much of it ends up in the garbage. This wasted food rots and emits methane, a greenhouse gas that disturbs climate change. Furthermore, when organic matter like food waste decomposes in landfills, it produces leachate, a harmful liquid that pollutes groundwater. In addition, producing the food that ultimately gets wasted uses a lot of water and creates water pollution. Finally, all this food waste takes up valuable space in landfills. When these landfills reach capacity, they must be closed because they pose an environmental hazard to nearby communities. All of these factors lead to increased costs for recycling or disposing with food waste, which are passed on to hotel guests in higher prices (Shehzad, 2015).

Chemicals from pesticides: The Bahria Grand Hotel in Lahore generates chemicals that have an effect on the environment through their food waste. The first problem is chemicals that come from things like pesticides and fertilizer as well as packaging. These chemicals have the potential to contaminate water

systems and soil, as well as to create health issues in both humans and animals. Second, the combustion of discarded food releases heat-trapping gases such as carbon dioxide and methane into the atmosphere, which contributes to the progression of climate change. Because they are not being consumed, leftovers that are stored in freezers emit an additional quantity of gases that trap heat because they are not being used. Lastly, preparing an excessive amount of food results in the waste of resources such as water and energy, in addition to an increase in the amount of trash produced (Obi, 2016).

Excess refrigeration and electricity use: There are many factors that contribute to food waste in the hotel industry. One of the main causes is excess refrigeration and electricity use, which has a direct impact on how much food is thrown away each year. One common way hotels use excessive energy is by running the dishwasher twice or even three times when they only need to run it once; this can cause up to a kilo of food waste per wash cycle. At the Bahria Grand Hotel in Lahore, one of detrimental effects of food waste on the environment is the excessive use of power and refrigeration. That indicates that the majority of individuals grossly underestimate the effect that food waste has on the surrounding ecosystem. Furthermore, there is a connection between letting food go bad in the refrigerator and an increased chance of acquiring asthma or other chronic respiratory ailments (Tonini, 2018).

Economic Impacts of Food Waste

Significant economic effects result from food waste in the hotel industry. Up to a third of the food served in restaurants and hotels is never consumed, resulting in increased costs associated with ordering, preparing, and disposing of excess food. In reality, around \$75 billion worth of food is wasted annually by restaurants and supermarkets alone (Melikoglu, 2013).



Fig 3: Economic Impacts of Food Waste (Mourad, 2016).

Money is wasted: The hotel allows food to go bad in its dumpsters, which may end up costing them money in the long run because they will need to buy more supplies. Because of this, staff will have fewer tasks to complete, and some of them may need to be replaced. This would necessitate an increase in compensation, which would have a direct and adverse effect on the company's bottom line due to the fact that the rate per hour for each person would have to go up. When customers buy less goods in supermarkets, the number of available staff members drops, and the cycle continues. The higher the rates, the lesser the revenue. At the Bahria Grand Hotel in Lahore, wasting food has several adverse effects on the hotel's bottom line. The first problem that comes to mind is the excessive waste of financial resources. It is a waste of money to produce goods that are never bought or used by anyone; instead, these goods go bad before they are ever offered for sale or put to any purpose.

Extra Labor is required: The second problem arises when companies lose valuable individuals who no longer feel required as a result of a lack of jobs from workers who were unproductive because of a lack of duties. These employees leave the company because they no longer feel required by the company.

Increase in Equipment Damage: When a company is unable to sell any products because no one wants such products, the company's profits will decline. It is necessary to collect, acquire, and prepare the meal's components before it can be created. After the food is finished cooking, it must be sliced, cut, and put back together before it can be served (hittle, 2015).

Decrease in Profits: At this point, it is finally supplied to the customers or to the subsequent station in the production process. It is inevitable that there will be some goods remaining, and either they can be stored for later use or they can be thrown away. If the same employee might have been creating other items or services that generate income instead, then it is possible that the additional effort necessary to save this underutilized food will result in a loss of revenue overall. **Additional Resources Are Needed for Meal Preparation; Food Waste Has a Negative Impact on the Economy of the Bahria Grand Hotel Lahore:** The first resource that is required is space, which can refer to either the actual area required, such as refrigerators and freezers, or the amount of time required, such as employing cooking staff rather than serving employees. If a hotel's cooks run out of time and they have to buy supplies or prefabricated dishes because they do not have enough time, then the hotel will end up paying more money overall than they would have if they had simply prepared enough dishes in advance (Buisman, 2019).

Disposal Costs Money: Food waste disposal is an expensive endeavor, so the more food that is thrown away, the more money the business will lose as a result. Food waste costs money since it requires hotels to discard the excellent money they spent on the food. It costs money to dispose of food since restaurants lose time and money preparing and serving a meal only to toss it away at the end of the night (Sanciolo, 2022).

Social losses caused by food waste

When food that was made specifically for human consumption is wasted, it does not only have a negative impact on the environment and the economy, but it also has a negative impact on society. To begin, when we waste food, we remove potentially edible foods from the food chain and dispose of them in the trash. To put that into perspective, out of 7.3 billion people, there are only 795 million of us. Throughout the years 2014-2016, millions of people all around the world struggled with chronic malnutrition (Adeyeye, 2017).



Fig 4: social impacts of food waste (Papargyropoulou, 2014).

Bahria Grand Hotel Lahore has had a tough time with the social losses caused by food waste. Hotel has been trying to find ways to lessen the waste by implementing recycling and sustainability initiatives in their kitchen.

Harms to animals: Food waste affect health of animals. In addition, providing them with an excessive amount of ruined food can lead to illness and even death if they continue to consume unhealthy meals on a regular basis. In addition, people should not touch or feed these animals because doing either of those things might spread sickness from one animal to another, which can impact both people and animals. It also causes a problem for the hotel, which is that because there are now more visitors, there are also more unused meals that need to be thrown away so that they do not become an eyesore in the hotel or attract pests. It has been demonstrated that the number of stray cats and dogs that end up living on the streets is reduced when people feed them instead of throwing away their leftovers. This solves a problem that is problematic for both the animals and for society as a whole (Pinotti, 2019).

Food waste enhances poverty: Food waste has major repercussions for society, and in many instances, it contributes to an increase in levels of poverty. For instance, in this case, the Bahria Grand Hotel in Lahore has thrown away meals because the catering management techniques are poor.

In addition, the employees who are responsible for the preparation of food lack the appropriate training. The end result is that some of the bits of food that were left over are left sitting on the shelves or in the sinks, rendering them unfit for ingestion by anybody else. As a direct consequence of this, an increased number of children and adults living in low-income homes would go hungry (Galli, 2019).

Food waste impacts Health: Food waste does a lot of damage to the environment, and it's also bad for people's health. To put it another way, food waste is connected to health problems. Because of the significant amount of food that is being thrown away, the Bahria Grand Hotel Lahore might also have to deal with the aforementioned health problems. The inability to obtain nutrient-dense foods has been linked to a variety of health issues, including diabetes and cardiovascular disease. In addition, a deficiency in proper nutrition can cause children's growth rates to slow down, which has repercussions for both their physical development and their intellectual potential. Last but not least, the workers at the hotel are at risk of developing malnutrition as well as illnesses associated to inappropriate nutrition, both of which can lead to a reduction in their overall level of productivity at work (Kummu, 2012).

Water losses: In nations where there is a consistent loss of food owing to a lack of refrigeration, one of the most pressing societal problems is the availability of water. To put it more plainly, food waste, which includes things like spoiled fruit and vegetables, not only consumes valuable storage space but also generates a potentially dangerous gas called methane. Methane is a potent greenhouse gas that contributes to climate change at a rate that is more than 20 times higher than that of carbon dioxide. As a result, it poses a substantial threat to agricultural production and raises the overall level of air pollution. Because it becomes more difficult for individuals who do not have access to safe drinking water from natural sources or from health institutions, it can also contribute to an increase in the number of people who go hungry (Galli, 2019).

5. Challenges of Food waste:

Challenges related to food waste have been discussed in this chapter.

Food waste is a key environmental and social issue in the hospitality industry. According to the World Resources Institute, food waste accounts for more than a third of all food produced globally. As it decomposes in landfills, food waste releases methane, a potent greenhouse gas that traps heat in the atmosphere (Flanagan, 2021).

Food waste is a serious issue in the hotel industry. With lack of information, poor storage system and lack of staff training being some of the causes, Bahria Grand Hotel Lahore has been working to manage food wastage and promote recycling and sustainability (Giroto, 2015).

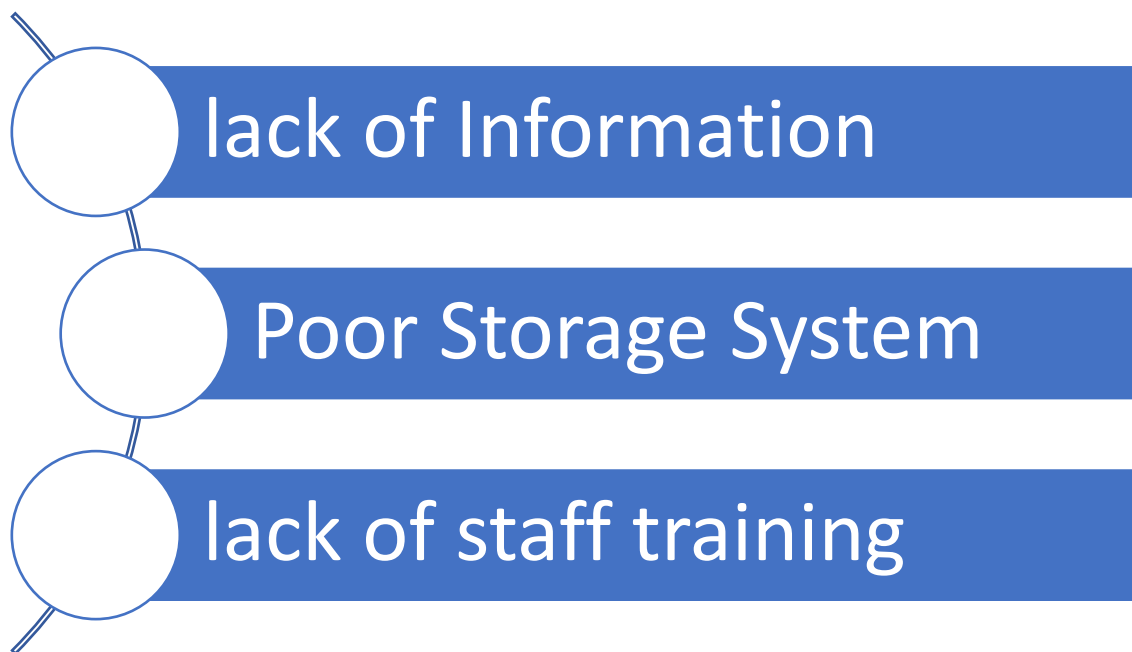


Fig 5: Challenges of Food waste (Giroto, 2015).

