

UNIVERSITY OF EDUCATION, WINNEBA
COLLEGE OF TECHNOLOGY EDUCATION, KUMASI

**ASSESSMENT OF THE EFFECT OF FOOD WASTAGE ON
PRODUCTIVITY IN SOME SELECTED HOTELS IN SUNYANI
MUNICIPALITY.**



GIFTY OSIAKWA

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SELECTED HOTELS IN SUNYANI MUNICIPALITY.**

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**A project work presented to The Department of Catering and Hospitality,
FACULTY OF TECHNICAL EDUCATION, University of Education, Winneba
in partial fulfillment of the requirement for the award of Master of Technology
in Catering and Hospitality Education**

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DECLARATION

Candidate's Declaration

I, Gifty Osiakwa, hereby declare that this whole project work is the result of my own original research, except the quotations from books which I have acknowledged; and that no part of this study has been presented for another degree in the University Of Education, Winneba or elsewhere.

CANDIDATE'S NAME: GIFTY OSIAKWA

Signature

Date.....



Supervisor's Declaration

I hereby declare that the preparation of this project work was supervised in accordance with the guidelines on supervision of project laid down by the University of Education, Winneba.

SUPERVISOR'S NAME MR. MICHAEL TSORGALI

Signature.....

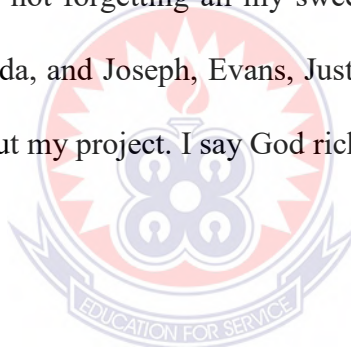
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It is always good to appreciate one's contribution. It is due to the fact that I feel in need to commend all those who in diverse ways contributed to making this work possible. I wish to express my heartfelt gratitude to the almighty God for his grace, care and protection throughout my course at the University.

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DEDICATION

This project work is dedicated to the Almighty God, Divine Joy Kwaku Afriye and my family.



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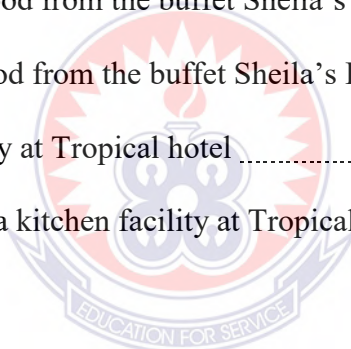
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ABSTRACT

The purpose of the study was to assess the effects of food wastages in some selected hotels in Sunyani Municipality. The study employed a mixed approach and descriptive survey in tackling the problem at hand. A sample size of 215 was used which comprises of 160 customers, 39 workers, and 16 managers. Random sampling technique was adopted in selecting the customers while the workers were purposively sampled. Questionnaires, interview and observation were adopted as the research instrument for soliciting information from the respondents. Findings from the study revealed that food wasting situations at the very various sampled for the study were very alarming since 61.1% admitted food wasted constitute a larger portion of waste generated in their hotels. It was also indicated in the findings that the hotels were making losses rather than profit and considering shutting down the restaurant section as a result of food that gets wasted and customers get stranded when they need food. However, it was established through the findings that the food wasting problems among the hotels can be reduced drastically if they employ qualify personnel, upgrade their kitchen and storage facilities to a standard, educate customers on food wasting, operate a customer-friendly food policies and food specialties. Finally, the study recommended that standard protocols that are used in operation of hotels in the country should be adhered to by the hotels sampled for the study to assist them in reducing the food wasting situation.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Hospitality services are facilities and amenities created to receive and entertain guest (Mensah, 2008), one of such amenities is the food service establishment comprising of hotels, restaurants, fast foods, canteens and chop bars. In order to provide food for guests, these facilities go through a series of processes mostly in the kitchen where raw materials are received, processed and converted into finished products. In the course of going through these processes, food is wasted.

Food wastage refers to the number of materials, ingredients that are lost during the storage production process, cooking or serving, due to shrinkage, evaporation, boning and cutting (Jones, 1995). It is the amount of food thrown away, the unnecessary loss of materials during food production. Food waste is a conscious resolution to throw away food mainly through negligence (Lipinski et al; 2013). The food thrown away could have been re-used, sold or eaten.

Food waste is thus an issue of efficiency where the individual managing the food determine whether there should be a waste or not (Erik-son, 2012). Large quantities of produced foods are discarded around the world (Gustavsson et al., 2011). As stated by FAO (2011),” 280-300 kg per capita per year in developed countries and 120-170 Kg per capita per year in developing countries of food goes waste” and, to a large extent, this type of waste is avoidable (Refsgaard and Magnussen, 2009; Swami et al., 2011). The wastage of food

occur at all stages of the life cycle of food, starting from harvesting, through manufacturing, distribution and finally consumption, but the largest contribution to food waste is from homes and the other institutions such as the hospitality industry, food, and beverages companies and restaurant all over the world (EPRS, 2014; FAO, 2011 and 2012; Thøgersen, 1996; Williams et al., 2012).

According to Food and Agriculture Organization of the United Nations (FAO, 2017), one-third of the food produced in the world for human consumption every year, approximately 1.3 billion tonnes, gets lost or wasted. Meanwhile, there are 795 million hungry people out of 7.5 billion people living on this planet, which means one out of nine people in the world suffers from chronic malnutrition. (World Hunger News, 2016) The contradiction here is that in the meantime, while a huge amount of food gets discarded every day.

In 2014, researchers at the U.S. Department of Agriculture's (USDA's) Economic Research Service (ERS) announced that 31%, or 133 billion pounds of the 430 billion pounds of food available in the United States, ends up as waste (Buzby et al., 2014). In Ghana, Chefs for Change Foundation estimated that 3.2 million tons of food is wasted annually. Catering industries in Ghana waste a lot of food through negligence and inadequate knowledge. Food service establishments in Ghana consist mainly of traditional catering establishments (GTA, 2009) which basically do not have the requisite gadget to store and preserve food; as such most of the foods get wasted. The 2010 population census revealed that there are about 36 hotels in the Sunyani Municipality and all these hotels one way or the other offer food service to their customers. Along the service chain, food

wastage may be encountered by the hotel operators. This interest the researcher to conduct a study into the effects of food wastages among some selected hotels in the Sunyani municipality.

1.2 Statement of the Problem

Most hotels in the Sunyani Municipality waste food, because of no proper mechanism put in place to check the food wastages. As a result of employing people with little knowledge about food processing to handle their kitchens a lot of the wastages occur through the process of preparation and also workers deliberately wasting food as a result of poor managerial skills of hotel managers. Food left are sometimes thrown away without considering any alternative as recycling or selling it to pig farmers to make an extra income and the most serious part of it is that hotels have to spend money to hire the services of waste managers for proper disposal. Those who cannot afford dump it anyhow which negatively impact on the environment.

A critical assessment revealed that most of the hotels in the Sunyani Municipality are now operating without a restaurant or a food joint because of continue cost occurrences from food wastages. The situation is that those who are operating with food service are not also functioning to their capacity. Customers have to wait barely for some minutes before he or she can be served. Imagine the consequences that will happen when the customer is hungry in the night. These hotels don't sell food in the night, is only a day affair.

However, it was an issue that most of the times got neglected or disassembled due to various reasons. While it might be a concern to a lot of managers, yet, not everyone is ready to bring it on and take it seriously. Being caterer, I have gained a strong interest in contributing to saving the hospitality industry. Since waste management in general and food waste management particularly are a crucial part of sustaining the operation of the hospitality industry and raising awareness as well as presenting proper handling approaches among the public is a necessity. The researcher decides to address the effects of food wastage on productivity in the hospitality industry as among the selected hotels in the Sunyani Municipality. It, therefore, deems appropriate for the researcher to find out what really is the cause of the food wastage in these selected hotels and the best possible way we can adapt to reduce the food wastage.

1.3 Purpose of the Study

The general purpose of the study was to assess the effect of food wastage in some selected hotels in the Sunyani Municipality.

1.4 Objectives

1. Explore the food wastage situation in some selected hotels in the Sunyani Municipality.
2. Identify the effects of food wastage on the operations of the selected hotels in the Sunyani Municipality.
3. Devise measures that can be adapted to reduce food wastage among the selected hotels in the Sunyani Municipality.

1.5 Research Questions

This research was guided by some questions. These are as follows:

1. What is the situation of food wastage in selected hotels in the Sunyani Municipality?
2. Are there any possible effects of food wastage on the operations of the selected hotels in the Sunyani Municipality?
3. What are some of the measures that can be taken to reduce food wastage among the selected hotels in the Sunyani Municipality?

1.6 Significance of the Study

The study is significant for the following;

This study has a paramount contribution to the hospitality industry in Ghana basically at Sunyani; whereby it reveals the possible causes, effect and ways to reduce food wastage in the hospitality industry.

This study has contributed other researchers who their study based on waste management in the hospitality industry.

To Government of Ghana, District Assemblies and NGO's, the research has highlight some of the challenges faced by hotel operators on food waste management in the Sunyani Municipality, which will guide them in the issuance of licenses of operation and awarding of hotels.

The study will also provide a theoretical understanding to readers to recognize the effect of food waste practices and organizations operational performance and suggest best ways to enhance performance.

To the society, understanding the effect of food wastage and its contribution on organizations operational performance will assist them in selecting the best hotels that suit their satisfaction.

The study will guide policymakers in the government agencies, management of the hotels and other key stakeholders in the formulation of policies governing food waste management.

1.7 Scope of the Study

The study reflects on issues related to food wastage. It involves issues like the concept of food wastage in the hospitality industry, factors causing food wastage in the hospitality industry and others.

1.8 Organisation of the Study

This study is structured into five (5) main chapters, each with minor sub-topics. The first chapter introduced the research topic and it discussed the background of the study, an overview of food wastage in Ghana, problem statement, study objectives, the significance of the study, the scope of the study and organization of the study.

Chapter two was a review of related literature on food wastage. Specific topics discussed includes the concept of food wastage in the hospitality industry, factors that causes food wastage in the hospitality, effect of food wastage on the operations of the hospitality industries, environmental impacts of food wastage, economic costs of food wastage, social

losses caused by food wastage, approaches and practices for food wastage reduction in the hospitality industry.

Chapter three describe the methodology guiding the study area, research design, population, sampling technique and sample size, data collection technique such as questionnaires, interview, and observation. Chapter four basically looked at the analysis and presentation of results from the survey. The presentation was guided by the research study objectives. Tables and charts were used to present findings.

Chapter five was the conclusion of the study. It presents a summary of major findings conclusions and Recommendations were made.



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter is about the review of the related literature on the content of the effects of food wastages in some selected hotels. Specifically, the review was done under the following: the concept of food wastage in the hospitality industry, Factors that causes food wastages in the hospitality industry and possible measures that can be adapted to reduce food wastage among the selected hotels in the Sunyani Municipality.

2.2 The Concept of food Wastage in the Hospitality Industry

The United States Environmental Protection Agency defines food waste for the United States as "uneaten food and food preparation wastes from residences and commercial establishments such as grocery stores, restaurants, and produce stands, institutional cafeterias and kitchens, and industrial sources like employee lunchrooms".

Food waste is defined by Okazaki et al. (2008, p. 2483) as “any food that is not consumed by humans and can be generated at any level within the food chain”.

Following the approach adopted by Pirani and Arafat (2014) for the purpose of this paper food waste will be defined as any food discarded as part of operations by restaurants. Such waste refers to food losses within the restaurant business and excludes the earlier stages of the food chain (Gustavsson, 2011). While acknowledging, there will always be some waste that is unavoidable, of increasing concern for food establishments is avoidable food waste which is leading to enormous economic and environmental problems.

Previous studies showed that there is a difference between food loss and food waste. It is pointed out that food loss means the decrease in food mass or in its quality (FAO, 2014, in Coughlin, Petljak, and Naletina, 2017), which makes it unsuitable for human consumption (FAO, 2011, in Cuglin, Petljak, and Naletina, 2017) Another source indicates that food loss consists of food spills, spoils, incurs an abnormal reduction in quality such as bruising or get lost before it reaches the customers. Food loss usually occurs at the production, storage, processing, and distribution stages in the food value chain. (Lipinski, 2013).

Meanwhile, food waste tends to be food that has fine quality and is suitable for consumption, but does not get consumed because it gets discarded—either before or after it is left to perish. Food waste typically takes place at the retail and consumption stages in the food value chain. The cause can be the negligence or a conscious decision to throw food away. Although both food loss and waste happen all over the world, food loss tends to be more prevalent in developing countries, while food waste tends to be more prevalent in developed countries. (Lipinski, 2013) As the drivers that generate food waste and the solutions to it are different from those of food losses, food waste is recognized as a distinct part of food loss (FAO, 2017).

