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Implementation of Zero Food Waste in the Buffet Restaurant Service
(Case Study: Sheraton Grand Jakarta Hotel)

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ABSTRACT

This study is motivated by the growing issue of food waste in the hospitality industry, particularly in buffet services, which are characterized by large-scale food production. It aims to analyze the factors causing food waste and to implement the zero food waste concept in buffet restaurant services at Sheraton Grand Jakarta Hotels. The research method is a descriptive qualitative approach, employing observation, interviews, and documentation. The informants in this study include the Chef de Cuisine, Chef de Partie Hot Kitchen, and Chef de Partie Pastry Bakery. The results show that food waste is influenced by operational factors, inventory system factors, and hotel quality standards and regulations. Zero food waste is implemented through the stages of planning and production, serving, monitoring, and reuse and redistribution. The efforts include using occupancy data, implementing batch cooking, controlling serving container size, a gradual refill system, recording waste logs, and collaborating with external organizations to redistribute surplus food that is still suitable for consumption. In conclusion, the implementation of zero food waste has been carried out systematically and in an integrated manner.

Keywords: *Zero Food Waste, Buffet Service, Sheraton Grand Jakarta Hotels*

Introduction

The hotel industry in Indonesia, particularly in Jakarta, has experienced significant growth, leading to an increase in large-scale food and beverage operations (BPS, 2023). This growth has led to higher levels of food production and service, which, in turn, contribute to food waste in hotel operations [1]. Globally, the Food and Agriculture Organization reported that approximately 1.3 billion tons, or one-third of the world's total food production, is wasted each year [2]. A United Nations Environment Program report noted that in 2019, approximately 931 million tons of food were wasted at the retail, food service, and household levels [3]. In Indonesia, BAPPENAS estimated that food waste amounts to 20.93 million tons per year, with an average of approximately 300 kg per capita [4]. This condition indicates that food waste is a structural problem related to food production, distribution, and consumption systems [1]. In the hotel industry, buffet services have operational characteristics that may increase food waste because their service system requires the availability of relatively large quantities of food to maintain service standards [5], [6]. Studies indicate that serving waste in buffet services can account for approximately 20–30% of total food waste, while guests' excessive portion-taking further increases the volume of waste [7], [8]. Therefore, waste management in buffet services requires a more systematic approach than that applied in restaurants. In response to this problem, the concept of zero food waste has emerged, emphasizing systematic efforts to minimize food waste through production planning, waste monitoring, stock control, and integrating sustainability strategies into kitchen operations [9]. This concept is understood as a managerial approach that requires cross-functional coordination and organizational commitment to reducing food waste [1], [10]

Food waste has become a major issue in the hospitality industry, particularly in buffet services, which involve large-scale food production and the need to maintain food availability until the end of operational hours. Buffet service systems have the potential to generate food waste due to overproduction, fluctuations in guest numbers, and service standards that require food displays to remain full and visually appealing throughout the service period. As an effort to address this issue, the concept of zero food waste has emerged as a strategic approach that emphasizes waste prevention through production planning, inventory control systems, waste monitoring, and sustainable food redistribution [9].

Research on food waste in the Indonesian hospitality sector has generally focused on quantifying waste volume and consumer behavior [11][12]. Studies specifically discussing the implementation of the zero food

waste concept in five-star hotel breakfast buffet services remain relatively limited. In addition, previous studies have not extensively examined how operational factors, inventory systems, quality standards, and hotel regulations influence food waste generation in buffet services. Therefore, this study aims to fill the existing research gap by conducting an in-depth analysis of the implementation of zero food waste practices in buffet services at a five-star hotel in Indonesia, specifically at Sheraton Grand Jakarta Gandaria City Hotel. This study contributes to the development of the sustainable hospitality and food waste management literature, particularly in the operational context of breakfast buffets in five-star hotels in Indonesia. In practice, this study provides insights into the implementation of forecasting, inventory control, batch cooking, gradual refill systems, and food redistribution practices to support the application of the zero food waste concept in hotel buffet restaurant services. The findings are expected to serve as a reference for the hospitality industry in developing more integrated and sustainable food waste management systems.

