

FOOD WASTE MANAGEMENT CHALLENGES AND STRATEGIES IN THE HOTEL INDUSTRY IN JAKARTA

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ABSTRACT

This study aims to analyze the management of food waste in the hotel sector with a focus on reducing the amount of food waste produced. The research method used is a qualitative method with the Miles and Huberman Model approach. Primary data was obtained through in-depth interviews with 22 respondents from F&B hospitality practitioners, experts, customers, and Foodbank institutions, using a purposive sampling technique. The results show that food processing in the hotel sector is carried out efficiently, but there are differences in the number of food waste per customer. Challenges in Food Waste Management (FWM) include unpredictable sales fluctuations, lack of customer awareness, and food wastage. Effective strategies to reduce food waste involve inventory management, employee training, customer education, and collaboration with Foodbank institutions. FWM has significant economic, social, and environmental impacts. FWM has direct links to the three Sustainable Development Goals (SDG 2, SDG 12, and SDG 13) on eradicating hunger, responsible consumption and production, and climate action. Managerial implications for hotels based on these conclusions include implementing an effective monitoring and reporting system related to FWM, collaboration with Food Rescue agencies, and encouraging customer participation through education and incentives. To reduce food waste and support sustainable development goals.

Keywords: *food waste management, hotels, challenges, sustainability, collaboration*

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INTRODUCTION

The tourism sector in Indonesia has great potential as the country's second-largest foreign exchange earner after taxes. Foreign exchange earnings in 2022 reached US\$4.26 billion and before the pandemic in 2019, it reached US\$17.76 billion (Minardi et al., 2021). The hotel and tourism industries are closely interrelated, where the growth of hotels and lodging places is an indicator of economic growth. However, the emergence of hotels also has an impact on increasing the amount of food waste, so efficient Food Waste Management is needed (Dewilda et al., 2022).

Hotels are one of the main sources of food waste. This food waste contributes to greenhouse gas emissions, especially methane gas which has a global warming impact 21 times greater than CO₂ (Nordin et al., 2020). Food waste (food waste) not only has an impact on the environment but also has a social impact by causing the loss of nutrients. Meanwhile, around 8.85% of the food waste produced by the HOREKA sector is still edible food which can be utilized through the food bank mechanism. Food waste (food waste) also has an impact on economic losses, where efforts to reduce food waste by hotels can minimize economic losses in their business. Economic loss due to food waste in Indonesia reaches 4%-5% of GDP so Food Waste Management can contribute to the development of a green economy (Leverenz et al., 2021).

Even though Food Waste Management (FWM) has been implemented, there are still challenges in finding solutions to minimize food waste, including in Jakarta which is facing an increase in the supply of new units that have the potential to increase food waste production (Hapsara & Lemy, 2020). Meanwhile, data from the DKI Jakarta Central Statistics Agency (BPS) showed that there were 6,047 cases of malnutrition. To overcome challenges in Food Waste Management (FWM), the hotel sector has strategic opportunities that can reduce food waste production by preventing or reducing the causes of food waste (Okumus, 2020). However, collaborative efforts from various parties are needed to implement these strategic opportunities.

METHOD

Research Methods

Based on the background of the problem, this research uses qualitative research methods. Qualitative analysis methods are used as an approach to provide detailed and in-depth information about the phenomenon or event under study. This method makes it possible to provide an in-depth description of complex phenomena and track unique events. In addition, this method also makes it possible to illuminate the experience with a variety of diverse roles, as well as give voice to sights that are rarely heard. This approach aims to explore the topic of Food Waste Management (FWM), its impact, the challenges faced, the strategies used, and its relation to the Sustainable Development Goals (SDGs).

Data Collection Methods

In this study, data were obtained from primary data. Primary data refers to data obtained through direct observation in the field. Primary data was collected through in-depth interviews with relevant sources. In-depth interviews are an interview method conducted with key informants who have a significant role in the research context. The purpose of in-depth interviews is to gain a deeper understanding of events, activities, people, organizations, feelings, motivations, demands, concerns, and other matters relevant to this study.

