

Proposal of optimal discount price of ready meal considering the expiration date

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Abstract

The abundance of ready meals in the stagnant Japanese food market is remarkable. The general term “ready meals” outside the home refers to such items as commercially available lunch boxes from the delicatessen. In Japanese food supermarkets (hereinafter referred to as SM), discounted sales of ready meals are made to reduce food waste and increase gross profits before closing. The following three points are considered for the discount sales of ready meals: 1) Stock food is sold to reduce waste loss; 2) if the discount amount is large, the food’s quality is suspect and the meal is not purchased; and 3) the discount amount is reduced in order to secure gross profits. In contrast, setting discount prices for ready meal often depends on the experience and intuition of the person in charge, as such, there is no numerical basis.

Therefore, the purpose of this study is to derive the optimal discount prices that maximize the gross profit for the discounted sale of ready meals in SM, taking into account the impact of the expiration date on consumers and the aforementioned points of the discounted sale for ready meals. Our results indicated that the optimal price changes according the amount of stock, the number of customers at the store, and the number of times that discounts are changed. In addition, the optimal price for each condition could be derived by simulation.

Keywords

ready meal, discount sale, food waste, expiration date, food supermarket

Note: Yu Wakabayashi is currently a staff member of Kao Corporation. But this study is not related to Kao at all because it was conducted when he was a student at Waseda University.

Biographies

Yu Wakabayashi is currently a staff member of Kao Corporation in Japan. He earned Bachelor Degree of Engineering in School of Creative Science and Engineering from Waseda University, Japan. His research interests are mainly focused on Industrial Engineering and Marketing.

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