Research Methods

The research design used in this study is a descriptive qualitative approach. This method enables researchers to understand phenomena in depth through observation, interviews, and documentation [13] . The study was conducted at Sheraton Grand Jakarta Gandaria City Hotel, located at Jl. Iskandar Muda, Kebayoran Baru, DKI Jakarta, Indonesia, 12240. The scope of this study was limited to the analysis of food waste in buffet services, particularly during breakfast operational hours (06:00–10:00 WIB), as well as food preparation waste generated during breakfast menu preparation at Sheraton Grand Jakarta Hotel. The study was conducted over a six-month period, from July to December 2025, encompassing observation, interviews, documentation collection, and data analysis. The data in this study were obtained from the waste management reports of Sheraton Grand Jakarta Gandaria City Hotel for the period from July to September 2025. The main data consisted of descriptive information related to the processes of collecting, sorting, and handling food waste carried out by the hotel. The data sources used in this study were divided into two categories: primary and secondary data [14]. Primary data were collected directly through observations of breakfast buffet operations and structured interviews conducted via mobile phone with the Chef de Cuisine, the Chef de Partie of the Hot Kitchen, and the Chef de Partie of Pastry Bakery. Secondary data were obtained from internal hotel documents, including food waste reports from July to September 2025. These documents were used to complement the primary data and provide a clearer overview of the implementation of zero-food-waste practices in buffet services at the Sheraton Grand Jakarta Hotel. The data collection techniques employed in this study included observation, interviews, and documentation. These techniques were selected to obtain comprehensive data and to support the completeness and accuracy of the research findings [15]. The research instruments were adjusted to the study's focus on the implementation of zero food waste in the buffet restaurant service at Sheraton Grand Jakarta Hotel. Data analysis was conducted descriptively and qualitatively to comprehensively explain the phenomenon of food waste in buffet services and to identify strategies for implementing zero food waste. The analysis process was carried out continuously from the data collection stage to the conclusion stage [16]. To ensure the credibility and validity of the research data, information obtained from observations, interviews, and documentation was carefully selected to identify aspects directly related to menu planning, serving processes, and food waste management. This process involved data triangulation, which simplified complex data into a more organized, systematic form, thereby facilitating analysis and interpretation.

Results and Discussion

Factors Causing Food Waste

Based on data collected at Sheraton Grand Jakarta Hotel, several factors were identified as influencing food waste in the restaurant buffet service. These factors include operational factors, inventory systems, and hotel quality standards and regulations, which are consistent with the findings of Filimonau and De Coteau [11].

a. Operational factors

The operational system implemented includes several components, such as the availability of work guidelines, the determination of production quantities, interdepartmental communication, and the ability to anticipate changes in guest numbers. This is consistent with the studies by Filimonau [11], Principato [12], Martin-Rios [13], and Tomaszewska [7], which state that operational factors in buffet services play an important role in influencing the occurrence of food waste through the availability of work guidelines, production planning, interdepartmental coordination, and the ability to adjust production quantities [7], [12], [13], [14]. All of these components play a role in determining the effectiveness of food production management and the alignment between the amount of food provided and guest consumption. Work guidelines at the Sheraton Grand Jakarta

Hotel help prevent food waste. If such guidelines are absent, unclear, or not implemented, food waste will increase. The Chef de Partie added that understanding of these work guidelines is strengthened through regular monthly training, ensuring that all staff can consistently apply operational standards. This aligns with [21], who stated that staff training and education are important factors in improving the effectiveness of food waste reduction policy implementation in the food service sector [21].