In the case of the food and beverage industry, a food item becomes waste when it failed to be used by a customer or an employee of a food service or restaurant operation. Food waste consists of both food and beverage for customer's consumption and kitchen waste such as eggshells, fresh food trimming waste, oils, spoiled or expired products. Food waste falls into two categories: Pre-consumer food waste and post-consumer food waste. Pre-

consumer food waste includes overproduction, spoilage, expiration, and trimming waste. (Shakman, 2013) Post-consumer food waste often referred to as plate waste, is the food items left or discarded by the customers. These often include food left on the plates or unused seasoning part or leftover beverages. (Baldwin & Shakman, 2012, 57).

In a similar vein, Constello (2016, in Cuglin, Petljak and Naletina 2017, 538) divides into two types of food waste. The first type is food waste before its consumption. This type of waste refers to kitchen leftovers (any organic material that is thrown away during food preparation, like peels, grease, fruit and vegetable parts; it is considered inedible) and food which has rotten (either the shelf-life has expired, or it is decomposing; it is considered inedible). The other type is food waste after consumption which is the food served to the guests that have not been eaten.

2.3 Factors that Cause Food Wastage in the Hospitality Industry

Food waste is believed to occur at different stages of the food chain from the supply to the after-service. It is impossible for a restaurant not to produce any waste at all costs. Food waste generation does not indicate poor operating practices, since it takes place due to various comprehensible and sometimes, inevitable reasons. As food waste is categorized into two groups: pre-consumer and post-consumer food waste, the causes of them are different. (Baldwin & Shakman, 2012, 57-59).

According to (Baldwin & Shakman, 2012, 58-59), pre-consumer food waste is often caused by the reasons stated in Table 2.1 This table below is the summary of the main causes of food waste in the hospitality industry introduced by Baldwin and Shakman in the book

“Greening Food and Beverage Services”. The causes are categorized into two types: pre-consumer and post-consumer. (Baldwin & Shakman, 2012, 58-59).

Table 2.1: Causes of pre-consumer and post-consumer food waste
(Baldwin & Shakman, 2012)

Causes of Food Waste	
Pre-consumer	Post-consumer
Unidentified demand	Large portion sizes
Overstocking	
Inefficient production	Inefficient service model
Poor communication	
Staff behavior	
Unskilled trimming	
Over-merchandising	Customer’s menu acceptance
Food Safety	

From Table 2.1, the first and most common cause of food waste is unidentified demand. Kitchen operators sometimes have problems to estimate the number of guests they are going to serve and guess what menu will be the most suitable and cost-effective. If the restaurant offers a wide range of menu and changes them very often, this can be a struggle. In order to improve the forecast, studying the customers’ preferences and other factors such as weather patterns, and local competition is very necessary. (Baldwin & Shakman, 2012, 58).

Overstocking is another reason why food service points have to put food to waste. Some restaurants do not want to tell their customers that they cannot fulfill an order; as a result, they end up preparing more than they actually need. This margin of error method might work in many situations but too large margin prediction can lead to waste. (Baldwin & Shakman, 2012, 58).

Besides, inefficient production procedures also create a great amount of food waste in hotel restaurants. Chefs often refer batch cooking method to food waste reduction; however, it depends on the time of the day as well as the size of the batch. For example, the schedule for the breakfast buffet is from 7 am to 10 am and the hotel wants to offer food until 10 am. Yet, the demand is low as it is near closing time. If the hotel still keeps the habit of batch cooking despite the fact that closing time is drawing near, it can create a huge amount of leftover. To prevent creating an unwanted amount of waste, they could offer a cook-to-order model or present their food in smaller containers and change the display. (Baldwin & Shakman, 2012, 58-59).

Additionally, poor communication among restaurant employees can lead to food waste generation. Communication between the front and the back of the house is very important because when miscommunication happens, due to several reasons such as the physical layout of the operation, language or cultural gaps or limited time, it can result in failure in regulating food production. (Baldwin & Shakman, 2012, 59).

Staff behavior also plays an important role in food wastage control. Staff behaviors can either reduce or contribute to food waste. For example, if a recipe requires four and a half kilograms of beef and the beef package just comes in 5 kilograms, the chef cannot separate the package and leave the rest unused but use up the whole bag of meat. This action does not come with bad intentions. However, it has led to an unexpected amount of food wastage. (Baldwin Shakman 2012, 59). Another staff-related cause of food wastage is unskilled trimmings. Vegetables, fresh fruits, and meat need to go through trimming and preparing phase to be ready for use. Staff members should acquire appropriate kitchen skills training and anticipate skills to produce food without creating so much waste. (Baldwin & Shakman, 2012).

Furthermore, over-prioritizing merchandising creates an enormous amount of food waste. It is understandable that operators want their merchandising products to stay fresh, beautiful, and plentiful on the shelves. Nevertheless, this can result in an excessive number of products wasted by the end of the day. (Baldwin & Shakman, 2012, 59).

On the other hand, although food safety comes as the first priority at any food service point, it contributes immensely to the dispose of food. Food with any issues regarding timing, temperature or handling should be discarded for the consumers' health reasons. Still, lessons should be learned from the mistakes so that they will not be repeated again, (Baldwin & Shakman, 2012, 59).

In terms of post-consumer food waste, Shakman in (Baldwin & Shakman, 2012, 59) lists three main reasons. The first reason is the large portion sizes. More than often, the portion sizes are way bigger than what the customers can actually consume. In addition, inefficient-service model can generate an significant amount of food excess. Self-service food points such as cafeterias, buffet restaurants, and other non-commercial foodservice operations-allow their guests to take more than what they can eat. Also, customer's menu acceptance can contribute to waste in a sense that when customers do not enjoy some part of the condiments, some certain ingredients, or the quality of the served food, they usually refuse to finish their meals. (Baldwin & Shakman, 2012, 59).

In a different study, although not categorizing the causes of food waste according to the stages, Hogan proposes that the most five common food waste causes include five factors.

These include the following:

- Restaurant managers and chefs prefer not to run out of all food items, thus, they often stock up and produce in large amounts. Even though the purpose itself is positive, this usually leads to food waste. In the food service industry, overproduction is considered as part of risk management; nevertheless, the price that we pay for this risk management method is food waste. (Hogan, 2016).
- Besides, food service operations tend to over-merchandise, which can lead to food excess. It is understandable that food service providers create bountiful and beautiful displays to attract customers. Nonetheless, this often links with food excess. Food merchandising can still be organized without creating so much waste by scaling back on buffet sizes and slim down customer serving sizes. (Hogan, 2016).

- Confusing food safety policies in different food service operations may produce unexpected food wastage footprint. Food safety is, of course, the priority that every food service provider keeps as a protocol in their business. In order to comply with food safety regulations, food service providers usually create a margin of error for food safety. However, more often than not, they end up creating a few margins around the first margin, leading to the disposal of food that is not disqualified. (Hogan, 2016).
- In many restaurants, false labor/waste trade-offs are another reason why food is created excessively and ended up in the trash. For the sake of minimizing labor cost, food service operators provide food in large batches without realizing that while trying to save on labor cost, they are wasting on resources, food, and money when they toss out food not eaten later. (Hogan, 2016).
- Another reason why restaurants are wasting food is that operators always try to live up to customer options and choices. Many foodservice operators wish to provide their last customer of the day the same menu and services that the first customer gets. While keeping various menus and services from open till close ensures good customer experiences consistently, every day is not the same and waste is generated. (Hogan, 2016).

Another study points out that the causes of food waste comes from different stages in the supply chain such as improper storage of raw material or products, sloppy transportation or improper preservation leading to expiration, lack of motivation, etc. (Parfitt, 2010, in Cuglin, Petljak, & Naletina, 2017, 540).

2.4 Effects of food Waste on the Operations of the Hospitality Industries

Every year a third of food produced for human consumption gets lost or wasted. (FAO, 2017). In Finland, “Food accounts for more than one-third of the environmental impact of overall Finnish consumption and about one-quarter of the climate impact of consumption.” (S4lvennoinen, et al., 2015, 140) According to a small pilot study carried out by the Sustainable Restaurant Association (SRA) in 10 restaurants based in London, an average restaurant may produce 21 tons of food waste per year. (Giorgi, 2013, 6) Not only is this number noticeable, but it also indicates that there are many issues associating with it.

Nonetheless, not all the food waste in restaurants get proper treatment. A study in 2014 by the Food Waste Reduction Alliance points out that only 14.3 percent of food waste gets recycled and 1.4 percent of food gets donated. Up to 84.3 percent simply just get discarded. (Business for Social Responsibility (BSR), 2014, 19) Needless to say, the huge amount of food waste sent to the dumpsite certainly have various impacts on the environment, economy, and society

2.4.1 Environmental Impacts of Food Waste

The environmental footprints that food waste create include both upstream and downstream impacts. (Baldwin & Shakman, 2012, 60) Upstream environmental impacts refer to the environmental footprint of a food item before reaching the food service operation. (Baldwin & Shakman, 2012, 60) These impacts are relatively invisible since they are not obvious for operators and other stakeholders to see. However, they account for a comparatively huge amount of food wastage. According to (FAO, 2013, 12), upstream food

wastage, occurring during production, post-harvest handling and storage, makes up more than fifty percent (up to 54 percent) of total food wastage.

In terms of upstream impacts, when a food item gets discarded, all resources that are used to produce them go to waste, too. These resources include natural resources that the farmers use for food production such as land, water, fertilizers, pesticides, and the fuel for the tractors; as well as the carbon footprint that the transportation phase costs. At this stage, the food item needs to be refrigerated, which costs energy, water usage, along with the emission of air and water pollutants.

Once a food item is wasted, it brings to waste an enormous amount of carbon footprint, energy, water, other natural resources, and certainly hidden expenses. (Baldwin & Shakman, 2012, 60), At the same time, food waste that occurs during processing, distribution, and consumption damages the environment dramatically as it hits the landfills or incinerators, leading to many downstream environmental consequences. First of all, since approximately seventy percent of food waste content is water (Zhang, 2006, in Baldwin & Shakman, 2012, 61), the activity of transporting food waste to the landfill heavily requires a huge amount fossil fuels and creates air pollution from the emissions. Whereas, this could be prevented by reducing the amount of food waste during different stages of the food supply chain. (Baldwin & Shakman, 2012, 61). Every day, food waste transferred to the landfills accumulates and piles up, thus, forming a daily cover that traps the old food waste underneath. With no oxygen, this environment becomes anaerobic as food waste decomposes. This process produces landfill gas emissions of 50 percent

methane and 50 percent carbon dioxide. (Baldwin & Shakman, 2012, 61) All food items share a common characteristic which is that they all emit biogenic greenhouse gases (GHGs) such as methane (CH₄) and nitrous oxide (N₂O). Methane and Nitrous oxide are very powerful greenhouse gases. Methane itself weighs 25 times more than carbon dioxide, which makes it a very powerful greenhouse gas. (IPCC, 2007, in FAO, 2013, 18); Intergovernmental Panel on Climate Change, 2007, in Baldwin & Shakman, 2012, 61) In addition, it is a crucial fact that according to EPA, there is more methane in the atmosphere now more than at any time in last 400,000 years (EPA, 2010, in Baldwin & Shakman, 2012, 61).

In addition to methane, the total carbon footprint that food wastage leaves account for approximately Gigatons in 2007. (FAO, 2013, 17), if food waste were a country, it would rank as the third country which emits the most greenhouse gases, just following the USA and China. Thus, it is not a surprise that food wastage connects to climate change due to the excessive amount of greenhouse gas emissions. Reducing food waste in different stages rather than sending them all to the landfills helps with both dealing with greenhouse gas emissions and climate change.

An interesting thing is that there is a noticeable pattern in food waste producing areas. Meanwhile, in developed countries, it is likely that there is more food waste generated in downstream phases of the food supply chain, the opposite is true for developing countries. In low-income areas, food waste often occurs during the upstream stages. (FAO, 2013, 14), Another important wasted resource to mention is blue water. Bluewater in agriculture refers

to “the consumptive use of irrigation water taken from ground or surface water.” (FAO, 2013, 27) But why blue water is worth mentioning in the environmental impacts of food waste? It is because “blue water use in irrigated agriculture has the potential for causing severe environmental problems, such as water depletion, salinization, water-logging or soil degradation” (Aldaya, 2010, in FAO, 2013, 27). All over the world, the blue water footprint for the agricultural production of total food wastage in 2007 is about 250 cubic kilometers (km³), which is more than 38 times the blue water footprint of USA households, or 3.6 times the blue water footprint of total USA consumption (Mekonnen & Hoekstra, 2011, in FAO, 2013, 27).