Sampling Method

In this study, sampling was carried out using the Non-probability sampling method. Non-probability sampling is a method that does not provide equal opportunities for each element or member of the population to be selected as a sample. The non-probability sampling technique used in this study is purposive sampling. Purposive sampling is a sampling technique that is carried out deliberately by selecting samples based on a specific purpose. In purposive sampling, the sample is selected selectively to obtain the most relevant and representative information related to the research topic. This research involved 22 respondents consisting of FnB hospitality practitioners, experts, customers, and Foodbank institutions. The number of hotel samples used in this study were 2 hotels, consisting of 5-star hotels.

Methods of Data Analysis

In this study, the Miles and Huberman Model approaches were used to analyze the data. This model proposes that data analysis is carried out interactively and continuously until a comprehensive conclusion is reached. Miles and Huberman's model consists of three streams

of analysis that are carried out simultaneously, namely data reduction, data presentation, and conclusion. Data reduction involves summarizing, selecting, and focusing on important things, as well as looking for themes and patterns that appear in the data.

To strengthen the validity of the findings, this study uses the Triangulation method. Triangulation is an analytical technique that involves comparing data from different sources or techniques. In this study, source triangulation and technique triangulation were used. Source triangulation was carried out by verifying findings by comparing data from different informants and comparing the results of this study with other relevant studies. Meanwhile, Technical Triangulation was carried out to test the credibility of the data by examining data from the same source but using different analysis techniques.

RESULTS AND DISCUSSION

This study shows that food processing in the hotel sector has been specifically carried out with high efficiency. This can be seen from the amount of edible food waste produced which is very low, namely only 0.33%. While the edible food waste generated by HOREKA as a whole is 8.85% (Brigita & Rahardyan, 2013; Purwanto & Ardi, 2023). Although food processing is carried out with high efficiency, the number of fw per customer is quite high. This difference can be caused by factors that were not considered in the study (Vieira et al., 2021).

FWM also engages FnB experts to gain practical perspectives and field experience. Proper menu planning based on the request, accurate procurement, and good storage management is important in reducing fw in hotels (Noviastuti & Putranti, 2021). Implementation of FWM involves coordination between the receiving party, store, and kitchen to ensure proper storage of food ingredients to prevent spoilage (Amicarelli et al., 2022). The kitchen staff must be equipped with professional knowledge, to reduce potential fw in the preparation process. At the ordering & serving stage, it is important to provide food according to the order and apply strict hygiene, safety, and sanitation rules. A post-consumption FW audit is conducted to compare the amount of food served with the amount consumed. This audit data can be used for menu planning & purchasing adjustments, thus helping to reduce food wastage in hotels (Dewilda et al., 2022).

FWM is also seen from the point of view of hotel restaurant managers, namely Hotel A and Hotel B. Both of them apply QC and the FIFO system in receiving & storage (Tomaszewska et al., 2021). Both of them monitor the temperature and storage time of food at the food ordering & serving stage. Both of them are implementing efforts to reduce waste through customer education and awareness. Both hotels use the rest of the trimmings as raw material for other food menus.

Despite many similarities, the two have differences in FWM practice. Hotel A uses a standard recipe with portions based on experience, while Hotel B collects customer preferences and conducts food testing. Hotel A uses the rest of the trimmings to become animal feed, while Hotel B processes it into fertilizer. Hotel A focuses on customer awareness through signage and outreach, while Hotel B implements the concept of live cooking and show kitchen. Hotel A manages edible food waste in collaboration with Foodbank Indonesia, while Hotel B manages it directly for donation (Hermanu, 2022).

FoodCycle Indonesia and its Customers are also involved in efforts to reduce fw in Indonesia. FoodCycle Indonesia has a program called FoodCycle Kitchen which focuses on saving edible food waste. For unedible food waste, FoodCycle Indonesia has a program called FoodCycle Farm. Diners reduce fw by consuming the food they order and paying attention to the portion according to their stomach capacity. In addition to sharing food if needed, giving special notes to waiters regarding food preferences is also done to reduce fw (Camilleri, 2021).