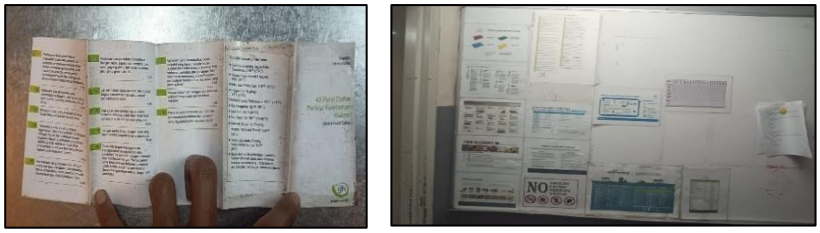

Figure 1. Written Work Guidelines & Handbook

The findings of this study indicate that operational uncertainty remains a major challenge in managing food waste in buffet services, particularly in determining production quantities and responding to fluctuations in guest numbers. The mismatch between production quantities and actual guest consumption can lead to overproduction, especially when changes in guest attendance are difficult to predict accurately. This condition is consistent with Martin-Rios' [13] findings, which stated that inaccurate forecasting and overproduction are among the primary causes of food waste in the hospitality industry [20]. Sheraton Grand Jakarta Hotel has sought to minimize this risk by using occupancy data to determine production quantities. Historical guest consumption patterns and reservation data are also used to estimate food demand and evaluate surplus food at the end of operational hours. These practices align with the study by Filimonau [11], which emphasized that production planning based on demand forecasting and operational data can help reduce discrepancies between food production and consumption [17]. However, the implementation of this strategy has not been fully optimal because buffet service standards position food abundance and the continuous availability of menu items as indicators of service quality. As a result, food displays must remain full and visually appealing throughout the breakfast service period, even when guest numbers fluctuate unexpectedly.

The study also found that effective interdepartmental communication plays an important role in reducing food waste in buffet operations. Coordination between the Food and Beverage Product division, the Food and Beverage Service department, and the reservation team enables the kitchen staff to receive updated information regarding guest numbers and food conditions in the buffet area. Buffet runners and service staff routinely report food availability directly to the kitchen team so that production adjustments can be made promptly. This finding supports the argument of Filimonau and De Coteau [11], who stated that weak internal communication in food service operations contributes to production inefficiency and increased food waste [18]. Nevertheless, fluctuations in guest numbers continue to create uncertainty in buffet operations, leading to unavoidable food surplus at the end of service periods. This finding is consistent with Tomaszewska [7], who explained that discrepancies between estimated and actual guest attendance can significantly increase serving waste in buffet services [7]. Therefore, the implementation of zero food waste should not be viewed solely as a technical operational issue, but also as a managerial challenge related to service design, quality standards, and organizational priorities. The findings suggest a trade-off between maintaining guest satisfaction through abundant buffet presentation and achieving resource efficiency through food waste reduction strategies.

b. Inventory System Factors

The implementation of the stock recording system at Sheraton Grand Jakarta Hotel has been carried out in a structured manner as a basis for raw material management. This is consistent with the findings of Dora [15], who stated that ineffective inventory management, including inaccurate stock recording, contributes to increased food waste in food service operations [1]. Inaccurate stock data may lead to overstocking, thereby increasing the risk of food waste. Stock management has been conducted through an available formal recording system. This condition is supported by Principato [16], who stated that without a structured stock monitoring system, raw material management tends to rely on individual experience [22]. In addition, the Chef de Partie added that direct field checks are conducted to ensure consistency between system data and actual conditions [16]. The stock data obtained are then used as the primary reference to determine production needs, taking into account material availability and the estimated number of guests. This aligns with Martin-Rios [13], who emphasized that using stock data improves planning accuracy, thereby reducing discrepancies between raw material needs and availability [13].

The implementation of the First-In, First-Out (FIFO) and First-Expired, First-Out (FEFO) methods at Sheraton Grand Jakarta Hotel is part of the raw material management system to minimize the risk of expired product waste. This is consistent with the findings of Principato [16], who stated that effective inventory

management practices, including the implementation of FIFO and FEFO, play an important role in reducing food waste in the food service sector. Irregular stock rotation may cause raw materials to be overlooked until they exceed their safe consumption period, thereby increasing the risk of food waste. The observation results indicate that stock rotation using the FIFO and FEFO methods has been carried out clearly and consistently on a daily basis. This is demonstrated through routine checks of date labels and the shelf life of materials as a form of operational control. The implementation of the FIFO and FEFO systems is shown in Figure 2.

