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Application of Participatory Concept in Minimizing Food Packaging Waste (FPW) in Manufacturing Firms

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Abstract

All the industrialized countries lately focus on the need for the best solutions for the reduction of food waste at the various stages of the supply chain by conducting the participatory concept. It is a solution and stakeholder-oriented concept providing information on how to analyze the status quo identification of organization-specific problems and with the involvement of relevant stakeholders, develop solutions in the processes along the food value chain. The objective of this study is to present a participatory (five-phase) concept to diminish FPW in manufacturing firms. This concept is adapted to the continuous improvement (PDCA cycle) applied in Total Quality Management (TQM), which involves a participatory approach where workers and stakeholders are collaborated to detect causes for inefficiency and advance measures to counteract FPW in the Healthy Food Drink powder Manufacturing firm. The research was conducted by analyzing the data related to FPW such as Aluminum Wrappers (AlWs), Bag in Boxes (BIBs), and Plastic Bottles (PBs) using Microsoft Excel and Power BI software. Also, it paid attention to related operational and supporting processes within the organization and the behavior of the staff to get an impression of the working atmosphere and attitudes of staff. The analysis was done as a comparison with the collected FPW data for 2 months before and after developing, and implementing upgraded, targeted management practices. This analysis provided the basis for the developmental framework with the focus of increasing the effectiveness of FPW management practices by assessing the structure and selecting the best waste management methodologies for FPW. According to the analyzed data, the total wastage of AlWs, BIBs, and PBs showed 5.81%, 1.82% and 1.96% respectively. With the participatory concept, the organizational weaknesses which caused the occurrence of FPW were identified, and developmental measures were implemented to obtain significant reductions of waste of Alws, BIBs, and PBs up to 2.06%, 0% and 0.43% consequently. Counteractive measures, such as join in workforces into the developing and implementing waste reduction measures, workforce training, scheduled preventive maintenance on machines, utilization of removable ink-to-print date codes, efficient demand planning and accurate demand forecasting, enhance workforce motivation and commitment, establishing trust among all employees and proper communication flows within departments which influencing the occurrence of FPW have been proposed to avoid losses. It affirms that the participatory concept either contributes to reducing FPW or enhancing resource efficiency in the food industry, as this would enable companies to benefit economically.

Keywords: Food packaging waste, Participatory concept, Continuous improvement, Integration, Resource efficiency