Lack of Information: Food waste management faces a big obstacle as a result of the local population's continued lack of information regarding the problem of food waste, which presents itself as a serious barrier. The absence of legislative frameworks for the management of food waste is another factor that contributes to this problem and should be addressed as quickly as possible by the relevant authorities. When it comes to the management of food waste, the Bahria Grand Hotel faces a number of other

challenges, some of which include the following: improper disposal methods, which lead to soil contamination; inadequate infrastructure for storage and processing; low recycling rates; an inefficient composting process; limited access to affordable fuel and raw materials; and limited access to recyclable materials (Goodman-Smith F. M., 2020).

Poor Storage System: Typically, in hospitality and food service sectors, food waste is stored in large centralized storage units with enough space to accommodate catering services for the day. However, this model is not applicable at other types of restaurants and hotels where bulk supplies are delivered every few days. Moreover, these kinds of buildings usually have a much smaller footprint than average hotel which makes storage an even bigger challenge.

Additionally, the main challenge of inventory management system in terms of food waste is that most restaurant owners have no way of knowing how much product they will need for the week ahead because of the unpredictability of what may come out on any given day. With the exception of a small handful, all restaurants use centralized supply chains and chefs do not always know what is coming in at any given time. Thus, these businesses typically have large amounts of perishable goods (mainly vegetables) stockpiled to ensure that they are never caught short-handed. However, this creates an increased risk for spoilage or waste because it encourages overproduction and stockpiling - especially with meat products - which creates more food-waste than necessary (Okumus *et al.*, 2020).

Lack of staff training: Staff members at the hotel are not properly trained on how to manage food waste which can result in a mess or potential for pest infestation. Staff is usually responsible for sorting, collecting, and transporting garbage, including organic wastes, such as food scraps and unused produce. Ineffective training and communication with these staff members can result in faulty sorting and mishandling of these resources which can lead to contamination. For example, if leftovers from meals are mixed into containers with other materials during collection, it will be difficult to identify that they were used for catering purposes only (Goodman-Smith F. M., 2020).

6. Food Waste Management in Hotels

This chapter has shed light on how food waste can be managed at hotels.

In order to manage food waste in hotels, it is necessary to understand the various types of food waste generated. Most of the food waste in hotels is created by the guests, and can be divided into 5 categories: leftovers (e.g., breakfast croissant), expired items (e.g., milk), unserved items (e.g., bread), cooking oil, and stale items. These five categories are then sorted for composting or recycling purposes (Okumus B. T. 2020).

Bahria Grand Hotel Lahore can decrease their impact on the environment and preserve resources in their daily operations; they can be more sustainable while retaining top-notch amenities and services. By knowing all the sources of food waste, authorities can limit overproduction. Chefs, waiters, and other restaurant staff should be careful with food purchases. Also, make sure they know when and how to use leftovers. Pakistan may learn from Finland about sustainability and recycling to reduce hotel food waste (Pearson, 2013).

Following aspects can be considered for food waste control:

Create a zero-waste culture from the top down in hotels

The establishment of a zero-waste culture from the top down is crucial for hotels. When a business turns its attention to being more eco-friendly, the change typically permeates management and workers. This ensures that waste is swiftly detected and disposed of properly, so that as little as possible ends up in a landfill. This not only saves money, but it also reduces waste, which can help save time and energy.

In this technique often, food that would have been wasted is offered to people in need through various programmes across the neighborhood, fostering a sense of community while lowering carbon emissions, combating global warming, and supporting local efforts. Efforts to eliminate waste are gathering steam, but there is still much to be done (Chemat, 2012).

Educate hotel employees

To control food waste, one must first be taught how to effectively handle it. The majority of branches of Bahria Grand Hotels Lahore consist of multiple parts, including restaurants, bars, and function halls. Each location in a hotel has its own method for reducing food waste, so education requirements will vary based on where someone works. When establishing an educational program, it is essential that managers address each department separately as well as have an overall lesson for everyone, so that everyone has the same understanding of how food is handled in hotels and why it is essential to prevent food waste (Okumus, 2020).

Measuring, Monitoring, and Tracking in Restaurants

The key to effective hotel food waste management is measuring, monitoring, and tracking the amount of food discarded. Bahria Grand Hotel Lahore need to ensure that servers and other staff members are aware of how much food they put out each day, particularly if customers are attempting to decrease food waste. Be explicit about which types of food or ingredients are being discarded, and become accustomed to the numbers decreasing over time. Encourage the kitchen staff to limit their rubbish output while also reducing the amount of food that goes bad. Even a small reduction in waste can have a big effect in the long run (Sucheran, 2021).

Before preparing leftovers in hotel

To control food waste in Bahria Grand hotels, managers must first analyze the types of food served and the daily amount of food wasted. Some items are more likely to be left on trays or plates than others, so it is crucial to priorities those meals first. To limit waste, impose stringent restrictions on who may take leftovers home. Before letting guests take leftover food from the hotel, show the staff how to package their own food properly (Goodland, R. &., 1996).

Implementing sustainability in service operations at Scandic hotels. Everyone enjoys leftovers and meals stored for later consumption. However, when a hotel or restaurant manager departs, certain guests are

more inclined than others to take home additional food, even if it means wasting perfectly edible meals (Ann Goodman, 2000).

Save Items for Restaurant Staff Lunches

Food waste management for restaurants and hotels involves both minimizing waste and controlling costs. In China, it was found that consumption habits are a reason to food wastage. By organizing lunches for their employees, managers may reduce waste. There is no one-size-fits-all strategy for conserving things for staff lunches, as each foodservice firm has a unique model for its food manufacturing process. In large kitchens, there should ideally be a designated individual responsible for preventing food waste. In this manner, it can be incorporated into a future meal or donated directly to a charity organization instead of being discarded. Many factors must be considered before developing an effective system for smaller businesses, such as cafés and independent restaurants with limited resources and support personnel (Filimonau, 2017).

Use restaurant leftovers for breakfast

Having a system that allows guests to take leftovers home is one of the best ways for a hotel to reduce food waste. Hotels that provide complete breakfasts with a variety of bread, pastries, fruits, and liquids may not be doing enough to reduce food wastage. Some restaurants use left over as appetizer. If most of these foods are not consumed during breakfast, they can be brought back on subsequent days. Guests may also take home little portions of meat and cheese. If visitors take more than half of their original order home, it may be appropriate to provide them with larger containers for packing their leftovers or to leave a composting information booklet in their rooms when they check in (Ruiz-Campillo, 2020).

Donate uneaten restaurant food

Many restaurants and hotels end up discarding food that is still edible. This is not only a waste of resources but also an inconvenience for restaurant patrons. Most people feel awful for these institutions, so when some businesses began giving uneaten food to customers, customers felt good about helping them. In recent years, it has become increasingly common for hotels and restaurants to

give leftover food. The act of donating leftover is establishing now a days at hotels. In fact, some establishments have food waste management systems built in so they can plan precisely where their waste goes. While these solutions are not cheap, they help to reduce waste and help those in need (Pirani, 2014).

7. Approaches and practices for food waste reduction

The various strategies and methods for cutting down on food waste have been broken down and discussed in this chapter. It has also been discussed how reduce; reuse, and recycle can help hotels to reduce food waste.

Reducing food waste is an important step in reducing environmental footprint. There are many approaches and practices one can use to reduce the amount of food waste. The food waste in hotels can be classified into 3 categories: Overproduction, spoilage, and plate waste. Some factors that cause overproduction are chefs preparing more than what is needed for a meal. Some factors that cause spoilage are food not stored properly and produce going bad before it can be used. Plate waste happens when customers do not eat their meals or when guests take more than they need for a meal. A few ways to prevent overproduction include using smaller plates at buffets or asking customers how much they would like before placing their order (Nguyen, Linh 2018).

Bahria Grand Hotels in Pakistan can use these approaches to manage food waste. This will help a lot to solve the problem of food waste in hotel chain. In a similar vein, Baldwin Proposes that the management of food wastes should follow the hierarchy of reducing, reusing, recycling, and finally dumping garbage in landfills. Reduce, reuse are recycling are the approaches to food waste in Bahria Grand Hotel Lahore (Yu, 2021).

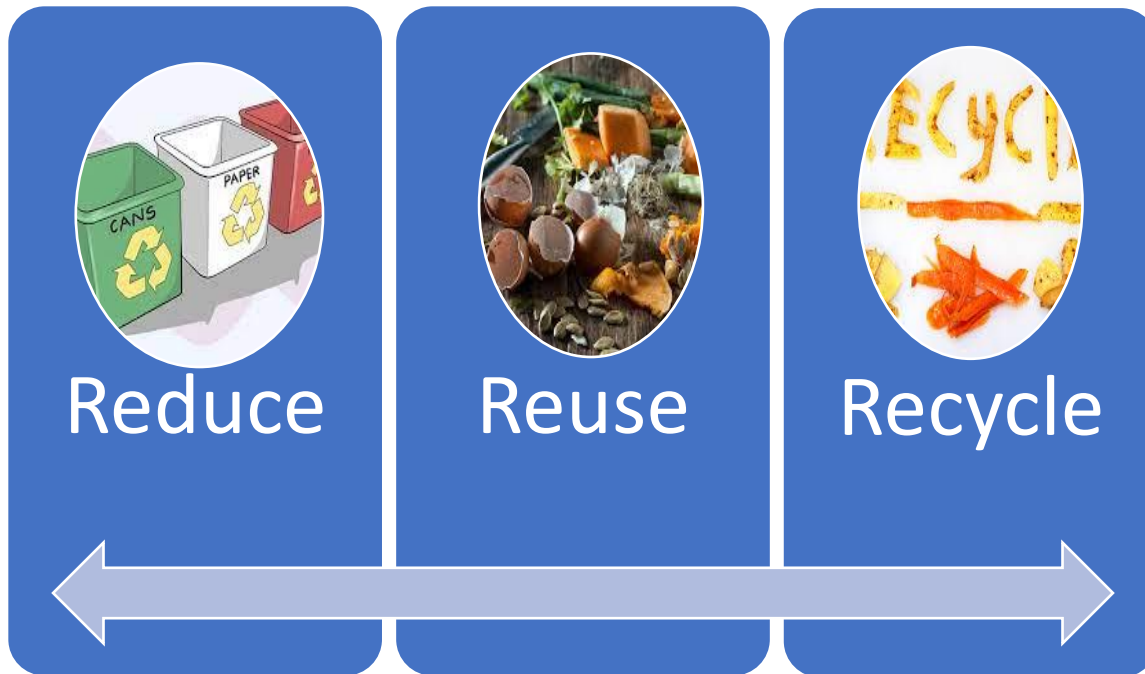


Fig 6: approaches to manage food waste (Yu, 2021).