Figure 2. Application of the FIFO and FEFO Systems

The findings show that implementing FIFO (First In, First Out) and FEFO (First Expired, First Out) systems plays an important role in reducing raw material waste caused by quality deterioration and product expiration. Raw materials are used based on storage period and expiration date, minimizing the risk of unused stock becoming waste. This finding is supported by Principato [16], who emphasized the importance of integrating inventory management to reduce food waste in the hospitality industry.

The use of historical consumption and occupancy data also contributes to operational efficiency by improving purchasing planning and minimizing excess inventory. Through demand pattern analysis, hotels can better align stock levels with actual consumption needs, reducing the discrepancy between supply and demand. These findings are consistent with [17], who highlighted the importance of using historical data to improve inventory efficiency and reduce food waste [10].In addition, routine inventory evaluation serves as a monitoring and preventive mechanism to avoid overstocking and unnecessary waste. Continuous monitoring supports operational efficiency and strengthens food waste reduction practices, as noted by Caldeira [5]. Overall, the integrated inventory system supports the implementation of zero food waste practices in buffet operations at Sheraton Grand Jakarta Hotel.

c. Hotel Quality Standards and Regulatory Factors

Hotel quality standards and regulatory factors include regular replacement policies, serving time limits, food safety procedures, and food redistribution policies. Martin-Rios [13] and Tomaszewska [7] stated that operational standards in buffet services significantly influence food waste generation through refill policies, time controls on serving, and food safety restrictions [7] [20]. At Sheraton Grand Jakarta Hotel, regular replacement policies are implemented to maintain service quality while controlling serving waste. Production quantities are adjusted according to guest consumption levels through gradual refill systems, container size management, and batch cooking. Food is prepared progressively based on real-time guest consumption patterns to prevent excessive display while maintaining buffet appearance. This finding supports Wu and Teng [8], who identified gradual production and consumption monitoring as effective strategies for reducing buffet food waste [8].

Figure 3. Display Buffet

Serving time limits also influence the potential for food waste. Food exceeding display limits is first evaluated according to food safety and quality standards before being categorized as waste. If still suitable, it may

be reused for internal purposes such as staff meals. Smaller containers are also used toward the end of operations to reduce food surplus while maintaining buffet presentation. The findings indicate that hotel quality standards and food safety regulations create a dilemma between maintaining premium service quality and reducing food waste. Five-star hotel buffet standards require food to remain fresh, attractive, and prominently displayed until operations end, leading to the replacement of food that may still be safe to consume but no longer meets presentation standards [24]. Furthermore, HACCP-based food safety procedures regulate storage, cooking, holding, and serving temperatures, as well as the duration of service, limiting opportunities for reutilization and increasing food waste [25]. To address this issue, Sheraton Grand Jakarta Hotel implements adaptive strategies, including batch production, gradual refills, adjustments to container sizes, and regular food monitoring. These approaches aim to maintain food quality while minimizing overproduction and excessive food display. The findings align with those of Filimonau and De Coteau [11], who argued that premium hospitality standards often conflict with resource-efficiency and food-waste-reduction efforts [14]. Therefore, implementing zero food waste in hotel buffet services requires balancing service quality, food safety, and sustainability principles without compromising guest satisfaction.