The volume of blue water coming from food waste makes up about three times the volume of Lake Geneva or has the same volume as the annual water discharge of the Volga River. (FAO, 2013, 27) Furthermore, the occupation of landfills for food waste develops damaging environmental impacts due to the pollutants and toxicity from leachate and groundwater contamination. The development of landfills and conversion of wild lands, on the other hand, harms the ecosystem as well as the biodiversity on a global scale. Even when food waste is sent to the incinerators instead, it is such an inefficient waste-to-energy source for the reason that food waste has a high content of water. As a result, reducing the amount of food waste generated before it reaches the landfills and incinerators, foodservice operators can build a win-win relationship with the environment. (Baldwin & Shakman, 2012, 61).

2.4.2 Economic Costs of Food Waste

Food wastage does not only create apparent environmental impacts but also many obvious financial impacts on the overall operations. Particularly, there are four main financial costs created when foodstuffs get discarded in the kitchen: Raw material costs, labor costs used during food production, energy costs used for the kitchen as well as the serving phase, and food waste disposal costs. (Baldwin & Shakman, 2012, 62).

In the food service industry, once a food item is sent to the garbage, the first clear thing is that the money used for purchasing the raw material is directly wasted. Food wastage occurs on several occasions such as overcooking, burning or spoilage due to poor food delivery and storage, etc., as a result, these food items are no longer available for serving. These pre-consumer food wastes can be prevented by closely monitoring kitchen operations and other approaches. It is estimated that food industry lost about 4 to 10 percent of their investment on food purchase. This means that for every 1,000,000 USD that is spent on the raw material purchase, around 40,000 USD to 100,000 USD is poured down the drain. (Baldwin & Shakman, 2012, 62) This figure points out the importance of reducing pre-consumer food waste for food service providers to save their financial costs and enhance their operations for higher revenues.

However, in addition to raw material costs, labor and energy costs take place in the kitchen, too. Raw material needs to go through trimming and proper preparation to be ready-to-serve. After preparation, refrigeration and storage might be necessary. All of the labor and energy used during food production are inevitable expenses in every kitchen. Thus, once a

food item is wasted, it takes a hidden large amount of money into the dumpster. (Baldwin & Shakman, 2012, 62).

Last but not least, foodservice operators have to pay several times for the last handling step of food waste. Because food waste can create unpleasant odors and leachate, it is mandatory for operations to provide spacious trash bins and proper staff handling. At this stage, they also have to pay for the garbage hauling companies to come and collect them. With these activities happening daily or weekly, the overall costs just for food waste processing accumulate and may become a concerning financial burden. (Baldwin & Shakman, 2012, 62-63). Needless, to say, food waste costs in many ways to the foodservice operators. Just for the pre-disposal phases of food waste, there are three different types of expenses: raw material costs, labor costs, and the costs of energy used for food preparation and storing. However, the costs do not end here. Food waste continues to cost even after disposal, due to the fact that it costs the operators to hire labor to handle the trash disposal and garbage hauling service. (Baldwin & Shakman, 2012, 62-63).

2.4.3 Social losses caused by food waste

Once the food produced for human's consumption hits the trash bin, not only does it hurt the environment and economy, but it also creates certain negative impacts on the society. First of all, wasting food means that we are actually taking edible food out the food chain and putting them into the dumpster. Whereas, there are 795 million 7.3 billion people living in the world suffering from chronic undernourishment in 2014-2016. (World Hunger News, 2016).

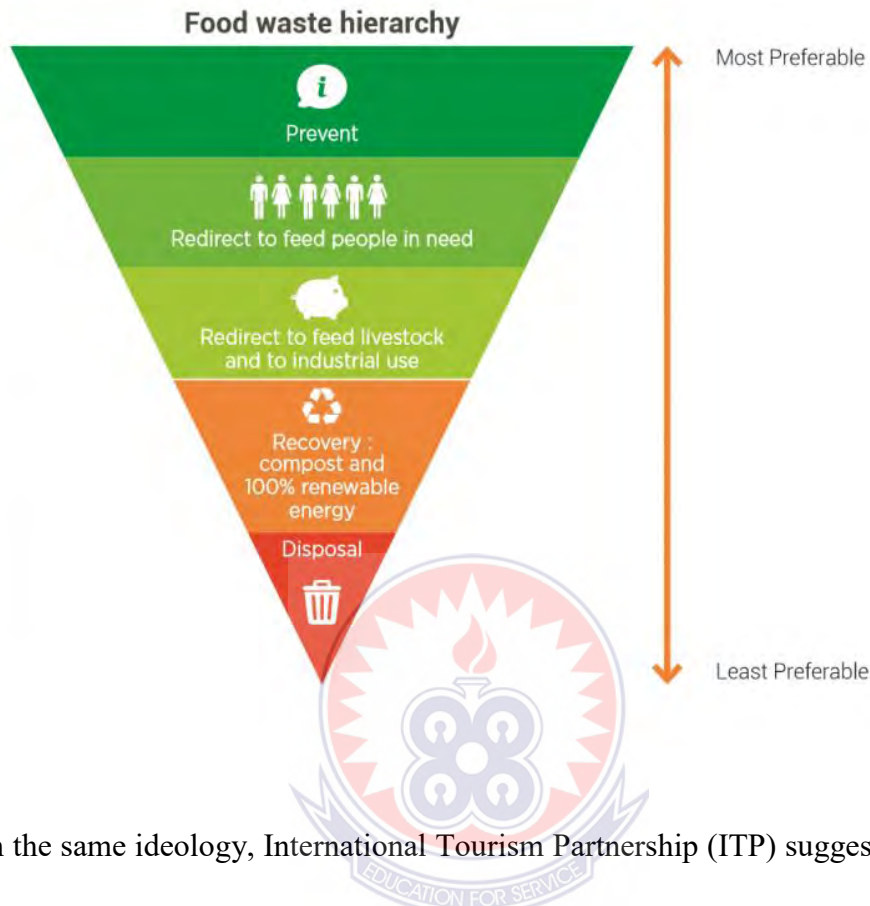
It is such an alarming issue that we are wasting a huge amount of food. The global amount of food wastage is 1.6 gigatons per year (FAO, 2013, 11) while there are still so many people just need enough food to feed themselves to be alive. Despite the fact that we produce more than enough food to feed all human beings on the Earth, a great part of this food goes to waste. According to the data that FAO collected, the food that is currently lost or wasted in Latin America could feed 300 million people. Similarly, the food currently wasted in Europe could feed 200 million people and the food lost in Africa could feed 300 million people. The most important point is that if one-fourth of the food currently lost or wasted all over the world could be saved, it would be enough to feed 870 million hungry people in the world. (FAO, 2017).

Not all food is sent to the dumpster are rotten and contaminated. Most of the food wasted is actually in good shape and edible. It is calculated that 1.3 out of 1.6 Gigatonnes of food waste consists of edible parts. (FAO, 2013, 11) If food wastage can be recovered, it would feed enough hungry people and animals, too. Besides, during food production, a significantly great amount of water is used for farming and watering. Thus, when food is wasted, water loss is created, too. The irrigation water that farmers use to grow wasted food would be enough for the domestic water needs for 9 billion people (Vaughan, 2009, in Baldwin & Shakman, 2012, 63).

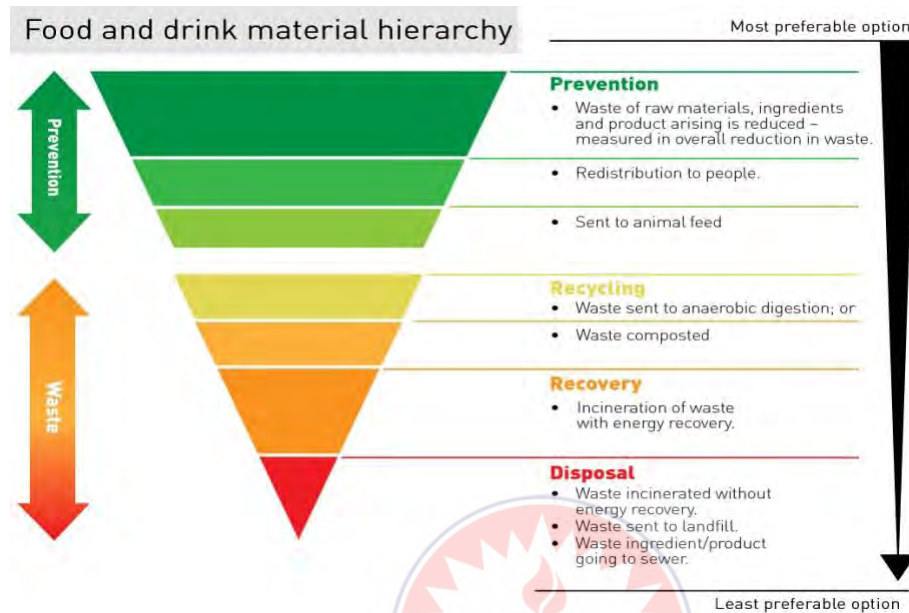
2.5 Approaches and Practices for Food Waste Reduction in the Hospitality Industry

The reason why sustainability in the food industry should be maintained is that as the population is growing, the needs for food will grow, too. The world population is estimated to grow from 7.5 billion to 10 billion in 2050, leading to an increase of 60 percent in food demands. (Consultative Group on International Agricultural Research [CGIAR], 2014, in Baldwin, 2015, 2). In order to keep up with this future need, sustainability in the food industry should be taken care of so that while we can produce and consume food safely, the development of the future generations can also be supported (Baldwin, 2015, 2).

The European Hospitality Industry (HOTREC) introduces a food waste hierarchy to help foodservice outlets to handle food waste in a more sustainable way. (Figure 2) The very first step is to prevent food from being wasted in the first place. Otherwise, food waste should be redirected to feed people and animals. The other part of food waste than can be recovered for composting or renewable energy generation. The least preferable step, which operations should try to avoid at their best, is to totally dispose of food waste and send them to the landfills. (European Hospitality Industry (HOTREC), 2017, 9).

Figure 2.1 Food Waste Hierarchy (European Hospitality Industry)

With the same ideology, International Tourism Partnership (ITP) suggests food and drink material hierarchy (Figure 20) created by The Waste and Resources Action Programme (WRAP) to tackle food waste with more details. (Figure 3) In this hierarchy, the first priority is also prevention by measuring food waste, followed by optimization by redistribution to people and animals. The third step in the chart is recycling by composting or anaerobic digestion. The recovery occurs when the waste cannot be recycled, done by sending food waste to the incinerators for energy recovery. The last and least preferable option is disposal and transportation to landfills. (International Tourism Partnership (ITP), 2014, 11-14) the Similarly, Baldwin suggests that food waste should be managed following the

Figure 2.2 Food and Drink material hierarchy (International Tourism Partnership (ITP))

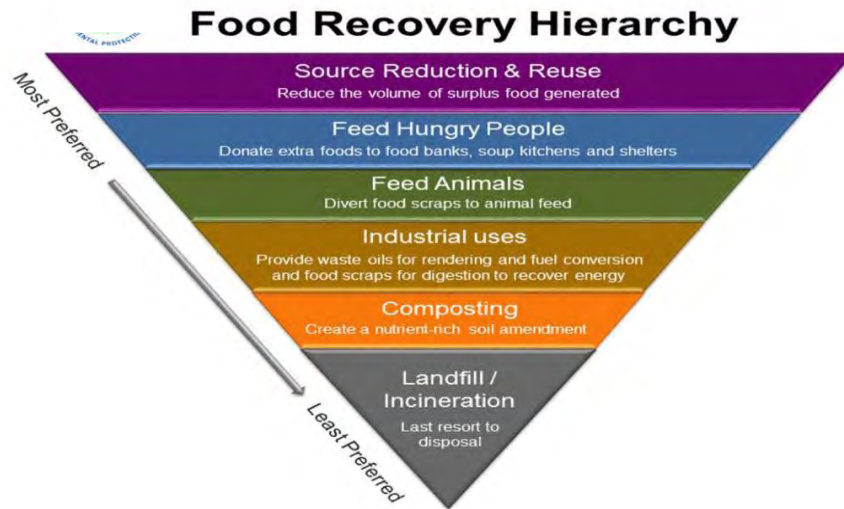
Similarly, Baldwin suggests that food waste should be managed following the hierarchy of reducing, reusing, recycling, and landfill. (Figure 3) According to the hierarchy, food waste reduction is the preferable approach since it can prevent the impacts linking with the wastage. The root cause of food waste can be dealt with by a supply chain collaboration. Partnership in the supply chain promotes the development of the food industry standard adjustment such as a better match between demand and supply, and standards for date labeling on retail products. The next stage in the hierarchy is to reuse the food. Reusing the food can be done by saving the food to feed the hungry people or reproduce into different products. Saved food can also be fed to the animals, but under certain safety regulations such as leftovers from customers should be treated before being used for animal feeds. Using saved food can both replace other feed sources and increase productivity. For

example, chicken eggshells can be a useful calcium enrichment ingredient as livestock feed since they are high in calcium with low levels of heavy metals, while the natural calcium carbonate source may be polluted with these elements (Faine, 1995; Whithing 1994, in Baldwin, 2015, 146-148) study of Geography does not mean a change in the content of the subject. The content Food waste recycling comes as the third stage of the hierarchy. This stage is not preferable since at this stage the original value from the food is lost. Food waste recycling can be used for composting for a soil amendment, anaerobic digestion for energy, or rendering for tallow/meal.