FWM has Economic, Social, and Environmental impacts. Overall, the potential economic losses that can be avoided by hotels every month is around 340 million rupiahs. However, the value of the economic loss from FW may be higher than previously calculated. Based on the case study, the monthly production of fw hotels is equivalent to fulfilling the daily food needs of 383 people for 30 days. However, in reality, only 0.32% of edible food waste can be utilized. The amount of CO₂ emissions produced every month from the total fw hotel reaches 21,318 kg. If we calculate the carbon economic value of this amount, it is equivalent to a value of 41 million rupiahs.

Hotels have challenges, which can also be seen from the FnB expert's perspective. Challenges occur in terms of raw materials that do not meet quality standards, as well as fluctuations in sales that are difficult to predict. Lack of stock rotation and overstocking or understocking are also challenges. From the Human aspect, experience is also a challenge for FWM. In addition, customers' lack of awareness of their responsibility for the food ordered is also a challenge to FWM. FWM challenges are also seen from the perspective of hotel restaurant managers. Hotel A and Hotel B have the same challenges in FWM. Hotel A and Hotel B both face challenges in menu planning creativity. The two hotels also have the same challenges in terms of receiving food ingredients. Hotel A and Hotel B both face challenges in their meat and vegetable cutting skills at the food preparation stage.

Despite having the same challenges, the two hotels specifically also have different challenges. Hotel A faces the challenge of creating a variety of food throughout the stay, while Hotel B has to satisfy different preferences. The challenge for Hotel A is in purchasing activities during a sudden event, while for Hotel B is when the number of customers is less than what was booked. Hotel A faces challenges in receiving groceries, especially goods that do not pass QC or damage to storage equipment. Hotel B faces challenges in the availability of goods when purchasing in small quantities from traditional markets. Hotel A faces a challenge regarding the reliability of the equipment which may affect the appearance of the food. Hotel B faces the challenge of managing food rotation to ensure that the food served is fresh and safe.

FWM challenges are also experienced by FoodCycle Indonesia and its customers. FoodCycle Indonesia faces challenges in distributing food aid. FoodCycle Indonesia faces challenges in obtaining sufficient funding to finance its operations. Another challenge faced by FoodCycle Indonesia is the public's perception that FoodCycle Indonesia is a foreign institution. So that people think that FoodCycle Indonesia has no difficulty in funding. While the challenge for customers is related to the taste of food that does not meet expectations or food portions that are too large. Apart from that, variety and the desire to try a lot of food is also a challenge for FWM customers.

Strategies for responding to FWM challenges can also be seen from FnB experts. Selecting competitive vendors and regular market surveys can be a strategy to address FWM challenges. Receiving goods based on purchase orders (PO) and checking with the chef to ensure that

goods are received in good condition is also an FWM solution. Placement of raw materials according to their type, creation of BIN cards, and regular monitoring help in controlling raw material supplies. Employee training and direct supervision during food processing help reduce wastage. Education to customers about their responsibilities in taking food must also be carried out. As well as managing leftover food for recycling or donating through the foodbank mechanism also helps reduce food wastage.

From the Hotel's point of view, Hotel A and Hotel B have different FWM strategies. Hotel A monitors viral trends in the market and creates similar menus to avoid boredom. They also use leftover trimmings or ingredients close to the expiration date for monthly promotional meals. Hotel B Creates a menu based on available food ingredients within a certain period, by limiting food storage time. Hotel A maintains strong relationships with vendors to ensure quality and adherence to hotel standards. They maintain and replace storage equipment regularly. Hotel B Replaced packaging with standard compliant container upon receipt of goods, clearly labeled with an expiration date on goods.

Hotel A rotates off-peak team members to areas that need assistance. Hotel B manages the workflow of the team, ensuring product handling is up to standard. In this case, the two hotels conduct periodic training to improve their skills. Hotel A conducts employee training in food-cutting techniques to produce uniform cuts and reduce residual trimming. Hotel B serves individual small dishes to ease rotation and improve food hygiene, presentation, and quality.

