FOOD WASTE MANAGEMENT ON RESTAURANTS IN JAKARTA

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ABSTRACT

Objective: The purposes of this study were to explain restaurant’s policy on its procedure of food waste, to identify whether restaurant has policy of donating leftover food, to explore how restaurant train and communicate to their employees about restaurant waste disposal standard, and to understand what chefs consider to be the toughest challenges in reducing food waste.

Theoretical Framework: The theoretical framework used by the restaurant operational control cycle and Waste Reduction Method

Method: In this research the approach used is a qualitative approach. Data collection in this study are using interviews to Demi Chef to Executive Chef have managerial responsibilities in kitchen operations. The transcripts that have been made are analyzed using thematic coding so that data that was previously unsystematic or can be further simplified and grouped so that it is easier to understand better. The quotes from interviews will be used to propose the final description then eventually the differences made between the samples taken can be seen.

Result: The result of the study that food waste disposal procedures, not all have separated and weighed food waste from their restaurants. Two main problems, which were their guests and their staffs. They won’t be able to control their guests and on the other hand, it was rather a tougher challenge to raise staff awareness of the importance of reducing food waste.

Implications: It was important to educate business actors and all those involved in it, as well as all community about reducing food waste as what we are facing now is lack of knowledge about appropriate ways to measure food waste.

Originality/Value: The results of this study contribute to the theory of waste management in hotel restaurants from a restaurant management perspective

Keywords: Food Waste, Restaurant, Guest, Chef, Kitchen, Jakarta.

GESTÃO DE RESÍDUOS ALIMENTARES EM RESTAURANTES EM JACARTA

RESUMO

Objetivo: Os objetivos deste estudo foram explicar a política do restaurante sobre o procedimento de desperdício de alimentos, identificar se o restaurante tem uma política de doação de sobras de comida, explorar como o restaurante treina e comunica aos seus funcionários sobre o padrão de descarte de resíduos do restaurante e entender o que os chefs consideram ser os desafios mais difíceis na redução do desperdício de alimentos.

Quadro teórico: O referencial teórico utilizado pelo ciclo de controle operacional do restaurante e Método de Redução de Desperdícios

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Método: Nesta pesquisa a abordagem utilizada é qualitativa. A coleta de dados neste estudo é feita por meio de entrevistas com Demi Chefs e Chefs Executivos que possuem responsabilidades gerenciais nas operações da cozinha. As transcrições realizadas são analisadas por meio de codificação temática para que dados antes não sistemáticos ou possam ser ainda mais simplificados e agrupados para facilitar a melhor compreensão. As citações das entrevistas serão utilizadas para propor a descrição final e eventualmente poderão ser visualizadas as diferenças feitas entre as amostras colhidas.

Resultado: O resultado do estudo mostra que os procedimentos de eliminação de resíduos alimentares, nem todos separaram e pesaram os resíduos alimentares dos seus restaurantes. Dois problemas principais, que eram seus convidados e seus funcionários. Não conseguiram controlar os seus hóspedes e, por outro lado, foi um desafio bastante mais difícil sensibilizar os funcionários para a importância de reduzir o desperdício alimentar.

Implicações: Era importante educar os intervenientes empresariais e todos os envolvidos, bem como toda a comunidade, sobre a redução do desperdício alimentar, uma vez que o que enfrentamos agora é a falta de conhecimento sobre formas adequadas de medir o desperdício alimentar.

Originalidade/Valor: Os resultados deste estudo contribuem para a teoria da gestão de resíduos em restaurantes de hotel numa perspectiva de gestão de restaurantes.

Palavras-chave: Desperdício de Alimentos, Restaurante, Hóspede, Chef, Cozinha, Jacarta.

GESTIÓN DE RESIDUOS ALIMENTARIOS EN YAKARTA

RESUMEN

Objetivo: Los objetivos de este estudio fueron explicar la política del restaurante sobre el procedimiento de desperdicio de alimentos, identificar si el restaurante tiene una política de donación de alimentos sobrantes, explorar cómo el restaurante entrena y comunica a su personal sobre el patrón de eliminación de residuos del restaurante, y entender lo que los chefs consideran los desafíos más difíciles en la reducción de desperdicio de alimentos.

Marco teórico: Marco teórico utilizado por el ciclo de control operativo del restaurante y método de reducción de residuos

Método: En esta investigación el enfoque utilizado es cualitativo. La recolección de datos en este estudio se realiza a través de entrevistas a los Chefs Demi y Chefs Ejecutivos que tienen responsabilidades gerenciales en las operaciones de cocina. Las transcripciones realizadas se analizan mediante codificación temática de manera que los datos no sistemáticos anteriores o las transcripciones puedan simplificarse aún más y agruparse para facilitar una mejor comprensión. Las citas de las entrevistas se utilizarán para proponer la descripción final y, posiblemente, se puedan visualizar las diferencias realizadas entre las muestras recogidas.

