



THE PHENOMENON OF FOOD WASTE IN BREAKFAST BUFFET SERVICES FOR SUSTAINABLE TOURISM

FENOMENA PEMBOROSAN MAKANAN DALAM LAYANAN PRASMANAN SARAPAN UNTUK PARIWISATA BERKELANJUTAN

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Abstract

Food waste in buffet services in the tourism sector is a strategic issue that has significant impacts on environmental, economic, and social aspects, especially in the context of efforts to achieve sustainable tourism. This study aims to analyze in-depth strategies for preventing food waste in buffet services by highlighting operational practices, guest behavior, and managerial policies implemented in the field. The research approach uses qualitative methods with data collection techniques through direct observation, in-depth interviews with hotel managers and staff, and documentation studies related to the food production and serving processes. The research results indicate that the most effective food waste prevention strategies include ongoing guest education on responsible consumption behavior, the implementation of flexible and adaptive portion sizes tailored to guest needs, and staff capacity building through training on food management and waste mitigation. Furthermore, strengthening coordination between the kitchen, restaurant service, and management is also crucial in ensuring optimal strategy implementation. These findings provide practical and academic contributions to the tourism industry by offering recommendations that can serve as a basis for developing more efficient and sustainable policies and operational practices, thereby reducing the negative impact of food waste while improving the quality of buffet service..

Keywords : food waste, buffet service, sustainable tourism.

Abstrak

Limbah makanan dalam layanan prasmanan di sektor pariwisata merupakan isu strategis yang berdampak signifikan pada aspek lingkungan, ekonomi, dan sosial, terutama dalam konteks upaya mencapai pariwisata berkelanjutan. Studi ini bertujuan untuk menganalisis strategi mendalam dalam



mencegah pemborosan makanan pada layanan prasmanan dengan menyoroti praktik operasional, perilaku tamu, dan kebijakan manajerial yang diterapkan di lapangan. Pendekatan penelitian menggunakan metode kualitatif dengan teknik pengumpulan data melalui observasi langsung, wawancara mendalam dengan manajer dan staf hotel, serta studi dokumentasi terkait proses produksi dan penyajian makanan. Hasil penelitian menunjukkan bahwa strategi pencegahan limbah makanan yang paling efektif meliputi edukasi berkelanjutan kepada tamu tentang perilaku konsumsi yang bertanggung jawab, penerapan ukuran porsi yang fleksibel dan adaptif sesuai dengan kebutuhan tamu, serta peningkatan kapasitas staf melalui pelatihan manajemen makanan dan mitigasi limbah. Selain itu, memperkuat koordinasi antara dapur, layanan restoran, dan manajemen juga sangat penting dalam memastikan implementasi strategi yang optimal. Temuan ini memberikan kontribusi praktis dan akademis bagi industri pariwisata dengan menawarkan rekomendasi yang dapat menjadi dasar pengembangan kebijakan dan praktik operasional yang lebih efisien dan berkelanjutan, sehingga mengurangi dampak negatif limbah makanan sekaligus meningkatkan kualitas layanan prasmanan.

Kata Kunci : limbah makanan, layanan prasmanan, pariwisata berkelanjutan.

1. INTRODUCTION

Sustainable tourism demands efficient and responsible resource management, including in food management. One of the main challenges in hotel buffet service is the high potential for food waste, which is not only economically detrimental but also impacts the environment (Dolnicar et al., 2020). According to the FAO (2011), one-third of food produced globally is wasted annually. In the context of buffet service, overconsumption, inappropriate portion sizes, and lack of guest awareness are the main causes of food waste (Cozzio et al., 2021; Appel et al., 2025). The structural design of buffet service encourages the potential for food waste. The "all you can eat" concept often triggers consumer behavior that does not consider individual consumption capacity. On the other hand, hotels also face a dilemma between maintaining service quality and guest satisfaction with efficiency and food waste reduction efforts. Recent research shows that small interventions such as redesigning smaller plates, providing nutritional labels, or raising awareness campaigns about food waste can significantly reduce food waste in buffet service.

A literature review on the issue of food waste in buffet services shows that food management in the tourism sector plays a crucial role in achieving sustainable tourism goals. According to Dolnicar et al. (2020), almost half of waste in the hotel industry comes from food, particularly in buffet services, which tend to generate plate waste due to the buffet or self-service system and guests' tendency to overeat.

