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Study on the Implementation of Food Waste Management in the Pastry Department of The Westin Hotel Jakarta

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ABSTRACT
This study aims to examine the implementation of food waste management practices in the pastry department of The Westin Jakarta Hotel by employing the food waste hierarchy framework, which encompasses five dimensions: prevention, reuse, recycling, recovery, and disposal. The research adopts an applied qualitative approach, utilizing data triangulation through observation, in-depth interviews, and document analysis. Key informants include the *sous chef*, *chef de partie*, and waste management staff. Data were analyzed using an interactive analysis model, which consists of data collection, data reduction, data display, and conclusion drawing. Findings indicate that, within the prevention dimension, production planning based on forecasting, along with the implementation of *FIFO* (First In, First Out) and *FEFO* (First Expired, First Out) systems, has proven effective in minimizing raw material waste. In the reuse dimension, efforts to repurpose leftover dough and unsold products have been implemented, although on a limited scale. For the recycling dimension, used cooking oil from pastry production is collected and handed over to relevant parties for further processing. The recovery dimension is reflected in the use of leftover pastry products as feed for maggots, albeit still at a small scale, while used oil is sold to an external partner for conversion into biodiesel. Waste disposal is carried out through the separation of organic and inorganic waste, in collaboration with third-party service providers to ensure environmentally responsible waste management. Overall, while a range of positive practices have been adopted, improvements are needed in technological integration and the establishment of more efficient partnerships to better support hotel operations and environmental sustainability.
Keywords: food waste management, food waste hierarchy, hotel, pastry department, sustainability.

INTRODUCTION

Tourism is a travel activity that involves moving from one destination to another that is done recreationally without being bound by a specific destination, with the intention of getting a refreshment of mind and taking advantage of free time with family (Sa'ban, Ilwan, & Rosita, 2023). Indonesia, with its cultural diversity and stunning natural beauty, offers huge tourism potential (Pradini, Latif, & Amalia, 2022). The availability of abundant domestic resources, including strategic geographical location, large areas, and natural, cultural, culinary, and other high-value assets, is a significant attraction factor for domestic and foreign tourists, thus positioning Indonesia as a tourism destination that has great potential to be developed (Rahma, 2020).

The tourism sector has a great contribution in driving the economy of the country and society, by involving various parties ranging from providers of goods and services to tourists as consumers who carry out various economic transactions, such as the purchase of tourist attraction tickets, the use of accommodation and transportation services, consumption in restaurants, and the purchase of souvenirs and gifts (Ardiansyah et al., 2022). Bank Indonesia recognizes that the tourism industry plays a crucial role as one of the most efficient sectors in increasing the country's foreign exchange earnings (Haryono, 2024).

Modern tourism uses the 7A concept as a comprehensive framework—Attraction, Accessibility, Amenities, Activities, Attitude, Ambience, and Accelerator—to enhance the traveler experience. Research such as that by Vyas and Vyas (2024) emphasizes the importance of accommodation in influencing tourists' intention to return, with hotels being a crucial part of the amenities that provide services to guests. In Jakarta, there is a wide range of hotels from 1 to 5 stars, and by 2024, hotel supply is projected to increase by 7.8% with the opening of five new hotels, making the Central Jakarta and SCBD areas a top destination. One of the leading hotels is The Westin Jakarta, which offers a range of luxurious amenities and operates at the top of the Gama Tower, providing spectacular views of the city.

However, the high number of guests consuming food at The Westin Jakarta has led to an increase in the volume of food waste, which requires efficient waste management. Food waste, defined as food that is wasted despite being fit for consumption, has significant economic and environmental impacts, with nearly 50% of waste in Jakarta comprising food waste (Fauzia, 2023; Sipsn, 2024). The hotel's food and beverage department generated 6,990 kg of organic waste between October 2024 and January 2025, with the pastry department being the largest contributor. This indicates an urgent need to evaluate and improve the food waste management system, especially after the termination of the hotel's collaboration with its waste treatment partner (Aditya & Kurniawati, 2023; Luthfi & Elvandari, 2024). This study uses the Food Waste Hierarchy theory to analyze waste reduction efforts and eco-friendly waste management practices in the pastry department, with the goal of identifying effective strategies amid operational challenges (Giordano et al., 2020; Papargyropoulou et al., 2014).