Reduce food waste: The majority of food waste in Pakistan is disposed of in landfills, which contributes to climate change through emissions of methane and other greenhouse gases. By reducing food waste, hotels may contribute significantly to climate change mitigation. In addition, reducing food waste saves money on disposal costs, thus enhancing the financial viability of recycling practices. Recycling can attract tourists to a hotel, as it is frequently a decision factor for ecologically conscious travelers, the guests preferred to have recycling bin in the hotel. Lastly, it's important to look at recycling issues as a whole, not just because they're good for business, but also because they're good for society and the planet. Study has shown that, overbuying is the cause of food waste (Okumus, 2020).

Reducing portion sizes, giving smaller options as part of the restaurant's normal menu, and transitioning to customer-requested, smaller portions can help reduce food waste. This decreases food waste resulting from spoiled dishes and client surplus. However, one should seek ways to modify recipes so that portion sizes do not appear overly small. If there are leftovers or some clients request larger quantities, provide doggy bags or half portions or two small entrees lobby (Millar, 2012).

Reuse: Reusing food can mean either retaining it to be used to feed those who are hungry or changing it into new things to sell. However, in order to fulfill some safety requirements, such as disinfecting discarded food from customers, one must first use the food to feed animals. The animals are also able to

be fed whatever food that has been stored for them. Bahria Grand hotel reuse waste to manage food waste. Any activity will inevitably result in waste, but this unwanted byproduct can be avoided. Food that has been stored on-site is utilized to create lunch and dinner on the first day of an event to ensure that any leftovers are not thrown away. When there are leftover ingredients in the kitchen, they are placed in a waste drawer that has the ability to be chilled for up to two days. Slushies' can be made from ingredients such as vegetables or fruits that cannot be stored by blending them in a blender with sugar and water and then freezing the mixture. Following the conclusion of an event, Bahria implements the methods of reducing, reusing, and recycling the waste. To cut down on the amount of food they throw away, they clear the tables of any unused dishes after each meal and make an effort to offer only one dish for each course as much as is practically practicable. During buffet lunches, the dishes are changed out every two hours to guarantee equitable distribution and maintain their freshness. When the guests have finished their meals, they will be given a box containing recyclable cutlery manufactured from material that has been verified before they leave (Pleissner, 2018).

Recycling of hotel food waste

Bahria Grand's kitchen team has been practicing the 3R's, which includes recycle food waste. The food that cannot be reused is often made into manure or compost to be used in gardening. Composting and digestion are the two most popular methods for recycling leftover food. Composting is a simple process that uses decomposition to break down organic materials. When this is done on a large scale, it becomes more difficult and expensive to do as there's less oxygen and microbial activity. When food waste or other compostable materials are mixed with sawdust or straw, it becomes easier for bacteria to break down the material. Digestion also takes place on a large scale and can be seen in some industrial sized farms that use methane digesters. The utilization of the nutrients contained in food waste through the use of controlled decomposition processes is the major objective of both of these approaches (Mak, 2021).

8. Sustainability

In contemporary civilization, sustainability has become a major concern as we explore how to best utilize our resources for long-term requirements. Reducing waste is a crucial component of sustainability. To protect environment, there is need to reduce waste (Goodland R. &, 1996).

Sustainability in Pakistani hotels

The amount of food that must be produced to feed the world's population will unavoidably increase in proportion to the world's population, which is growing at an exponential rate. According to projections, the world's population will have grown from 7.5 billion to 10 billion by the year 2050, which will cause a 60 percent increase in the demand for food. Research Contributions of the Consultative Group on International Agricultural (CGIAR), 2014 Sustainability issues must be resolved if the food industry is to be able to meet future demands. This will guarantee that we can continue to raise and consume food without endangering our health and enable us to support the development of future generations (Baldwin, 2015 2). Sustainability in Pakistan confronts numerous hurdles, but it can be attained through measures that enable people to repurpose some goods rather than simply discarding those. The hotel industry's food waste is a major contributor to food loss and waste in Pakistan.

Reduce greenhouse gas emissions by composting

Food waste is a global concern since it reduces food production and delays agricultural expansion, which is essential for Pakistan's sustainability (Aggarwal, 2004). It also causes a rise in greenhouse gas emissions, which depletes Pakistan's natural resources. In addition, food waste increases the use of landfills, which increases greenhouse gas emissions and deforestation, resulting in climate change. Stopping all of these will reduce Pakistan's greenhouse gas emissions and help us achieve our objective of sustaining the world sustainably. There is no denying the fact that composting is an effective method for returning nutrients to the soil without producing a great deal of greenhouse gas emissions. It also helps reduce landfill usage, resulting in fewer methane emissions from landfills. Using aerobic decomposition, compost pile heats up and decomposes, producing carbon dioxide, water vapor, and heat as byproducts. The outcome is nutrient-rich, productive soil that can be used to cultivate other plants (Gooding, 2016).

Eco-friendly food packaging

Pakistan is a vast, heavily populated nation whose population is expanding rapidly, who will be subject to tremendous environmental pressure and diminishing resources. Pakistan's food output will need to expand by 50 percent by 2050 in order to feed its population as its population will jump to 250 million in 2025 and 335 million in 2050 (Qureshi, 2012).

To reduce food waste, policymakers and sustainability-minded farmers in Pakistan must begin implementing sustainable agricultural practices on local farms and ranches in an effort to boost total crop yields and reduce harvest losses the continuous expansion of global population, anticipated at roughly 9 billion by mid-century (White, 2012).

Advantages of eco-friendly alternatives

In Pakistan, sustainable food waste management can assist in minimizing economic expenditures. In addition, there is a great deal more we can do in countries with a large population of hungry people in terms of finding ways to feed them, and food waste reduction means we have more leftover food for them to consume (Sadeq, 2016).

It is a significant way to utilize the world's resources wisely. Reducing food waste in Pakistan can benefit farmers. On tiny farms and in rural communities where subsistence farming is practiced, farmers must produce as much food as possible to provide for their families. Even if there are leftovers from a family's dinner, they will be utilized in some way; otherwise, they will be wasted. But sustainable methods of food preservation could change all that by keeping many more leftovers fresher for longer, preventing them from spoiling before being used (Liu, 2022).

Reducing the environmental impact of food waste can be accomplished through the use of sustainable practices. In cities, there are frequently numerous steps between the origin of our food and its arrival on our plates. Composting can help put leftovers to good use at every step of the process by keeping them out of landfills, reducing methane gas emissions, and lowering air pollution, which is particularly

significant in metropolitan settings. Reducing food waste through sustainable practices decreases pollution that can negatively impact human health and contribute to climate change. (Placeholder1)

There are a variety of strategies to reduce food waste without negatively impacting a family's finances or leaving people hungry, but it's time to begin working on long-term solutions to the problem (Thyberg, 2016).

Sustainability in hotels in Finland

Finland has been ahead of the curve in terms of energy use and trash reduction for a long time. Finnish hotels demonstrate that this historically wasteful industry may be part of the solution to climate change rather than part of the issue, despite the fact that Finland produces a small fraction of the carbon emissions per capita produced by other nations. The advantages of sustainable practices in the hospitality business are becoming increasingly obvious, and the growth of green hotels has prompted many travelers to seek out these types of lodgings. Numerous hotels in the Finnish hotel business have adopted sustainable practices, and the Finnish Green Hotel Association has been established to help spread their message of sustainability throughout the country's tourism industry (Halme, 2001).

Hotels throughout the world have taken steps to be more environmentally sensitive, but in Finland, this has been an intrinsic aspect of conducting business since the late 1990s, when the Finnish Tourist Board mandated that all hotels in the country must be carbon neutral by 2012 or face fines. It is therefore not surprising that many of these hotels are entirely sustainable and even create their own electricity and food via on-site energy and farming systems. It must be noted that, Finland has long been known as an ecologically responsible country and Finnish hotels are no exception to this. The Finnish Association of Hotels and Restaurants (RAY) has many sustainability criteria hotels must meet in order to be RAY certified, including the use of renewable energy, Training of staff, and Guest education for recycling and reducing the amount of waste produced (Lehmann, 2011).

Staff training

In Finland, hotels are required to follow SFS 5874 criteria for food waste prevention. The guidelines include the need to avoid using disposables whenever possible, and teach cooks on how to cook in a sustainable manner. Additionally, hotel workers should clean dishes promptly after usage rather than

waiting until there's a significant pile of dishes. More importantly, these measures must not cause difficulty or extra labor for kitchen staff and they should not affect guests too. If one plans to introduce new sustainability measures at hotel, make sure to evaluate both sides of the coin. Implementing new policies can lead to improved revenue if done right; train personnel on proper implementation procedures before rolling out changes across entire organization (Barik, 2017).

Guest education

Hotels in Finland are required to declare their food waste levels as part of a national programmed designed to assist businesses in reducing food waste in an effort to improve sustainability and conserve resources. The Finnish Food Waste Act mandates that businesses with over 50 employees must monitor and report annually on the amount of food they discard or donate, as well as the amount of preventable food waste. In addition to releasing its own statistics, the hotel association of Finland has built an online platform where members may share best practices and insights regarding their efforts to reduce food waste. As Finland's hotel industry continues its push for more sustainability, it will be intriguing to watch if these studies result in higher resource efficiency among member hotels (Okumus B. T., 2020).

9. Materials and Methods

This section includes a summary of the research technique utilized in this thesis. The chapter opens with a discussion of research methodology and qualitative research. Target Methods and the benefits of qualitative research are described next. This chapter also discusses the study's limitations and the theme interview. This chapter also explained reliability and validity.

Research Methodology

This research is based on both primary and secondary sources. It is a qualitative research. Primary data was collected from authorities of Bahria Grand Hotel Lahore. In addition to it, using a regularly developed questionnaire, data was acquired from managers of Bahria Grand Hotel Lahore and from the manager of Sokos hotel Finland and Scandic Hotel Kajaani. Secondary data has been collected from numerous peer reviewed articles, journals, books, and websites.

