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Strategies for Controlling Motion Waste and Food Waste (Case Study of Korean Cafe X, South Jakarta)

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Abstract:
This study aims to analyze management control systems in minimizing waste at Korean Cafe X, South Jakarta, focusing on motion waste and food waste. A qualitative case study approach was employed through interviews, observations, and documentation, analyzed using thematic analysis. The findings reveal that motion waste is the dominant form of inefficiency, caused by sorting raw materials that do not meet strict specifications and by repetitive, non-value-added activities. Food waste primarily occurs with vegetables and short-shelf-life ingredients due to improper storage. The use of the MOKA digital Point of Sales system assists in inventory monitoring but has not significantly reduced waste. Key contributing factors include a lack of staff training, limited kitchen infrastructure, and inconsistencies in raw material quality from suppliers. This study recommends adapting Lean Manufacturing principles and the 5S method—proven effective in the manufacturing sector—to the service sector, particularly small- to medium-scale restaurants, to improve efficiency, reduce waste, and support sustainable operations.

Keywords: management control, motion waste, food waste

1. Introduction

The food and beverage industry is one of the most dynamic sectors in Indonesia, but it also faces significant operational challenges, including various forms of waste that can reduce efficiency and profitability. In restaurant operations, motion waste—unnecessary movements or repetitive tasks that do not add value—and food waste—the disposal of edible materials—are among the most common and detrimental inefficiencies. These issues not only increase operational costs but also have environmental and sustainability implications. Effective management control systems play a crucial role in identifying, monitoring, and minimizing such waste, thereby improving workflow efficiency and resource utilization. This study focuses on Korean Cafe X in South Jakarta, a medium-scale Korean restaurant, to analyze how management control systems address motion and food waste, and to explore the potential adaptation of Lean Manufacturing principles and the 5S method from the manufacturing sector into restaurant service operations.

Waste management in the food and beverage sector has become an increasingly important area of study due to its impact on operational efficiency, cost management, and environmental sustainability. According to Ohno (1988), waste in a production or service process refers to any activity that consumes resources without adding value to the final product or service. In restaurant operations, waste can manifest in various forms, including motion waste, food waste, waiting time, overproduction, and defects. Among these,

motion waste and food waste are particularly relevant because they directly affect both cost structures and customer satisfaction. Previous research has demonstrated that systematic waste control can significantly improve a business's competitiveness and long-term sustainability (Womack & Jones, 2003).

Motion waste is defined as unnecessary physical movements of staff or materials that do not contribute to value creation (Lean Enterprise Institute, 2015). In the context of restaurants, this waste often arises from inefficient kitchen layouts, poor workflow design, or redundant handling of raw materials. Shingo (1989) highlights that motion waste not only reduces efficiency but also increases the likelihood of errors, fatigue, and safety hazards. Studies by Soriano (2002) and Hwang & Lambert (2008) have shown that reorganizing workspace arrangements, implementing standard operating procedures (SOPs), and investing in ergonomic tools can significantly reduce motion waste, leading to faster service times and improved employee productivity.

Food waste, on the other hand, refers to edible food that is discarded, whether due to spoilage, overproduction, or preparation errors (FAO, 2011). The United Nations Environment Programme (UNEP, 2021) reports that the hospitality industry is a significant contributor to global food waste, with restaurants being a primary source. In small- to medium-scale restaurants, food waste often stems from inaccurate demand forecasting, poor inventory management, and improper storage techniques. Research by Papargyropoulou et al. (2014) emphasizes that reducing food waste requires integrated strategies that combine supply chain coordination, real-time inventory monitoring, and staff training in food handling practices.

Management control systems play a critical role in monitoring and reducing waste in service operations. Merchant and Van der Stede (2017) describe management control systems as a set of tools and processes designed to ensure that an organization's activities align with its strategic goals. In the restaurant sector, these systems may include performance measurement dashboards, Point of Sales (POS) software, waste tracking logs, and periodic operational audits. Studies have shown that digital POS systems, such as MOKA and Square, can enhance stock monitoring and sales analysis, though their effectiveness depends on proper integration with operational practices (Liu et al., 2020).

The application of Lean Manufacturing principles and the 5S methodology—originally developed in the manufacturing sector—has gained traction in the hospitality industry as a means to improve operational efficiency. Lean focuses on eliminating waste while maximizing customer value (Womack et al., 1990), whereas 5S (Sort, Set in order, Shine, Standardize, Sustain) provides a structured approach to workplace organization (Hirano, 1995). Recent studies, such as those by Antony et al. (2019) and Dora et al. (2014), demonstrate that adapting Lean and 5S in restaurant operations can reduce both motion and food waste, improve service speed, and create a more organized working environment. These findings provide a theoretical foundation for examining how such principles can be effectively implemented in small- to medium-scale Korean restaurants, such as Korean Cafe X in South Jakarta.

2. Research Method

This study employed a qualitative case study approach to analyze the management control systems used to minimize motion waste and food waste in a medium-scale Korean restaurant, Korean Cafe X, located in South Jakarta. The qualitative approach was chosen to gain an in-depth understanding of the processes, behaviors, and contextual factors influencing waste management within the restaurant's operational environment (Creswell, 2018). The case study design allowed for a comprehensive exploration of the specific challenges and strategies employed by the restaurant in addressing these issues.