Implementation of Zero Food Waste in Buffet Services

Based on the results of data collection conducted at Sheraton Grand Jakarta Hotel, it was found that the implementation of zero food waste in buffet services is carried out through several stages: planning and production, serving, monitoring, and reuse and redistribution. This aligns with the concept of food waste management proposed by Principato [12] and UNEP [3], which states that efforts to reduce food waste are carried out in an integrated manner through control at every operational stage, from planning to reuse [3], [12].

a. Planning and Production Stage

Based on data collected at Sheraton Grand Jakarta Hotel, the planning and production stage includes several components: occupancy data, raw material purchasing, standardized recipes, raw material processing, and portion control. This is in line with Martin-Rios [13] and Papargyropoulou [18], who stated that the planning and production stage begins with occupancy data, controlled procurement of raw materials, the use of standardized recipes, raw material processing, and production portion control [13], [18]. All of these components support the accuracy of production planning and align the amount of food prepared with operational needs. The planning and production stage includes occupancy data, raw material purchasing, standardized recipes, raw material processing, and portion control. Martin-Rios [13] and Papargyropoulou [18] explained that these components are essential for aligning production quantities with operational needs and reducing food waste [13], [18]. At Sheraton Grand Jakarta Hotel, production planning is based on estimated occupancy data. For example, if breakfast reservations reach 250 pax, the kitchen team adjusts protein purchases according to projected consumption. This supports Filimonau [11], who emphasized that accurate guest forecasting is important for preventing food overproduction in hotels [17]. The use of occupancy data helps balance production levels with actual consumption, minimizing food surplus from the outset of operations. This finding aligns with Papargyropoulou [18] and Martin-Rios [13], who highlighted the importance of integrating procurement systems with production planning to prevent food waste [13], [18].

Standardized recipes function as operational guidelines for ingredient quantities, processing methods, and production output. These standards ensure consistency in food production and reduce waste caused by production discrepancies. According to Papargyropoulou [18], operational standardization is one of the key preventive strategies for reducing food waste during the production stage [22]. At Sheraton Grand Jakarta Hotel, recipes include ingredient details, portion gram weights, and preparation methods, with adjustments based on the number of guests. Raw material processing is carried out efficiently to maximize material utilization and minimize waste. Ingredients are processed systematically through efficient cutting techniques and the reuse of suitable leftovers, such as carrot peels for stock and near-expiry baguettes for garlic bread. This finding is consistent with Papargyropoulou [18], who emphasized that waste prevention at the early processing stage is more effective than reprocessing waste later [22]. In addition, portion control is used to regulate food production quantities based on estimated guest consumption. Although buffet guests are free to choose their portion sizes, production quantities are controlled to reduce the risk of overproduction and food waste.

b. Serving Stage

Based on data collected at Sheraton Grand Jakarta Hotel, the serving stage includes several components: buffet design, container size, batch cooking, and refilling restrictions. This aligns with Papargyropoulou [18], who stated that food waste control at the serving stage is achieved through the arrangement of buffet design, container capacity, a gradual production system, and a controlled refilling mechanism to align food availability with consumption levels [18]. This aligns with Principato [16], who stated that serving design influences consumption behavior and food waste levels in food service operations [12]. Based on the interview results, the three informants

stated that buffet design considers aesthetics, guest movement flow, and operational efficiency. The buffet is organized systematically, grouping menus by food categories such as carbohydrates, vegetables, plant-based proteins, and animal-based proteins.