The study titled A Hierarchical Pyramid for Food Waste Based on a Social Innovation Perspective highlight how food waste hierarchy frameworks intersect with community innovation, providing important insights into sustainable waste management in the hospitality sector (Zorpas et al., 2021; Lombardi & Costantino, 2021). However, literature that specifically examines food waste in the pastry section remains limited (Astawan et al., 2023; Zakiah et al., 2023). Therefore, this research will conduct an in-depth case study in The Westin Jakarta's pastry department to explore food waste practices, operational barriers such as shelf-life, presentation, and overproduction, and actionable sustainability strategies.

Previous studies such as Haryono (2024) and Rahma (2020) have emphasized the strategic importance of the tourism and hospitality sectors in driving economic growth and supporting environmental sustainability. Haryono emphasized tourism's role in strengthening foreign exchange, while Rahma linked hotel infrastructure to competitiveness through the 7A framework. However, both studies tend to focus on macro-level indicators and do not delve into department-specific food waste concerns. Other scholars such as Dewilda et al. (2022), Desmafianti and Fauzzia (2021), and Ally et al. (2024) provide broader insights into food waste in hotels but without focusing on departments like pastry.

This research aims to fill that gap by applying a micro-level analysis of food waste practices in The Westin Jakarta's pastry department. The study emphasizes the need for tailored waste reduction strategies, especially given the luxury hotel's high turnover and demand for product aesthetics. Through this approach, the study aims to enhance practical understanding of eco-friendly food waste handling, contribute to operational policy development, and expand

academic discourse on food waste reduction in the hotel sector (Hasan et al., 2024; Asiah et al., 2022; Aditya & Kurniawati, 2023).

RESEARCH METHOD

This study adopted a qualitative descriptive approach with an applied research design, aimed at providing an in-depth exploration of food waste management practices in the pastry department at The Westin Jakarta. The qualitative method was chosen to obtain rich, contextual, and narrative-based insights into operational challenges and behavioral patterns in food waste handling. The research population comprised hotel staff directly involved in the pastry and stewarding departments. Through purposive sampling, key informants were selected based on their roles and experience in managing food waste. The sample included the pastry *sous chef*, bakery *sous chef*, *chef de partie*, chief steward, and steward supervisor. These individuals were considered the most knowledgeable about departmental procedures related to food waste and sustainability efforts.

The data collection techniques used in this research included semi-structured interviews, participatory observations, and documentation review. Interview instruments were developed based on the Food Waste Hierarchy framework, focusing on the stages of prevention, reuse, recycling, recovery, and disposal. Observation guidelines were used to record actual practices during food preparation and service. To ensure the validity of data, the researcher used triangulation across methods (interview, observation, and documents) and sources (different personnel with similar roles). Reliability was enhanced through member checking and maintaining a consistent interview protocol. All data were collected over a period of five months, from January to May 2025, to allow for thorough field immersion and repeated data verification.

Data analysis was conducted using Miles and Huberman's interactive model, consisting of three steps: data reduction, data display, and conclusion drawing/verification. Data were coded and categorized using NVivo 12 software, which helped in identifying emerging themes, patterns, and relationships. The researcher followed a systematic procedure—starting with data transcription, coding of key themes, cross-checking with field notes, and synthesizing findings into a coherent narrative. The application of this analytical model ensured a rigorous, iterative interpretation of data, while also supporting transparency and traceability. Overall, this method provided both depth and accuracy in understanding how food waste was managed and what improvements could be made within luxury hotel operations.

RESULT AND DISCUSSION

Implementation of Food Waste *Prevention* Strategy in the *Pastry Department of* The Westin Hotel Jakarta

Effective Production Planning

In the first question about production planning in the *pastry department, Chef* Tomy explained that in the *pastry* team, to prevent *food waste*, *the pastry* team uses a forecasting *system* that includes *weekly forecast* and *fourteen days forecast*.

Table 1. Reservation Update (Weekly Forecast)

Seasonal Taste	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday
	2-May	3-May	4-May	5-May	6-May	7-May	8-May
Breakfast	227	280	250	230	200	160	180
Lunch	71	90	47	2	23	15	31
Lunch MP	95	0	0	22	21	30	35
Dinner	118	143	80	52	7	25	86
Dinner MP	0	0	0	0	0	0	0

Source: Pastry Department, The Westin Jakarta

Every 7 days, this *forecast* data is updated to record the raw material needs based on reservations, *occupancy*, and upcoming *events*, especially for restaurants such as Seasonal Taste, with *the forecast of* the next 7 and 14 days, the *pastry team* can prepare the right amount of ingredients according to the number of *pax* registered for each *event*, so that *the pastry* team can anticipate the need for ingredients and reduce the risk of waste.