Research by Cozzio et al. (2021) emphasizes the importance of persuasive communication-based interventions in reducing food waste in star-rated hotels. This study demonstrates that strategically placed educational messages can significantly reduce food waste. This aligns with the Theory of Planned Behavior (Ajzen, 1991), which explains that a person's intention to act is strongly influenced by social norms, personal attitudes, and perceived behavioral control.

Furthermore, Appel et al. (2025) identified that hotel guests' food consumption behavior is influenced by perceptions of the wide variety and quantity of food served and irrational



consumption patterns, also known as the pay-rider mentality, which is the perception that because they have paid, guests feel entitled to take as much food as possible. Within the framework of Social Practice Theory (Shove et al., 2012), food waste is a result of the interaction between social habits or customs, consumption patterns, and the buffet service system. This study also shows that regulatory and educational approaches can significantly reduce food waste. Murni (2020) highlighted the effectiveness of food waste levy regulations in changing restaurant behavior to be more efficient in managing food. Meanwhile, Astria et al. (2023) in their literature review classified food waste reduction practices into four main approaches: policy, education, logistics/management, and institutional support.

Thus, an effective food waste reduction strategy in the context of buffet service requires an integration of educational approaches, service arrangements, buffet area design, and strengthening hotel operational policies.

The Theory of Planned Behavior (Ajzen, 1991) explains that an individual's intention to perform an action is influenced by attitudes, subjective norms, and perceived behavioral control. In the context of food waste, this theory is used to understand hotel guests' behavior toward consuming food at buffet tables. The Theory of Planned Behavior (TPB) is a social psychology theory widely used to explain and predict individual behavior based on their intentions to act. In TPB, intention is considered the primary factor influencing actual behavior, and it is shaped by three main components: attitude toward the behavior, subjective norms, and perceived behavioral control.

a. Attitude toward Behavior

Attitude refers to an individual's positive or negative evaluation of an action. In the context of consuming food at a hotel buffet, this attitude reflects how guests perceive the act of consuming large quantities of food. If guests perceive consuming large amounts of food as a form of freedom or luxury while staying at a hotel, they are more likely to overindulge, even if they don't consume all of it. Conversely, if they recognize that food waste negatively impacts the environment and ethical consumption, they are more likely to consume food more wisely.

b. Subjective Norms

Subjective norms relate to social pressure or an individual's perception of the expectations of others (e.g., family, friends, or society) regarding a behavior. In the context of a buffet, these norms can be formed from collective habits, such as the belief that "while there's plenty of food, take as much as you can." Conversely, if developing social norms encourage environmentally conscious and anti-wasteful behavior, guests will be more careful about what they consume. Therefore, creating new norms through campaigns or education conducted by the hotel can influence guests' subjective norms.

c. Perceived Behavioral Control.

This component reflects the extent to which individuals feel able to control their behavior. In the case of food waste, this control relates to the extent to which guests feel able to estimate their portion sizes, or the extent to which the buffet system facilitates the consumption of smaller portions. If guests find it difficult to adjust their portion sizes due to



large containers or cutlery, or a less flexible buffet system, they may consume more food than necessary. Conversely, if hotels provide nutritional information, smaller portion sizes, and education about mindful consumption, perceived behavioral control will increase, and the tendency to skip meals on cutlery can be reduced.

Thus, the Theory of Planned Behavior provides a strong conceptual framework for understanding the psychological and social factors that influence guest dining behavior in hotels, which ultimately impacts the amount of food waste generated. Through this approach, interventions designed to reduce food waste should not only focus on the physical aspects of buffet service but also on fostering more positive attitudes, norms, and perceived control toward responsible food consumption. Therefore, this theory is relevant as a basis for designing consumer education strategies and food management policies in the food and beverage sector of hotels.