Figure 4. Design of the Main Course Buffet and Egg Station

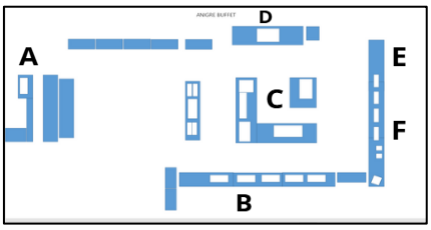

Figure 5. Overall Buffet Design

Based on the observation results, implementing batch cooking, container size control, and a gradual refill system helps align the quantity of food produced with guest consumption levels during operational hours. When guest consumption begins to decline, the kitchen team switches to smaller serving containers to maintain food freshness while minimizing surplus. This finding supports Principato [16], who stated that serving system control, including portion and presentation management, influences consumption behavior and contributes to reducing food waste in food service operations [12]. At the start of breakfast operations, only a limited quantity of food is prepared for refills, and production is gradually increased as stock levels decrease, while considering the number of guests who have not yet arrived. This approach helps maintain food quality and freshness while reducing the possibility of overproduction. The findings are consistent with Filimonau [14], who emphasized that gradual production control in kitchen operations plays an important role in improving operational efficiency and minimizing food waste in the hospitality industry [18]. Furthermore, the gradual refill system serves as a control mechanism, ensuring that additional food is served in line with actual guest consumption during operational hours. Active monitoring by the kitchen and service teams allows the refill frequency to be adjusted based on buffet conditions and guest demand. This strategy minimizes excessive refilling, which can result in leftover food at the end of service. The findings are in line with Martin-Rios [13], who stated that buffet food waste can be reduced through management of refill frequency and serving adjustments [20]. Nevertheless, limited refilling is still maintained until the end of operational hours to preserve buffet presentation standards and ensure that food displays do not appear empty.

c. Monitoring Stage

Based on data collected at Sheraton Grand Jakarta Hotel, the monitoring stage includes several components: daily waste records, material classification, monthly follow-up, and corrective actions. This aligns with Dhir [1] and Papargyropoulou [18], who stated that the monitoring stage should include waste recording, classification of waste sources, periodic evaluation, and continuous corrective actions [1], [18]. All of these components serve to identify sources of waste, evaluate the level of food waste, and provide a basis for decision-making on operational improvements. Waste recording is carried out routinely at the end of each operational period by the steward team or the Chef on Duty.

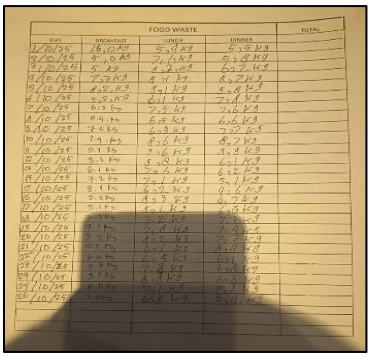

Figure 6. Daily Waste Log Form

Implementing waste monitoring through a waste log helps the kitchen department evaluate which types of food most frequently experience surplus and contribute to food waste during buffet operations. Waste monitoring is conducted by recording waste generated at various operational stages, including food preparation and serving. This process enables the hotel to identify patterns of waste generation and determine which menu items most often lead to overproduction or low consumption. These findings are consistent with Filimonau and De Coteau [11], who emphasized that identifying and mapping sources of food waste constitute important steps in food waste

management within the hospitality industry [6]. Implementing waste monitoring through a waste log helps the kitchen department identify the food items that most frequently generate surplus during buffet operations. Waste is recorded at different operational stages, including preparation and serving, enabling the hotel to analyze waste patterns and evaluate overproduction or low-consumption menu items. This finding supports Filimonau and De Coteau [11], who emphasized that identifying food waste sources is an important step in hospitality waste management [6]. Waste separation is carried out according to the location where the waste occurs. Preparation waste is identified in production areas such as the kitchen, commissary, and butcher section, while serving waste is collected in the stewarding area. At the disposal stage, waste is categorized into organic and inorganic types. However, detailed waste mapping still requires further development to support more comprehensive monitoring and evaluation [24]. Waste log data are then used to improve forecasting, production planning, and buffet display arrangements in future operations. Through periodic evaluations and coordination meetings, the hotel reviews the effectiveness of waste management strategies and identifies operational improvements. This practice aligns with UNEP [3], which highlighted the importance of data-based monitoring and periodic evaluation in improving food waste management systems [3]. Data from July–September 2025 show a gradual decline in food waste, from 44.123 kg in July to 32.650 kg in August and 29.253 kg in September. These findings indicate that implementing zero food waste not only reduces waste but also improves operational efficiency through integrated monitoring, forecast-based adjustments, production control, and buffet display management.

