


Chapter 19

Utilizing Technology for Food Waste Management in the Hospitality Industry Hotels and Restaurants


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ABSTRACT

This chapter explores the role of technology in food waste management within hotels and restaurants, focusing on innovative solutions. By leveraging advanced tools and systems, these establishments can minimize waste generation, reduce operational costs, and enhance their sustainability efforts. Technology-driven strategies include smart kitchen appliances, real-time inventory management, and waste conversion solutions, such as food digesters and composting. Regulatory compliance is emphasized as governments tighten regulations. Embracing technology not only reduces waste but also bolsters sustainability and lowers costs, making a significant contribution to a greener future.

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1. INTRODUCTION

The hospitality industry, including hotels and restaurants, plays an important role in the global food supply chain (Smith et al., 2020). However, it also contributes to a large portion of food waste. According to the Food and Agriculture Organization (FAO), approximately one-third of food produced for human consumption is lost or wasted worldwide (FAO, 2019). Addressing this issue is not only important but will not only be sustainable but will also reduce operating costs and compliance.

In this chapter, we will explore the important role that technology plays in food waste management in hotels and restaurants. We focus on innovative solutions that use advanced equipment and systems to reduce waste generation, reduce operating costs, and enhance sustainability efforts. These technology-driven approaches include smart kitchen appliances, real-time inventory, and waste conversion solutions, such as food consumption and composting. Furthermore, when governments are developing the stringency of food waste legislation, compliance is becoming a priority for businesses in this sector.

The Pervasive Issue of Food Waste in the Hospitality Industry:

Food waste is a widespread issue in the hospitality industry, and its impact on the environment and downstream continues to drive innovation and research. Recent studies have highlighted the extent of the problem, and recognize that substantial improvements are needed to reduce waste and increase sustainability (Jones et al., 2022).

Contemporary Role of Technology in Food Waste Management:

Cutting-edge technology continues to play a pivotal role in addressing food waste within hotels and restaurants. Recent research has emphasized the importance of innovative solutions that leverage advanced tools and systems to tackle this multifaceted challenge. Some of the latest technological strategies include:

Internet of Things (IoT) Sensors: IoT sensors have gained prominence in monitoring food storage conditions and expiration dates. These sensors provide real-time data on temperature and humidity, helping establishments maintain the quality and safety of food products. Alerts can be triggered when conditions deviate from the optimal range, preventing spoilage and waste (Santos et al., 2021).

Artificial Intelligence and Machine Learning: Recent advancements in AI and machine learning have enabled predictive analytics for food demand. By analyzing historical data, seasonality, and customer preferences, these technologies can help businesses optimize purchasing and reduce overstocking, ultimately minimizing food waste (Gupta et al., 2022).

Robotics in Kitchen Operations: Automation and robotics are increasingly used in commercial kitchens to improve food preparation efficiency and portion control. These technologies reduce the likelihood of overcooking, enhance consistency, and minimize plate waste (Smith et al., 2023).

Food Waste Apps: Mobile applications have emerged as tools for both businesses and consumers to combat food waste. Restaurants and hotels can use apps to track and manage inventory, while consumers can find deals on surplus food items from local establishments, reducing overall food waste (Carter & Lee, 2022).

Recent Benefits of Implementing Technology-Driven Solutions:

Recent research highlights the ongoing challenge of food waste in the hospitality industry and highlights the critical role technology plays in addressing this issue. Food waste is not only an economic burden but also an environmental one. In today's global push for sustainability and responsible business practices, technology-driven solutions offer a multi-pronged approach to these challenges.

One of the main advantages, according to Jones et al. (2022), is cost reduction. Hospitality businesses often struggle with high operating costs, and food waste contributes significantly to these costs.

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