Chef Azis added that for events with *a set menu*, an efficient way to avoid *food waste* is to weigh each portion of ingredients to be used. For example, if there are 100 *pax*, the *pastry team* will calculate the amount of ingredients such as *mango sauce* based on a predetermined portion, for example 30 grams per serving. Through this method, the *pastry* team can prepare the right amount of ingredients, according to the needs, so that the ingredients are not wasted.

Chef Je also said that the *pastry* team delivers ingredients twice every week, on Tuesday and Friday, based on the *forecast* that has been prepared a week before.

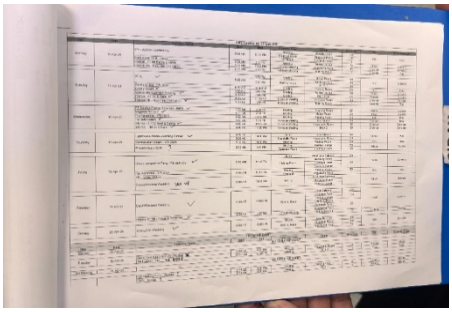

Figure 1. Banquet Forecast

Source: Researcher Documentation

Forecast This is obtained through meetings *banquet meeting* on Mondays and Thursdays, which aims to determine the amount of *Event* and the need for materials for the next one week. Through careful planning, the team *Pastry* can adjust the percentage of materials needed, so that it can anticipate the presence of *Event* and avoid shortages or waste of materials.

In planning, pastry teams face various challenges, especially limited raw materials which often require them to offer alternative menus if the necessary ingredients are not available, to maintain the quality of service and guest satisfaction. Chef Azis explained that sudden demand, especially for sudden events, is a common problem, so pastry teams have to use ingredients that are in the kitchen and apply the concept of "asper chef," where menus are

prepared based on the availability of ingredients. Chef Tomy added that despite making predictions, fluctuations in demand are often surprising, so urgent ingredient orders need to be made with a PO cover system to ensure ingredients are available on time. This situation is exacerbated by the limited daily workforce, where pastry teams often must find additional workers to meet needs when there is a sudden event. Specific strategies in the pastry department involve structured work shift splitting to ensure smooth operations, where the morning shift is responsible for preparing prepared food, the middle shift is supportive, and the afternoon shift focuses on production for the next day. In addition, the pastry team also relies on reservation forecasts to adjust the amount of food prepared, avoiding waste by producing only 30-40% of the number of existing reservations. In the face of the big days, the team has planned the menu in advance and conducted trials to ensure suitability. A just-in-time production strategy is implemented to maintain the freshness of the product, by starting production after the confirmation of the event. The pastry team also adjusts the production system to the restaurant's occupancy rate, ensuring the bread is baked at the right time to maintain freshness. When there is a surge in demand, the team has prepared a backup plan and ordered materials urgently if needed. On the other hand, when demand decreases, adjustments are made by reducing raw materials and the number of daily workers. To maintain efficiency, the pastry team also applies FIFO and FEFO systems in the storage of ingredients, ensuring that the first entry is used first. Despite the obstacles, such as limited storage space and the experience of new staff, the pastry team is committed to training all members to understand the existing procedures. Morning and evening briefings are conducted to ensure each team member understands their duties and maintains operational standards. Materials that are close to the expiration date will be used first, both for staff consumption and processed into new products. This approach not only helps to reduce waste but also ensures product quality is maintained, with the pastry team working hard to continuously improve the production planning system to keep it effective and efficient.

Storage Quality

Regarding raw material storage standards, *Chef* Azis explained that in the *pastry* department, *the pastry* team has three storage standards applied to raw materials, namely *dry store*, *chiller*, and *freezer*. Materials stored in dry *stores*, such as dry materials and packaging that do not require refrigeration, can only be stored for a maximum of one month. For ingredients stored in the *chiller*, which are more sensitive to temperature and must be kept fresh, they can only be stored for three days. Ingredients stored in the *freezer*, such as those that require long-term storage, can be stored for up to one month. To ensure that stored ingredients are used in a timely manner, *the pastry* team implements *a date labeling system*, where each ingredient is labeled with a date to make it easier to control the expiration date and ensure longer use of ingredients first.

