Sustainable Food Waste Management Practices

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Although food waste management has been significant for all stakeholders from all industries globally, research in hospitality food waste management and practices still needs to be further studied, especially in five-star hotels in developing countries. Using the Food Waste Hierarchy, this research proposes to contribute to the knowledge of sustainable food waste management and practices in five medium and large five-star hotels to promote the United Nations Sustainable Development Goals (SDGs).

Keywords: sustainable food waste management practices ; food waste hierarchy ; hotels

1. Introduction

Tourism is not only a national revenue generation but also can be used as a pertinent and innovative tool in sustainable development and poverty reduction [1][2], which is related to the United Nations Millennium Development Goals (UNMDGs), especially ‘Goal 1 No Poverty’. In addition, sustainable tourism development should take full responsibility for tourism’s current and future economic, social, and environmental impacts and address the needs of visitors, the industry, the environment, and host communities [9]. As the United Nations’ Agenda 2030 of 17 universal Sustainable Development Goals (UNSDGs) may not be comprehended by all stakeholders in the tourism and hospitality sector [4][5][7], this issue challenges to quantify the balance of its positive and negative impacts on local communities’ economy, environment, culture, and society [4]. Additionally, the studies on the UNMDGs and UNSDGs are limited in tourism and hospitality (e.g., [4][5][7][8]), especially in sustainable food waste management in tourism and hospitality.

Food waste is a primary sustainability concern [8][10], especially in the accommodation and food service sectors [11][12]. Food waste is not only an issue for UNSDG #12 (Responsible consumption and product) in developed countries but also an issue for UNSDG #2 (Zero hunger) in less developed countries [13][14]. Concerning UNSDG #12 [15], there is an increasing expectation regarding the sustainability of the tourism and hospitality industry. This industry comprises various businesses such as destinations, attractions, accommodations, restaurants, catering, festivals, and events. Additionally, hospitality’s food and beverage demands are a notable proportion of global food procurement. The high pressure from customers’ demands and the requirement for sustainable management of food and beverage value chains from the tourism and hospitality industry are significant to attend to, especially food waste management.

Food waste definition and inclusion journey vary among researchers. Food waste occurs through the food supply chain from agricultural production to the final household dining consumption [16] and out-of-home (hospitality) consumption [17] or at retail and consumption stages in the food supply chain [18]. Although the challenge of food waste generated at out-of-home dining in hospitality is often debated through media, the food waste in hospitality research is very scant [19][20][21]. Therefore, the academic research in food waste management and practices needs to be more varied. Two recent reviews of hospitality food waste by Dhir et al. [17] and Filimonau and De Coteau [20] highlight the limited food waste studies in hospitality, especially in developing countries. In addition, hospitality food waste research is divergent and segregated [17], lacks managerial mitigation [21] and is mostly conducted in developed countries [22].

Additionally, Filimonau and De Coteau [20] emphasise the complexity of the hospitality sector impacting distinct food waste management practices. Theoretically, Food Waste Hierarchy Model is applied widely in waste management, but only a few studies in hospitality food waste management [15]. For example, Srijuntrapun et al. [14]’s recent research highlights the significance of food waste hierarchy for small-, medium- and large-sized hotels in Thailand to reduce food waste and food costs and protect the environment through a corporate social responsibility lens. Food waste attracts attention from academics and practitioners globally as it challenges economic, financial, social, moral, and environmental issues in managerial practices due to consumers’ growing expectations, excessive food production, lower consumer food cost, and high food waste handling cost [18][23]. In addition, food waste significantly impacts the environment, society, and economy [23][24] and has become a global challenge [22]. Food waste can financially and socially impact tourism and hospitality businesses. A vital societal challenge in tourism and hospitality management is under-researched [25][26][27][28].
Food loss and food waste (FLW) often refer to overlapping terms in the literature as they occur at each stage throughout the food supply chain from farm to fork \[14\]. Many researchers (e.g., \[15\], \[16\]) refer to food loss as any food loss during preparation and post-harvest processes and food waste as any food wastage during distribution and consumption processes. In addition, many researchers refer to food waste as part of food loss and define food waste as food that is deliberated to discard or left to spoil or expire and is unsuitable for human safe and nutritious consumption \[17\].

