Chapter 16
A Comprehensive Review of Food Waste Management Strategies in the Food Service Industry

Ronelle Crocker
https://orcid.org/0009-0007-9215-2333
Durban University of Technology, South Africa

ABSTRACT

Food waste presents a severe sustainability challenge. Of the food produced globally, 30% is wasted, and if no significant improvement is made, this figure is expected to double by 2050. With the continuous growth of the hospitality sector, an increasing amount of waste, particularly food waste, is generated. Globally, the hospitality industry is the third-largest contributor to food waste. Food waste mitigation is fundamental to the sustainable improvement of the food service industry, owing to its adverse consequences and ethical concerns. For this reason, there is an increasing demand for practical solutions in the food service industry. Establishments in the food service industry can make a significant contribution to global sustainability efforts by creating partnerships with stakeholders and providing educational programs aimed at waste reduction to employees and consumers. Several food service establishments actively implement measures to minimize waste and recognize and accept their responsibilities.

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1. INTRODUCTION

Globally, the tourism sector, specifically the Food Service Industry (FSI), significantly contributes to food waste generation and has recently become a topic of interest in the FSI (Martin-Rois et al., 2022). With the popularity of eating out, food waste in the sector is escalating (Wang et al., 2017), and it produces twice as much organic waste compared to other sectors, impacting current food systems (Martin-Rois et al., 2022). While food waste is recognised as a global issue, there is no universally accepted singular definition of the term across various literature studies (Martin-Rois et al., 2018); however, for the aim of this chapter, the United Nations Environment Programme (UNEP) Food Waste Index Report (2021) definition will be utilised. UNEP (2021) defines food waste as *"food and the associated inedible parts removed from the human food supply chain."* The food wasted annually is estimated to increase by 30% by 2030 (Martin-Rois, 2020). Food wastage is 750 billion USD annually in terms of economic and environmental costs (Wu & Teng, 2023) and could nourish a global population of seven billion people (McAdams et al., 2019).

The extent and concerns of the food waste issue have globally exacerbated its related sustainability concerns; however, it is mainly indicative of the FSI as the sector employs more staff than other retail sectors (Martin-Rois et al., 2018) and generates an excessive amount of food waste (Sucheran & Olanrewaju, 2021; Martin-Rois et al., 2022). As a subsector within the food and beverage industry, the FSI includes establishments that provide meals for consumption out of the home (Martin-Rois et al., 2018; Martin-Rois et al., 2022), including restaurants, canteens, cafeterias, and other establishments that prepare and serve meals, and excludes the retail sector (Eriksson et al., 2017). Several factors contribute to the generation of food waste in the FSI, such as the demand for food production, access and availability of food resources, consumer motivations, and a lack of awareness about food purchasing and consumption habits, as well as market-related constraints (Martin-Rois et al., 2022; Knorr & Augustin, 2022). Food waste takes place mainly at the end of the food supply chain during the preparation and distribution of meals, but food waste management should be a priority because there are opportunities for waste reduction at every stage (Lins et al., 2021; Samsuddin et al., 2022; Gonçalves et al., 2023). For food waste management to be effective, it should include quantification solutions, the continuous development of new techniques, and practical approaches (Assamoi & Lawryshyn, 2012; Zhang et al., 2019; Martin-Rois et al., 2022).

There are several approaches to food waste management (Martin-Rois et al., 2018; Bilska et al., 2020; Dhir et al., 2020). Waste management practices adopted by the FSI encompass conventional best practices, whereas others implement cutting-edge innovative solutions, with most approaches taking place at the operational level of

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