Chef Tomy added that for ingredients stored in glass bottles or cans, *the pastry* team puts them at the bottom of the storage shelf. This is being done to reduce the risk of damage if the packaging falls or breaks, so that it will not damage other materials on the top shelf or cause further damage. Meanwhile, for materials that have gone through the *repackaging* process and are moved into plastic containers, the materials are stored on the top shelf. The *pastry team* also always writes a new expiration date after the ingredients are moved to a new container.

This process is important to keep the FIFO (*First In, First Out*) system properly implemented, so that materials that come first or that expire faster can be used first.

Chef Je also revealed that the storage standards applied in the *pastry department* are generally similar across all *kitchen outlets*, including *dry stores*, *chillers*, and freezers. In *the dry store*, the material must be tightly wrapped using a suitable wrap, to avoid contamination and bacterial growth, as the *temperature of the dry store* is in the "*danger* zone". For ingredients stored in the *chiller*, *the pastry* team must be tightly wrapped and can only be stored for three days. It is important to ensure that freshly cooked or still hot ingredients are not directly fed into the *chiller*, as the hot temperatures can increase the risk of contamination and damage the quality of the ingredients. To overcome this, the ingredients that are still hot *are cooled by the pastry* team first at room temperature or by using a *blast freezer* to quickly lower the temperature to a safe temperature before finally being stored in the *chiller*. This process ensures that all ingredients remain safe for consumption and that quality is maintained.

To ensure that *the temperature of the chiller* and *freezer* is maintained, *Chef* Azis said that there is a routine check that is carried out every morning, and the person who is fully responsible for ensuring the temperature *of the chiller* and *freezer* is in optimal condition is.

Figure 2. Pastry Chiller and Freezer Temperature

Source: Researcher Documentation

Regarding raw material storage standards, Chef Azis explained that in the pastry department, the team applies three storage standards, namely dry store, chiller, and freezer. Ingredients stored in dry stores, such as dry ingredients, can only be stored for a maximum of one month, while ingredients in chillers that are more sensitive to temperature must be kept fresh and can only be stored for three days. For ingredients that require long-term storage, freezers are used with a storage time limit of up to one month. To ensure the timely use of ingredients, the pastry team implements a date labeling system by labeling each ingredient with a date. Chef Tomy added that the ingredients in glass bottles or canned packaging are placed at the bottom of the shelf to reduce the risk of damage, while the material that has been moved to a plastic container is stored on the top shelf with a new expiration date written on it. Chef Je explains that this standard applies to all kitchen outlets, where ingredients in dry stores must be tightly wrapped to avoid contamination. Materials that are still hot should not be directly

put into the chiller; instead, they must be refrigerated first to maintain quality. The temperature checks of the chiller and freezer are routinely checked every morning by the Sous Chef, and if the temperature is not suitable, corrective action is taken immediately to ensure that the raw materials remain safe to use.

Chef Tomy added that to keep the *chiller* and *freezer* temperature stable, *the pastry* team avoids opening the door too often, especially on the *chiller*. If the *chiller door is* opened too often, the temperature inside can drop drastically. For example, the ideal temperature for *a chiller* is a maximum of 5°C, but if you open it frequently, it can rise to 8°C, 9°C, or even 10°C, which has entered the *danger zone*, where food can start to spoil. To monitor the temperature periodically, the *pastry* team uses *the* A3 form, which serves to record the temperature of *the chiller* and *freezer* every morning (*AM)* and afternoon (*PM).* If the temperature is not as expected, the *pastry* team will immediately report this to the engineering team. The *engineering* team will then carry out further checks to ensure there is no damage to the cooling system, or if necessary, adjustments are made to the freon so that the temperature is stable again.