Despite the expanded studies of food loss and food waste (FLW) in the past years, they still need profound knowledge \[18\] that is limited by time, geographic coverage, and inconsistent data \[19\]. Studies (e.g., \[20\], \[21\], \[22\]) claim that catering and food service operations may engender an appreciable amount of food waste and delay achieving the UNSDGs.

Applying the Social Practice Theory (SPT) in a recent systematic literature review by Munir \[23\] highlights the need to explore practices on reducing kitchen waste (meanings) and managerial knowledge (competencies); and the interaction of these elements with a practice-oriented approach in the future studies and policy frameworks.

### 3. Food Waste Management and Waste Hierarchy Model

Typical food waste management primarily practices animal feed, anaerobic digestion, composting, recovery of energy, and landfill, but less on preventing food waste \[24\]. The waste hierarchy principles by European Commission \[25\] include prevention, reuse, recycling, recovery, and disposal, ranging from the most preferable to the least options. Many relevant organisations, researchers and practitioners have developed, adopted, and adapted this model as waste prevention and sustainable waste management guidelines (e.g., \[26\], \[27\], \[28\]). For example, a new food recyclable waste hierarchy developed by the US Environmental Protection Agency (EPA) guides food loss prevention and waste management strategies for individuals and businesses \[29\]. There are some principles of this particular model, and most of them overlap around these four essential foundations: prevention/reduction (to reduce food surplus/loss and avoidable food waste at source); reuse (edible food for human consumption); recycle (feeding animal, compost) and recover (creating energy); and disposal (landfill/incineration), which prevention and reduction are much more appropriate and effective in food waste management by reducing food loss at the source and maximising food use \[30\], \[31\], \[32\].

Although the food waste hierarchy model is beneficial, very few studies apply this model to food waste management in hospitality \[33\]. Srijunrapun et al. \[34\] highlight that applying the food waste hierarchy model can help reduce food waste at every step of hotel food distribution and operation. In addition, through the application of the food waste hierarchy model, the “hotels can adopt effective food waste management practices to achieve zero food waste, such as preventing the generation of food waste, recirculating food waste for recycling, and using food with maximum efficiency” \[35\], p. 8).

### 4. Food Waste Management in Hospitality

Despite the gradual research development on food waste management in restaurants in developed countries, there is still a need to bridge a gap between sustainable innovations and recycling practices in hospitality \[36\] in the context of developing and transitional economies \[37\]. Although most food waste research in food service operations conducts in restaurants setting, the research gaps in different types of restaurants may contribute to distinct food waste management practices \[38\]. In addition, food waste reduction has received little attention from the hotel business sector \[39\], and food waste in restaurants still needs to be researched \[40\].

Past research highlights good food waste management practices and sustainable initiatives by responsible hospitality and food service operations. For example, the hotel can redesign a new kitchen process at the planning stage to reduce food waste \[41\]. At the handling stage, storage should be regularly checked to ensure the First-In-First-Out (FIFO) stock method is implemented, unused, unsold or excess food is redistributed by selling it at a lower price or donating it to staff or other needed organisations or reusing it by cooking it for employee consumption at the staff canteen \[42\], \[43\], \[44\]. At the restaurant operations, a la carte service should be offered rather than buffets \[45\], inedible leftover food can be provided to customers in a doggy bag for pets, recycled and processed into fish food or used for composting \[46\], \[47\], and any food waste should be measured to reduce food waste \[48\]. Even though food waste studies in hospitality and food service operations gradually increase these days \[49\], \[50\], \[51\], \[52\], the hotels’ food waste management is still disintegrated \[53\].

Good practices are presented, the businesses in hospitality and food service operations, especially hotels, they however still face some challenges, such as insufficient resources in handling food waste and changing recycling behaviour in restaurants \[54\], the influence of corporate policies and procedures for FW prevention \[55\]. Interestingly, Srisuwannaket and
Liumpetch and Srijuntrapun et al. highlight that most food waste in Thailand has been disposed of in landfills, the last effective option of the food waste hierarchy model. Hence, the aim is to fill the gaps by exploring and examining different aspects and levels of sustainable food waste management in the hospitality industry using food waste hierarchy-guided questions to understand to what extent the five-stars hotels in Thailand pursue the best current practices in sustainable food waste management towards advancing the UN Sustainable Development Goals (SDGs) to provide insights of the current situation of sustainable food waste management and guidance and recommendations for the restaurants in hotels.

References

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