Composting and digestion are the most common methods of recycling food waste. The main purpose of these two methods is to reuse the nutrients in the food wastage with controlled decomposition processes. Compost can be set up and done onsite and the final product of compost can be useful as a soil fertilizer. Another recycling scheme, anaerobic digestion, is a closed process that produces methane and carbon dioxide from fermenting the food. The products of this process include methane which is used as an energy source and the remaining solids which can be used as a soil additive. Rendering animal by-products is done to produce tallow and other products, however, this method is rather expensive due to the energy use during the process. (Baldwin, 2015, 148-149).

The least advantageous approach to food waste handling is sending it to the landfills. The reason why this is the last thing to be considered is that it costs extra resources to deliver the wastage and it produces greenhouse gases GHGs (methane), which is not beneficial for the environment. (Baldwin, 2015, 149).

Figure 2.3 Food Waste Hierarchy (Baldwin, 2015, 147).



So how exactly should food service outlets apply this type of food waste hierarchy on their operations? As the first priority, food waste prevention and reduction should be done more thoughtfully. This includes daily food waste tracking (Baldwin & Shakman, 2012, 68-69). Figure 4 shows a short summary of the aforementioned means to handle food waste smartly in the foodservice sector.

Figure 2. 4 Practices for Food Waste Prevention and Reduction



After the service, even if the served food is left, it can be processed so that it is still edible. Food in good condition can be used for staff's meals, and some leftovers can be used other food production. For example, bread can be turned into toasts, and vegetables and can be made into soups, bouillon, mashes, etc. (European Hospitality Industry (HOTREC), 2017,13). When food becomes waste, it can be reused in various ways. Edible food close to expiry but safe and still in good shape can be donated to food banks and charitable organizations. (Baldwin & Shakman, 2012), European Hospitality Industry (HOTREC), 2017). Some can be used as animal feed or agricultural production. (Baldwin & Shakman, 2012, pp. 7273; European Hospitality Industry (HOTREC), 2017, 13).

If wasted food cannot be reused anymore, it is the time for the next step, recycling. Food wastage then can be used for composting and generating renewable energy through mechanization. Some leftovers have an extra ecological function such as coffee grounds which can be used as a natural repellent against slugs and snails. (European Hospitality Industry (HOTREC), 2017, 9-13; Baldwin & Shakman, 2012, 77-79).

International Tourism Partnership (ITP), 2014, 6), better ingredient purchase and storage (European Hospitality Industry (HOTREC), 2017, 11-12; Baldwin & Shakman, 2012, 70), smart food merchandising to minimize food waste (Baldwin & Shakman, 2012, 70-71), flexible and low-waste menu design by creating multiple use for more ingredients to have less waste (Baldwin & Shakman, 2012, 71), efficient employee training to create an internal culture and raise awareness among them (Baldwin & Shakman, 2012, 71), and last but not least, customer engagement. (European Hospitality Industry (HOTREC), 2017, 13).

Foodservice outlets should offer menus with more portion sizes to choose from. The staffs should also engage in a friendly conversation when a customer wants to order something, explaining the differences in ingredients and portion sizes. If the customer can get the meal according to their taste and consuming ability, the less plate residue will be created in the end. Doggy bags should also be introduced to the customers so that no waste is left. (Giorgi, 2013, 28-30) Foodservice operations can also consider changes in their service model, for example, from self-service by guests to staffed-service so that the amount of food taken is controlled and supervised. (Baldwin & Shakman, 2012, 74).



CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter describes the study area and also presents the methods which were used for data collection and analysis of data in this research. The methodology then includes research type and design, population, research instruments, data collection methods, data analysis techniques, and ethical issues.

3.2 Study Area

This study was conducted in Sunyani, the capital of both the Brong-Ahafo Region and the Sunyani Municipality. Oral tradition shows that Sunyani started as a small camp where elephant hunters met to share their meat, hence the name “Osono dwaee” which literary means a place where elephants are shared. Hunting, lumbering and other primary activities helped the town to grow at the initial stages. However, Sunyani began to grow faster after the British colonial government chose the town as district headquarters. This move by the then government brought many offices and government workers to the town (Dickson & Benneh, 1995).



Figure 3.1: District map of Sunyani Municipality (GSS. 2014).

Currently, Sunyani is a municipality and the population of the entire municipality is over 248,496, according to 2010 census (GSS, 2014). The land area of the Sunyani Municipality is about 1,289km². The Municipality is in the semi-deciduous forest and, therefore, receives heavy rainfall of about 1,500mm to 2,000mm a year (Dickson & Benneh, 1995). This favors the cultivation of cocoa and other food crops like plantain, banana, cassava, and cocoyam. The Sunyani Municipality is surrounded by the Sunyani West, the Tano North and the Asutifi North Districts. The Sunyani Township keeps on growing and is now merging with the surrounding towns such as Fiapre, Abesim, Odumase and New Dormaa (GSS, 2014).

Sunyani Municipality has ten-second cycle institutions in the. These are Sunyani Senior High, St James Seminary and Secondary School, Twene Amanfo Senior High/Technical School and SDA Senior High School which are public schools. The remaining ones, that is, Abesim Community Senior High School, Gilberto Music Academy/Senior High School, Sunyani Business College, St Vitus Senior High/Technical, Oxford Senior High School and Oli Star Business Academy/Senior High School which are private institutions. Basically, the city has four tertiary institutions and a good number of hotels, lodge, villa, guest house ranging from a one-star hotel to three-star hotel. All these hospitality industries in the town offer food services to the customers in the process of discharging their duties. This made it important for the researcher to assess the effect of waste among some of the selected hotels in the Municipality.

3.3 Research Design

A mixed approach was adopted for the study. This approach makes use of frequencies and percentages. As indicated by Osuala (2005), quantitative research makes use of mathematical and statistical methods. Apart from these, some qualitative analysis was made when discussing the data that was provided by the respondents of the various hotels. Qualitative analysis was made on the discussion of the figures on the tables in Chapter Four. The research design that adopted for the study is a descriptive survey. The descriptive survey uses questionnaires, interview guides, and opinion polls as some of the methods to collect data which help researchers to answer their research questions or test their hypotheses (Osuala, 2005). The main research instruments employed for this study was questionnaires and participant observation hence the adoption of a descriptive survey.

3.4 Population

The target population consisted of all the workers who have a link to the food wastages in the hospitality industry at the Sunyani Municipality and customers who patronize the food services of the selected hotels. The accessible population was workers from 16 hotels within the municipality and customers present at the time of conducting the research. In all, 357 respondents were accessible.

3.5 Sampling techniques and Sample size

Quota sampling and Purposive sampling technique were adopted in selecting the staff of hotels within the municipality who were included in the study. In this case, each of the towns within the Sunyani Municipality was represented by at least a staff from one hotel. In all, 16 hotels were sampled out of 36 for this study. Staff at the various hotels who have a direct link with the food wastages at the hotels was purposively selected. Quota sampling and simple random sampling was adopted in selecting a number of customers at the various hotels who were included in this study. Each hotel was represented by 10 customers.

Simple random sampling technique involving lottery style was then applied in selecting 10 customers at each hotel out of the large numbers. Customers present at the time of the research were given a bowl containing a mixture of “Yes or “No” cut out pieces of the paper sheet to select one. Those who selected “Yes” were interviewed with the guide. The use of simple random sampling technique helped in eliminating selection bias because each of the customers stood the chance of being selected. In all, a sample size of 215 was used for this study. This comprises 55 personnel’s working at the various hotels that have a

direct link to the food wastage at the hotels. The remaining 160 were customers at the various hotels at the time of conducting the research.

3.6 Data Collection Techniques

3.6.1 Questionnaire

The questionnaires administered to both the supervisors and the workers at the kitchen of the various hotels. In all, 55 respondents were served with the questionnaires. Among the issues raised in the questionnaires are respondent's biodata such age, gender, educational background, work experiences, and job title. It also includes items soliciting information on food wasting situations in the various hotels and questions like their knowledge on food wastage, the nature of kitchen (equipment and tools), and the rate at which food is wasted in the various departments that contribute much to food wasting in the hotels. Further questions were posed to the respondents on the effects that food wasting brings to the hotels and more over what possible means they are doing to reduce the menace.

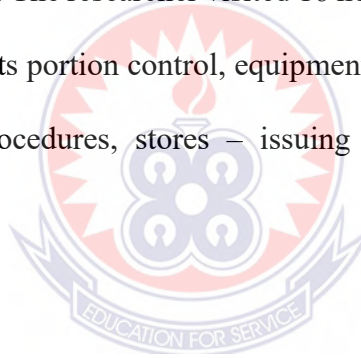
3.6.2 Interview

The researcher interviewed customers who were at the selected hotels at the time of conducting the research. Customers' biodata such as gender, age, and educational background, the purpose of visiting the hotel, income and employment status were few data retrieved through the interview. Customers' knowledge of food wasting was also solicited. They were also made to share their views on the effects of food wasting on the operations of the hotels and as well as some of the measures they may consider appropriate

when adopted can reduce food wasting the hotels they visit. It also involves the effect of food wastage on hotels profit margin, business patronage.

3.6.3 Observation

The researcher designed an observation guide which contains elements that are relevant to the study. As the researcher visited the facility in the hotels, any relevant information that will aid the research work were observed and the results were used to support discussion in chapter four. Things observed include the tools and equipment used at the kitchens of the various hotels, the skills of the workers at the kitchen, workers' motivation and their attitudes towards the work. The researcher visited 16 hotels and observed the environment, type of hygiene, ingredients portion control, equipment and size, methods used to process the food, front office procedures, stores – issuing of food items and housekeeping situations.



3.7 Data Analysis

Quantitative methods such as descriptive and inferential statistics were adopted in analyzing the field data obtained from the questionnaire and the interview. Qualitative methods were used for the discussion of the tables. The Statistical Package for Service Solution (SPSS) was used in this study for classifying data, analyzing and drawing of tables.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter covers the results and discussion of the data collected from the questionnaires, interviews, and observation.

4.2 Gender characteristics of Managers

Gender is considered as a major factor in assigning roles to people in many societies and this has seen a lot of researches. In this study, collecting data on the gender of respondents gave an indication of the kind of people (whether male or female) in the helm of affairs of the management of the various hotel. Information solicited from the managers as shown in Table 4.1 below indicated that majority of the 13 respondent representing (81.3%) out of the 16 respondents were males whilst the remaining 3 respondents (18.7%) were females. This result corresponds with results of earlier gender imbalanced in the hotel management. According to Wood & Viehland (2000), this “pink-collar ghetto still exists” and especially in hotels of over 500 rooms where only 2.6 percent of the hotel managers in the United States were identified as women. Business owners still have the notion that women should hold small positions in companies/institutions.

Table 4.1: Age Characteristics of Managers

Age	Frequency	Percentage (%)
18 – 29 years	3	18.8
30 – 40 years	9	56.2
41 - 50 years	4	25
51 - 60 years	0	00
Total	16	100

4.2.2 Age characteristics of Managers

In addition to information solicited and presented in Table 4.2 below, the study revealed that majority of the managers (9) respondents representing 56.2% were within the age range of 30 – 40 years. The least of the age range of 41 – 50 years recorded two (2) managers representing 25% and three (3) managers representing 18.8% were also within the age range of 18 – 29. Accumulatively it can be established that 75% of the managers were within the active working class of people in the country and were expected to manage this facility with the utmost capability. Moreover, the study recorded none of the managers within the 51- 60 years' age range.

Table 4.2: Age Characteristics of Managers

Variables	Frequency	Percentage (%)
18 – 29 years	3	18.8
30 – 40 years	9	56.2
41 - 50 years	4	25
51 - 60 years	0	00
Total	16	100

4.2.3 Educational Level of Managers

The information on the academic qualification of respondents provided the researcher insight into the problem at hand in a particular institution. Many types of research have been conducted to establish a relationship between performance and academic qualification. As indicated in Table 4.3, the study revealed that majority (6) respondents representing 37.5% were having HND/Diploma as their highest academic qualifications. Four (4) representing 25% of the managers were having First degree as their highest academic qualification. The least among the highest qualification variables was Masters which recorded only one manager representing 6.2%. The rest of the qualification was WASCE/BECE which reordered three (3) of the managers representing 18.8% and Certificate which also featured two (2) managers representing 12.5%. The study conducted uncovered that some of the managers were having a minimal qualification on the academic ladder which they were not supposed to manage the affairs of such facilities.