Resultado: El resultado del estudio muestra que no todos los procedimientos de eliminación de residuos de alimentos separaron y pesaron los residuos de alimentos de sus restaurantes. Dos problemas principales, que eran sus invitados y sus empleados. No podrán controlar a sus huéspedes y, por otro lado, ha sido un reto mucho más difícil concienciar al personal sobre la importancia de reducir el desperdicio de alimentos.

Implicaciones: Fue importante educar a los actores empresariales y a todos los involucrados, así como a toda la comunidad, en la reducción del desperdicio de alimentos, ya que lo que estamos enfrentando ahora es una falta de conocimiento sobre las formas adecuadas de medir el desperdicio de alimentos.

Originalidad/Valor: Los resultados de este estudio aportan a la teoría de la gestión de residuos en los restaurantes hoteleros desde la perspectiva de la gestión de restaurantes.

Palabras clave: Desperdicio de Comida, Restaurante, Invitado, Chef, Cocina, Yakarta.
1 INTRODUCTION

Food and Agriculture Organization (FAO) of the United Nations in 2018 released data estimating the amount of loss generated by food waste, which was 1.3 billion tons per year or worth about $1 trillion. FAO stated that food waste has become a global and complex problem. This problem has impacted environment, economic and social (FAO, 2013). A country shall be considered to have food security if its people are economically and socially able to access food sources. FAO once estimated that one-third of the food the world produces is lost or wasted. It can be said that food loss and food waste are closely related to world security.

Indonesia is included in the top 40 countries with the most food waste in the world with 315 kg per person per year (see table 1). This shows that Indonesian people still often throw away food, which is ultimately wasted and becomes food waste. This can be a very big problem when it is associated with the large population of Indonesia, where 22 million Indonesian are still experiencing hunger and are below the poverty line. Such contradictory on the one hand Indonesia produces a lot of food waste but on the other hand many of its citizens are still hungry.

Table 1
The most food waste in the world

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Country</th>
<th>Kilogram/person/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ethiopia</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Nigeria</td>
<td>7</td>
</tr>
<tr>
<td>3</td>
<td>China</td>
<td>44</td>
</tr>
<tr>
<td>4</td>
<td>Greek</td>
<td>44</td>
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<tr>
<td>5</td>
<td>India</td>
<td>51</td>
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<tr>
<td>6</td>
<td>Russia</td>
<td>56</td>
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<tr>
<td>7</td>
<td>Columbia</td>
<td>63</td>
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<tr>
<td>8</td>
<td>Brazil</td>
<td>71</td>
</tr>
<tr>
<td>9</td>
<td>Egypt</td>
<td>73</td>
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<tr>
<td>10</td>
<td>South Korea</td>
<td>95</td>
</tr>
<tr>
<td>11</td>
<td>France</td>
<td>106</td>
</tr>
<tr>
<td>12</td>
<td>Tunisia</td>
<td>112</td>
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<tr>
<td>13</td>
<td>Canada</td>
<td>123</td>
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<td>14</td>
<td>Jordan</td>
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<td>15</td>
<td>Morocco</td>
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<td>16</td>
<td>Portugal</td>
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<td>17</td>
<td>Italy</td>
<td>145</td>
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<td>18</td>
<td>Mexico</td>
<td>149</td>
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<td>19</td>
<td>Germany</td>
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<td>20</td>
<td>Japan</td>
<td>157</td>
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<tr>
<td>21</td>
<td>Spain</td>
<td>165</td>
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<tr>
<td>22</td>
<td>Turkey</td>
<td>168</td>
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<tr>
<td>23</td>
<td>South Africa</td>
<td>172</td>
</tr>
<tr>
<td>24</td>
<td>Hungary</td>
<td>189</td>
</tr>
<tr>
<td>25</td>
<td>Lebanon</td>
<td>202</td>
</tr>
</tbody>
</table>
According to National Waste Management System (Sistem Informasi Pengelolaan Sampah Nasional/SIPSN, 2020) that released by Ministry of Environment and Forestry, the most waste composition in Indonesia is from food waste but unfortunately there are no report showing specific figures from how large the tourism industry contributes directly to the amount of food waste in Indonesia. On the other hand, several other studies have shown that the tourism industry has an influence on the amount of food waste as happened in Denmark where the hospitality industry contributes more than 50% of food waste (Curry, 2012). In Italy, restaurants contribute 21% of total food waste (Coldiretti, 2017). The hospitality sector, in particular the provision of food services is the third largest contributor to global food waste, just behind households and the agricultural sector with its associated food processing industry (Stenmarck et al., 2016).