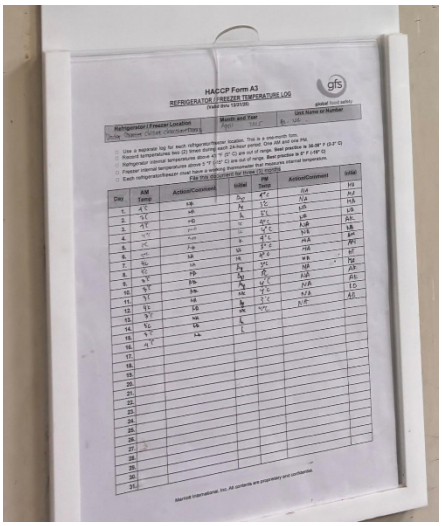

Figure 3. Form A3

Source : Researcher Documentation

Chef Je also explained that in every *shift*, both morning and evening, there are *staff* who oversee filling out a form that is specifically used to monitor *the temperature of the chiller* and *freezer* at their respective outlets. Each *staff* member on duty must fill out this form completely, record the temperature, and include the name and related information. If the temperature is not suitable or there is damage to the cooling equipment, the staff immediately reports it to the engineering team. Information about this issue is also disseminated through communication groups dedicated to staff. This group ensures that the entire team can immediately be aware of any issues that occur and can take steps to deal with them quickly, even if any team members have already gone home. This effort is made so that the pastry team can maintain the quality of the raw materials and ensure that the temperature of the chiller and freezer remains in a safe condition.

Regarding the frequency and procedure of quality inspection of raw materials in chillers and freezers, Chef Azis explained that every day, the pastry team checks the ingredients stored in the chiller, especially those that are at high risk such as milk, eggs, and cream, because the

high protein content makes these ingredients go stale easily. Checks are carried out every morning, where the team checks the expiration date label and ensures that the quality of the material is still good.

Chef Tomy added that although the storage standards in the *chiller* require checking a maximum of once every three days, he always teaches the team to check ingredients every day. This is done to avoid potential negligence, especially during *shift changes* or after team members have taken a break. If there is no regular checking, the material can be missed, and the quality can deteriorate. Therefore, every day the team not only checks the expiration date and implements the FIFO (*First In, First Out*) system, but also checks the quality of the materials. Materials that are already moldy or smelly are immediately removed and discarded.

Chef Je also said the same thing, although the standard in the *chiller* is to check ingredients once every three days, the *pastry team* focuses more on ingredients that are easily contaminated with bacteria, such as *mousse* and *sauce*, because of their wet and moist texture, they are prone to becoming a breeding ground for bacteria. Therefore, these ingredients are a top priority in daily check-ups. While more stable ingredients, such as *butter*, flour, and sugar, do not require too frequent checking, if the temperature inside *the chiller* is well maintained. For *freezers*, which have a longer shelf life, checks are carried out weekly. Generally, it is carried out in conjunction with *deep cleaning activities*. In this check, all the stock of cakes in the *freezer* is checked, *the date* label is updated, and the quality of the cake is checked to ensure that the stored product is still in good condition and suitable for use.

If the *temperature of the chiller* and *freezer* is unstable or the appliance is damaged, *Chef* Azis explains that the first step taken is to move the affected ingredients to a safe storage place. After that, the *pastry* team immediately reported the problem to the *engineering team* to be repaired immediately, so that the temperature can return to normal and the raw materials remain safe.

Chef Tomy added that the *pastry* team uses *an A3 form to record the temperature of* the chiller *and* freezer twice a day. If the check results show an inappropriate temperature, then *the staff* will immediately make a report and submit it to the engineering team for immediate follow-up.

Chef Je also explained further that when there is a problem with the temperature, the *pastry* team directly contacts the *engineering team* through an emergency phone number prepared specifically for situations like this. Usually, the *engineering* team on duty will come immediately to check the problem directly. If the problem can be fixed immediately, maintenance is done immediately at that time, but if the repair cannot be done immediately, the *pastry* team will follow *up* and ensure that the problem is resolved promptly to prevent further damage.

Staff Training and Awareness

To increase the awareness of *pastry staff* in preventing *food waste*, *Chef* Azis explained that production is always adjusted to the needs of guests. For example, for a wedding with 300 guests, only 300 portions are prepared, so that the ingredients used are according to the actual number of guests, minimizing waste.

Chef Tomy added that to further increase *staff* awareness, he provides *training* that emphasizes the importance of careful planning. *Chef* Tomy will direct each *pastry staff* to always pay attention to the *forecast* before starting production, as well as discuss in the team about the needs of the ingredients to be used. Each team is required to report on the amount of material required before starting production, to ensure that the quantity produced is in accordance with the requirements. *Chef* Tomy also emphasized that purchasing ingredients is not a simple process, because it involves procedures that must be followed, so the procurement of ingredients must be more careful and appropriate, to avoid waste and become *food waste*.

Regarding the training or material provided to *pastry staff* and *trainees* regarding the management of raw materials so as not to cause *food waste*, *Chef* Azis explained that in the *pastry department,* every morning before starting production activities, *a briefing* is held to provide information about the activities that will take place that day, including *events* that has been scheduled. *This briefing* aims to make each *staff* and *trainee* clearly know what products need to be produced and how much is needed, so that production can be adjusted to existing needs.