Furthermore, social practice theory suggests that food waste results from the interaction between social norms, service infrastructure, and habits (Shove et al., 2012; Appel et al., 2025). Social Practice Theory provides a more comprehensive alternative framework for understanding human behavior, including in the context of food waste. This theory was comprehensively developed by Shove, Pantzar, and Watson (2012) and expanded by contemporary research such as Appel et al. (2025). Social Practice Theory focuses not only on rational individuals but also on social practices that result from the dynamic interaction of social norms (meanings), infrastructure (materials), and competencies or skills (competences). Social Meanings and Norms (Meanings) Social meanings or norms in the context of hotel buffet service encompass cultural perceptions, consumption symbolism, and expectations of luxurious service. In some regions, an abundance of food at a hotel is considered a sign of hospitality and luxury. This creates an implicit norm that guests are entitled to take large amounts of food, even beyond their needs, because they have "paid" for all these services. Such norms become part of the social practices that lead to food waste and are often difficult to change without a comprehensive, educational approach.

d. Infrastructure (Materials)

Material aspects include the design of the buffet area, the type of serving utensils, the size of the plates, the accessibility of the food, and the serving system implemented by the hotel. Buffet service infrastructure that discourages small portions, or lacks labels with nutritional information and food ingredients, indirectly encourages guests to overeat. For example, large plates can provide a visual cue that large portions are acceptable. In the context of Social Practice Theory, these material structures are not neutral but actively shape and maintain the practice of overeating.

e. Skills and Competences (Competences)

Competences include guests' ability to estimate their food needs, knowledge of the environmental impact of food waste, and awareness of ethical consumption. Many guests may lack sufficient understanding or skills in managing buffet-style food. For example, they may be unaccustomed to taking small portions and then taking more if they want more, using a refill



strategy. This lack of competence is part of a social practice that does not support sustainable consumption behavior.

If food waste is a product of social practices, not simply individual decisions, Social Practice Theory encourages a more complex understanding of this phenomenon. This approach highlights that behavioral change is not sufficient through moral appeals or individual education alone; it also requires transformation of service structures, cultural norms, and prevailing customary systems.

In the context of food waste prevention strategies for hotel buffets, Social Practice Theory implies that effective interventions must encompass all three elements of social practice: changing norms through social campaigns and adjusting the meaning of hotel luxury; improving buffet service infrastructure to support smaller portions and targeted information; and building guest competency through direct education, staff training, or engaging visual communication design.

2. RESEARCH METHOD

This study uses a descriptive qualitative approach to explore in-depth food waste prevention strategies implemented in hotel buffet services (Nugraha, 2025). This approach was chosen because it allows researchers to understand the phenomenon contextually through direct interaction with stakeholders in the field.

a. Research Design

This research design is a case study conducted at one or more star-rated hotels offering buffet services. The research focuses on the processes implemented by the hotels in managing and preventing food waste.

b. Research Location and Time

The study was conducted at a star-rated hotel in a tourist area with high occupancy rates and an all-you-can-eat buffet system. The study period lasted two months, covering weekdays and weekends to observe variations in guest behavior.

c. Research Subjects and Informants

The informants in this study were selected using a purposive sampling technique, selecting informants based on their knowledge and experience relevant to the research problem. Key informants included: Hotel/restaurant operations managers, head chefs, kitchen and service staff (waiters/waitresses), and hotel guests who agreed to be interviewed.

d. Data Collection Techniques

Data was collected through three main techniques:

1). Participatory observation was conducted directly in the buffet area during breakfast service. Observations included food collection procedures, guest behavior, and handling of leftovers. 2). Interviews: Semi-structured interviews were conducted with informants to explore perceptions, experiences, and strategies implemented to prevent food waste.

Data Analysis Techniques: Data analysis was conducted using the thematic analysis method according to Miles and Huberman (1994), which consists of three stages: Data



reduction: filtering and simplifying raw data into essential information. Data presentation: organizing information in narrative form. Conclusion drawing and verification: summarizing findings based on patterns and relationships between themes, and conducting triangulation to ensure the validity of the results.

Triangulation was conducted by comparing data from observations, interviews, and documentation to ensure consistency and validity of the findings.

Participatory observation: to directly observe buffet service practices and guest behavior.

Interviews: conducted with hotel managers, chefs, service staff, and guests.

Documentation: food waste reduction campaign materials.

Campaign Title:

"Take Enough, Finish Without Leaving Any Leftovers!"

Main Slogan:

"Eat Wisely, Save the Earth."