**Table 2**

*Indonesian Waste Composition 2020*

<table>
<thead>
<tr>
<th>Percentage</th>
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<tbody>
<tr>
<td>Period</td>
</tr>
<tr>
<td>Food Waste</td>
</tr>
<tr>
<td>Leaf Twigs</td>
</tr>
<tr>
<td>Paper</td>
</tr>
<tr>
<td>Plastic</td>
</tr>
<tr>
<td>Metal</td>
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<tr>
<td>Textile Fabric</td>
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<tr>
<td>Leather Rubber</td>
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<tr>
<td>Glass</td>
</tr>
<tr>
<td>Others</td>
</tr>
</tbody>
</table>

| 2020  | 39.68 | 13.99 | 12.03 | 17.01 | 3.33 | 2.69 | 1.98 | 2.28 | 7.03 |

Source: (National Waste Management System, 2020) has been reprocessed.

Indonesian government has actually initiated to launch national policy and strategy in managing household waste and household-like waste in Regulation of the President of the Republic of Indonesia No. 97 of 2017 that targeting to reduce waste by 30% and increase waste handling by 70%. This policy is an effort to achieve Sustainable Development Goals (SDGs) 12.3, which is reducing global per capita food waste by 50% at the retail and consumer level, as well as reducing food lost throughout the production and supply chain, including post-harvest losses, can be achieved by 2030. However, up to this moment, either ministry nor government do not have written regulations on how to achieve this.
As one of the biggest contributors of food waste, tourism industry, especially restaurants, should have big role in innovating in reducing food waste. Food donation is one of the solutions. However, the movement of donating food has not yet become a popular activity. Moreover, the standard practice in hotels and restaurants are not allowing food waste to be consumed for health reason.

In the previous study on 10 chefs in Arkansas, United States of America, regarding their perception on food waste, it was found that the biggest challenges that arise are cooperation and lack of knowledge (Reardon, 2020). They have lack of common mindset in handling food waste. As for the results of the study, trainings for employees and as well as composting food waste are the options for the chefs in handling food waste as they need to consider the importance of maximizing the business profit.

Based on the description above, it is important to understand on how the chefs in Jakarta think about this matter. What are their methods in reducing food waste and how effective are their methods used in their restaurant?

The scope of problem in this study was limited to avoid deviations and broadening the subject matter so that the study is more focused. This study limited the scope of study on few things such as, informants are limited to chefs in Jakarta, from the positions of Demi Chef to Executive Chef, regardless the type of restaurant of the intended population, therefore the result of the study cannot be generalized outside the population. This study did not take into account the differences in the type of restaurant where the informants worked or the background of the informants.

As described on the background of the problem, this study was formulated as below,

- What is the policy from the restaurants on the procedure of disposing the food waste?
- Do the restaurants have policy on donating their food waste?
- How do the restaurants train and communicate to their employees regarding the standard of disposing the food waste?
- What are the biggest challenges faced by the chefs in reducing food waste?

The purposes of this study were to explain restaurant’s policy on its procedure of food waste, to identify whether restaurant has policy of donating leftover food, to explore how restaurant train and communicate to their employees about restaurant waste disposal standard, and to understand what chefs consider to be the toughest challenges in reducing food waste.

This study was expected to provide benefits for many parties, especially for the tourism sector, both theoretical and practical benefits. For theoretical benefit, it is hoped that this study
can contribute insight and knowledge regarding food waste in Indonesia, especially in the food and beverage industry in managing their food waste. It is also hoped that this study can be used as means of developing knowledge and theory about food waste. For practical benefits, it is hoped that this study would be useful for tourism industry, academics and government

2 LITERATURE REVIEW

2.1 UNDERSTANDING OF FOOD WASTE

Food waste according to various institutions and the opinions of experts such as The United States Department of Agriculture (USDA) which considers food waste as part of food loss (Buzby et al., 2014). FAO (2013) also defines food loss as referring to a decrease in the mass (dry product) or food nutrition content (quality) of food originally intended for human consumption. These losses are mainly caused by inefficiencies in the food supply chain, such as poor logistics infrastructure, lack of technology, insufficient skills, knowledge and management capacity of people in the distribution chain, and lack of access to markets, as well as natural disaster.

Still from FAO (2019), food waste is defined as decrement of quantity and quality of food. Food waste is recognized as a different part of food loss because the cause of its occurrence and solution to it are different from food loss (FAO, 2014). The meaning of food loss from FAO in line with what expressed by Parfitt et all (2010) that food loss refers to a decrease in the mass of food that can be consumed by people. Food loss occurs at the production, harvest and processing stages in the food supply chain. Food loss that occurs at the end of food chain (retailers and final consumers) is better known as food waste, which is related to consumer retail behavior.