Chef Tomy also added that although there is no formal training in the *pastry* department on raw material management, the *staff* gives practical tips to fellow *staff* and *trainees* to avoid *overproduction*. One of them is to always pay attention to *the hotel* occupancy rate and *forecast* to find out the number of products that must be produced. This effort is carried out so that *the pastry* team can calculate, calculate and ensure the right amount of production so that it can reduce the risk of *overproduction* that can lead to *food waste*.

Based on the results of the interview with Mr. Supra, to prevent *food waste*, the hotel provides regular seminars on food safety standards, such as the HACCP seminar. This training is held at least once a year and must be attended by all *staff* and *trainees,* especially in the *food handler* section. This training aims to ensure that all *staff* and *trainees* understand and apply the correct ways to manage raw materials safely and efficiently. This step is part of a *preventive* effort to manage raw materials well, to avoid unnecessary waste.

Implementation of Food Waste Reuse Practice Strategy in the Pastry Department of The Westin Hotel Jakarta

Reuse of Leftover Dough or Toppings

Based on information from Chef Je and the pastry team, they carefully calculated the ingredients to avoid excess dough. If 3,200 grams are required, and the original recipe is 3,600 grams, recalculations often result in an excess that is utilized for optional products. The rest of the ingredients are stored in a chiller or freezer, depending on their durability, and reused the next day. Products processed from leftover dough such as "bread butter pudding" and "cake pop" maximize the use of ingredients, reduce waste, and serve a variety of desserts. Chef Azis explained that the unsold products will be replaced with menu innovations that are more in line with the trend, to maintain relevance and maximize the use of ingredients. If the pastries don't sell, they are moved to the all-day dining area for the buffet. Previously, the pastry team collaborated with a leftover distribution vendor, but now it provides leftovers to the employee canteen. In retail, they apply discounts on products that don't sell well and move them to the buffet, making sure nothing is wasted. 4.3.2 Discount Products That Are Close to Expiration

Chef Azis explained that to reduce food waste, the pastry department provides a 50% discount on unsold products starting after 5 pm. This system is implemented at Daily Treats from the end of 2024, after the cooperation with SOS ends, with normal prices from 8 am to 5 pm. This discount applies specifically to products such as bread and croissants that are made fresh every day, so that they are sold before the day ends. The pastry team informs promos through in-store brochures and Instagram, helping guests know about discounted products. According to Chef Azis and Chef Tomy, this strategy is very effective, with almost 90% of products sold after the application of the discount, so that waste can be minimized.

Products Approaching Expiration

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Implementation of Food Waste Recycling Strategy in the Pastry Department of The Westin Hotel Jakarta

Organic Waste Treatment

Chef Azis explained that to reduce food waste in the kitchen, the pastry team applies the principle of waste separation by separating organic and non-organic materials. This step supports better waste management and protects the environment. Products that are still edible but not suitable for sale, such as buffet leftovers, are given to employees. The pastry team also ensures the precise use of ingredients to prevent excess, with strict supervision during the production process. Leftover bread and croissants are processed into croutons, cake pop, or bread butter pudding, while leftover ingredients can be reused. The processing process is carried out by maintaining cleanliness and preventing contamination, using separate tools and gloves. The pastry team also works with third parties to process leftovers into compost. Regarding the management of used oil, this oil is stored separately in a special container and sold to vendors to be processed into biodiesel. With these measures, the pastry team seeks to maximize the use of ingredients and minimize waste, while still maintaining cleanliness and sustainability.

Use of Recycled Products

Based on the results of interviews with related parties, Mr. Supra said that the hotel previously ran a program to recycle organic waste into compost through collaboration with PT APM. The compost generated from the program is then distributed back to the hotel for use, but this collaboration does not continue and is replaced by MagaLarva. PT APM used to manage organic waste from all hotels in the Marriott Group network. The system is paid, where the hotel has to pay a transportation fee of 3 million rupiah every month. Because the costs that

must be incurred are quite high, the hotel decided to stop the cooperation with PT APM. The hotel will remain open to re-establish cooperation, if there are institutions that can accommodate and manage organic waste more effectively.