The indicators used in this qualitative case study were designed to capture a comprehensive and in-depth understanding of the restaurant's waste management practices. The study focused on several key aspects, including the workflow and operational processes that generate waste, the behaviors and practices of staff in handling, sorting, and disposing of waste, as well as contextual factors such as physical layout, organizational policies, and external regulatory influences. Additional indicators examined the specific challenges encountered in waste management, ranging from technical and behavioral barriers to managerial constraints, along with the strategies implemented by the restaurant to address these issues through operational adjustments and managerial initiatives. The study also assessed the suitability of the case study approach by evaluating the depth, relevance, and richness of data gathered through observation, in-depth interviews, documentation review, and triangulation, ensuring that the findings accurately represent the complexity of the restaurant's real operational environment.

3. Results and Discussion

3.1. Results

The analysis revealed two primary categories of waste at Korean Cafe X: motion waste and food waste. Motion waste emerged as the most dominant, characterized by inefficient workflows, repetitive non-value-added activities, and unnecessary staff movements. Observations showed that the kitchen layout contributed significantly to inefficiency, with frequent back-and-forth movement between storage areas, preparation tables, and cooking stations. Interviews with kitchen staff indicated that the sorting of raw materials often required additional handling due to inconsistencies in supplier quality, resulting in delays and increased workload.

Food waste was primarily associated with perishable ingredients such as vegetables and short- shelf-life items. Document analysis of waste logs and POS reports indicated that a significant portion of food waste stemmed from improper storage methods, which accelerated spoilage. Additionally, inaccurate demand forecasting led to over-preparation of certain menu items, particularly during low customer traffic periods. While the digital POS system MOKA was effective in tracking inventory levels and sales patterns, its integration into daily kitchen operations was limited, reducing its impact on waste reduction.

Thematic analysis identified three key factors contributing to both types of waste: (1) inadequate staff training in efficient kitchen practices and waste management, (2) limited kitchen infrastructure, particularly in storage and preparation areas, and (3) inconsistencies in raw material quality from suppliers. Staff members reported that waste management procedures were largely informal and reactive, with no standardized waste reduction protocol in place.

Despite these challenges, some positive practices were observed. The restaurant maintained basic waste separation, with unused but safe ingredients sometimes repurposed for staff meals. There was also evidence of informal communication between front-of-house and kitchen staff to adjust preparation quantities based on real-time customer orders. However, these practices lacked systematic monitoring and formal integration into the management control system.

Overall, the results indicate that while Korean Cafe X has some mechanisms to monitor waste—particularly through its POS system—the absence of structured waste management protocols, insufficient staff training, and operational inefficiencies hinder significant waste reduction. These findings suggest that implementing Lean Manufacturing principles and the 5S method could provide a structured approach to improving workflow efficiency, reducing unnecessary motion, and minimizing food waste.

3.2.Discussion

This study found that motion waste and food waste are the most significant inefficiencies at Korean Cafe X, with motion waste being more dominant. Inefficient kitchen layout, redundant handling of raw materials, and inconsistent supplier quality disrupted workflow, increased preparation time, and contributed to staff fatigue. These findings are consistent with Shingo's (1989) and Womack and Jones's (2003) observations that poor workflow design and non-value- added activities are major contributors to operational waste in service industries. Food waste, primarily involving perishable vegetables and short-shelf-life ingredients, was caused by improper storage practices and inaccurate demand forecasting, a pattern supported by Papargyropoulou et al. (2014). While the MOKA POS system provided useful data, its limited integration into daily kitchen operations reduced its effectiveness in guiding real-time production adjustments.

Human resource and infrastructure limitations further compounded the waste problem. The lack of structured staff training in waste prevention led to reactive rather than preventive measures, echoing Antony et al.'s (2019) emphasis on the need for skill development in waste management. Informal practices, such as repurposing unused ingredients and verbal coordination between teams, provided some benefits but lacked systematic monitoring. Additionally, limited storage capacity and preparation space contributed to disorganization and higher spoilage rates. Addressing these issues requires a combined approach: integrating Lean Manufacturing and 5S principles for workflow efficiency, implementing supplier quality control, enhancing staff training, and fully utilizing digital tools like POS systems to support data-driven decision-making in waste reduction.

4. Conclusion

This study concludes that motion waste and food waste are critical operational challenges at Korean Cafe X, with inefficiencies rooted in workflow design, storage practices, supplier quality inconsistencies, and limited staff training. Although the MOKA POS system supports inventory monitoring, its limited integration into daily operations reduces its potential to prevent waste. Addressing these issues is essential for improving efficiency, reducing costs, and supporting environmental sustainability.

To minimize waste, the study recommends: (1) redesigning kitchen workflows and applying the 5S methodology for better space utilization; (2) implementing supplier quality controls to reduce re-sorting and handling; (3) providing regular staff training on efficient movements, storage, and forecasting; and (4) fully integrating the POS system into kitchen operations for real- time data-driven decision-making. These measures, drawn from Lean Manufacturing principles, offer a structured approach to enhancing operational performance in small- to medium-scale restaurants.

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