Another opinion also states that food waste basically occurs when food is packaged but not consumed and when customers take too much food that needed and leave the leftover food on the table (Pirani and Arafat, 2014). According to Végh (2021) food waste is divided into 2, Pre-Consumer Waste and Post-Consumer Waste. That statement is in line with Legrand (2017) however he divided food waste into 3, Pre-Consumer waste, Post-Consumer Waste, and Packaging Waste and Operation Supplies. Meanwhile according to Kuo and Shih (2016), food waste is unconsumed food in all stages, from food production to food consumption. In the stage of consumption, the term plate waste is used for the food served but not consumed. Plate waste consist of 3 categories, namely consumable, non-consumable, and possible to consume.
(Stenmarck et al., 2016). Consumable food waste accounts for a very significant amount of the total food waste that exist (Marthinsen et al., 2012) and can be consumed but is not consumed (WRAP, 2013).

2.2 UNDERSTANDING OF RESTAURANTS

Restaurants are one form of business in the tourism industry which continues to develop and is found in many places. According to the Ministry of Tourism and Creative Economy (2014), a restaurant business is a business providing food and beverage services equipped with equipment and supplies for the process of making, storing, and serving in a fixed place, not mobile with the aim of gaining profit.

According to Pizam (2010), there are basically 7 styles or service methods that are often used in restaurant industry today, namely as follows:

1. Plate service (service a’l’assiette), is food service that is arranged in the kitchen and served to guests on plates, commonly called American service.
2. Silver service, is food service that is first served on a serving plate (usually silver plate but not in common anymore) to guests, then divided and transferred from serving plate to plate in front of the guest using a spoon and fork.
3. Gue’ridon service (service a’la russe), is using side table or trolley to prepare and serve the food.
4. Family service (service a’la francaise), is a very simple service that serve food in dinning table (carousel in the middle of the table for Chinese service and Chinese dim sum service) to allow guests to choose and take the food they like.
5. Buffet service, usually serving food artistically on display table (can be more than 1 table) and guests choose what they like from various hot and cold dishes, soup, barbeque, salad, and desserts.
6. Smorgasbord service, similar to buffet service except that guests are allowed to serve themselves from the smorgasbord consisting of dishes from Scandinavian countries including hot and cold seafood dishes which are often smoked or pickled.
7. Cafeteria service, guests would choose their food from the long food counter known as race and placed it on the food tray.

Meanwhile, according to Davis et al., (2018), restaurants are classified according to style and level of service, which are
• Fine dining, is a luxury and expensive dining service based on high quality ingredients and cooking techniques with a high level of formality.
• Casual dining, is often referred to as family dining with reasonable price and relaxed style.
• Quick service restaurants (QSR), is the official term of fast-food restaurants.
• Coffee shops, is service with high volume of take-away with menu focusing on coffee and light food.
• Take-away/mobile, is solely preparing food to take home.

In tourism industry, the amount of food waste thrown away by restaurants is influenced by the type of service or type of restaurants (Kilibarda, 2019). Several studies shows that the most waste is generated from restaurants with buffet service compare to À la carte (Papargyropoulou et al., 2016; Pirani and Arafat, 2016).

2.3 OPERATIONAL CONTROL

Figure 1

Restaurant Operational Control Cycle

Source: Ninemeier, 2009

Menu Planning is the key for restaurant business being successful in becoming a profitable restaurant. Menu has the role to communicate information to customers (Davis et al., 2018). Menu planning process needs continuous improvement (Ninemeier, 2009) as it has direct impact on the operational service such as, Product Control Procedure, Cost Control Procedure, and Production Requirement. With a good menu planning, you will be able to create a limited
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menu with few choices, that will open the possibility of reducing food waste as there is not much food leftover in the kitchen operations (Gisslen, 2010).

Purchasing is an activity to purchase production raw materials with quality and quality at the right time, place and source (Ninemeier, 2009).

Receiving products must pay attention to several things, namely checking materials according to orders in the purchase order and delivery invoices, receiving products and transferring them to the proper storage place, as well as recording the products that arrived in the receiving document. Correct product received as per ordered will be able to avoid products disposal before used.

Storing is the process of transferring materials that have been ordered to the proper storage place. In the storing process, improper storage often causes a decrease in the quality of food ingredients, even food that is frozen for a long time will also reduce its quality (Ninemeier, 2009). According to Ninemeier, to reduce the loss caused by improper food storage, we must pay attention to product rotation using First In First Out method, ensure the right and appropriate temperature, carry out routine cleaning of the material storage area, ensure each material is stored properly.

Issuing is an activity carried out to prevent excess goods leaving the storage area so eventually it will reduce food waste if the activity carried out properly.

Production is the stage where further checks are carried out to ensure that the products offered will exceed consumer expectations and ensure that during the production process the cost incurred are not greater (Ninemeier, 2009).