Hotel A performs regular maintenance on equipment and systems to prevent breakdowns and failures that could lead to the wastage of food. They also carry out double control to ensure customer orders are correct and avoid recording errors that can cause returns. Hotel B avoids food returns by understanding diner preferences and avoiding booking errors. Hotel B avoids food returns by understanding diner preferences and reducing return risk through more precise ordering. Hotel A cooperates with Foodbank Indonesia to distribute excess food to those in need. Hotel A Has not utilized unedible food waste. Hotel B uses organic waste as fertilizer in their real estate through a bioconversion process with the help of maggot larvae.

FoodCycle Indonesia and customers also implemented a strategy to answer the FWM challenge. FoodCycle Indonesia seeks to involve various parties, including hotels, restaurants, and supermarkets, in food donations. FoodCycle Indonesia has also built a business entity related to FWM to support the foundation's operational costs without relying on donors. In addition, FoodCycle Indonesia is developing a Rate Card as an additional source of income. Meanwhile, Customers have developed individual strategies for reducing fw and demonstrated sensitivity to the problem through various Individual actions. Individual actions such as sharing leftovers with others and helping to spend unfinished food.

Food waste management (Food Waste Management/FWM) has an effective contribution to achieving several Sustainable Development Goals (SDGs). Although FAO initially linked the issue of food waste directly only with SDG 12, namely responsible consumption and production, observations and field research have shown different results. At least, FWM has a direct link to the three SDGs' achievements, namely SDG 2, SDG 12, and SDG 13.

One of the Sustainable Development Goals (SDGs) is SDG 2, which focuses on Ending Hunger. The target to be achieved is to achieve food security and improved nutrition, as measured by indicator 2.1.2, namely the proportion of the population experiencing food shortages. Food waste management (FWM) can help reduce wastage of resources and ensure

the efficient use of food. In addition, the use of edible food waste through food banks to be donated to those in need also plays a role in efforts to eradicate hunger (Wyngaard & De Lange, 2013). FWM can reduce the number of people experiencing food shortages, thereby contributing to global efforts to end hunger and ensure sufficient food availability.

SDG 12 is a sustainable development goal related to responsible consumption and production. One of the targets to be achieved in SDG 12 is to reduce food wastage, as measured by indicator 12.3.1 on the level of food wastage per capita and food losses in the supply chain. Data from FoodCycle Indonesia shows that food waste production in Indonesia reaches 63 million tons per year, which is equivalent to IDR 330 trillion per year. Carrying out food waste management (FWM) also contributes to saving water and energy used in food production (Juvan et al., 2018).

SDG 13 is a sustainable development goal related to climate action. One of the targets to be achieved in SDG 13 is to increase education, awareness, and human capacity on climate change mitigation, which is measured through indicator 13.3.2 on the number of national policies implemented to reduce the impact of climate change and adopt risk reduction strategies. Food waste management (Food Waste Management/FWM) contributes to climate change mitigation. By reducing food waste, we can reduce methane emissions and help slow climate change. Food waste rotting in landfills produces methane gas, which is a powerful greenhouse gas. Methane gas that accumulates in the atmosphere has an impact on global warming around 21 times stronger than CO₂ (Nordin et al., 2020).

CONCLUSION

SDG 13 is a sustainable development goal related to climate action. One of the targets to be achieved in SDG 13 is to increase education, awareness, and human capacity on climate change mitigation, which is measured through indicator 13.3.2 on the number of national policies implemented to reduce the impact of climate change and adopt risk reduction strategies. Food waste management (Food Waste Management/FWM) contributes to climate change mitigation. By reducing food waste, we can reduce methane emissions and help slow climate change. Food waste rotting in landfills produces methane gas, which is a powerful greenhouse gas. Methane gas that accumulates in the atmosphere has an impact on global warming around 21 times stronger than CO₂ (Nordin et al., 2020).

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