d. Reuse and Redistribution Stage

Based on data collected at Sheraton Grand Jakarta Hotel, the reuse and redistribution stage includes several components: standard procedures, the use of food that has not yet been served, collaboration with social institutions or food banks, and records of donated food. This is in line with Filimonau and De Coteau [11] and UNEP [3], who stated that the process of reuse and redistribution in food waste management includes clear procedures, the sorting of food that is still suitable for consumption, distribution mechanisms with external parties, and distribution records [3], [11]. All of these components play a role in maximizing food utilization while ensuring the redistribution process complies with applicable food safety standards and regulations. Standard procedures play a role in food waste management by ensuring food safety while reducing operational waste. This is supported by UNEP [3], which stated that food reuse must be carried out through standardized procedures to ensure safety while supporting food waste reduction [3], [11]. Reuse is only carried out for materials that are still in a safe condition and have not been served to guests. Food that has been displayed in the buffet is not reused due to considerations of quality and food safety. The utilization of food that has not yet been served plays a role in food waste management, aiming to reduce serving waste more effectively. This aligns with Filimonau and De Coteau [11], who stated that reusing materials that have not yet been used can reduce waste in hotel operations. Food that has not yet been served to guests can be reused, either for the next service period or processed into another menu item. Observation results show that refillable food is separated before being displayed in the buffet area, so it can be reused in accordance with applicable food safety standards. For example, the daging kalio menu served at the breakfast buffet, with part of it stored in a hot box for refilling, can be reused as a different menu item, such as daging rendang. This indicates that the reuse process was considered before the serving stage, not only after food is left as leftovers.

Figure 7. Food Distribution

The findings of this study support the concept of sustainable hospitality, which emphasizes integrating operational efficiency, service quality, and environmental sustainability into hotel operations. The implementation of batch cooking, refill limitations, and waste monitoring demonstrates efforts to control food waste through more adaptive operational approaches. The study also indicates that the successful implementation of the zero food waste concept is strongly influenced by management commitment and interdepartmental coordination. These findings are consistent with those of Filimonau and De Coteau [11], who stated that reducing food waste in hospitality services requires integration among operational systems, organizational coordination, and continuous commitment within hotel management [18].

The implementation of zero food waste at Sheraton Grand Jakarta Hotel is carried out through several interconnected operational stages. The process begins with forecasting and using occupancy data to estimate food production quantities based on occupancy levels and guest consumption patterns. These data are subsequently used in raw material purchasing processes to avoid excessive stock levels. Within the inventory system, the hotel applies FIFO (First In, First Out) and FEFO (First Expired, First Out) methods to ensure optimal utilization of raw materials and minimize the risk of product expiration.

At the serving stage, implementing batch cooking and adjusting production quantities enables food to be produced gradually to meet operational requirements, thereby reducing the risk of overproduction. During buffet display operations and gradual refill processes, food is replenished progressively using appropriately sized containers to maintain buffet presentation standards without overfilling. Throughout operational activities, the hotel conducts waste monitoring using waste logs to record the types and quantities of food waste generated as part of the evaluation process for food waste control. Food that remains suitable for consumption is then reused or redistributed to external parties through collaboration with social organizations, while waste that cannot be reused proceeds to the final disposal stage in accordance with hotel waste management procedures. All of these stages are evaluated periodically through evaluation and continuous improvement processes to enhance the effectiveness of zero food waste implementation and support sustainable hotel operations.

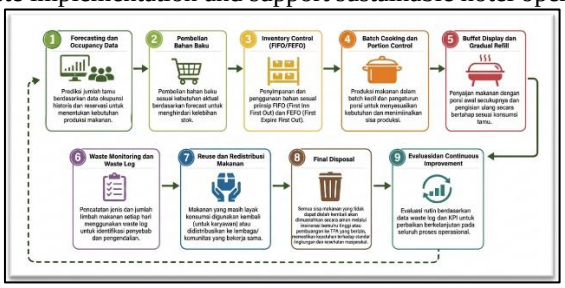

Figure 8. Integrated Flow of Zero Food Waste Implementation at Sheraton Grand Jakarta Hotel