Serving can be described as the transfer of a ready-to-eat food product from the kitchen to the water. At this stage, the waiter will control the quality of the product one last time before serving it the customer. While serving describes the presentation process from the waiter to the consumer. According to Ninemeier (2009), it is very important to have good timing of service, smooth staff communication, adequate supplies, right temperature and holding time, and food appearance.
2.4 WASTE REDUCTION METHOD

ReFed (Rethink Food Waste Through Economics and Data), a non-profit organization in 2018, developed a practical guide for reducing food waste in restaurants which they named it as Restaurant Food Waste Action Guide. ReFed concluded that there is no one solution that will suit all types of restaurants in food waste reduction. ReFed identifies solutions as the basic reference for restaurants to be able to reduce food waste, which are divided into 3 main part, prevention, recovery and recycling. Included in prevention are menu planning, customizable portion and dish options, smaller plates and no usage of tray, optimized quantities, waste tracking and analysis, inventory management and production planning. Included in recovery are education of responsibility for donating, suitable partnerships in donating, as well as donation, storage, handling and transportation. Included in recycling are centralized composting, on-site processing, animal feed and cooking oil recycling.

Figure 2
Restaurant Supply Chain

As shown in the picture above, the supply flow that occurs in the restaurant and it can be concluded that prevention of food waste can be done starting from receiving the ingredients until the ingredients become food served to guests. Waste reduction methods will be successful with the implementation of good strategies where employees determine the success or failure of implementing strategies, therefore employee training is important in efforts to reduce food waste. Understanding how they perceive, especially chefs and employees, about the problem of food waste. Furthermore, it is also important to see whether employees feel that the problem of food waste is a big problem.
2.5 FOOD DONATION

EPA (United States Environmental Protection Agency) in 2019 create a food recovery hierarchy (Food Recovery Hierarchy) where in this hierarchy the EPA prioritizes actions that can be taken to prevent food waste. In each hierarchy there is management different strategies, which is the highest level in the hierarchy is the best way to prevent and divert food waste which can have an impact on the environment, society and the economy, and they are, Source Reduction, Feed Hungry People, Feed Animals, Industrial Uses, Composting, and Landfill/Incineration.

Figure 3
Food Recovery Hierarchy

Source: United States Environmental Protection Agency (2019)

In Indonesia there is no legal protection, either criminal or civil, for food donors, even if they donate with good intentions and paying attention to food safety, they can be punished if the food they donate is problematic. In law number 18 of 2012, it only regulates the government carrying out the regulation, guidance, control and supervision of food and the community carrying out the production and supply process, trade, distribution and acting as a consumer. However, it does not regulate protection towards food donors. Lack of information about how to donate food and lack of rules may be the reason for not many food donors.
3 RESEARCH METHODS

3.1 RESEARCH DESIGN

In this research the approach used is a qualitative approach. According to Sugiyono (2017) qualitative research is a research method based on post-positivism philosophy, used to research the conditions of natural objects, (as opposed to experiments) where the researcher is the key instrument, data collection techniques are carried out in a triangulated (combined) manner, data analysis is inductive/qualitative, and qualitative research results emphasize the meaning of generalizations. Meanwhile, according to Creswell (2014) qualitative research is an approach to exploring and understanding the meaning of individuals or groups related to social or human problems. Therefore, it can be concluded that qualitative research is a research method that describes a phenomenon from individuals or groups through descriptions in the form of sentences in natural object conditions.

3.2 RESEARCH TYPE

Sekaran & Bougie (2016) mentioned three types of research:

1. Exploratory Study; study conducted when the researcher does not know much about the situation at hand, or there is no information available about how a problem has been solved in the past. These studies often rely on secondary research where data collection is taken through focus groups, interviews, and case studies.

2. Descriptive Study; study the main aim is to be able to describe a phenomenon. This study helps researchers to understand the characteristics of a group in a particular situation, be able to think systematically and observe an aspect of a particular situation, offers new ideas for further research and helps to make certain decisions.

3. Causal Study; this study aims to find out how food waste is managed and the perceptions of restaurant chefs regarding food waste problems. This study will use an exploratory study with a phenomenological research design because it focuses on the experiences and views of subjects regarding food waste management in restaurants, where in the situation studied is not known by many parties. So more in-depth research is needed.

In this study, the unit of analysis was the individual chef himself, so it requires researchers to carry out exploration with the aim of achieving this. Understand the informants in the research problem, understand the perceptions and identify the implementation of food waste management in restaurants.
waste reduction in restaurants and the impact of the implementation for the success of sustainable policies. This is in accordance with the researcher's aim of being able to explore informants in more detail.

3.3 RESEARCH SUBJECTS

Research subjects in this study were referred to as informants, or can be referred to as people who have the background that can be used to obtain information. Informants in this study are determined with certain considerations, several specific criteria were determined for informants as follows:

- Chefs with positions from Demi Chef to Executive Chef.
- Actively working at a restaurant.
- Working in the Jakarta area.