Qualitative research

In this thesis, qualitative research was used to obtain data. It is gathering and evaluating non-numerical data (such as text, video, or audio) to better comprehend concepts, opinions, or experiences. It can be utilized to gain in-depth insights into a topic or to generate fresh research ideas. Qualitative research is done to learn more about how people see the world. We conducted qualitative research to explore how people manage their food waste. The research involved in-depth interviews with managers in the restaurants (McLeod, 2017).

Methods of qualitative data collection:

Qualitative data collection methods include document study, observations, semi-structured interviews and focus groups. Observing a target population in their natural setting is the most common qualitative method for data collection. In this setting, the researcher interacts with the subjects and observes them in their environment. Semi-structured interviews and focus groups are also used when there is an interest in hearing from a number of people about a particular topic. In this thesis semi structured

interviews were conducted from the managers of hotels. A total of three interviews were carried out via emails. themes of questions was causes of food waste, consequences of food waste, challenges of food waste and approaches to manage food waste (Harrell, 2009).

Advantages of Qualitative Research:

In contrast to quantitative research, which attempts to describe the frequency or intensity of a problem by measuring numbers, qualitative research is more concerned with the stories behind these figures. Qualitative data can aid in the identification of viable solutions that might not have been identified otherwise. Advantages include: Qualitative examines subjects in greater depth than quantitative research, which merely records specific data. Moreover, qualitative research permits the investigation of attitudes and beliefs in addition to behaviors and practices. In addition, qualitative research aids in understanding behavior on an individual level, as opposed to merely as a part of a group. It is also useful for creating new hypotheses, performing preliminary experiments, and identifying pertinent results. Conducting interviews is an important part of qualitative research, which is one of its advantages. In the realm of qualitative research, face-to-face interviews have long held the position of preeminent technique for conducting interviews.

Advantage of qualitative research in food waste is that it can aid in informing the public about food waste. For instance, food waste revealed that customer knowledge, attitudes, and behaviors contribute to food waste. Qualitative data can aid in the identification of viable solutions that might not have been identified otherwise. Additionally, qualitative data assists in addressing customer behavior issues. Additionally, these exploratory insights from qualitative research bring value beyond conventional methods (Opdenakker, 2006).

Data analysis

The qualitative data collected during three managers via interviews was analyzed using a series of analytical processes linked to the grounded theory research approach. Thematic analysis was done to analyze data obtained from managers. Initially, based on the interview framework and the data itself, the information was gathered in the form of interview notes. Then, the information was categorized into meaningful categories. This process resulted in the distinctions between food surplus and waste,

avoidable and unavoidable waste, and finally, waste prevention and waste management. After that, by reducing and rearranging the data into more manageable and understandable forms, emergent patterns and relationships between the key themes were discovered. The options for prevention and management were identified and prioritized using the waste hierarchy principles after mapping the relationships between food surplus and waste, as well as between avoidable and unavoidable waste. Finally, the key themes were synthesized and presented in the framework for food surplus and waste along with their relationships and prioritized prevention and management options (Vaismoradi, 2016).

Population and Sampling

The target population is the one managers of from managers of Bahria Grand Hotel Lahore and two others are manager of Sokos hotel Finland and Scandic Hotel Kajaani. The presented research focuses on recycling techniques to reduce food waste. Purposive sampling has been used to select samples for data collection. The nature of sampling for this research is purposive because a pre-determined group is selected as the sample based on the objectives of the research and characteristic of the population. Purposive sampling is the judgment of researcher (Baran, 2016).

Limitations

As far as the limitations of this thesis are concerned, the fact that all of the interviewees' responses and thoughts of managers are primarily derived from personal experience is the most significant restriction of this study. As a result, the phenomenon as a whole cannot be described using the data that was collected. In addition, the management of food waste is difficult to quantify because management is an ongoing process that occurs on a daily basis. The theme interview does provide in-depth insights on food waste management at Bahria Grand Hotel Lahore from the point of view of the interviewees; however, it is unable to analyze the entirety of the food waste management process on the premise. This study proposes a framework for dealing with the problem of food waste. Additionally, although research carries useful information about management of food waste at Bahria Grand hotel Lahore, its accuracy is limited as interviews were conducted from managers sitting remote (Kiger, 2020).

Theme interview

In qualitative research, the three methods of data gathering that are considered to be the most essential are observation, theme interviews, and diverse documents. When a more in-depth understanding of a phenomenon or scenario, such as the characterization of a problem, evaluation of effectiveness, or evaluation of results, is necessary, a technique known as a theme interview can be utilized to get this knowledge. Interviews with subject matter experts are the major method of data collecting utilized in this investigation. After the information from the interview has been compiled, it is analyzed before being compared to the theoretical topics covered in the literature review. The goal of the author is to investigate the management of food waste at the Bahria Grand Hotel in Lahore in relation to a number of different topics concerning food waste; hence, thematic interviews were selected as the major technique for acquiring data for this research. Sources, consequences, difficulties, and management techniques for food waste were among the topics discussed in this study. It should be brought to everyone's attention that because no materials for in-person observation are provided, nor are any papers, it is abundantly evident that conducting theme interviews is the method of data collection that is most appropriate for the study (Moser, 2018).

The interviewees' responses are derived from the perspectives and experiences gained while working at the hotel, respectively. The replies from *managers of Bahria Grand hotel Lahore, Scandic Hotel Kajaani, and Sokos Hotel Kajaani* reveal a diverse array of perspectives regarding the wasting of food. At the beginning of the interviews, the respondents were given questions regarding their thoughts on the food waste. The next question that was posed to them was to explain, amount of wasted food waste in their hotels. In the second part of the survey, managers were asked how much per day their hotels throw out in terms of food. After then, the questions discuss the factors that lead to, the outcomes of, and the challenges posed by excessive food waste at the hotel, as well as potential solutions to these issues. The test consisted of a total of 20 questions, five of which were of a general character, while the other fifteen questions were based on four primary topics. The answers to the questions are provided in the table that follows.

GENERAL QUESTIONS
1. How would you define food waste?
2. How much of our food is wasted each year in your hotel?
3. Do you have to deal with food waste on a daily basis
4. What is recycling and sustainability in your thought?
5. In future, what would be impacts of food waste in your opinion?
THEME 1: Causes of Food Waste Bahria Grand Hotel Lahore, Scandic Hotel Kajaani, And Sokos Hotel Kajaani
6. What are causes of food waste in your hotel?
7. Who is responsible for food waste at your hotel?
8. When does food get wasted?
9. How poor staff training is cause of food waste?
Theme 2: Consequences Of Food Waste
10. What are the repercussions of food waste?
11. Who will be responsible for cleaning up after all the wasted food?
12. What would happen if no one recycles food waste?
13. How does food waste effects the environment?
Theme 3: Challenges of Food Waste
14. What are some of the challenges associated with decreasing food waste?
15. What are the ways to overcome challenges of food waste?
Theme 4: Approaches to Manage Food Waste
16. What are the approaches to manage Food waste at your hotel?
17. What can a manager do to minimize food waste?
18. What should hotel can do to boost the food waste awareness of our workers and customers?
18. What kind of everyday strategy could be utilized to reduce food waste?
20. In your thought, what is the role of media to educate people about food waste?

Conducting the interviews

In total, three hotel managers were interviewed: one each from the Bahria Grand Hotel, the Scandic Hotel Kajaani, and the Sokos Hotel. Interviews were conducted with managers because these individuals are the most knowledgeable about hotels. In addition to that, they are proficient in the management of food waste. The personnel who were chosen for the interview were those who have direct contact with food waste on a daily basis; as a result, they are aware of the current situation regarding the food waste management system at the hotel. The author wanted to acquire a variety of perspectives and points of view on the topic of food waste, so she decided to conduct interviews with different hotel managers. The results of the Bahria Grand Hotel in Lahore were evaluated alongside those of two hotels in Finland. This was done because Finland has one of the best systems for managing food waste; the steps that Finland has adopted will be used in Pakistan; and this choice was made to ensure that the research is accurate.

Every one of the interviews was conducted in the month of April in 2022. The interviews were carried out in English, recorded, and then subsequently transcribed into materials for analysis. During the interviews, in-depth interviews and face-to-face discussions were utilized in order to elicit the responses of the respondents, which included their personal thoughts and points of view. The questions for the interview were aimed to cover four aspects of food waste: its causes, its consequences, its challenges, and its possible remedies. Because the questions were open-ended, the respondents were given the opportunity to share their own thoughts, views, and experiences. The examination of the data was carried out utilizing thematic analysis. The purpose of the thematic analysis is to arrive at an understanding of the core of the texts and to present a condensed account of the many resources. After then, the transcripts were carefully analyzed in order to extract the most important ideas, facts, and perspectives. In light of the fact that the interview questions had been segmented into topics in advance, depending on the theories, the gathered data ought to also be compared to the overarching ideas of the theories. The conclusion and the recommendations were taken from secondary sources such as books and articles in addition to the answers that were supplied by the users.

Reliability and validity

In order to determine the overall quality of a thesis, it is common practice to employ the concept of credibility, which is comprised of two sub-ideas: dependability and validity. Reliability refers to the consistency of the results that were collected, whereas validity refers to the validity of the research that was conducted. The research gathered information from reliable sources such as the Food and Agriculture Organization of the United Nations and other academic sources since it is essential to provide scientific facts and viewpoints from experts in the hospitality industry.

Not only does the study incorporate information pertaining to food waste on a global scale, but it also incorporates data pertaining to food waste in the hospitality industry in Finland that was obtained through past investigations conducted by the Natural Resources Institute Finland, the research may be trusted because it is based on a case study of a hotel that is located in both Pakistan and Finland. The fact that all of the interviewees' responses and opinions are based on their own personal experiences constitutes a drawback of the study. As a consequence of this, the collected data are unable to provide an adequate explanation for the phenomenon as a whole. In addition, the management of food waste is a continuing daily operation, which makes it impossible to define the scope of the problem. In-depth information regarding the management of food waste at the Bahria Grand Hotel is provided in the subject interview (Schunn, 2016).

10. Findings

In this chapter thematic analysis of themes has been given. Thematic analysis of questions taken from managers of Scandic Hotel Finland and Manager of the restaurant at the Sokos Hotel Finland has been given in first section. Later, thematic analysis of questions/ themes taken from manager of Bahria Grand Hotel in Lahore has been discussed.

