

## Finding a New Alternative to Reduce Food Waste: An Experimental study on Food Consumers

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Every year, about 1.4 billion tons of food, which is one-third of the world's food production, have been discarded without being consumed. This is estimated to be half of the world's total grain production (Gustavsson et al., 2011). 56% of the world's food waste comes from developed countries, with South Korea, Japan, and China accounting for half. The three countries of South Korea, China, and Japan account for half of it. Food waste increased by 19.2% between 2011 and 2016 in South Korea. It resulted in economic costs reaching 17 million dollars in 2018. The domestic food waste problem was at a serious level in South Korea (Kostat 2012, 2017).

The purpose of this study is to propose a new method for reducing food waste and to investigate its effectiveness. We designed the experiment of using a self-order kiosk machine to present four types of treatments to reduce food waste and estimated the effect of the treatments on the chance of less food waste. We would suggest the relevant policy to reduce food waste in restaurants by discouraging consumers from choosing more foods to be thrown away.

For this research, we designed an experiment by surveying food consumers. The number of participants was 1,000 consumers in South Korea. We split them into 200 participants for each group we will explain. We surveyed them twice. The first treatment (Group 2) was education. A web page and short video clip were shown to participants to provide various information, including the current status of food waste and the effect of reduction endeavors. The second treatment (Group 3) is a nudge. For the nudge, the survey posted an image presenting, "Reducing food waste, it is a great practice to save the planet!" during the experiment. The third treatment (Group 4) was that participants were given the option to exclude at least one side dish with a discount from the main menu price. The last treatment (Group 5) was the opposite case of the third treatment. Participants in this treatment group can add side dishes they want with an extra charge for each side dish. We also considered the control group with the same environment as other groups except for treatments

Our preliminary treatment effect analysis shows that the educational treatment is an effective policy to discourage consumers from choosing more side dishes they would not eat. The treatment to give consumers the option to exclude side dishes with a discount is more effective than that to add side dishes with an extra charge. However, nudge is ineffective in selecting a few side dishes. The results give us policy implications for reducing food waste in restaurants.

Our model also tests if the default effect exists in our experiment on reducing food waste. Based on the estimation result, the default effect does not exist. Two experiments of excluding and adding side dishes show that both methods can discourage people from choosing more side dishes. Economic incentives were presented to participants and would be effective for both groups.

### References

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- Kostat. 2012, 2017. National Waste Statistical Survey.

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