Table 4.3: Educational Level of Managers

Qualification	Frequency	Percentage (%)
HND/Diploma	6	37.5
Degree	4	25
Masters	1	6.2
WASCE/BECE	3	18.8
Certificate	2	12.5
Total	16	100

4.2.4 Areas of Specialization of Managers

Information solicited on areas of specialization of the managers presented in Table 4.4 revealed that majority (7) representing 43.7% specialized in Accounting. Three (3) of the managers representing 18.8% also majored in Tourism and Two respondents representing 12.5% specialized in Hospitality management. A quiet number of the managers (4) representing 25% ended their educational specialty at either the Senior High School or Basic Education.

Table 4.4: Areas of Specialization of Managers

Program Studied	Frequency	Percentage (%)
Hospitality Management	2	12.5
Tourism	3	18.8
Accounting	7	43.7
Secondary/Basic Education	4	25
Total	16	100

4.2.5 Managers' Years of Working

One keen area of management is the persons' years of job experience. Though some new employees do better on their new job long service of experience always counts. This research sought to consider the working experience of the managers and it was revealed in Table 4.5, that two (2) of the managers representing 12.5% were new in the management business and five respondents as well representing 31.2 have worked for one to three years respectively. Four to Six years recorded the highest number of managers which is six respondents representing 37.5%. These three (3) of the managers have worked for the period between seven to ten years. Information retrieved from the managers demonstrated

that most of the managers were experienced and can at least manage the affairs of the hotels to a certain capability.

Table 4.5: Job Experience of Managers

Years of Working	Frequency	Percentage (%)
Below a year	2	12.5
1 - 3 years	5	31.2
4 - 6 years	6	37.5
7 - 10 years	3	18.8
Total	16	100

4.2.6 Exploring the food wastage situations at the various hotels

This section sought to find out the nature of food wasting in the selected hotels. The section, therefore, explores issues regarding respondents' knowledge on approaches to reduce food wasting, the number of times food is wasted in their hotels, departments that contribute much to food wasting and the quantum of food wasted. The reaction of respondents is summarized with the discussion in Tables below and it was the first objective of the study.

4.2.6.1 Managers' responses on the food waste situations at their hotels

Every manager's motive is to maximize profit and minimize cost without compromising quality. Good policies ensure the sustainability of a business venture. The study sought to find out the situation of food waste in the various hotels from the management's accounts. Responses from the field data as presented in Table 15 indicates that most managers do not have adequate knowledge on the approach to reduce food wasting in their various hotels. The data shows while Seven (9) of the respondents representing 43.8% are aware of

different approaches to reduce food wasting in their hotels, a significant number of Nine (9) respondents representing (56.2%) have no idea of such. A study conducted by Schneider (2013) noted that waste occurs because of poor planning, lack of knowledge of knowledge, poor buying habits, and discounts issued by suppliers in large quantities. Because the majority of the managers do not have adequate knowledge of food wasting approaches it was not oblivious to observed that food wasting was on the ascendency among these hotels.

Also, the responses show that 68.8% of the managers at the various hotels have do with the problem of food waste on the daily basis and only 31.2% which is five managers admitted not have experiences food wastages on daily basis. The findings support what Sandaruwani & Gnanapala (2016) discovered that is very difficult to achieve zero tolerance of food wasting in the hotel hospitality. It was also found out that only five (31.2%) of the managers have food waste constituting less than forty percent of total waste generation in the hotel but the greater number of eleven (11) managers representing 68.8% was of the view that the food wasted can constitute about forty to sixty percent of total waste generated in their hotel. Sustainable Restaurant Association, UK report also reviewed this trend in their study whereby 65% alone of the waste coming from the kitchen (SRA, 2010).

However, ten (10) of the managers representing 62.5% identified the storage facility in their hotels as a major contributor to food wasting but the remaining six (6) representing 37.5% disagreed to that. A significant number of 12 respondents representing (75%) of managers admitted majority of the food also get wasted at the kitchen while Nine (9) of the

respondents were saying that most of their food waste comes from the customers' rejections of already prepared meals the remaining Seven (7) respondents representing 43.8% do not have that experiences. Researchers such as Gunders (2012) estimated that 4% to 10% of foods that restaurant managers purchase do not reach the customers. Most of it is lost in the kitchen either as edible or inedible food. Though this study does not study the amount of food wasted in the kitchen but could be estimated that about 60% of the food wasted in the hotels were from the kitchen.

On the same agenda, managers were asked about the policy guiding food taking outside the hotel premises, majority (11) respondents representing 68.8% said they have strict policy while the remaining five (5) respondents representing 31.2% said their rules are flexible. All the managers (16) representing 100% agreed that they approved foodstuff recommended to them by the head of the kitchen departments. Quantum number of managers which was 11 representing (68.8%) agreed that something has to be done on food that is wasted at their hotels because it is really alarming but the remaining five (5) managers disagreed to that. The food wasting situations in the selected hotels were not different from what Alonso et al, 2015 uncovered in research. They found out that most restaurants only manage a low level of profit with the likelihood of failure or a constant threat of shutting down.

Table 4.6: Exploring food waste situations at the various hotels (Manager's responses)

Responses	Disagree		Agree		Total	
	Freq.	%	Freq.	%	Freq.	%
I have much knowledge on food wastages and approaches to reduce food waste in this hotel.	7	43.8	9	56.2	16	100
The hotel experiences food wastages on daily basis	5	31.2	11	68.8	16	100
Food waste constitute about 40% - 60% of waste generated in the hotel	5	31.2	11	68.8	16	100
Most of the food are wasted at the storage facility	6	37.5	10	62.5	16	100
Most of the food are wasted at the kitchen	4	25	12	75.0	16	100
Most of the food wastages occurred through customer's rejection of prepared foods	7	43.8	9	56.2	16	100
The hotel has strict rules and regulations on food leaving the premises of the hotel	5	31.2	11	68.8	16	100
I approved budget for only recommend food stuff from the head of kitchen department.	0	00	16	100	16	100
The food wastages situation in this hotel is on alarming rate.	5	31.2	11	68.8	16	100

4.2.7 Effects of Food Waste on the Operation of the Hotel.

Apart from exploring the situation of food wasting, the study also focuses on finding out the effects of food wastage on the operation of the various hotels.

The booking services, the prices of food, employees quitting the job, the state of the restaurant and many more questions were posed to the respondents to ascertain the effects of the food wasting situations.

4.2.7.1 Managers Responses on the effects of Food Wastage in their Hotels

Improper checking of food wastage has the potential of collapsing a business. Responses from the field as shown in Table 4.18 demonstrated that most customers preferred booking for a room than patronizing their food. The data shows that while five (5) of the managers representing 31.2% were receiving customers who patronize both bookings of a room and purchasing of food, a significant number of eleven respondents, representing 68.8% of the managers received customers who only patronized booking of rooms than purchasing of food. Also, the responses show that 62.5% of the managers at the various hotels admitted they do not have any proper mechanism to manage food waste as they spend extra cost in disposing of the wasted food but 37.5% which is six (6) managers confirmed of not spending extra cost to dispose of the food wasted. It was also found out that most of the hotels have lost some of their customers to other hotels. Nine (9) of the managers representing 56.3% admitted while the remaining seven respondents representing 43.7% disagreed to that assertion.

However, nine (9) of the managers representing 56.3% were of the view that they do not really hear people saying good things about the food sold in their hotels but Seven respondents said they have a good public good image about their food. A significant number of 10(62.5%) managers admitted that lack of patronizing is due to high pricing of food sold at the hotels as compared to the price they would have collected if they have customers. The remaining Six (6) representing 37.5% of the managers were saying that they were charging enough for their food sold in the hotel.

A significant number of managers 10 respondents representing (62.5%) agreed that something has to be done on food that is wasted at the hotels in order to safeguard the operations of the hotel. Six respondents representing (6%) of the managers disagreed to that. Majority (9) respondents representing 43.7 agreed that they are considering laying off a worker or shutting down the restaurant section in the hotel.

Table 4.7: Effects of food wastage on the operations of the hotel (Manager's responses)

Responses	Disagree		Agree		Total	
	Freq.	%	Freq.	%	Freq.	%
Customers preferred booking rooms rather than enjoying our or meals which affect our profit margins	5	31.	11	68.	16	100
The hotel spend extra cost in disposing of wasted foods which also add extra charges to our operational cost	6	37.	10	62.	16	100
The hotel have lost some customers to other competitors because of food related problems	7	43.	9	56.	16	100
I really don't hear customers saying good things about the food sold here to others.	7	43.	9	56.	16	100
We are charging low price for food because of lack patronage and as a result of this the hotel is incurring cost.	6	37.	10	62.	16	100
The entire hotel can be out of operation if drastic measures are not taken to control food wastages.	6	37.	10	62.	16	100
Am thinking of shutting down the restaurant as an alternative to sustain the operation of the hotel	7	43.	9	56.	16	100

4.2.8 Measures that can be adapted to reduce food wasting

This final objective was to identify possible measures that can be adopted by the hotel's sample for the study to help reduce food wasting and sustain their business. The already existing strategies adopted by these hotels were analyzed and add up where necessary and presented in the tables below.

4.2. 8.1 Managers' Responses to the Measures that can be Adapted to Reduce Food Wasting

To keep every business growing certain measures must be adhered to maintain the standard and maximize profit. The data correlated on Table 4.20 suggested that some of the hotels were doing well in reducing food wastage while others were not having any idea about how to keep the business running. All the (16) managers representing 100% of the hotel's sample for the study agreed that they all employed qualified personnel or organize a fresher course for the existing staff to assist in maintaining the standards and sustaining the operation of the hotel.

A quiet number of five respondents representing 31.2% of the managers disagreed to upgrading their kitchen to standard because they think their kitchen is one of the best but the majority (11) representing 68.8% confirmed that they need massive improvements in their kitchen. The same 31.2% of the managers opposed to upgrading their storage facilities to help reduce food wasting but the remaining 68.8% welcomed the idea of upgrading the facility to a standard one.

Moreover, a greater number of the managers agreed to consider design a well-detailed food menu for both customers and workers at the kitchen to help to reduce food wasting but the rest of the managers which were Seven (7) respondents representing 43.7% disagreed to that measure because they are having it at their respective hotels. The study also revealed that (9) respondents representing 56.3% of the managers were not making any profit from the food that is wasted so they considered selling the leftover food to animal farmers for extra income/biogas generators. But the remaining Seven (7) managers representing 43.7% have already instituted those measures. The outcome of the study supports a study conducted in 2014 by the Food Waste Reduction Alliance which points out that only 14.3 percent of food waste gets recycled and 1.4 percent of food gets donated. Up to 84.3 percent simply just get discarded. (Business for Social Responsibility (BSR), 2014, 19).



Table 4.8: Measures that can be adapted to reduce food wasting (Managers' responses)

Responses	Disagree		Agree		Total	
	Freq.	%	Freq.	%	Freq.	%
I have the intention of employing qualified personnel along the food wastages chain/provide training for the existing workers.	0	00.0	16	100	16	100
I have the intention of upgrading the kitchen in this hotel to the international standard	5	31.2	11	68.8	16	100
I am considering upgrading the storage facility to the maximum functioning capacity	5	31.2	11	68.8	16	100
Am considering selling the leftover food to animal farmers for extra income/biogas generators	7	43.7	9	56.3	16	100
Am considering design a well-detailed food menu for both customers and workers at the kitchen	7	43.7	9	100	16	100
The hotel is prepared to purchase the recommended ingredients for the preparation of food sold here	0	00.0	16	100	16	100
Am considering of less strict rules on customers who want to take their food outside the hotel premises	0	00.0	16	100	16	100
Establishing effective food monitoring system	0	00.0	16	100	16	100
The hotel may consider selling the leftover food cheaper to people who may need or safe it in good condition and reuse it.	0	00.0	16	100	16	100

4.2. 9 Age characteristics of kitchen Attendants

Most employers around the world have a specific gender and age limits that they employed.

Most company's employed energetic workers because of the nature of the work. This research seeks to find out the caliber of workers the hotels were having at their kitchen department as shown in Table 4.6. Through the study, it was revealed that the majority (21)

respondents representing 53.9% as shown in Table 4.8 above represents females whilst 18 respondents (46.1%) represent males. The outcome of the research was not obvious since in this country the work at the kitchen is mostly considered as that of a woman and not of a man.

Table 4.9: Gender Characteristics of Kitchen Attendants.

Variables	Frequency	Percentage (%)
Male	18	46.1
Female	21	53.9
Total	39	100

4.2.9 Age characteristics of kitchen Attendants

Also, information gathered on respondents in table 4.7 unveiled that majority (22) respondents representing 56.4% of the workers were within the age cohort of 18 – 29 years. The age bracket that recorded the least respondents were between the 41 – 50 years which was seven respondents representing 17.9%. The remaining 10 respondents were within the 30 – 40 years' age range. None of the workers were within the 51 – to 60 years' age cohort. This tells you that the nature of the work at the kitchen does not only requires an experience people but also smart and energetic people. It was observed through this study that most of the hotels were having this caliber of people at their various kitchen but what was lacking was the requisite knowledge and skills.