In accordance with the themes, the purpose of the research is to present credible insights on the administration of the disposal of food waste at the Bahria Grand Hotel in Lahore. The purpose of this project is to address the four primary concerns regarding the sources, impacts, problems, and potential solutions to the issue of food waste at the hotel. It is essential to pay close attention to the various points of view held by the interviewees who frequently deal with the issue of food waste. The results of the analyzed questions and answers pertaining to the interviews are presented in the following chapters. The answers were compiled and compared with the data from the prior concepts in the same order as the topics that were listed.

Background

The interviews with the hotel's managers were carried out in order to acquire first-hand experience with the food waste that occurs on a regular basis. They have a significant amount of experience thanks to the length of time that they have spent working in the hospitality business. When questioned about their thoughts on the subject of wasted food, they each provided their own perspective. In general, the issue of wasted food is considered to be a problem that requires further attention and should be taken care of.

When it comes to definition, the **Manager of Scandic Hotel Finland** remarked that food waste is food that is not consumed. Every year, about one-third of the world's food is wasted, while more than one billion people go hungry. Organizations such as Scandic are addressing global hunger and sustainability issues. Beginning in 2017, all hotels in Scandic's global franchise began serving leftovers from hotel buffets for breakfast or lunch for two days after guests stay.

According to the manager of the Scandic hotel, some causes of food waste at the Scandic hotel are Fruits and vegetables are being discarded rather than utilized as ingredients in recipes. Furthermore, employees frequently pile too much food on plates, resulting in not everyone getting what they require. When staff workers make too much during one serving hour, it's difficult to predict how much customers will consume. Furthermore, to-go meals are overstuffed, making it difficult to eat without spilling all over oneself or the car seat.

In terms of the challenges of food waste at Scandic Hotel Finland, the manager stated that decreasing food waste is a difficult process. The hotel considered these difficulties and devised remedies for each one: Employees were squandering a lot of food, so Scandic personnel began throwing out damaged bananas instead, because spoiled bananas cannot be reclaimed. Furthermore, to avoid workers overcooking vegetables and having to throw them away, Scandic lowered the size of their vegetable serving pans, so cooks would feel more tempted to utilize lesser quantities for more orders.

Manager stated that, in terms of measures to managing food waste at Scandic Hotel Finland, the FAO suggests expanded education and awareness efforts, as well as improved date labelling systems, so consumers are aware when they buy produce or if leftovers have gone bad. Manager said, "In 2008, the Scandic Hotel in Helsinki (Finland) launched a reduction programme that resulted in an 82% reduction in operational food waste." Scandinavian, like many other prominent hotels and restaurants, is committed to reducing operational food waste.

Manager of the restaurant at the Sokos Hotel Finland, said, food waste can be caused by having too many visitors, possibly as a result of poor advertising, guests eating more than they should have, or expecting something that is not on the menu. Additionally, often there is a large quantity of bread on display which attracts lots of insects and this will result in the bread being thrown away. In addition, if an order has been placed for a specific dish and then cancelled, the dish would still need to be cooked, served and collected so it cannot just be saved or disposed of.

The only way to reduce the causes is to handle each situation individually. There are many occasions when people have chosen from a menu but have not come to eat because they arrived late or left early. The amount of food that is prepared for those people can also be considered as being wasted.

As far as challenges are concerned, manager said one challenge that has to be tackled is the change in menu. Food often changes during the season, but this leads to a lot of unused leftover ingredients. Certain types of food have a shorter shelf life. More time consuming when the kitchen team needs to track which type of pasta is needed for which dish; what meat fits with certain dishes; which vegetable goes into which sauce.

In following paragraphs commissioning party Bahria Grand Hotel will be discussed in details, thematic analysis of answers obtained from manager will be discussed next:

Causes of food waste at Bahria Grand Hotel Lahore

This chapter focuses on three major causes of food waste at hotels.

What are the causes of food waste?

As it was covered in chapter 2, there are many different reasons why restaurants and other food service establishments frequently throw away perfectly good food. The causes of food waste mentioned in chapter 2 are Customer error and Restaurant meals left unfinished, Poor Inventory management, inadequate planning, Poor Staff Training and Managerial and technological constraints. Almost many of these causes are the same as those described by the hotel manager.

Manager Bahria Grand Hotel stated that *“Food waste at restaurants can be caused by a variety of factors, one of which is ordering insufficient quantities. Additionally, Poor Staff Training is another cause of food waste. There are also other explanations, such as broken products or remaining commodities that could not be sold on another day. The most prevalent explanation is high staff turnover rates, which occur because new employees must go through a learning curve before becoming comfortable with their job. What happens when people take their time getting into the swing of things? They make blunders such as tossing away good food instead of properly marking it so that it can be re-used. These errors occur more frequently as business grows since there is greater stress involved, which leads to errors in*

judgment. Often, if the restaurant is unaware that these errors are occurring, the amount of wasted food grows. All of these issues add up to a lot of waste over time, especially if they happen during busy seasons like Ramadan or Eid al-Fitr, when every consumer wants something different. Customers are unaware that this stuff ends up in landfills rather than feeding starving people who may require it more than we do."

Who is responsible for food waste at Bahria Grand Hotel Lahore?

According to the manager of the Bahria Grand Hotel in Lahore, hotels ought to take responsibility for the food waste that they produce and treat it with care. When hotel guests throw away a dinner plate, they are effectively throwing away the many hours of labor that went into cooking, prepping, and obtaining that meal. Along with the hotel, they have an excessive amount of responsibility for the waste of food. The amount of food that is thrown out by this establishment is excessive, and we have to find a solution to the problem as quickly as possible before they begin to pollute our oceans with plastic pollution and our landfills with food waste. When someone throws away an uneaten piece of bread or leftover lasagna, they are not only flushing away good nutrition down the drain; they are also flushing away time and money. Because there is an entire infrastructure to sustain life that goes on behind every dish that is prepared by these chefs, it is not just good nutrition that is flushed away.

When does food get wasted at Bahria Grand Hotel Lahore?

Manager Bahria Grand Hotel Lahore replied:

According to the manager the kitchen is the primary contributor to the food waste that occurs at the Bahria Grand Hotel Lahore, according to the management, the hotels frequently have too many people working in too few shifts, which results in a significant amount of unused food and other resources being wasted. According to him, this does not imply that the phenomenon in question is limited to the hospitality sector alone. In point of fact, it is a problem on a global scale. He also discusses the fact that their cooks are continuously developing new meals in response to the rapid pace at which people's preferences evolve. In addition, the responsibility for wasted food rests with the individual customers. The majority of consumers either order too much or do not consume what they have ordered because it is not to their liking, which results in a significant amount of food being thrown away that was not consumed. The amount of food that is wasted in the hotel goes beyond the breakfast that is left uneaten by guests; it also includes perishable fruits and vegetables that could have been donated to

nearby communities or sent to be used as compost; freshly prepared meals that are served throughout the day but are never eaten; sauces that do not need to be thrown away because they can still be transferred into new jars; and food that is left on cutting boards. If there is going to be any possibility of resolving this issue, the consumption patterns of both the workers and the clients will need to undergo significant shifts.

How poor staff training is cause of food waste?

Manager Bahria Grand Hotel Lahore replied:

Front-line employees are the ones who are responsible for managing food waste since they are the ones who are in direct touch with visitors and are aware of the preferences that guests have. It is essential, however, to instruct them in how to respond to these requests in a manner that is kind and does not put the customer in an awkward position. According to the management of the Bahria Grand Hotel in Lahore, many members of our staff do not have the necessary training to understand why food is wasted and how to prevent it. He went on to say that we have started a new training programmed on the management of food waste in the hopes that it will transform the way our personnel think about the waste of food. Manager also stated that the primary objective of this programmed is to educate our workers about the reasons for food waste and the ways in which it may be reduced using simple methods.

Impacts of food waste at Bahria Grand Hotel Lahore

In this chapter, we discuss the effects of wasting food from the perspectives of those who were interviewed. We will talk about the people who are impacted by food waste as well as the consequences of it.

What are the repercussions of food waste?

Manager said an excessive amount of wasted food is harmful not just to our environment but also to those who are less fortunate and do not have access to it. It is anticipated that the negative consequences of wasting food over the long run would become even more severe as a result of climate change. Some of those effects include pollution, emissions of greenhouse gases, and toxicity. The organization loses money due to the numerous additional expenditures that are incurred as a direct result of food waste, which may be analyzed using economic terminology. And when it comes to the owners' personal finances, wasting an excessive amount of food costs them a lot of money. Additionally,

the fact that there are millions of people contributes to the damage that it does to society. People are being forced to go hungry, and perfectly good food is being thrown away. In addition, the effects of food waste are not only felt in the form of a loss of resources such as water, energy, labor, land, and chemical inputs into crop production, but also in the form of considerable financial expenses as well as repercussions for the global sustainability of our food system.

Who bears the brunt of the effects of food waste?

The manager replied:

There is no denying the reality that the employees and staffs of The Bahria Grand Hotel who directly deal with food waste on a daily basis bear the brunt of the effects of food waste. In addition to this, the financial management of the Bahria Grand Hotel will have to bear the brunt of the consequences.

What would happen if no one recycled food waste?

Manager remarked, it will bring disaster. An extreme illustration of this would be in a country that is classified as third world and has neither recycling plants nor the internet. Because of this, disease outbreaks are possible because we are unable to utilize the nutrients that food provides and we need to find a way to get rid of our waste. When most businesses recycle, they end up with a large quantity of unused food, which is then typically dumped in landfills or burned. While the incineration of waste results in the emission of chemicals into the air that are potentially carcinogenic, landfills produce hazardous gases that contribute to global warming, which is harmful to the ecosystem.

How does food waste effects the environment?

According to the management, the quantity of food that is wasted has a significant influence on the habitats of both the local and the global levels. For instance, when natural resources like oil and water are utilized in production but nothing is ever produced, there are two repercussions: negative externalities and economic inefficiencies. Both of these affects are a result of the production process. In addition, the utilization of natural resources such as oil and water can be quite pricey, and they do not replenish themselves. The manager went on to say that food waste in landfills results in the production

of methane gas, which has a negative influence not just on the environment but also on people like us who live in it. If we were to limit the amount of food that is thrown away, not only would the natural world be able to recover from its damage more rapidly, but we would also experience improved health.

Challenges of Food Waste in Bahria Grand Hotel Lahore

Food waste is a complicated issue that involves many parties and many stakeholders, consequently, there still remains many obstacles. The challenges of reducing food waste will be discussed in this chapter, along with some potential solutions.

What are some of the challenges associated with decreasing food waste?

