

# Development of Mail-order (Online) Food Shopping in Japan

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## Introduction

In the consumer goods market, the market size for food is the second largest behind apparel, however online shopping accounted for only 2.64% of the food market in 2018 (Ministry of Economy, Trade and Industry 2020 : p. 49).

The large food market size and low online purchase rate pose both business opportunity and risk at the same time. The opportunity is the potential of the online food market size that motivates providers to invest in online channel development. And risk is the low food category online purchase rate (2.64%) compared to other categories like home interior (22.51%) and apparel (12.96%) (Ministry of Economy, Trade and Industry 2020 : p. 49). The current paper is a mid-review of the Institution's Grant Project 2019 and briefly covers the initial research question development and analysis and looks into options for further research.

The current paper has four sections. The first section of the paper starts with an overview of the online food purchase channel development in Japan, where Rakuten has played an important role in developing the online retail market in general. The second section defines the research questions based on an existing literature review. The third section describes the data used for the analysis and the analysis results. The final section of the paper reviews the analysis results in the wider context and provides possible further research options.

## 1. Online food retail channel development

### A. Online food purchase service provider diversification

Although the online food purchase rate is still low compared to other categories, the online market growth potential has led to service provider diversification in recent years. Currently the businesses providing online food purchase services have their roots in the following four areas.

The first ones are the pioneers in mail-order food delivery. The ordering method in the pre-internet period was paper or telephone based, after selecting products from paper-based weekly delivered catalogue. This ordering method is still available. The Cooperative covers almost all prefectures in Japan with their food delivery service.

The second ones are internet platform providers, namely internet companies like Rakuten, that provide a platform for independent retailers to sell their products online. In the initial stage, the internet platform providers only provided the platform to retailers, but later ventures with supermarket chains were started in order to be directly involved in the food online purchase service.

The third ones are supermarket chains that have started an online purchase and delivery service in addition to their regular store operations. Most of these supermarket chains have now formed alliances or joint-ventures with the internet platform providers.

The fourth ones are new start-ups that are offering a novelty type of service, and they have added an online food purchase option as an addition to their main service. For example, Cookpad started as an online recipe site in 2004 and became public listed company in 2009. Their main revenue is advertising income from the popular recipe site. In 2018, Cookpad started Cookpad-mart offering an online fresh food purchase service with deliveries to a cool locker located at a convenient

**Table 1** Food mail-order internet service providers adapted from (Nishiyama & Kimoto, 2019)

Main business	Business	Food mail-order internet service
1. Food mail-order delivery	Cooperative	Co-op deli; pal system
	Oisix ra Daichi	Oisix; Radish Boya
2. Internet platform providers	Yahoo	Dely; ASKUL & ItoYokado IYFresh
	Rakuten	Rakuten & Seiyu net-super
	Amazon	Amazon fresh
3. Supermarkets and food retailers	Lawson	Lawson fresh pick
	Aeon	Aeon net-super
	Life	Life NetShop
	ItoYokado	ItoYokado net-super
4. Start-ups	Cookpad	Cookpad mart
	Vegeo vegeco	Vegery
	Vivid garden	Tae Choku

pick-up location.

An overview of food internet order service providers with examples is provided in Table 1. In the following sections we will describe food online purchase service development at Rakuten and the supermarket chain Seiyu.

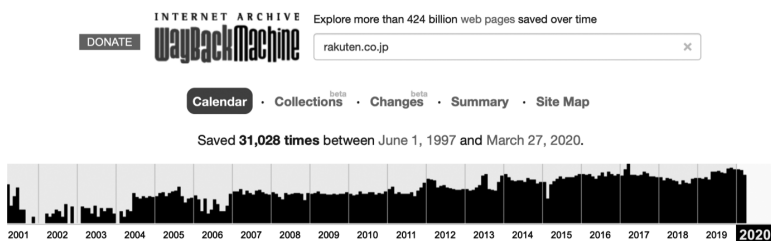
#### B. Rakuten

A major shift in the online purchase channel development in general was in 1997 with the establishment of the Rakuten mall. Rakuten mall offered a stable and reliable online purchase platform to retailers and shoppers. For retailers, Rakuten mall provided an opportunity to showcase their products online without being a technology expert, and the retailers accepted Rakuten mall as it was easy to use and opened a new sales channel to them. The shoppers accepted Rakuten mall because it

offered them a reliable and stable shopping environment where products were guaranteed to arrive, shared comments from other shoppers added confidence, and personal information was kept secure. It is important to notice that once the shoppers registered to the site and got used to the site layout, they could just keep browsing around for products across different shops, because the shop layout is standard with only minor modifications allowed. The site gradually increased in popularity, and Rakuten started adding purchase incentives like points with purchases and additional services like the Travel site for online travel reservations (Rakuten, 2020).