Table 4.10: Age characteristics of Kitchen Attendants.

Variables	Frequency	Percentage (%)
18 – 29 years	22	56.4
30 – 40 years	10	25.7
41 - 50 years	7	17.9
51 - 60 years	0	00
Total	39	100

4.2.10 Academic Qualification of workers

The level of knowledge and skills of every employee is very essential since it aids researchers to identify and adopt the best method to tackle the problem at hand. Information presented in Table 4. 8, majority (17) respondents representing 43.7% of the kitchen attendants sampled for the study were having WASCE as their highest education. Eight (8) respondents representing 20.5% have obtained NVITI/ certificate as their highest point of qualification. The remaining Nine (9) and five (5) respondents representing 23% and 12.8% respectively have acquired HND/Diploma and first degree as their highest qualification. The study has shown that most of the hotel facility was lacking the appropriate personnel for the specific work. It was also observed that managers with the lowest educational background were also hiring employees on the lower rank of the educational ladder.

Table 4.11: Academic Qualification of Workers

Variables	Frequency	Percentage (%)
WASCE	17	43.7
NVTI/Certificate	8	20.5
HND/Diploma	9	23
Degree	5	12.8
Total	39	100

4.2.11 Job Title of Workers

As demonstrated again in Table 4.11, Most of the hotels were not having proper segregation of the kitchen departments. The position given to the workers clearly spelled out the type of kitchen that was existing in most of the hotels. Some were having the rank of an executive chef which was only five (5) respondents representing 12.8%. Majority (25) respondents representing 64.1% identified themselves as cooks with no ranks or managing any section in the departments. The remaining Nine (9) respondents representing 23% associate themselves with the position of head of cooks. What was observed that most of the workers who were identified as heads of cooks were rather performing the function of executive chefs, there was no clear line of duty at the various kitchen and could have been the major reason why most of the food went waste at the kitchen as indicated in Table 4.12

Table 4.12: Job Title of Workers

Variables	Frequency	Percentage (%)
Master chef	5	12.9
Head of cooks	9	23
Cook	25	64.1
Total	39	100

4.2. 12 Job experience of workers

From Table 4.12, the information sought from the workers indicates that seven (7) respondents representing 17.9% of the workers have been with the kitchen department for less than a year. The chunk of the workers representing 19 respondents representing (33.3%) has only spent a year to three on their job at the various hotels. Five (5) respondents representing 12.9% have been working on their current job close for about seven to ten years while the remaining eight respondents (8) representing 35.9% of the workers have also secured four to six years working experience on their current job. The study revealed most of the workers were not well experienced in the field of their work and this could lead to most food wasted at the kitchen if proper supervision is not employed.

Table 4.13: Work Experience of Workers

Years of working	Frequency	Percentage (%)
Below a year	7	17.9
1 - 3 years	19	33.3
4 - 6 years	8	35.9
7 - 10 years	5	12.9
Total	39	100

4.2.12: The employees' responses to the food wasting situations at their respective hotels

Good employees have the ability to turn around the fortune of every organization. These abilities of the employee's rest upon the caliber of training such employee had. The study sort to find out the employee's ideas they have about food wasting situations in their respective hotels.

The data gathered and demonstrated in Table 4.13 revealed that a greater portion of the employees sampled for the study does not have much knowledge on approaches to reduce food wasting. Out of the 39 employees, only 13 respondents representing 33.3% admitted that they have enough knowledge of food wasting approaches but the remaining 26 respondents representing 66.7% do not. Again, 27 respondents representing (69.3%) of the workers said the hotels do not have a well-planned and detailed food preparation manual but 12 respondents representing (30.7%) confirmed that some exits in their respective hotels.

Additional information solicited indicated majority of the hotels do not have a standard. Out of the 39 respondents, 25 representing 64% disagreed that their kitchen is a modernized one with a well-resourced equipment's. The remaining 14 respondents representing (35.8%) agreed that their kitchen is of the standard. Moreover, 26 representing 66.7% was of the view they do not have much training in food preparation and kitchen ethics but 13 respondents representing (33.3) disagreed to that notion.

According to the data presented in Table 4.17, most of the hotels were recording food wastage in their books on a daily basis. This was evident when majority (24) respondents representing 61.6% of the respondents admitted that food wasted every day at their respective hotels but 15(38.4%) of the respondents were of the view it may happen but not on daily basis. There was a positive correlation between the frequency of food waste occurring and the percentage of food waste generated in the various hotels. This is because the information presented in Table 4.17 revealed the same 24 respondents representing (61.6%) of the workers confirmed that food waste generated in their hotels can constitute forty to sixty percent of total waste generated while the same 15 respondents representing (38.4%) food waste constitute lesser than that.

Finally, data gathered shows that most (22) respondents representing 66.7% of the workers admitted they have fixed menu that they prepared for customers so customers only have to choose from already prepared meals while the remaining 17 respondents representing (33.7%) said customers can order for their meals to be prepared for them. “Many foodservice operators wish to provide their last customer of the day the same menu and services that the first customer gets. While keeping various menus and services from open till close ensures good customer’s experiences consistently, every day is not the same and waste is generated” (Hogan, 2016). The study also revealed the trend identified by Hogan in 2016. Actually, customer’s rejection of food served to them were the major contributor to food waste in the hotels. The study also revealed that the majority of the workers admitted the trend of wasting is worrying and proper measures needed to be instituted while 17 respondents representing (43.5) was of the view that it is normal.

Table 4.14: Exploring Food Wastage Situation at the Various Hotels (Employees Responses)

Responses	Disagree		Agree		Total	
	Freq.	%	Freq.	%	Freq.	%
I have much knowledge on food wastages and approaches to reduce food waste in this hotel.	13	33.3	26	66.7	39	100
The kitchen department have a well detailed food preparation manual	27	69.3	12	30.7	39	100
Our kitchen is equipped with well modernized tools and equipment	25	35.8	25	64.2	39	100
I am well trained in food preparation and kitchen ethics	26	66.7	13	33.3	39	100
There is a daily basis food wastage at the kitchen	15	38.4	24	61.6	39	100
About 40% to 60% food prepared get wasted at the kitchen	15	38.4	24	61.6	39	100
The hotel has fixed food menu that are prepare every day for customers	17	43.5	22	56.5	39	100
Customers have an option to take leftover food to their home	26	66.7	13	33.3	39	100
Customers' rejection of food served to them constitute the major part of food waste	21	53.8	18	46.2	39	100
Food wastages situations in this hotel is really bad	17	43.5	22	56.5	39	100

4. 2.13 Effects of food wasting on the operation of the hotel (Workers' Responses)

The data gathered and demonstrated in Table 4.17 revealed that a greater number of the employees sampled for the study suggested that most of the hotels were not able to increase their customer base. Out of the 39 employees, only 17 respondents representing 43.5% said that they are able to improve on their existing food delivery services but the remaining 22

respondents representing 56.5% agreed that the kitchen department has not been able to increase the number of customers they served everyday. Again, 26 respondents representing (66.7%) of the workers said the hotel has not added other services to the already existing services but 13 respondents representing (33.3%) of the workers made it clear that they are able to improve their services to other ventures.

According to the data presented in Table 4. 19, it was evident that most of the hotels were losing prominent employees to other hotels and job ventures. This was clear when majority (30) respondents representing 77% of the workers claimed that some of their colleagues have quitted the job to join another hotel where the business is booming but 9 representing (23%) of the respondents were of the view that they received workers rather than leaving. There was a positive connection between the frequency of worker quitting and those thinking of quitting this is because the information presented in Table 4.19 revealed that majority of the respondents 27 representing (69.3 %) of the workers confirmed that some of their colleagues have quit the job to join other hotels where business is booming. There are still those who were also having the intention of quitting to fish out better jobs. Only (30.7%) said they like their place of work.

Finally, data gathered shows that most of the workers (20) representing 51.3% admitted that the price of food sold at the hotels are relatively cheaper due to the patronization whiles the remaining 19 respondents representing (48.7%) disagreed to that assertion. Actually, the study also revealed that there could be a job losses if measures are not taken to control food wastage. Majority (21) respondents representing 53.9% of the workers admitted the trend

of wasting is worrying and proper measures needed to be instituted to prevent job losses while 18(46.1) were of the view that it is normal.

Table 4.15: Effects of food wasting on the operation of the hotel (Workers' Responses)

Responses	Disagree		Agree		Total	
	Freq.	%	Freq.	%	Freq.	%
The kitchen department hasn't been able to increase the number of customers they served every day	17	43.5	22	56.5	39	100
The kitchen department hasn't been able to expand to other services of food joint such as home delivery, orders from customers, preparing all meals at all time.	13	33.3	26	66.7	39	100
The kitchen department has lost prominent chef and cooks to other hotels due to the poor standard of working conditions	9	23.0	30	77.0	39	100
I have the intention of looking for a better place to work	12	30.7	27	69.3	39	100
We are charging a low price for food because of lack of patronage and as a result of this, the hotel is incurring a cost.	19	48.7	20	51.3	39	100
There can be a job lost if measures are not taken to control food wastages.	18	46.1	21	53.9	39	100

4.2.14 Workers' Responses on Measures that can be Adapted to Reduce

Food Wasting in the Various Hotels.

The responses from the workers were very encouraging concerning the measures that can be adapted to reduce food waste in their respective hotels. The information presented in Table 4.18 revealed that all the workers that are 39 respondents representing 100% agreed with the researcher as such approaches suggested to them have the potential to reduce food

wastage in their hotels. It was not obvious when all of them agreed to suggest to management in developing standardized recipes for menu items to ensure correct cooking times and methods are followed to avoid over-or-under cooking products, suggest to management to provide customers with a choice for smaller or larger portions of individual meal items on the menu and the associated prices, customers order meal items (that aren't the main feature of the meal) such as salad, rice and fries as a separate side dish, employ a Nose-to-Tail approach for meat products and/or a Fruit-to-Root approach from plant products to use less desirable parts in menu dishes and offer a daily special based on what stock/product needs to be used quickly to prevent it from spoiling and being wasted.



Table 4.16: Workers' Responses on Measures that can be Adapted to Reduce Food Wasting in the Various Hotels.

Responses	Disagree		Agree		Total	
	Freq.	%	Freq.	%	Freq.	%
Develop standardized recipes for menu items to ensure correct cooking times and methods are followed to avoid over-or-under cooking products.	0	0	39	100	39	100
Suggest to management to provide customers with a choice for smaller or larger portions of individual meal items on the menu and the associated price	0	0	39	100	39	100
Customers order meal items (that aren't the main feature of the meal) such as salad, rice, and fries as a separate side dish	0	0	39	100	39	100
Employ a Nose-to-Tail approach for meat products and/or a Fruit-to-Root approach from plant products to use less desirable parts in menu dishes	0	0	39	100	39	100
Offer a daily special based on what stock/product needs to be used quickly to prevent it from spoiling and being wasted	0	0	39	100	39	100
Implement a First-In, First-Out system to ensure the oldest stock and partially opened/used stock is always used first	0	0	39	100	39	100
Develop standardized recipes for menu items to ensure correct cooking times and methods are followed to avoid over-or-under cooking products.	0	0	39	100	39	100
Customers order meal items (that aren't the main feature of the meal) such as salad, rice, and fries as a separate side dish	0	0	39	100	39	100
Employ a Nose-to-Tail approach for meat products and/or a Fruit-to-Root approach from plant products to use less desirable parts in menu dishes	0	0	39	100	39	100
Offer a daily special based on what stock/product needs to be used quickly to prevent it from spoiling and being wasted	0	0	39	100	39	100
Availing myself for fresher up course programs	0	0	39	100	39	100

4.3 Results from the Interview.

4.3.1 Gender characteristics of Customers

Most researches have established a relationship between the gender of customers and the rate they assess the services of hotels. As indicated in Table 4.19, the data gathered on the customers demonstrate that majority (87) respondents representing 54.4% were males while the remaining 73 respondents (45.6%) of the customers represent females. The study featured male dominance on the part of the customers sampled for the study.

Table 4.17: Gender characteristics of Customers

Variables	Frequency	Percentage (%)
Male	87	54.4
Female	73	45.6
Total	39	100

4.3.2 Age Characteristics of Customers

In Table 4.20, information gathered on the customer's ages revealed that majority (51) respondents representing 31.9 % of the customers were within the ages of 18 - 29 years. A quiet number of respondents (43) representing 26.9% of the customers were within the ages of 41 – 50 years.