Manager revealed that these challenges include a lack of information about recycling and the benefits it offers, the safety of workers as they handle waste and must be careful not to spread it, and inadequate service in certain locations. In addition, there are significant risks involved in the waste management and recycling industries. They include being exposed to chemicals, explosions caused by combustible dust, risks associated with machine guarding, and coming into contact with powerful machinery that has moving parts.

What are the ways to overcome challenges of food waste?

The manager explained that one way to reduce the amount of food that is wasted can be accomplished by serving visitors on smaller plates and placing less amounts on each plate. Not only will this help save money on food, but it will also stop individuals from overeating and leaving them feeling bad afterward. In addition, one way to circumvent the problem is to place uneaten food in the refrigerator for consumption the following day. This will prevent the food from being wasted. Along with this, there is a need to set up lunch buffets rather than supper ones because dinner buffets have more customers and are more likely to have more food waste owing to leftovers, spillage, and servings that are too large for one person to consume in a single sitting. One strategy for mitigating the effects of these issues is to lessen the amount of food that is thrown out, beginning with the point of production and continuing with the education of both customers and employees.

“At the Bahria Grand Hotel in Lahore, which does not appear to be addressing any of these concerns, I will be having a conversation about the difficulties associated with food waste today. A cursory

inspection of their kitchen revealed a great deal of stale food and uneaten leftovers piled one on top of the other in mounds around the space. It was a terrible sight, but what made it even worse was that when I asked some of the workers about it, they informed me that they had been directed to prepare enough food for twice the quantity that was necessary because customers are frequently dissatisfied with the size of their servings”.

Approaches to Manage Food Waste at Bahria Grand Hotel Lahore

Even though food waste management is still a difficult problem to overcome, the hotel still has access to a wide variety of solutions that it can implement in order to deal with the matter. In this chapter, we will discuss the manager' recommended solutions to the problem of food waste, all of which are practical, rational, and feasible.

What are the approaches to manage Food waste at your hotel?

Approaches stated by manager are almost similar to approaches we have studied before in this thesis in chapter in chapter 5.

Manager stated that, it appears that there are two techniques to managing food waste. One, rather than squandering all of the food, we can donate it to a local food bank or pantry so that those in need can eat nourishing meals. Second, buy less food and collaborate with caterer to reduce waste by determining the exact number of plates needed for each meal. The General Manager of Bahria Grand Hotel stated, "We intend to initiate a discourse with our employees and guests so that they realize how they can contribute to decreasing food waste." We must modify attitudes and actions, particularly among children and teenagers.

Since they contribute significantly to food waste the manager also mentioned that recycling can be used to manage food waste. Recycling food waste is critical for two reasons: global warming and environmental damage. Both have an adverse effect on our planet and its inhabitants. Aside from those reasons, there are others, such as people lacking adequate resources being unable to access foods that they require because their prices are higher than they can afford; or people going hungry because food is unavailable where they live or a lack of money required for transportation, storage, or refrigeration.

According to the manager, food waste control is critical for sustainability. The reason for implementing sustainability in the food sector is that as the world's population grows, so will the demand for food. To fulfil future demands, the food industry's sustainability should be prioritized, so that we can produce and consume food safely while also promoting future generations' progress. It would be a disgrace to waste food when there are so many people who do not have enough. Reducing and effectively managing trash can help reduce hunger and make sustainable living more accessible to everyone.

What can a manager do to minimize food waste?

Waste management is a huge problem in the hospitality industry. In the hotel, there are many areas that generate food waste. This includes the kitchen, restaurant, and catering. The amount of food wasted on a daily basis has been found to be so large that it could feed millions of people all over the world. In order to minimize this food wastage, every manager in charge should be aware of some key strategies they can implement. Bahria Grand Hotel Lahore Manager said that a good strategy to minimize food waste is to buy all of the necessary ingredients from supplier in one go, and then prepare all the food in one batch. This way, the hotel is not left with any leftover ingredients. They also cut down on preparation time. Manager can educate staff about food waste; manager can motivate employees to reduce food waste.

What should hotel can do to boost the food waste awareness of our workers and customers?

The Bahria Grand Hotel Lahore has implemented a number of preventative and corrective methods to reduce the amount of food that is wasted within the establishment. The hotel is dedicated to being environmentally friendly, as seen by its provision of composting bins and its promotion of the recycling of unused food. Since more than a year ago, we have been recycling our garbage into compost, and it has been doing well. Our employees have received training on the need of recycling, are aware of what they should do if they have extra food, and express satisfaction with the system. We give guests with composting bins to dispose of their organic waste in throughout their stay.

What kind of everyday strategy could be utilized to reduce food waste?

According to the management of the Bahria Grand Hotel Lahore, "we have put in place a special fridge for our leftovers, and we also encourage customers to purchase little portions of food that can be easily managed." In addition, we are in the midst of putting in place a procedure via which we will inquire of our visitors as to whether they would like us to make arrangements for any leftover food or food that is in excess to be delivered to NGOs or other organizations that feed the homeless. The Green Building Council has just recently presented the hotel with a 'Silver Award' for the initiative it has taken to recycle plastics and paper while also utilizing solar power in its operations.

In your thought, what is the role of media to educate people about food waste?

The dissemination of information about the problem of wasted food through the media has been a very effective method. It is currently being utilized in the print media, social media, and electronic media, all of which are distinct forms. Articles published in print media such as newspapers, periodicals, and books are often available to the general public as ready-made reading material. Daily or weekly publication of articles on food waste in print media can be an effective step toward reducing food waste. Due to the fact that it is interactive and can quickly disseminate information to a large number of people, one of the most effective ways to distribute messages is through the usage of social media. People may find that doing so helps they waste less food. It is also feasible to have a conversation with people who hold ideas that are different from your own on a particular issue; in this way, one can learn about how people in various cultures live and function. Television, radio, and the internet are examples of electronic forms of media.

11. Discussion

This chapter is concerned with the presenting of discussion from the data analysis procedures discussed in the previous chapter. This chapter begins with the discussion section, which evaluates three interviews with Pakistani and Finnish managers. Interviews with managers from both nations, a comparison of food waste recycling techniques has also been provided.

From talks with Finnish hotel management, manager a lesson has been derived for Pakistani hotels. It was determined that the Bahria Grand Hotel could learn from Finland's food waste management procedures.

In this section, a development plan was also given to Bahria Grand hotel Lahore.

A comparison of Pakistan and Finland's food waste recycling practices

In Finland, everyone plays a part in minimizing food waste and making it easier for consumers to do the same, from grocery stores to restaurants. For instance, if grocery stores were compelled by law to separate organic materials (such as vegetable scraps) from other rubbish or even compost them on-site, they would have a greater incentive to track such items during collection. The approach has significantly decreased food waste. Therefore, surplus food is converted into fertilizer or distributed to indigent patients. The fertilizer is distributed to local farmers. The food, which would have otherwise been discarded, is provided to charitable organizations that feed the homeless and low-income families. On other hand, in Pakistani hotels like Bahria Grand Hotel customers are least concerned about food waste, that result into a large amount of food waste. According to one report, in Pakistan, about 40 percent of the food that is cooked is wasted (Aamir, 2018).

In Finland there is greater interest to reduce food waste as More than one-third of Finland's overall impact on the environment is caused by its consumption of food. Finland collects a large amount of food waste from grocery stores. The material is then transformed into compost at facilities such as the Tampere Biogas Factory, which burns methane created during anaerobic digestion to generate sustainable energy. They use the heat from these facilities to dry and compact organic waste for easier transport prior to transforming it into crop. To further reduce pollution, no chemicals are used to further reduce pollution; instead, the materials are left natural so they can be used by gardeners in the future. It

can be inferred that, to reduce food waste at hotel in Pakistan, strategies adopted by Finland can be adopted (Katajajuuri, 2014).

What can Pakistan learn from Finnish hotels about food waste recycling?

Finland has well quipped food waste management system. Additionally, there is proper legislation to control food waste in hotels. Pakistani hotels and restaurants are renowned for their opulent food and beverage spreads, which frequently result in a substantial amount of food waste. Finland, however, has a system in place that treats food waste not as waste but as an asset to be utilized for another purpose. In contrast to Finland, which recycles its food waste, Pakistan's recycling industry is still finding its footing after failing to reach its full potential in recent years. To assist Pakistan in achieving its solid waste management objectives like Finland, experts need to advocate more collaboration between commercial and public sector partner. Although Karachi's scenario may appear to be extremely different from Helsinki's, Pakistan might borrow Finland's approach to recycling food waste when drafting future rubbish management policies. Pakistan needs to have proper industry and to educate people about food waste. Additionally, government in Pakistan can learn from authority ties of Finland that are trying hard to implement rules about food waste. After learning from Finland's recycling of food waste, Pakistan can do recycling of food waste to save the economy as well.

12. Development plan for Bahria Grand Hotel

In light of interviews results, a plan was devised for Bahria Grand Hotel to reduce food waste at hotel. Bahria Grand Hotel Lahore has been trying to reduce food waste over the past few months, and they've seen some positive results.

Here is development plan for Bahria Grand Hotel to cut down on their food waste. Findings showed that food waste occurs when people purchase more food than they need, it ends up in landfills. To reduce food waste at Bahria Grand Hotel Lahore, owners must understand that they are part of a larger system and be willing to change their behaviors as well as those of their employees. The hotel industry is also affected by external factors, like changing weather patterns. Hoteliers can work with farmers, distributors, and customers to develop systems for less waste throughout all steps of food production and consumption. To cut down food waste at hotels, Bahria Grand Hotel Lahore need to understand causes of food waste. One way Bahria Grand Hotel Lahore can cut down on food waste is by using software to keep track of inventory levels. Another important way Bahria Grand Hotel Lahore can reduce food waste is by developing partnerships with local organizations to donate surplus foods or use leftovers in creative ways.

As a hotel's caterer, food waste is not only bothersome, but also expensive. Most do not realize how much of their food ends up in garbage cans, which is understandable. Because of this, some resort to The Food Surplus Exchange (TSF), an organization that teaches hotels how to reduce waste and better manage their resources. TSF conducts an assessment of a hotel's food waste situation before beginning to engage with it. After evaluating all of their processes, they collaborate with the hotel to devise solutions that will assist them in achieving their objectives. Bahria Grand Hotel Lahore needs to be aware about management of food waste.

In order to reduce food waste, Bahria Grand Hotel Lahore must first acquire packaging that prevents food from spoiling. Current food packaging is not optimal for long-term food storage, hence additional waste is to be anticipated. However, as such a reduction would necessitate the purchase of more expensive, sustainable packaging materials; it is possible that a third-party vendor will be required to

help them meet these goals if they wish to reduce food waste at their location. Finally, personnel should be instructed on the right storage and preparation methods for perishable foods.