Implementation of Food Waste Recovery Strategy in the Pastry Department of The Westin Hotel Jakarta

Cooperation with the Biodiesel Management Community

Regarding the hotel's cooperation with the biodiesel management community, Mr. Supra explained that the hotel has established an active cooperation with Green Daun Energi. The community routinely takes used oil from hotels to be processed into biodiesel. This cooperation allows the use of used oil, including from the pastry department, for environmentally friendly purposes. Regarding the management of leftover pastry products, most of the leftover food that is still suitable for consumption is distributed to canteens for employees. For example, leftover bread or donuts from an unfinished breakfast will be taken to the canteen. For the rest of the fruit or other organic matter, it will be given to the maggot manager.

Pak Supra explained that maggot managers come regularly, usually once a week, to collect organic waste that has been sorted by the stewarding team. The sorting process is well done, using a metal detector to separate organic and non-organic waste. The rest of the pastry product is temporarily stored in a refuse chiller to prevent bacterial growth before being taken. The main benefit of this collaboration is the reduction in the volume of waste disposed of in landfills. Although there was no direct feedback from maggot managers, this collaboration improved the hotel's sustainability and environmental responsibility. The main challenges faced are transportation costs and partner locations, where hotels are not willing to pay transportation costs for the waste provided free of charge.

Implementation of *Food Waste* Disposal Practice Strategy in the *Pastry* Department of The Westin Hotel Jakarta

Proper Waste Sorting

Regarding the sorting of waste in the *pastry department, Chef* Azis explained that to separate waste in the *pastry kitchen, the* pastry *team* uses different trash cans between organic and non-organic waste. This is done to ensure that waste is not mixed, with organic waste such as food and fruit scraps placed in special containers, while non-organic waste such as plastic, paper, and glassware is placed in different places.

Chef Tomy and *Chef* je added that there are 3 main categories in waste sorting in *pastry,* namely food waste, plastic, and glassware. Food waste, such as leftover fruit pieces and other food scraps, must be separated appropriately so that it does not mix with non-organic materials. Plastic waste and glassware are also separated according to their categories for better management.

Figure 4. Bins in Pastry Department
Source: Researcher Documentation

During the observation process, the researcher only found 2 categories of garbage dumps, namely *food waste* and non-organic, there is no glassware disposal as the two sources have said.

Mr. Supra also explained that all waste is carefully sorted before being disposed of, and to ensure that no hazardous objects are wasted, the *pastry* team also checks using *metal detectors*.

Regarding the challenges in implementing the waste sorting system, *Chef* Azis explained that the main challenge arises when there are new team members who are not familiar with the difference between organic and non-organic waste and food *waste* awareness. To overcome this, *the pastry* team routinely gives *briefings* to the new team.

Chef Tomy added that in the *pastry kitchen*, the team's awareness of waste sorting still needs to be improved, especially for team members who have just joined. Some team members sometimes still mix food waste with non-organic waste.

Figure 5. The Discovery of Paper in the Trash
Source: Researcher Documentation

To overcome this, *the pastry* team always reminds the team to separate the waste properly, as well as add *date labels* and instructions on the trash cans to make it easier to understand.

Chef Je explained that to ensure that the entire team understands waste sorting, the *pastry* team conducts regular training. Every time there are new members, both *trainees* and *daily workers*, the *pastry* team is given *basic knowledge* about the correct waste sorting standards.

Cooperation with Third Parties

Based on an interview with Pak Supra, The Westin Jakarta Hotel has established various ongoing collaborations with several third parties to manage waste better and more environmentally friendly. One of the parties working with the hotel is MagaLarva, which uses larvae as a solution to process organic waste into compost or reusable materials and Green Leaf Energy, which focuses on organic waste management to produce renewable energy. Previously, The Westin had also worked with several *vendors* to process *food waste*, namely PT APM for compost processing, and established a partnership with *Scholars of Sustenance*, a *food rescue* organization that aims to distribute food waste to those in need, even though the contract with the organization was terminated due to problems in contractual and financial agreements.

As long as the cooperation with some *vendors* does not continue, Mr. Supra emphasized that the hotel remains open to establishing partnerships with new parties who share the same interest in managing waste, provided that no additional fees are charged for waste transportation. The waste management mechanism in this hotel is relatively simple, but well structured. The hotel separates the waste according to the predetermined category, then stores it neatly in a special *chiller* for easy transportation.

Each category of waste is taken periodically by a third party that has been invited to work together. Organic and non-organic waste is collected every night, while used oil is collected every two to three weeks, and waste managed by MagaLarva is collected weekly. In this way, hotels can ensure that the waste management process runs efficiently and regularly, without interfering with the hotel's day-to-day operations.

