How the declaration of a state of emergency changed consumer shopping behavior: The utilization of physical stores and online shopping

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1. Introduction

Since 2020, the novel coronavirus infection (COVID-19) has become a global pandemic and has had a tremendous impact on our lives. Many countries tried to prevent the spread of infection through restrictions. In Japan, the government requested school closures from March 2020, and a state of emergency was declared on April 7. Japan's declaration of a state of emergency did not impose strict restrictions, but requested that large commercial facilities be closed and that people refrain from going out.

A substantial change has emerged in the shopping behavior in each country due to movement restrictions. In Western countries where strict lockdowns were implemented, shopping at physical stores such as supermarkets decreased, and as its alternative, online shopping such as using online supermarkets has increased (Ellison et al., 2021). Shopping for food through delivery services also began (Baker et al., 2020). Online shopping has also increased in Japan since the spread of COVID-19 (Watanabe and Omori, 2020). In this way, behavioral restrictions also affected the option between physical stores and online shopping when purchasing food. However, under Japan's state of emergency, it was possible to go out without legal restrictions such as penalties. Moreover, in Japan, people have the habit of frequently shopping because of their emphasis on food freshness, and it is conceivable that many people took measures against infection when going to physical stores such as supermarkets. It is also conceivable that the state of emergency changed consumer shopping behavior, such as people fearing infection reducing outside trips and increasing their use of online supermarkets and other online stores, or bulk buying when they visit supermarkets. Hence, this study analyzes how food shopping patterns have changed owing to the declaration of a state of emergency linked to COVID-19 by factoring in the differences between physical stores and online shopping, the amount per purchase, and the frequency of shopping. This paper provides an overview of that research.

2. Data

This research uses MHS (Macromill Holistic Spending Panel Survey), consisting of household account book data collected by Macromill, Inc. as data. In MHS, purchase history is registered by scanning the receipt by a shopping monitor through a smartphone. Hence, consumer shopping behavior, such as when the monitored product was purchased, what kind of items were purchased (fresh vegetables, meat, eggs, etc.), where they were purchased (supermarkets, convenience stores, e-commerce sites, etc.), and what other products were purchased together, can be analyzed in detail. This research follows O'Connell et al. (2021) and calculates the change in spending on an item for the same period of the previous year, with 28 days counted as one period. Here, the change in overall spending for an item within a period is broken down into "frequency" and "amount per purchase" proportions. Each of these can be considered to affect the spending; that is, if the frequency proportion is high regarding the change in overall spending for an item, the shopping frequency for it increases, and if the proportion for the amount per purchase is high, the bulk purchase increases. The proportions at physical stores and online shopping are each calculated. For example, as shown in the analytical schematic diagram in Figure 1, if the overall spending for an item has increased, the breakdown can show whether it accounts for the share frequency or share amount per purchase. As shown in Figure 1, if the overall spending for an item increased by 20%, the frequency contributed 120%, but the proportion of the amount per purchase was negative 15%. The part labeled "Others" captures the effect of changes in both frequency and amount per purchase, and this study focuses on frequency and amount per purchase. The number on the far right shows the total value of the proportions, which is 100% overall. By calculating the proportions for frequency and amount per purchase, for both physical stores and online shopping, the effect that they have on the change in overall spending for an item was investigated.

This research breaks down the factors behind the change in food spending from April 7, 2020, when the state of emergency was declared, 28 days before and after during Period 1, which is from March 9 to April 5, 2020,