Within the age range of 30 – 40 years recorded 38 respondents representing 23.8%. The age brackets of 51 – 60 years and above 61 years recorded 18 respondents representing (11.2%) and 10 respondents representing (6.2%) respectively. The study points out that aging men access the hotels the services of hotels than women who are aging. That is when

the ages of the men were increasing the rate of accessing the services of the hotel's increases but that of the women decrease while their age's increases as presented in Table 4.21

Table 4. 18: Age characteristics of Customers

Variables	Frequency	Percentage (%)
18 – 29 years	51	31.9
30 – 40 years	38	23.8
41 - 50 years	43	26.9
51 - 60 years	18	11.2
Above 61 years	10	6.2
Total	160	100

4.3.3 Educational Backgrounds of Customers

The literacy level of customers as shown in Table 4.21, indicated that majority (91) respondents representing 56.9% of the customer have obtained a Tertiary Education. There were 19 respondents representing (11.9%) of the customers who ended their education carrier at the basic Level (Primary Education). Quite a number (23) respondents representing (14.3%) of the customers also have ended their education carrier at the Junior High School. The remaining 27 respondents representing (16.9%) of the customers have achieved the senior high school certificate as their highest educational advancement. It can be deduced from the data gathered not only people with high educational backgrounds only access the services of the hotels in the Sunyani Municipality since accumulatively 69 out of 160 customers has not achieved much on the educational ladder yet they patronize the services of the hotels.

Table 4.19: Educational and Employment Backgrounds of Customers

Variables	Frequency	Percentage (%)
Primary Education	19	11.9
Junior High School Education	23	14.3
Senior High School Education	27	16.9
Tertiary Education	91	56.9
Total	160	100

4.3.4 Employment Backgrounds of Customers

Moreover, on Table 4.22, data acquired from the customers revealed that out of the 160-customer sampled for the study only 17 respondents representing (10.6%) were not employed yet enjoying the services of these hotels. The Government sector employees were 49 respondents representing 30.7% and Private sector employees were 58 respondents representing 36.2% forming the majority. The remaining 36 respondents were self-employed people. In all, it can be concluded that most private sectors employees and employers used the services of the hotels in the Sunyani Municipality than that of government employed workers.

Table 4.20: Employment Backgrounds of Customers

Variables	Frequency	Percentage (%)
Unemployed	17	10.6
Government employee	49	30.7
Private sector employee	58	36.2
Self-employed	36	22.5
Total	160	100

4.3.5 Customers' Purpose of Assessing the hotel

Information gathered on customers as indicated in Table 4.23 have shown that most (63 respondents) representing 39.3% visit the hotels with intention of booking a room and nothing else. On Purchasing of food variable, 44 respondents representing 27.5% admitted that they visit the hotels for this intention. A promising number of 39 respondents representing (24.4%) said they visit the hotels for both purchasing of food and booking a room for stay. The study recorded 14 respondents representing 8.8% who have no intention of either buying food or booking a room but their intention will be decided based on what they will observe at the hotel. Clearly it has shown that good food and accommodations at hotels are a contributing factor why some people visit hotels in the Sunyani Municipality.

Table 4.21: Customers' Purposes of Assessing the Hotels

Purpose	Frequency	Percentage (%)
Booking of a room	63	39.3
Purchasing of food	44	27.5
Both	39	24.4
None of the above	14	8.8
Total	160	100

4.3.6 Exploring the food wastage situations at the various hotels (customer's responses)

Customers are pivotal of food production in every food joint. Establishing a good relationship with customers give an advantage to the business operator to maximize profit. Customer has that ability to make and unmake business sustainability. Making customers aware of the possible contribution that they can contribute to food wasted assist in reducing

it. The study sought to find out how customers see food wasting in the various hotels they visit.

During an interview with the customers, it was discovered that only 57 out of the 160 respondents representing 35.6% had knowledge about food wasting understand that they can also contribute to food wasting in the various hotels that they patronize their services. The chunk part of respondents (124.4) representing 64.4% of the customers have no knowledge about food wasting and do not know that they can even contribute to food wasting in the hotels. According to Food Wise Hong Kong (2013), plate waste could be reduced by education or raising awareness among guests through an effective communication program.

Further confrontation with the customers also suggested that a significant number of 87 respondents representing (54.4%) of the customers have developed the attitude of not patronizing food made outside their home and if they will do they will be looking for something which is a replica but 73 respondents representing (45.6%) of the customers said they do not have any problem eating food made outside their home provided it is prepared under a good condition. As found by Stuart (2009), culture, personal choice and socio-demographic characteristics have been associated with increased food wastage. For the hotel sector, guest's arrivals from different cultures, background, and personal taste, will determine the consumption of different types of food, which will affect food waste generation. Thus, hoteliers should take possible actions in convincing and encouraging their customers towards plate waste reduction. However, the study revealed that All (160)

respondents representing 100% of the customers really cared about the pricing of food and the quality of the food. They expect that food must be quality and moreover affordable. They went further to say that any that do not confront their standard are sometimes rejected by them or will not visit the hotel again. Even if they will visit the hotel again they will only patronize the other services provided by the hotel but not their food. The information provided by the customers commensurate with what the manager said in Table 4.17 that most customers preferred booking rooms at their hotels than purchasing the food sold there.

In addition to the data gathered through the interview, almost all (147) respondents representing 91.9% of the customers said that they are sometimes over/underserved with food from the hotels they have been visiting. A few of the customers which are only 8.1% said they are always served with adequate food. Betz et al. (2015), in their study also said that food serving constitutes a greater portion of food wasted in the hospitality industries. They observed that when customers are over/underserved with food can contribute to food wasting so the hotels should do more to have good knowledge of portion control. The study also discovered that most customers visited the hotels without buying food and when they were asked for the reason they said the hotels have a nice room and a serene environment but food prepared in those hotels do not suit their preferences. They elaborated more on it that most of the hotels use substandard ingredients in preparing their food and moreover lack food safety ethics.

4.3.7 Effects of food wasting on the operations of the hotel (Customer Responses)

Food wasting has not only had adverse effects on the business alone but customers can be hugely affected when the menace is not checked. Discovering the impact of food wastage on customers assist in restricting policies to enable sustainability of the business. Most of the customers interviewed confirmed that at times it is difficult to get food to purchase from the hotels in the night. They also complained that most of the hotels do not prepare varieties of food.” It is like all the hotels are having the same fixed menu, banku and tilapia, fufu and abunabunu soup, fried rice and chicken, sometime you become bored with their food and preferred something else “These were what majority of the customers were saying as a result of the hotels inability to expand their food production services and about 88% of the customers said that.

Actually, 77% of the customer said that they have had an experience whereby they were disgraced in front of their relatives/friends whom they took them there for lunch/ dinner in some of the hotels. They said,” in fact, the food was so terrible that they have to leave it and go to another place and up to now their friends/relatives keep on tagging them with names as a result of the encounter which were totally time wasting and money loss.” Majority (87) respondents representing 54.6% of the customers also said that there is a time that they ate food in one of the hotels that he or she got sick and as a result of that had no intention of visiting that hotel again or saying any good thing about that hotel.

4.3.8 Measures that can be adapted to reduce food wasting

Through the interview, all the interviewees said that the hotels may be considering design a well-detailed food menu for both the customers and workers at the kitchen to help reduce food wasting. Again all the 160 (100%) customers agreed that certain prices of food that are mostly wasted can be re-looked at by the hotels to help reduce waste of that particular food. Almost 98% of the customers interviewed said that the hotels can sell leftover food to animal farmers for extra income/biogas generators or store it in good condition and reuse it. The responses that customers gave revealed an outcome of a study conducted in 2014 by the Food Waste Reduction Alliance which points out that only 14.3 percent of food waste gets recycled and 1.4 percent of food gets donated. Up to 84.3 percent simply just get discarded. (Business for Social Responsibility (BSR), 2014, 19).

4.4 Results from the Observation

Results from the observation were obtained from some selected hotels in the Sunyani Municipality. Among some of the hotel are:

- At TYCO hotel it was observed that each plate of food served to a customer there was a leftover after customer consumption. Mostly this happened when the kitchen attendants lack essential skill in portion size. Figure 4.1 below depicts the scene at the hotel.



Figure 4.1 Plate Waste at TYCO Hotel.

- At Sheila's Executive Hotel, it was observed that apart from the plate waste the buffet method they use in serving some particular foods was generating much waste in the hotels.

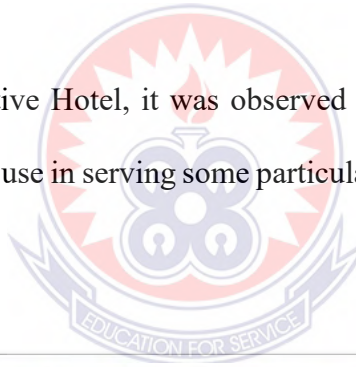


Figure 4.2: Leftover of food from the buffet Sheila's Executive Hotel.



Figure 4.3 Leftover of Food from the Buffet Sheila's Executive Hotel.

- At Tropical hotel, it was observed that the plate waste was also high, poor standard kitchen and cold room. Actually almost all the hotels were having challenges concerning cold rooms, standardize kitchen and other related problems which was contributing more to food that get wasted at the hotels.



Figure 4.4: Storage Facility at Tropical Hotel



Figure 4.5: A section of a Kitchen Facility at Tropical Hotel



CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of finding, conclusions, and recommendations of the study.

5.2 Summary of Findings

- The study revealed that most of the hotels were not having a standard kitchen. They lack the essential skills in producing certain varieties of food which constitute a great deal of food wastage situations in various hotels.
- The study also showed that the customers are not aware that their activities contribute to food wastage at the hotels. They normally abandon the food when they detect any mistake thus causing food wastage.
- The study also indicated that the various hotels were selling the same food giving the customers the upper hand to select from different hotels if one hotel does not meet their standard. There were no any specialties among them.
- The study revealed that all of the hotels do not have standard recipes for menu items to ensure correct cooking time, methods and presentation to avoid under or overcooking of food.
- The study also revealed that management does not usually provide customers with a choice for smaller or larger portions of individual meal items and their associated prices.

- The study indicated that some hotels run at a loss due to food wastage and some do shut down because of nonprofit making.

5.3 Conclusions

Actually, food wasting is not something that can be eliminated totally from the work of hotels, but the rate of food wasting of the various hotels in this study was very alarming which has the potential of collapsing the operation of the restaurants and the hotels as a whole. Based on the evidence gathered in this study it can be concluded that the various hotels were experiencing food wasting on the greater value.

Moreover, through the data gathered in this study, it can be concluded that the hotels were not able to expand their food production activities to cover other range of food service such as house to house delivery, night operations or increase their customer base. The hotels were making losses rather than profit and considering shutting down the restaurant section as a result of food that gets wasted. Customers get stranded sometimes when they are looking for food. Based on this evidence, it can boldly be concluded that food wasting has a potential effect on the operations of the various hotels included in the study.

Finally, although some form of measures were existing in the hotels to curtail the problem but such measures were not enough to reduce the menace drastically. Because most of the managers and the workers were not professionally trained in dealing with food wasting. The managers were hiring workers with no or little knowledge of food wasting and customers too were not educated on basic food wasting prevention. It can, therefore, be

established that lack of proper measures to manage food wasting has the potential of increasing the amount of food that is wasted daily.

5.4 Recommendations

- It is recommended that hotel management should adhere to standard kitchen planning guidelines in order to produce certain varieties of food for their customers.
- Customers should also be educated on the basis of food wastage regulations or tips so as to minimize food wastage
- The hotel's managers are also advised to practice correct menu planning techniques in order to bring a lot of varieties on their menus for customers to make their selections
- It is also suggested that hotels should develop their own standard recipes that will serve as a guide for kitchen staff in order to produce good quality food.
- There should be a laydown food portion control equipment's for portioning food for customers, to reduce wastage of food.
- Instead of closing down the restaurant section of the operation, management can outsource the food for an expert which can help to cut down most of the waste.

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APPENDIX

QUESTIONNAIRE FOR THE SUPERVISORS AT THE HOTEL

Hi, my name is GIFTYOSI AKWA and I am a student of UNIVERSITY OF EDUCATION, KUMASI. Department of Hospitality and Tourism Education, pursuing an academic thesis on the topic ASSESSMENT OF THE EFFECTS OF FOOD WASTAGE IN SOME SELECTED HOTELS IN SUNYANI MUNICIPALITY Please be reminded that all information provided are for academic purposes and would be treated with the utmost confidentiality as possible.

Thanks.

INSTRUCTIONS

Please tick the most appropriate answer to each of the questions.

SECTION A: General information on supervisors

Please can you tell us little about yourself by responding to the following questions with the appropriate information

1. Your sex: Male Female
2. Age: 18 –29 [] 30 – 40 [] 41 – 50 [] 51 – 60 []
3. Your Position
4. Your highest qualification.....
5. Area of specification.....
6. Number of years working on your current position at this hotel.....

SECTION B: Exploring the situation of food wastages at the hotel.