Bahria Grand Hotel Lahore hotel has halved its food waste by promoting smaller amounts, using fresh foods, and offering daily specials. They have also moved from plastic to paper straws and taught their employees on basic food storage and management procedures. Hotels may simply cut their own food waste with a little information and some basic planning.

The Bahria Grand Hotel in Lahore, Pakistan, has implemented a new programmed to prevent food wastage. Recognizing that uneaten food should not be considered wasted food, staff members will distribute leftovers to those in needs in the neighboring community. In addition, customers are invited to give uneaten edible bits of their orders so that they may be distributed in a similar manner. There may be some early opposition to such a concept, but it is eventually beneficial for all parties concerned. Locals gain access to free food, while hotels gain reputation for doing good and reduce their carbon footprint. Educating customers on why leftover food should not be wasted is essential; ensuring that those with lesser means have access to food may be just as critical.

This study revealed that, Bahria Grand Hotel Lahore can reduce food wastage at hotel by adopting recycling techniques. If a person eats a meal and has some left over, he or she should ask for boxes at their table before they leave. The kitchen can reuse these boxes and give it to guest with same order so that more guests will not get single use plate. More will be done if you want, but before implementing any green initiative always start small like Bahria Grand Hotel Lahore did with less disposable in their hotel but with little effort one can make difference.

Bahria Grand Hotel Lahore can promote sustainability by managing of food waste through recycling:

This research showed that food waste, in general, is a global problem. Hotels have started joining those efforts by cutting down on wasting food from their properties. Here are few ways Bahria Grand Hotel Lahore can reduce food wastage at hotel Bahria Grand Hotel Lahore must be aware of its leftover food items and take appropriate steps to use them rather than throwing them away. This will help keep more money pocket while reducing environmental footprint at the same time. Bahria Grand Hotel Lahore must implement effective inventory management practices so that it can track its inventory effectively so that it doesn't end up throwing away excess supplies or out-of-date products. Bahria Grand Hotel

Lahore should focus on serving fresh ingredients to guests rather than pre-made dishes that may lead to waste over time.

In addition to ordering too much, customer error is another significant cause of food waste. Customers often request items or food that hotel kitchens are not equipped to handle, causing a significant amount of food waste. Okumus, B. (2020) also underpinned this factor. According to Okumus, wrong customer serving leads to food wastage. In addition to that, if a customer requests an item that would require too much labor to prepare, or if they order an item outside of normal operating hours, then it may end up going in the trash. This is an unfortunate situation for everyone involved because not only does it mean wasted food, but it also means extra costs for hotels who need to pay staff overtime. Additionally, wasted food equates to wasted money and unused energy spent on growing, transporting, packaging, and preparing that food instead of other alternative uses. Furthermore, inadequate planning in hotels leads to food waste at hotels (Okumus B. , 2020).

Kasavan (2019) also bolstered this fact. Kasavan stated that the major cause of food waste in hotels is improper planning. This can occur during preparation, before or after preparation, during cooking, and even after cooking. When hotels have huge buffets that are paid for by corporate sponsors, chances are food may go to waste if the hotel's administration is not able to sell it all on time. The same goes with room service meals, which are not sold on time. Some restaurants do not ask how hot your steak should be cooked because they believe there will always be someone who wants their meat undercooked. There is no way of knowing how many people want medium-rare steaks, so instead they prepare everything as ordered regardless of risk (Kasavan, 2019).

Expired and inadequate storage are, unsurprisingly, other significant causes of waste. According to Green Restaurant Association research, stale food accounts for 16% of all food wasted in hotels. Priefer (2016) also reinforced this fact. According to Priefer, improper storage can lead to excess spoilage and therefore higher levels of food waste. This often happens because many hotel kitchens are not fully equipped with proper storage solutions, such as well-insulated walk-in coolers and freezers. In fact, restaurant refrigerators often have less insulation than those found in homes; even worse, hotel kitchen refrigerators don't typically include automatic defrosting systems. Lack of education deals a death blow to food waste at hotels. Gannon (2020) also supported this by saying that food waste is a common problem in hotels, and we believe it is directly linked to a lack of education and awareness

among hotel staff. According to the Green Restaurant Association, hotel employees may be accustomed to throwing out food as soon as an expiration date has passed or an item does not look appealing due to improper storage (Priefer, 2016).

Next comes the impacts of food waste at hotels. As a component of food production, greenhouse gas emissions are a byproduct of wasted food. Gilbert (2012) supported this fact by saying agriculture accounts for one-third of our total greenhouse gas emissions. Furthermore, agriculture accounts for more than 15% of global greenhouse gas emissions, and per capita food waste in developed countries is nearly twice that of developing countries. Hotels alone use so much energy, particularly for heating and cooling water, that these activities account for more than 60% of their carbon footprint. The problem also extends beyond costs; wasted food leads to needless labor expenditures on additional produce purchases and potential fines for violations of waste disposal regulations. Food waste can cause a significant financial impact for hotels. Mabaso (2018) also supported by saying over 40% of all food purchased by hotels goes uneaten. That's a lot of wasted money for not a lot of extra meals (Gilbert, 2012).

In Pakistan, hotels and restaurants are adopting sustainable practices to reduce food waste. Ivonkovic also supported this by saying biodegradable packing is a surge in hotels. Around 1.5 million tons of foods are wasted in Pakistan annually—this is a staggering amount considering over 20 million people go hungry every day. While most restaurants and hotels are aware of their contribution to food waste, they struggle with how to reduce it. In response, a number of restaurants have begun using biodegradable containers that decompose within 30 days or less; others use leftover scraps for animal feed or composting purposes. The National Agriculture Research Center has also developed an innovative process to turn food scraps into animal feed; currently, one tons of leftovers can produce one tons of feed for animals like cows and sheep.

There is no denying the fact that Pakistan can learn a lot from Finland in terms of reducing food waste at hotels. Because there is a strong desire in Finland to reduce food waste, food waste is reduced by investing in educating and incentivizing consumers. Friman (2022) supported this; In Finland each municipality creates an action plan to reduce household food waste. This involves education at home, work, and even daycares. A classic example of a simple way to reduce household food waste is changing packaging reducing plastic and increasing cardboard boxes, which are easier to store long-term. On a macro level, Finland has an excellent infrastructure that allows it to collect food scraps from restaurants

and grocery stores. The country also invests in quality composting facilities that accept all types of food scraps from restaurants and households alike (Friman, 2022).

Finland has great potential for recycling food waste. Pakistan needs to implement the recycling techniques of Finland to cater to the issue of food waste. This year, more than twenty tons of leftover foods were dumped in just one dumpster in Pakistan. This waste is primarily fruit and vegetable scraps, which could have been used to create compost. In Finland, they have three different types of centers where citizens can take their food scraps—to be converted into fertilizer for vegetables, animals, or industrial processes—or to be converted into energy. The process of converting organic waste into usable items such as energy is known as anaerobic digestion (Angelidaki, 2003).

The most common method for converting food waste into energy is through a process called anaerobic digestion. In order to produce biogas (the collective term for methane and carbon dioxide), the organic matter must undergo anaerobic fermentation. The beginning stages of biogas production involve aerobic fermentation—anaerobic fermentation only takes place after organic matter has been exposed to air. Anaerobic digestion produces biogas that can be used as fuel for vehicles, cooking stoves, and heating systems. By using these techniques to recycle food waste at hotels in Pakistan, we will not only reduce our country's greenhouse gas emissions but also improve our agricultural industry by producing high-quality fertilizer from leftover scraps.

13. Results, Findings and Recommendations

The main objective of the study is to find out causes and consequences of food wastage in Bahria Grand Hotel Lahore. Additionally, a development plan was provided to Bahria Grand Hotel to cater the food waste at hotel. Interviews were taken from three different managers. The data was collected through a standardized questionnaire and data was analyzed through thematic analysis technique. Analysis of the present study indicates that there recycling is the most suitable technique that can be used to cater food waste issue at Bahria Grand hotel.

Results:

This study was conducted in the hotel and tourism industries in Pakistan. This research compared and adopted useful tactics utilized in Finland for recycling sustainability and appropriate ways to promote recycling and sustainability in Pakistan. The purpose of the study was to address issues related to food waste. Data was collected from secondary data sources. In addition to that, questionnaires were conducted to collect data from hotel managers in both countries, i.e., Pakistan and Finland. Questionnaires have been given in Appendix part. The data was gathered from both primary and secondary sources, with primary data coming from the Grand Hotel's authority and secondary data coming from papers, books, and websites. Answer of 20 questions was collected from hotel managers of Scandic Hotel and Sokos in Finland. In Pakistan, data was collected from the manager of Bahria Grand Hotel. These interviews were compared to figure out ways to manage food wastage. After this, the recycling sustainability of food waste was compared in both countries.

When the results of all three managers were compared, it was discovered that a large amount of food is wasted in the Bahria Grand Hotel, and the main cause of food waste is customer attitudes. Food waste was caused by customer overbuying or unplanned orders. When compared to hotels in Finland, it was discovered that Finland is the world leader in food waste management. The reason for this was that Finland had developed techniques for dealing with food waste. Food waste recycling has yielded fantastic results in Finland. It was deduced that if Pakistani hotels, such as the Bahria Grand Hotel in Lahore, want to handle food waste, they will have to adopt Finland's food waste management strategies. Furthermore, customers must be educated on the dangers of food waste.

Findings of the Study

On the basis of data analysis, the following findings were drawn.

- Customer error and Restaurant meals left unfinished are significant causes of food waste.
- Inadequate planning and overbuying also leads towards food wastage.
- Environmental, economic and social impacts of food waste can be catered by educating staff and customers.
- Waste management system in Finland is developed.
- Finland is promoting sustainability by recycling food waste at hotels.
- Pakistani hotels can adopt policies adopted by Finland to cater food waste issues.
- Bahria Grand hotel Lahore can handle food waste issue by understanding causes of food waste and educating customers.
- Bahria Grand hotel need to implement recycling policies at hotel to cater food waste issue.

Recommendations:

- Bahria Grand Hotel Lahore must implement anti-waste legislation. Several countries, states, and cities have already passed laws to cut down on food waste. Some of these laws require stores to donate food that didn't sell.
- Bahria Grand Hotel Lahore must be strongly encouraged to donate extra food. Incorporating strategies to reduce food waste is an essential means of combating hunger in Pakistani hotels.
- Approximately large amount of food is lost annually in Bahria Grand Hotel Lahore, causing multiple problems. It is necessary to monitor and implement food waste policies in schools and workplaces. Schools and businesses can help lessen these problems by keeping an eye on how they handle trash and by putting in place better waste management policies.