These criteria were chosen to be able to get better exploration and understanding perceptions about food waste and the food waste management they carry out in kitchen operations as the positions of Demi Chef to Executive Chef have managerial responsibilities in kitchen operations. Having that in mind, it is foreseen that we would be able to see the reality that occurs in industry, especially the food and beverage service industry.

3.4 RESEARCH INSTRUMENTS

According to Sugiyono (2017), the study instrument or tool is the researcher himself. Therefore, the researcher must understand the methods used in this study which is data collection will be assisted by interview guides and documentation tools to make it easier for researcher to collect and collect data in the field.

3.5 DATA COLLECTION TECHNIQUE

Data collection in this study are using methods as follow:

3.5.1 Interview

Interviews were conducted to gain an understanding of perceptions and identify the implementation of food waste reduction in restaurants and the impact of the implementation for
the continued success of the policy. According to Sekaran and Bougie (2017), interviews can be structured and non-structured in conducting face to face interviews, by telephone or online. The researcher will conduct interviews with informants, where in this process the researcher will listen to their perceptions about food waste and the implementation of reducing food waste in their kitchen whether they have already taken mitigation measures and the reasons why if it hasn't been done.

3.5.2 Documentation

Documentation was carried out by taking photos, sound recordings, videos, or collecting documents from trusted sources such as company regulations regarding waste management. Food waste disposal reports that can support research data.

3.6 DATA ANALYSIS METHOD

In this study, audio/video recordings will be transcribed word for word from each interview. Then an analysis of the results of the interview is carried out and the text of the interview results will be used as the unit of data analysis. According to Creswell (2014), data analysis is carried out to provide a group/section of findings based on the focus or problem in a study. The transcripts that have been made are analyzed using thematic coding so that data that was previously unsystematic or can be further simplified and grouped so that it is easier to understand better. The quotes from interviews will be used to propose the final description then eventually the differences made between the samples taken can be seen.

3.6.1 Validity and Reliability Test

According to Moon et al (2016), Validity and Reliability Tests in qualitative research are divided into 4 methods, namely:

- Credibility, referring to the intended research objectives, and credible decisions are decisions that are consistent with the researcher's objectives (Patton 2002), which requires researchers and practitioners to be able to think critically and contextually when assessing methodological decisions.
• Transferability. is an external validity that refers to the extent to which the phenomena or findings described in one study can be applied or useful for future theory, practice and research (Lincoln and Guba 1985).

• Dependability, referring to the consistency and reliability of research findings and the extent to which research procedures have been documented, making it possible for someone outside the study to follow, audit, and criticize a research process (Streubert 2007).

• Confirmability, is a step taken by the researcher in order to manage and reflect the effects of philosophical preferences or experience and, if necessary, in accordance with the ontological and epistemological position of the study, to ensure that the results obtained are based on the experiences and preferences of the study participants (subjects, respondents), not from the researcher's side.

3.6.2 Data Validity Test Method

In this study, the data validity technique used is triangulation. Triangulation is a data validity testing technique that utilizes something other than the data taken for checking or comparing the data taken. According to Sugiyono (2017), triangulation is divided into three types of triangulations, namely source triangulation, data collection technique triangulation, and time.

This study uses source triangulation. Source triangulation is intended to be able to test the credibility of the data which is done by checking the data that has been obtained from one informant with another informant. Sources at this triangulation stage are by comparing five sources. Data from these five sources cannot be averaged, but can be described, categorized, which views are the same, which are different and which are specific from the three sources. Data that has been analyzed by researcher to produce a conclusion.

4 RESULTS AND DISCUSSION

4.1 RESPONDENT PROFILE

The informants selected were chefs who held the position of Demi Chef to Executive Chef who actively worked in the food and beverage industry in Jakarta or who had worked in
the same industry in Jakarta before. The following is a description of the informant whose identity is withheld due to the informant's desire to remain anonymous.

- The first chef is AG, he is currently the Head Chef from FM Jakarta restaurant.
- The second chef is DJ, currently he is the Demi Chef of the WK Jakarta Restaurant.
- The third chef is JD, currently he is the Chef Owner of the SBK restaurant.
- The fourth chef is IS, currently he is Jr. Sous Chef of PRC restaurant.
- The fifth chef is CT, currently he is the Head Chef of the NKB restaurant.

4.2 DESCRIPTION OF STUDY TIME

This study used the Focus Group Discussion (FGD) method on that conducted online via the zoom application. Where the role of the researcher in the FGD is as a participant observer, where in the FGD the researcher acts as a moderator and is directly involved in the discussion in the FGD. This FGD discussed chefs' perceptions of food waste and management models. The topics discussed are as restaurant policy on food waste disposal procedures, policy for donating leftover food from restaurants, training on disposal standards and restaurant waste disposal standards, and challenges in reducing food waste.