Please let us know your take on food wastages in this hotel as presented in the table below

Note: Strongly Disagree = 1 Disagree = 2 Neutral = 3 Agree = 4 Strongly Agree = 5

<i>S/N.</i>	<i>VARIABLES</i>	<i>SCALE</i>				
		1	2	3	4	5
	Suggested responses					
7.	I have much knowledge on food wastages and approaches to reduce food waste in this hotel.					
8.	Food waste constitute about 60% of waste generated in the hotel.					
9.	The hotel experiences food wastages on daily basis					
10.	Most of the food are wasted at the storage facility					
11.	Most of the food are wasted at the kitchen					
12.	Most of the food wastages occurred through customer's rejection of prepared foods					
13.	The hotel have strict rules and regulations on food leaving the premises of the hotel					
14.	I approved budget for only recommend food stuff from the head of kitchen department.					
15.	The food wastages situation in this hotel is on alarming rate.					

SECTION C: Effects of Food Waste on the Operation of the Hotel

Please let us know your responses on the effects of food wastages in the operation of this hotel as presented in the table below

Note: Strongly Disagree = 1 Disagree = 2 Neutral = 3 Agree = 4

Strongly Agree = 5

<i>S/N.</i>	<i>VARIABLES</i>	<i>SCALE</i>				
		1	2	3	4	5
	Suggested responses					
16.	Customers preferred booking rooms rather than enjoying our or meals which affect our profit margins					
17.	The hotel spend extra cost in disposing wasted foods which also add extra charges to our operational cost					
18.	The hotel have lost some customers to other competitors because of food related problems					
19.	I really don't hear customers saying good things about the food sold here to others.					
20.	We are charging low price for food because of lack patronage and as a result of this the hotel is incurring cost.					
21.	The entire hotel can be out of operation if drastic measures are not taken to control food wastages.					
22.	Am thinking of shutting down the restaurant as an alternative to sustain the operation of the hotel					

SECTION C: Measures that can be adopted to reduce Food Waste at the Hotel.

Please let us know your responses on the possible measures that can be adopted to improve your food service at this hotel as presented in the table below

Note: Strongly Disagree = 1 Disagree = 2 Neutral = 3 Agree = 4

Strongly Agree = 5

S/N.	VARIABLES	SCALE				
		1	2	3	4	5
	Suggested responses					
23.	I have intention of employing qualified personnel along the food wastages chain/provide training for the existing workers.					
24.	I have intention of upgrading the kitchen in this hotel to the international standard					
25.	I am considering upgrading the storage facility to the maximum capacity					
26.	Am considering selling the leftover food to animal farmers for extra income/biogas generators					
27.	Am considering design a well detailed food menu for both customers and workers at the kitchen					
28.	The hotel is prepared to purchase the recommend ingredients for preparation of food sold here					
29.	Am considering of less strict rules on customers who want to take their food outside the hotel premises					
30.	Establishing effective food monitoring system					
31.	The hotel may consider selling the leftover food cheaper to people who may need or safe it in good condition and reuse it.					

Thank You.

QUESTIONNAIRE FOR THE STAFF AT THE KITCHEN DEPARTMENT

Hi, my name is GIFTYOSI AKWA and I am a student of UNIVERSITY OF EDUCATION, KUMASI. Department of Hospitality and Tourism Education, pursuing an academic thesis on the topic ASSESSMENT OF THE EFFECTS OF FOOD WASTAGE IN SOME SELECTED HOTELS IN SUNYANI MUNICIPALITY Please be reminded that all information provided are for academic purposes and would be treated with the utmost confidentiality as possible.

Thanks.

INSTRUCTIONS

Please tick the most appropriate answer to each of the questions.

SECTION A: General information on supervisors

Please can you tell us little about yourself by responding to the following questions with the appropriate information

1. Your sex: Male Female
2. Age: 18 –29 [] 30 – 40 [] 41 – 50 [] 51 – 60 []
3. Your Position
4. Your highest qualification.....
5. Area of specification.....
6. Number of years working on your current position at this hotel.....

SECTION B: Exploring the situation of food wastages at the hotel.

Please let us know your responses on the underlying reasons that you may consider as a contributing factors to causes of food wastages in this hotel as presented in the table below

Note: Strongly Disagree = 1 Disagree = 2 Neutral = 3 Agree = 4

Strongly Agree = 5

S/N	VARIABLES	SCALE				
		1	2	3	4	5
	Suggested responses					
7.	I have much knowledge on food wastages and approaches to reduce food waste in this hotel.					
8.	The kitchen department have a well detailed food preparation manuals					
9.	Our kitchen is equipped with well modernized tools and equipment					
10.	I am well trained in food preparation and kitchen ethics					
11.	The hotel suffer food wastages on daily basis					
12.	The kitchen department contribute to about 60% of food wastages generated in this hotel					
13.	Customers' rejection of food served to them constitute the major part of food waste					
14.	The hotel have fixed food menu that are prepare every day for customers					

SECTION C: Effects of Food Waste on the Operation of the Hotel

Please let us know your responses about the experiences you had with our food service in this hotel as presented in the table below

Note: Strongly Disagree = 1 Disagree = 2 Neutral= 3 Agree = 4

Strongly Agree = 5

<i>S/N.</i>	<i>VARIABLES</i>	<i>SCALE</i>				
		1	2	3	4	5
	Suggested responses					
15.	The kitchen department hasn't been able to increased the number of customers they served everyday					
16.	The kitchen department hasn't been able to expand to other services of food joint such as home delivery, orders from customers, preparing all meals at all time.					
17.	The kitchen department have lost prominent chef and cooks to other hotels due to poor standard of working conditions					
18.	I really don't hear customers saying good things about the food sold here to others.					
19.	We are charging low price for food because of lack patronage and as a result of this the hotel is incurring cost.					
20.	The entire hotel can be out of operation if drastic measures are not taken to control food wastages.					

SECTION C: Measures that can be adopted to reduce Food Waste at the Hotel.

Please let us know your responses on the possible measures that can be adopted to improve your food service at this hotel as presented in the table below

Note: Strongly Disagree = 1 Disagree = 2 Neutral = 3 Agree = 4

Strongly Agree = 5

<i>S/N.</i>	<i>VARIABLES</i>	<i>SCALE</i>				
	Suggested responses	1	2	3	4	5
21.	Develop standardized recipes for menu items to ensure correct cooking times and methods are followed to avoid over-or-under cooking products.					
22.	Provide customers with a choice for smaller or larger portions of individual meal items on the menu and the associated price					
23.	Customers order meal items (that aren't the main feature of the meal) such as salad, rice and fries as a separate side dish					
24.	Employ a Nose-to-Tail approach for meat products and/or a Fruit-to-Root approach from plant products to use less desirable parts in menu dishes					
25.	Offer a daily special based on what stock/product needs to be used quickly to prevent it from spoiling and being wasted					
26.	Implement a First-In, First-Out system to ensure oldest stock and partially opened/used stock is always used first					
27.	The hotel may consider selling the leftover food cheaper to people who may need or save it in good condition and reuse it.					

Thank You.

INTERVIEW GUIDE FOR WORKERS

Hi, my name is GIFTYOSI AKWA and I am a student of UNIVERSITY OF EDUCATION, KUMASI. Department of Hospitality and Tourism Education, pursuing an academic thesis on the topic ASSESSMENT OF THE EFFECTS OF FOOD WASTAGE IN SOME SELECTED HOTELS IN SUNYANI MUNICIPALITY Please be reminded that all information provided are for academic purposes and would be treated with the utmost confidentiality as possible.

Thanks.

GENERAL QUESTIONS
1. How old are you?
2. What is your highest qualification?
3. What is your area of specification?
4. What is your position at the Hotel?
5. Can you describe briefly your experience in the hospitality industry?
6. What do you think of food waste?
7. Do you have to deal with food waste on a daily basis?
8. How much food waste does the hotel produce per day.
OBJECTIVE ONE: CAUSES OF FOOD WASTAGES AT THE HOTEL
9. Are you able to identified the stakeholders involved in the food wastages?
10. Which section of the hotel contribute much to the food waste?
Will you consider Inefficient forecast of food production, Incorrect estimation of ingredient purchase, Over-merchandising, Customer behavior, Food safety, poor storage facilities, unqualified working personnel, inadequate requisite tools to work with and purchasing of substandard materials as some of causes of the food wastages at your hotels? You can also specify apart from these.

OBJECTIVE THREE: EFFECTS OF FOOD WASTAGES ON THE OPERATION OF THE HOTELS
11. Do you feel like closing the restaurant section down?
12. Do you incur extra charges for disposing of wastages?
13. Do you have customers threaten the hotel of not revisit because of food related problems?
14. Do your hotel have environmental related problems due to improper disposal of food waste?
15. What really does food wastages do to your operation as a hotel?
OBJECTIVE THREE: MEASURE THAT CAN BE ADOPTED TO REDUCE FOOD WASTAGES
16. Do you have intention of employing qualified personnel along the food waste chain?
17. Do you have any intention to reuse the leftover food to prepared a different meal in order to reduce food waste?
18. Do you have the idea of out sourcing for already prepared food for your customers in order to keep your customers?
19. Have you considered selling your left over food to animal farmers for extra income?
20. Will you consider price reduction as a strategy to sell leftover food to avoid food waste?
21. Do have any intention of upgrading your kitchen to a standard?
22. Do you know or suggest any good approaches to reduce food waste?

INTERVIEW GUIDE FOR CUSTOMERS

Hi, my name is GIFTY OSIAKWA and I am a student of UNIVERSITY OF EDUCATION, KUMASI. Department of Hospitality and Tourism Education, pursuing an academic thesis on the topic ASSESSMENT OF THEE EFFECTS OF FOOD WASTAGE IN SOME SELECTED HOTELS IN SUNYANI MUNICIPALITY Please be reminded that all information provided are for academic purposes and would be treated with the utmost confidentiality as possible.

Please can you tell us little about yourself by responding to the following questions with the appropriate information

32. Your sex Male Female

33. Age: 18 –29 [] 30 – 40 [] 41 – 50 [] 51 – 60 []

34. Your marital status..... and Highest
qualification.....

35. Your occupational status and Income
level.....

36. Purpose of visiting this hotel?

Booking of a room Purchase food at the restaurant Both None of them

37. Do you have any idea on food waste in the hospitality industry? Yes No

SECTION B: Exploring Food Wastages at the Hotel.

Please let us know your responses on the underlying reasons that you may consider as a contributing factors to causes of food wastages in this hotel as presented in the table below

Note: Strongly Disagree = 1 Disagree = 2 Neutral = 3 Agree = 4

Strongly Agree = 5

S/N.	VARIABLES	SCALE				
		1	2	3	4	5
	Suggested responses					
38.	I consider myself as a potential contributor to food waste in this hotel					
39.	I have developed the attitude of not patronizing food made outside my home.					
40.	I have developed attitude for quality food at affordable price					
41.	I always reject food that is not prepared to suite my standards					
42.	I am sometimes over/under served with food from this hotel					
43.	I don't buy food in this hotel because my preferences are not prepared with the professional touch.					
44.	The hotel use substandard ingredients in preparing their food and more over lack food safety ethics.					
45.	The fold sold to me was in bad condition					

SECTION C: Effects of Food Waste on the Operation of the Hotel

Please let us know your responses about the experiences you had with our food service

in this hotel as presented in the table below

Note: Strongly Disagree = 1 Disagree = 2 Neutral = 3 Agree = 4

Strongly Agree = 5

<i>S/N.</i>	<i>VARIABLES</i>	<i>SCALE</i>				
		1	2	3	4	5
	Suggested responses					
46.	The food at this hotel is terrible I don't intend to purchase food at this hotel again					
47.	I was in need of food couldn't find some at this hotel I don't intend to visit this hotel again					
48.	The hotel have a bad odor emanating from the surrounding environment and this could be a scent of rotted foods.					
49.	I will recommend the food sold here to my colleagues					
50.	I will prefer buying food outside the hotel premises rather than patronizing the food sold here.					
51.	I have intention of revisiting this hotel only for booking of rooms and not their food.					
52.	I will recommend the shutdown of the restaurant at this hotel because their service is inferior					

SECTION C: Measures that can be adopted to reduce Food Waste at the Hotel.

Please let us know your responses on the possible measures that can be adopted to improve our food service at this hotel as presented in the table below

Note: Strongly Disagree = 1 Disagree = 2 Neutral = 3 Agree = 4

Strongly Agree = 5

<i>S/N.</i>	<i>VARIABLES</i>	<i>SCALE</i>				
		1	2	3	4	5
	Suggested responses					
53.	The hotel need professionals at their kitchen					
54.	The hotel should consider reducing the price of their food a bit.					
55.	Proper waste disposal approaches must be adopted by the hotel.					
56.	I will encourage the hotel to purchase the recommend ingredients for preparation of food sold here					
57.	I will suggest to the hotel to use referral service to deal with food waste.					
58.	The hotel should provide a well detailed food menu.					
59.	Establishing effective food monitoring system					
60.	They hotel may consider the leftover food cheaper to people who may need or safe it in good condition and reuse it.					