- There is dire need to educate customers and staff about food waste at Bahria Grand Hotel Lahore.
- Managers need to manage menu in a way, there ought to be minimum food waste.
- Government needs to make rules to cater food waste issues.
- The Nation of Pakistan Pakistan's composting infrastructure has not kept pace with population growth, resulting in an enormous amount of food waste in Pakistani hotels like Bahria Grand Hotel Lahore. Additional funding and support are required for cities and provinces to better manage food waste in the future. With composting infrastructure, less food waste and organic material will end up in landfills, reducing emissions that contribute to climate change.
- Produce waste in Bahria Grand Hotel Lahore presents an opportunity to educate children about saving seeds, cultivating their own plants, and cooking with home-grown produce. It also provides an easy way for adults to feed their families and manage food costs. There is a need to teach children about saving seeds, growing their own plants, and cooking with home-grown produce. If more Pakistanis grew fruit trees in their backyards, there would be less demand for packaged imports. If more Pakistani families took the time to make their own jam instead of purchasing expensive store-bought brands, they would save money and reduce food waste.

14. Conclusion

This thesis answers the research questions and concludes that food waste at Bahria Grand Hotel can be abated through recycling. Food waste has a detrimental effect not only on the environment, but also on the economy and social aspects of life. Food waste does not affect only biodiversity it can also impact this planet earth. Therefore, food waste management needs to be promoted. Sustainability is the only choice to keep this planet in better shape that can be achieved by managing food waste at hotels.

The study was conducted to address the following themes: causes, consequences and challenges of food waste; how can food waste be managed through recycling in the hotel industry? The thesis question has been briefly answered in this thesis. Three different managers were interviewed, one from Pakistan and the other two from Finland. There were challenges encountered while collecting data. The first challenge was convincing those remote managers to respond via email; managers appear to be wary of using email for any kind of communication. Another issue that arose was how to obtain a variety of data from a single manager when they worked at different locations and in different positions at each location. It was also discovered that some managers may be reluctant to share their personal feelings about the new programme with a superior or with someone who does not work directly with them. Managers were hesitant to share sensitive information for fear that it would be used against them later.

A standard questionnaire comprising of 20 questions was sent to managers via email. Answers were collected via email and analyzed. Customer error and restaurant meals left unfinished, Poor Inventory management, inadequate planning, Poor staff training, and managerial and technological constraints were identified as the causes of food waste at Bahria Grand Hotel Lahore. It was also discovered that food waste has a significant environmental impact. Furthermore, food waste has a significant impact on the global economy and society. This study also revealed that food waste in hotels is hampered by a lack of information, a poor storage system, and a lack of staff training. Food waste is one of today's most global, international, and pressing issues. It is a problem that has gone unnoticed for far too long. Many people are unaware that this problem begins in the kitchen and spreads throughout the hotel. One of the major causes of food waste at Bahria Grand Hotel Lahore is insufficient

storage systems. As previously stated, there is also a lack of knowledge among the staff about what can and cannot be recycled or disposed of.

To control food waste in hotels, hotel employees must be educated on food waste because their actions contribute to the problem. Furthermore, educating employees about the environmental consequences of food waste can help to protect the environment. In addition, donating uneaten restaurant food is a common way for hotels to reduce food waste and promote sustainability. The study also found that creating a zero-waste culture from the top down in hotels can help to reduce food waste. Management, housekeeping, and executive levels are all included. They can educate themselves on the environmental and economic consequences of hotel food waste and implement simple changes such as reducing portion sizes or allowing guests to order less food.

Future research:

It is suggested that this study be repeated every year, as it would be useful in managing food waste in hotels. As a result, it provides future research opportunities, particularly for the thesis commissioning party, Bahria Grand Hotel Lahore.

Appendix 1

Scandic Hotel Kajaani (Miia Paakkari):

	Questions Scandic Hotel Kajani (Miia Paakkari) Food and beverage manager	Comments
1	How would you define food waste?	Food waste comes from hotel due to breakfast and dinner.
2	What is recycling and sustainability in your thought?	Recycling collects and processes trash to make new products. Card board, glass, food waste, mixed waste, paper collection are recycled. Sustainability is to make efforts for betterment of planet earth.
3	What are causes of food waste in your hotel?	Customers take too much at breakfast and can't afford to eat is the biggest cause of food waste.
4	In future, What would be impacts of food waste in your opinion?	If we cut food waste in half, we could feed the world's hungry.

5	How you can control food waste at your hotel?	Measuring and monitoring on a daily basis can help to control food waste.
6	What might be some benefits of reducing food waste?	It can help Climate, additionally, it can help to save money.
7	How you can promote sustainability and recycling in your hotel?	By observing as closely as possible that recycling is carried out.
8	What can a manager do to minimize food waste?	Ensure that information is provided and that everyone follows the instructions given by hotel
9	What would happen if no one recycled?	There will be total chaos
10	How can food waste management be improved?	By weighing and taking pragmatic measures, it can be improved.
11	How does food waste impact the environment?	Bio waste and biogas will be result of food waste.

12	Does your organization have a sustainability program?	Yes, it has.
13	What sustainability challenges does your organization face?	We have good instructions and functional drains.
14	What are the sustainability practices in hotel?	Hotel chain has comprehensive guidelines to cater food waste.
15	Why is sustainability so important?	Sustainability will help to achieve good future.
16	What is the most important sustainability issue?	How we recycle and how we operate is the important challenge to deal.
17	What media can play role to educate masses about sustainability and recycling?	Media plays a key role shares the information well
18	How can you encourage customers to recycle?	We have a guideline everywhere.
19	How much of our food is wasted each year in your hotel?	N/A
20	What would be the future goals in sustainability practices?	A better and healthier planet for everyone, it's the best goals.

Appendix 2

Bahria Grand Hotel Lahore:

	Questions	Comments
	Manager of Bahria Grand Hotel Lahore (Syed Afeef Naqvi) Afeef.naqvi@bahriagrand.com	
1	How would you define food waste?	Food waste is anything that can't be eaten.
2	What is recycling and sustainability in your thought?	Sustainability means meeting our needs without compromising future generations'.
3	What are causes of food waste in your hotel?	Overbuying is the biggest cause of food waste.
4	In future, What would be impacts of food waste in your opinion?	Over a third of food is wasted. Food waste decomposition and waste trucking contribute to climate change and environmental degradation.

5	How you can control food waste at your hotel?	By taking order correctly it can be managed.
6	What might be some benefits of reducing food waste?	It will help to make environment a better.
7	How you can promote sustainability and recycling in your hotel?	By promoting legislation of government, it can be promoted
8	What can a manager do to minimize food waste?	Manager can minimize food waste by educating staff.
9	What would happen if no one recycled?	Ultimately, it will affect earth planet.
10	How can food waste management be improved?	Collection of organic waste on a regular basis can improve food waste.
11	How does food waste impact the environment?	It can degenerate environment.

12	Does your organization have a sustainability program?	Yes, it has. But we are trying to make it more accurate.
13	What sustainability challenges does your organization face?	Customers attitudes is the reason of food waste, and food waste affect sustainability. We are facing customer bad behavior as a challenge.
14	What are the sustainability practices in hotel?	Green hotel practices include energy conservation, water conservation, and waste management.
15	Why is sustainability so important?	It can help to make earth a better place to live.
16	What is the most important sustainability issue?	Climate change is the biggest issue.
17	What media can play role to educate masses about sustainability and recycling?	Media can educate masses to spread awareness about food waste.
18	How can you encourage customers to recycle?	By telling them, recycling is beneficial for their own generations.
19	How much of our food is wasted each year in your hotel?	A large amount is wasted.
20	What would be the future goals in sustainability practices?	The future goals will be to make environment better through sustainability.

Appendix 3

Sokos hotel Hannemari Kuronen Food Manager

	Questions	Comments
	Sokos hotel Hannemari Kuronen Food Manager hannemari.kuronen@sok.fi	
1	How would you define food waste?	Food waste is anything that can no longer be eaten.
2	What is recycling and sustainability in your thought?	Recycling is the process or action of reducing the wastage into reusable material. Really important to us and our entire hotel. We strive to take recycling into account in everything we do.
3	What are causes of food waste in your hotel?	Food waste comes somewhat inevitably. It comes because of lunch, from counterfeit products or old date
4	In future, What would be impacts of food waste in your opinion?	Impacts of food waste would be alarming. Loss is a bad thing and we must do everything we can to minimize it. We see a good future.

5	How you can control food waste at your hotel?	We make portions according to the dosing card, we use steelyards for cooking, we don't take too much stuff to digest etc.
6	What might be some benefits of reducing food waste?	It's like throwing money in the trash. Loss is not a good thing at all. We can save money by reducing food waste.
7	How you can promote sustainability and recycling in your hotel?	We make sure all employees recycle. For example, we do not drain water from the tap unnecessarily, wash full machine counters, turn off unnecessary lights, we prefer local food and local products, Etc. therefore, by promoting recycling, sustainability can be promoted.
8	What can a manager do to minimize food waste?	Managers can educate staff to get rid of this issue. Make sure the kitchen works as agreed. Tells, advises and guides and sets an example.
9	What would happen if no one recycled?	This can leave serious repercussions. Everyone would drown in the stuff.
10	How can food waste management be improved?	It can be improved by educating customers. Waste could be reused, for example as fuel

11	How does food waste impact the environment?	We can't say exactly, but we think it affects the climate
12	Does your organization have a sustainability program?	Yes, "Sustainable Travel Finland" -certificate and "Green Key" -program
13	What sustainability challenges does your organization face?	Have to think of possible alternatives e.g. for foil and take away boxes
14	What are the sustainability practices in hotel?	Each employee agrees to follow recycling and sorting instructions. Integrated approaches of recycling can help to achieve sustainability.
15	Why is sustainability so important?	It can save our environment. So that our earth may well
16	What is the most important sustainability issue?	Get everyone involved is the biggest issue. Additionally, educating masses is the other issue.
17	What media can play role to educate masses about sustainability and recycling?	It is important to inform new generations, for example through social media.
18	How can you encourage customers to recycle?	Telling the origin of the food, telling how sustainable development and recycling is reflected in our hotel

19	How much of our food is wasted each year in your hotel?	We do not know the exact amount, but we do everything we can to minimize it
20	What would be the future goals in sustainability practices?	All recycled, as little plastic as possible, waste management is fine

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