4.3 DISCUSSION

4.3.1 What is the restaurant's policy regarding food waste disposal procedures?

Based on what the informants stated, it can be concluded that food waste was waste or rubbish that came from two sources, which were from unused preparation residue and from food waste produced by restaurant guests which could have an impact on the environment. Informants understood the basic concept of food waste, which is in accordance with the definition of food waste from Kuo and Shih (2016) that is food waste occurs at all stages, from food production to consumption.

What was conveyed by the informants are also the in line with the statement from Végh (2021) that the source of food waste in restaurants can be divided into 2 parts, which are pre-consumer waste, which means all types of waste produced in the kitchen, and post-consumer waste, waste that comes from every food product that is returned after being served to guests. However, what the informants understand is not the same as Legrand (2017) where packaging waste and operational supplies are included in pre-consumer waste.
4.3.2 What is the process for disposing of food waste in your restaurant?

From the statement made by informant CT, there were two types of waste handling carried out in restaurants, by separating the types of waste and not separating them. Whilst informants DJ and JD separate the waste by separating organic waste from other types of waste. Meanwhile, the other three informants did not do so.

Unfortunately, the current separation was only based on type and does not differentiate between sources and waste. Restaurant Food Waste Action Guide (2018) recommends separating waste into 3 places; waste from damage goods/ingredients, waste generated during preparation, and waste from plate waste or guest leftovers. It is also recommended that in tracking and analyzing waste, the tracking system should be able to record: the weight, type and source of food waste. This is in line with the statement from Végh (2021) in carrying out important tracking and analysis to separate food waste into three parts based on its source; preparation waste, stale food, and leftovers from guests' plates so that we can aware of the source of the waste. Like the findings in study by Siaputra et al (2019) in Surabaya at restaurant "X" where most food waste comes from pre-consumer waste, so it is important for restaurants to try to analyze in more detail the sources of their waste.

4.3.3 Does the restaurant weigh or measure food waste?

Two informants did not weigh the waste they had, the three informants who weighed it were DJ, JD and CT, while two of them also separate the waste produced in their restaurants. However, weighing is currently carried out only on waste in the production process. Végh (2021) stated that when tracking and analyzing waste, collect and separately weigh the food waste produced to find contributors to the waste produced.

This is also in line with the recommendation from the Restaurant Food Waste Action Guide (2018) to first conduct a waste audit in restaurants, create a waste tracking system based on weight, type and source and track food waste before and after consumption and use this data to adjust operating procedures, update training materials, and making menu changes.
4.3.4 Does cooking without waste is possible?

The informant indicated that implementing zero waste was absolutely impossible. All informants answered that the concept of zero waste was difficult, impossible and would not be complete to no waste at all.

The replies from the informants were in line with Végh's statement in his book Surplus: The Food Waste Guide For Chefs. According to Végh (2021), there is actually no real zero in zero waste.

4.3.5 What practices are easiest to implement in reducing food waste in their restaurants’ operations?

From the informants’ statements, the easiest thing to implement is to control over ordering goods as stated by DJ and CT. In addition, CT stated the importance of how we store the goods ordered properly and correctly. IS, JD and AG mentioned the existence of control during processing, where control is carried out during processing and attempts to reuse materials once again before being thrown away. Furthermore, extending the life of the material by freezing so that the life of the materials can last longer. Receiving, storing and production stages have the largest and most frequent contribution in producing food waste (Siaputra et al., 2019). This is in line with the recommendations from STREFOWA (2019), that storage and purchasing are important points in the strategy to prevent food waste in kitchen operations.

4.3.6 Do the restaurants have policy of donating leftover food?

From the statements that the informants gave, it showed that they took precautions by processing the ingredients again for garnishes or other dishes for personal consumption or as staff meal if it was too much of it. This is in accordance with the directions from STREFOWA (2019) which can be seen in Figure 8 before the food was donated, although not all of the excess food was used as staff meal, making new dishes and turning them into snacks, at least there are positive steps being taken, even though not everyone has donated food from their restaurants. All informants had the same response that food donations could be a solution. This finding is similar to the findings from Reardon (2020) where out of 10 chefs there were 5 chefs who had not made food donations and only one of them had not thought about doing it.
4.3.7 How does the restaurant train and communicate to its employees about restaurant waste disposal standards?

From the statements of all the informants, it could be concluded that the communication they carry out was in verbal to their staff during kitchen operational. They also tried to communicate with guests by offering guests to stake away unfinished food. Furthermore, there were informants who communicate not only with the kitchen staff but with the front of the house team as well where they were taught in more detail about the food served and to communicate it with guests better in order to provide feedback to the kitchen team.

4.3.8 What are the toughest challenges in reducing food waste?

All informants agreed that it would be easier for restaurants if there were standard rules regarding food waste processing to make the rules or policies legally. Interestingly, all informants said that what is more important to handle this is education, not only for those in the industry but for the community as well. Because basically people are their consumers, so if people have awareness of this problem, the amount of waste produced will be pretty much lesser..