Campaign Objective:

To raise public awareness of the negative impacts of food waste and encourage behavioral changes in responsible food management.

Core Campaign Messages:

"Every grain of rice thrown away is the result of a farmer's hard work wasted."

"Food waste = wasted energy, water, and land."

"Half the food on your plate is uneaten. Come on, finish your food!"

"Love food, respect the process. Don't waste it carelessly!"

Supporting Facts:

The highest average food waste comes from weddings and buffets.

Concrete Actions Encouraged:

Take enough food, don't overdo it.

Use the FIFO (First In, First Out) method in kitchens and restaurants

Informant Selection Technique: Purposive sampling was used to identify key informants relevant to the topic, such as: - Hotel restaurant operations managers - Chefs - Service staff - Hotel guests
Data Analysis Technique: Data were analyzed using thematic analysis techniques. The steps included data reduction, data presentation, and conclusion drawing (Miles & Huberman, 1994). Data validity was strengthened through triangulation of sources and methods.

3. RESULTS AND DISCUSSION

The results of the study indicate that food waste prevention strategies redesigning buffet table layouts, adjusting food portions, and staff training. Data were obtained through direct observation and interviews with hotel management and guests. The following is a summary of the results obtained:



a. Field Implementation Strategy Positive Impact

- ✓ Consumer Education: Posters encouraging guests not to waste food, staff education: Increased guest awareness
- ✓ Layout Redesign: Food placement in a gradual flow: Reduced over-eating
- ✓ Smaller Portions & Refills: Food served in small portions, allowing guests to refill, Reduced food waste on plates
- ✓ Staff Training: Training on food handling and guest communication, Improved kitchen and service efficiency

These results align with research by Cozzio et al. (2021), which showed that delivering educational messages visually can significantly reduce food waste. Observations revealed that when food portions were made smaller and guests were given the option to refill, food waste on plates was drastically reduced. Interviews with the head chef revealed that regular training for kitchen and service staff helped them understand the importance of food waste reduction. This strategy has been shown to improve operational efficiency and support the hotel's image as a sustainable tourism player.

Interpretation of these findings suggests that food waste prevention is not merely a technical issue but is also closely linked to changes in guest consumption behavior and culture. This aligns with the Social Practice Theory approach, which views food waste as a result of the interaction of social habits and service systems.

Thus, implementing consistent strategies based on an understanding of guest behavior can significantly reduce food waste and support sustainable tourism practices.

4. CONCLUSION

This study confirms that food waste prevention in hotel buffet services is primarily a behavioral and systemic issue rather than a purely technical one. The findings demonstrate that integrated interventions combining guest education, buffet layout redesign, portion control, and staff training can effectively reduce plate waste and support sustainable tourism practices.

From the perspective of the Theory of Planned Behavior (Ajzen, 1991), educational messages and staff communication positively influenced guests' attitudes toward responsible consumption by reframing food waste as an environmental and ethical concern. Visual campaigns and persuasive signage also contributed to shaping subjective norms, as guests perceived that finishing food and taking appropriate portions were socially expected behaviors within the hotel environment. Additionally, operational measures such as smaller portion sizes and refill-based service enhanced perceived behavioral control by enabling guests to better manage their food intake. These results are consistent with previous studies showing that behavioral intentions to reduce food waste are strengthened when awareness and situational support are provided (Cozzio et al., 2021).

Beyond individual behavior, the findings align with Social Practice Theory (Shove et al., 2012), which emphasizes the role of social meanings, material arrangements, and competences in shaping consumption practices. The redesign of buffet layouts and serving systems



(materials) subtly guided guests toward smaller portions, while sustainability-oriented messages contributed to redefining luxury from abundance to responsibility (meanings). Staff training and guest education enhanced competences, enabling both employees and guests to adopt more sustainable food consumption practices. This supports Appel et al. (2025), who argue that food waste in buffet settings is embedded in routine practices and therefore requires structural and cultural adjustments.

Overall, the results suggest that effective food waste reduction in hotel buffet services depends on the integration of behavioral interventions and operational management. By addressing both individual intentions and the social practices embedded in buffet systems, hotels can significantly reduce food waste while strengthening their role in sustainable tourism development.

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