The diagram illustrates that the implementation of the zero food waste concept at Sheraton Grand Jakarta Hotel is carried out through several interconnected operational stages. The process begins with forecasting and occupancy data analysis, which serve as the basis for estimating food production based on guest occupancy levels and consumption patterns. This information is then applied in the raw material purchasing process to prevent excessive food stock. In the inventory management system, the hotel implements FIFO (First In, First Out) and FEFO (First Expired, First Out) methods to ensure optimal use of raw materials and minimize the risk of product expiration. During the food preparation and serving stage, the hotel uses batch cooking and portion control, gradually producing food and adjusting portion sizes to meet operational needs, thereby reducing overproduction. In the buffet display and gradual refill stage, food is replenished incrementally using appropriately sized serving containers to maintain buffet presentation while avoiding excessive food availability. Throughout the operational process, the hotel conducts waste monitoring through waste logs to record the types and quantities of food waste as part of the evaluation and control process. Food that remains suitable for consumption is reused or redistributed to external parties through food reuse and redistribution programs. Meanwhile, food waste that cannot be reused is processed in the final disposal stage in accordance with the hotel's waste management procedures.

All of these stages are regularly reviewed through evaluation and continuous improvement processes to enhance the effectiveness of the zero food waste implementation and support the sustainability of the hotel's operational practices. Furthermore, collaboration with external organizations such as Scholars of Sustenance (SOS) demonstrates the hotel's efforts to redistribute surplus food that remains safe for consumption, preventing it from becoming operational waste. The recording of donated food volumes serves as a transparency mechanism and as a basis for evaluating the effectiveness of sustainable surplus food management. This practice supports Mitricia [19], who stated that food redistribution to external parties is an effective strategy for reducing food waste while simultaneously generating social benefits [10]. This study is limited to food preparation waste and serving waste generated during breakfast buffet operations. The limitation was established to maintain the study's focus on operational stages that significantly contribute to food waste generation in buffet services.

Conclusion

The findings show that the main causes of food waste in buffet services at Sheraton Grand Jakarta Hotel originate from operational factors and hotel quality standards. Operational challenges, such as determining production quantities and responding to fluctuations in guest numbers, often create discrepancies between food production and actual consumption, increasing the risk of overproduction and serving waste. Although occupancy-

based forecasting has been implemented, uncertainty in guest attendance and consumption patterns remains a major challenge. Hotel quality standards and food safety regulations also contribute significantly to food waste generation. The implementation of the zero food waste concept at Sheraton Grand Jakarta Hotel has been integrated across planning and production, serving, monitoring, and reuse and redistribution stages. In the planning stage, the hotel applies occupancy-based forecasting, raw material purchasing management, standardized recipes, optimized material utilization, and portion control, although consistency in recipe implementation still requires improvement. However, refill activities that continue until the end of operational hours still create the potential for serving waste. At the monitoring stage, the hotel conducts daily waste recording and classification, and monthly evaluations, although waste classification remains insufficiently detailed for comprehensive analysis. In the reuse and redistribution stage, the hotel has implemented procedures for utilizing unserved food and collaborating with food banks and social institutions. This demonstrates the hotel's commitment to sustainable hospitality and social responsibility, though redistribution practices are constrained by food safety standards and internal regulations. Theoretically, this study contributes to the sustainable hospitality literature by demonstrating that hotel operational systems balance service quality standards with efficient food waste management. Practically, the findings highlight the importance of occupancy-based forecasting, batch cooking, gradual refill systems, FIFO and FEFO inventory methods, and waste monitoring in supporting zero food waste practices. Collaboration with external organizations also demonstrates the potential for more sustainable surplus food management systems. This study is limited because it does not quantitatively measure reductions in food waste or operational cost efficiency resulting from zero-food-waste strategies. Future studies are recommended to combine qualitative and quantitative approaches by measuring food waste reduction volumes, food cost savings, and operational efficiency indicators for a more comprehensive evaluation of zero food waste implementation in the hospitality industry.

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