5 CONCLUSION

5.1 CONCLUSIONS

Currently, chefs have a fairly good understanding of food waste. They divided food waste into two categories based on the sources, food waste from production and food waste from guests. Study in field is in accordance with Végh (2021) that stated it is impossible in kitchen operations not to produce waste. It is also in line with STREFOWA (2019) that stated in food waste disposal procedures, not all have separated and weighed food waste from their restaurants.

Informants agreed that donating food could be a solution in reducing food waste, but not all of them doing it. They were facing several obstacles in donating food, such as the quality of food that is nearly spoilt, own procedures in disposing of food that has been served, the amount of food waste that is not plenty enough to be donated, and maintaining the good name of the company. Several informants made food donations, but the food donated was mostly side
dish such as bread, because bread was considered relatively good quality over a longer period of time. There is a possibility that food donation in Jakarta could be developed considering that this could be a solution for reducing waste by adapting strategies from STREFOWA (2019), EPA. (2019) and ReFED (2018).

At this moment, specific training and allocated time regarding handling food waste were not available as informed by all informants. They communicated with the staffs verbally during and involving kitchen operations only. So far, what have been done is merely the least they can do such as separating the waste and selling several other items such as cardboard, glass bottles and oil, selling used oil to be reprocessed by third parties (in line with ReFED, 2018, about recycling food waste), and encouraging guests to take away their unfinished food. It was suggested that explaining the menu in details to the guests could be another solution to reduce food waste, therefore training the front-of-house about the menu is considered necessary.

Informants were facing two main problems, which were their guests and their staffs. They won’t be able to control their guests and on the other hand, it was rather a tougher challenge to raise staff awareness of the importance of reducing food waste. It is important to develop awareness among individuals of the application of best practices and responsible behavior (Janjic et al., 2019), in addition, employees are the main actors in determining the success of the company Sourvinou and Filimonau (2018).

According to the informants, it was important to educate business actors and all those involved in it, as well as all community about reducing food waste as what we are facing now is lack of knowledge about appropriate ways to measure food waste Sakaguchi et al. (2018). Easy access to information about how to prevent, measure and manage food waste may be the answer so that restaurants can develop optimal corporate strategies (Charlebois et al., 2015) as well as society adjusting themselves on their habit when eating at restaurants and at home.

5.2 MANAGERIAL IMPLICATIONS

5.2.1 For Indonesian Government

- It is recommended that the government create and have regulations that can regulate better food waste management by making more detailed and clear regulations regarding food waste management and donating food. It is needed to minimize doubts from the public and industry to donate their excess food.
• It is encouraged the Indonesian government to educate and develop waste management and food donation policies that are clearer in terms of procedures and objectives, so both industry and society can play an active role in reducing food waste to be able to achieve fair and equitable food administration as regulated in law number 18 of 2012.

5.2.2 For Indonesian Tourism Universities and Lecturers

• It is recommended that academics would hold discussions to develop and compile a food waste management model that is most suitable to be applied to the Indonesian food and beverage industry as a whole.
• To consider included food waste problem in a curriculum to be taught in all tourism study areas. The need for human resources who understand and can solve the problem of food waste will be greatly needed in the future. In this case, a big commitment is needed from the institution, to provide good facilities and enrich the knowledge of lecturers about food waste problems, by involving lecturers in various trainings.
• As donating food could be a solution, it is suggested that restaurants create CSR (Corporate and Social Responsibility) program by donating their excess food by collaborating with food banks or distribution organizations for excess food.
• It is also suggested that restaurants can try to start analyzing their food waste in more detail based on size, type and source.
• It is advised that restaurants communicate and train all parts of the restaurant as the success of a waste reduction program depends on a common thought regarding the problem of food waste.

5.3 LIMITATIONS AND SUGGESTIONS FOR FURTHER STUDY

As mentioned earlier, this study has limitations as it used an exploratory study where the data taken is limited to five chefs working in Jakarta without considering the type of restaurant from the informants. Beside the limitations of informants, another limitation was the interview data collection could not be done face to face due to the PPKM (Enforcement of Community Activity Restrictions) carried out by the Indonesian government due to the Covid-19. Interviews were conducted online and it was difficult to make observations at this time. Furthermore, some of the informants could not be interviewed due their tight schedule therefore data obtained was not optimal. This study also done in limited time.
As for further study, it is hoped that future study will be able to collect data from restaurants that have implemented food waste reduction programs or implemented sustainable gastronomic strategies in their operations so that they can get a clearer picture from the perspective of chefs who implement reduction programs. It is also suggested that future study will be able to collect more informants from various regions in Indonesia. Developing study on food waste management models in restaurants and better techniques in implementing management models more precisely and effectively should be done as well in further study. Last but least, from here, another study should be able to use tourism stakeholders as sources or informants so that there are more perspectives on the food waste problem.

REFERENCES