The main benefit of this collaboration is a significant reduction in the *volume* of *food waste* generated by hotels. This not only helps reduce environmental impact but also contributes to the fulfillment of sustainability standards set by hotels and reduces the negative impact of waste on the ecosystem.

Implementation of Management Strategies in *Food Waste* Management in *the Pastry* Department of The Westin Hotel Jakarta

In the *pastry* department of The Westin Hotel Jakarta, *food waste management* is implemented by following the principles in the *food waste hierarchy*, which includes five main stages, namely *prevention*, *reuse*, *recycling*, *recovery*, and *disposal* (disposal). Each of these stages is implemented systematically to reduce food waste, optimize resource utilization, and maintain environmental sustainability.

At the prevention stage, *the pastry* department conducts effective production planning using a *weekly and 14-day forecasting system that is clarified through* daily briefing *before* carrying out operational or production activities. This system allows *the pastry* team to plan the number of raw materials needed based on the number of guests and upcoming events, thus avoiding overproduction and reducing waste of raw materials. To ensure the use of raw

materials for a longer period, the FIFO (*First In, First Out) system is applied*. The smooth running of operational activities is also supported by the provision of HACCP materials for each *food handler* and is also supported by the division of *work shifts* that allow staff *and trainees* to work optimally. Training for staff is also an important part of this prevention, to ensure that each team member understands and applies the principles of efficient raw material management to avoid waste.

At the reuse stage, the strategy applied includes processing leftover dough or *unused toppings* into new products or the same product according to the menu ordered by guests or menu rotation, excess *croissant* residue can also be processed into *bread butter pudding*, which is a popular dessert, or *cake pop* which is made from leftover unused *pieces of cake*. For *pastry products* that are not sold are diverted to be consumed at buffet restaurants or given discounts at certain hours, for example after 5 pm, the goal is to keep the product sold out. These measures aim to reduce food waste and provide social benefits by distributing food that is still suitable for consumption.

At the recycling stage, *food waste* that was previously processed into compost for hotel gardens is no longer managed through collaboration with compost vendors, namely PT APM, due to the high transportation costs that must be borne by the hotel. The hotel also remains open to establishing partnerships with new parties that can offer more efficient and environmentally friendly organic waste management solutions. As an alternative plan, the *pastry* team gives *the leftovers* of the food to the employee canteen. For used oil waste from the *pastry production process*, it will be distributed to the *stewarding* to be collected and then processed by a third party. Non-organic waste remains managed by a third party for recycling, with the aim of reducing the volume of waste disposed of in landfills.

In the recovery stage, The Westin Jakarta Hotel collaborates with the biodiesel management community to process waste oil from *pastry production* into an environmentally friendly alternative fuel, namely Green Energy Leaf. Pastry products that are no longer suitable are also given to maggot managers to be processed into animal feed, namely MagaLarva.

At the disposal stage, *the pastry* department sorts waste wisely and thoroughly, separating organic, non-organic, and fragmented waste. Organic waste, such as food waste, is further processed for recycling or distributed to those in need. Non-organic waste, such as plastic and paper, is separated for recycling, while waste that can no longer be used, such as contaminated or damaged materials, is disposed of according to established procedures. For the used oil, it will be collected by the *stewarding team* on an 18-liter conductor and stored until Green Energy Leaves pick it up. This process ensures that waste disposal is carried out in an environmentally friendly manner and supports the principles of sustainability that are the hotel's main commitment.

CONCLUSION

The research findings indicate that food waste management in the pastry department has effectively followed the principles of the food waste hierarchy, implementing prevention, reuse, recycling, recovery, and disposal strategies. Prevention was achieved through careful raw material planning, the use of *FIFO* and *FEFO* systems, regular storage checks, efficient shift division, and *HACCP* training. Reuse practices included repurposing leftover dough and

distributing unsold food to buffet restaurants or employee canteens, successfully reducing food waste by 90%. Recycling involved channeling food-grade items to canteens and processing used oil through third parties, while recovery efforts focused on converting pastry waste into maggot feed, though this remains limited in scale. Waste disposal was managed through the separation of organic and inorganic waste in collaboration with third-party providers. Despite these positive outcomes, further improvements are needed to enhance sustainability and effectiveness. Future research should explore the integration of advanced technologies and broader recovery initiatives to optimize food waste management in luxury hotel settings.

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