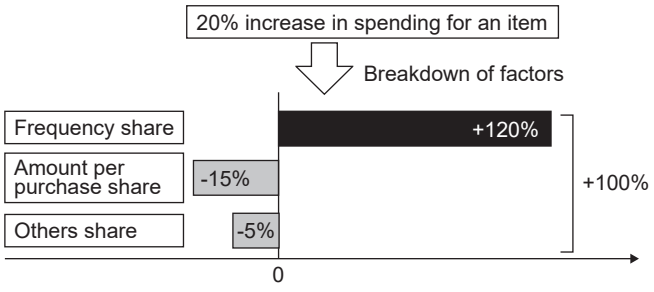

Figure 1. Analytical schematic diagram

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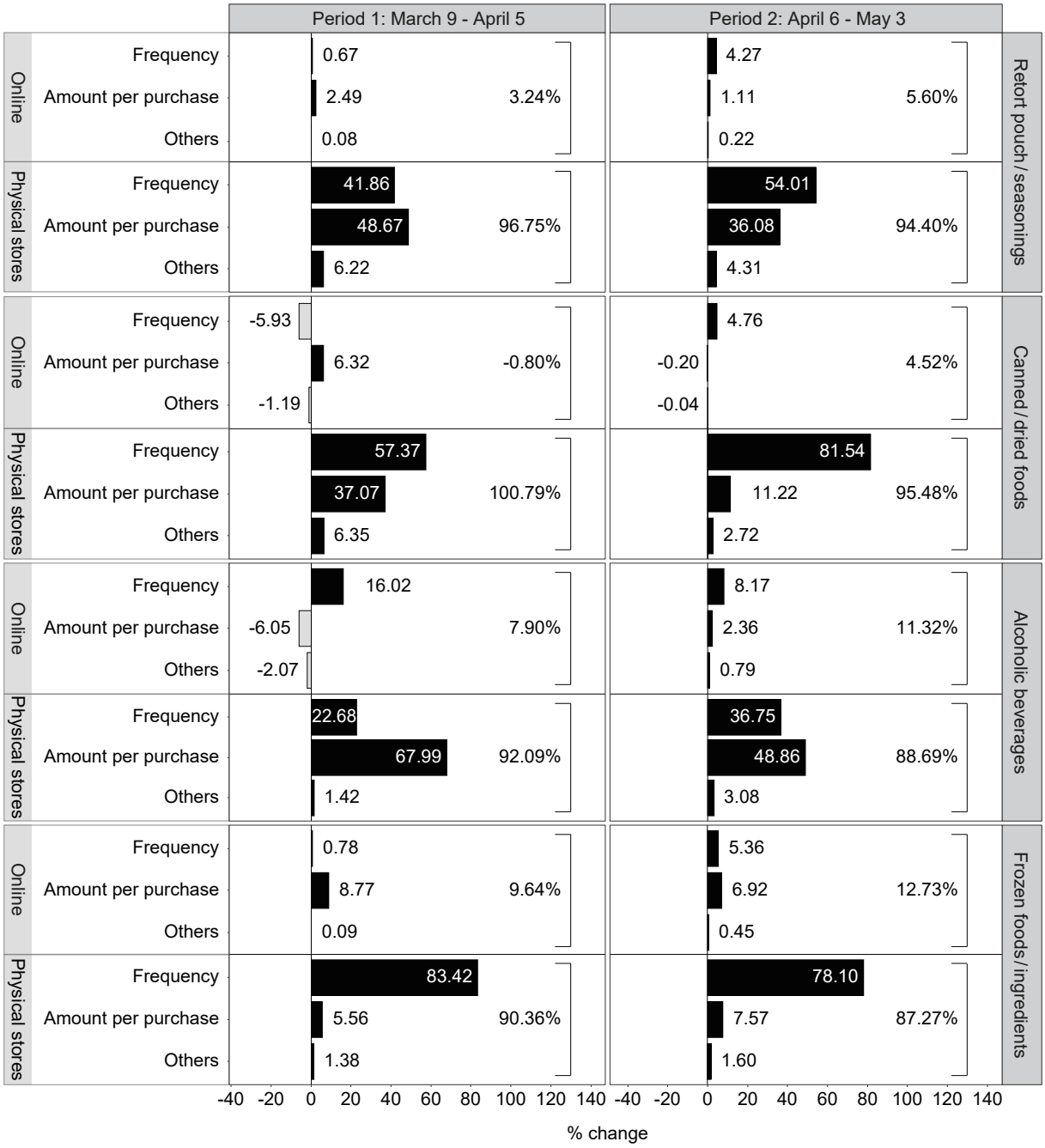

Figure 2. Factorization results of storable foods

and Period 2, which is from April 6 to May 3, 2020, compared to the same periods in 2019, for 3,712 MHS monitors. The analysis was conducted by classifying the food into three food groups: fresh/daily products (seafood, fresh vegetables/fruits, seasonings/oil, tofu/fermented soybeans/pickles, meat/ham/eggs, dairy products), staple foods (fresh noodles, cup noodles, dried noodles, flours, rice, grains, cereals), and storable foods (retort pouch/seasonings, canned/dried foods, alcoholic beverages, frozen foods/ingredients). Moreover, the five business categories of supermarkets, convenience stores, drug stores, discount shops, and liquor stores were defined as stores that correspond to physical stores, and the four business categories of online supermarkets, e-commerce malls, mail order stores, and food and ingredient delivery services as online shopping.

3. Results

When the spending for each food item was factorized by physical store, online shopping frequency and amount per purchase, the trends were different depending on the food group. The results are outlined here, with storable foods as an example. Figure 2 shows the calculation results for the shares of frequency, amount per purchase, and others separated into physical stores and

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online shopping. The numbers in the parentheses in the far right show the total proportions for physical stores and online shopping.

A feature of storable foods is that compared to Period 1 (before the declaration of a state of emergency), online shopping contributed to the spending increase in Period 2 (after the declaration of a state of emergency). Except for alcoholic beverages, spending was increasing because of increased utilization of online shopping. That is, it can be conceived that with the start of the declaration of a state of emergency, the opportunity to eat at home increased, so the purchase of these foods increased. It is likely that online shopping was utilized more frequently in cases when the food was relatively bulky or if the person had infection concerns. Although the total proportion of physical stores shows a relative decreasing trend, the frequency proportion is increasing. Therefore, in physical stores, the response to the increase in home meals was accomplished by increasing frequency rather than increasing bulk purchases. Moreover, an increase in the shares for amount per purchase and frequency was observed which is a common trend in other food groups, but it was small. For these foods, the proportion of shopping at physical stores was overwhelmingly large. By contrast, many studies and reports pointed out that online shopping utilization increased after the declaration of the state of emergency. Of course, online shopping utilization increased more than before, but there are contrasting outcomes depending on the item.

4. Conclusion

Alongside the declaration of the state of emergency in the early stage of the COVID-19 pandemic, many studies have pointed out that because people were no longer able to casually leave their homes, there has been an increase in the shift from physical stores, such as supermarkets, that have been utilized until now towards online shopping such as online supermarkets. In this study, we showed that the increase in the frequency of online shopping impacts the increase in food spending. However, the size of this impact is small. We also discovered that the utilization of physical stores still contributes significantly to food spending in terms of both frequency and amount. In other words, although there was a request to refrain from going out in the declaration of a state of emergency, it is conceivable that a relatively large number of consumers responded to this by increasing the frequency and amount of shopping they did at physical stores rather than increasing the frequency and amount of shopping online. Please refer to Ito and Maruyama (2023) for the research results introduced in this paper.

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