Internet archive (archive.org) WayBack Machine provides unique historical data for site views captured for Rakuten mall URL “rakuten.co.jp”. Figure 1 shows historical views of the site that have been available in the internet archive over the years. Site popularity development can be seen from the height of the bars that show the number of historical views available for the URL based on crawls to the site, which depend on the site links, site changes, and so on as defined by different algorithms (Leetaru, 2016).

The WayBack Machine historical site views allow a comparison of the Rakuten mall top page for the years 1999, 2004, 2009, and 2014. For the initial years, the historical site views are limited, and the site views for



**Figure 1** Internet archive historical site views available for Rakuten mall URL rakuten.co.jp (Wayback Machine, 2020)

1999 are available only for January, April, October, and November. As Fall is the season with appeal for fresh foods, then the chosen site views are for the end of August in 2004, 2009, and 2014, and for October 1999.

In 1999, the top page focused on fashion, interior, and home electronics; the food category was featured below these categories. In 2004, the “food, drinks and wine” category was shown in the top middle of the front page, and the feature section had “regional foods for order”. In 2009, the front page featured a banner for “gourmet order sets”, and the food section was divided into four categories: 1) food, sweets, meal delivery; 2) water, soft-drinks; 3) wine, beer, Western alcohol; 4) Japanese alcohol. In 2014, the front page featured a banner for “meal delivery half-price items”, and the feature section promoted “seasonal autumn fresh foods”. The frontpage views of the site and food category feature location for each year is shown in Figure 2.

The top-page for an online-store is the front window of the shop, and the shop features in a central position a product or category that the shoppers are expected to find interesting. From the shoppers’ side, the product or category that are most visited or searched for should be featured in the central visible position of the top-page. In that way the shoppers can quickly find what they are looking for, or the shoppers may notice a category that is currently trending. Easiness to find a category and satisfaction with the categories promoted are important to ensure repeat visits to the site. In case of Rakuten, the food category feature and location change on the top-page shows that specialty and regional foods, as well as meal delivery service, were gaining popularity in 2004.

This Rakuten example illustrates the efforts of internet platform providers to contribute to the food online market growth.

### C. Seiyu Net-super

Seiyu was the first supermarket chain that started offering online pur-





**Figure 2** Rakuten mall top-page views 1999, 2004, 2009, 2014. (Wayback Machine, 2020)

chase and delivery service for supermarket groceries in 2000. Seiyu has more than 300 supermarkets. They are mostly located in the Tokyo area but also in Hokkaido, Tohoku, Kansai and Kyushu. Initially, the orders were picked at the store and delivered to shoppers in the store service area. However, not all stores were used for filling internet orders. As a result of limited area store coverage and limited store online purchase service coverage, the Net-super service was only available in limited areas in the vicinity of a Seiyu supermarket. The analysis by Intage in 2017, based on consumer panel data, showed that 89% of all Seiyu users were only using an actual Seiyu store, 5% were using only Seiyu Net-super, and 6% were using both net-super and an actual Seiyu store. While only 6% of shoppers were using both Seiyu online and an actual store, they contributed to 18% of total Seiyu sales. This was due to higher annual purchase value (Makino, 2018). This data indicates that the Net-super service provides additional convenience to the shoppers, which may improve store loyalty.

In 2018, Rakuten and Seiyu (Rakuten News, 2018) opened a co-operated Rakuten-Seiyu Net-super that is available to all 99 million Rakuten members, offering 20,000 items that are available for order and delivery

in 16 prefectures. This business venture shows the trend of internet platform providers and grocery retailers combining efforts in the expectation of a growing online food market. But it also means that traditional grocery retailers have limited capability in developing online shopping and marketing platforms.

## 2. Research question development

### 2.1 Consumer channel choice

Purchasing food online is a definitive purchase channel choice for the shopper, and purchase channel decision making is part of shopping behaviour. Studies on consumer purchase channel choice can be categorized into two types: for products and for services. The research about purchase channel decision making in the context of a multi-channel setting is scarce. This section refers to channel selection theory (2.1) in the context of the service industry, and empirical studies (2.2) in the context of the online food purchase category.

Gensler et al. (2012) developed an integrative model of consumers' channel choice using data for the retail banking industry. Gensler et al. say that channel utility determines the likelihood that a consumer chooses a channel, and channel utility refers to channel attributes, experience, and spill over. Based on different authors, Gensler et al. identify the following central channel attributes: quality, price, convenience, and risk. They concluded that both channel utility and channel attributes need to be considered simultaneously when analysing consumer channel choice.

Ishii & Kikumori (2018) narrow the reasons related to online channel selection into four categories. The first reason is related to the channel, namely the purchase value and cognitive experience, ease of purchase, and risk related to purchase. A second reason is related to product, say-



ing that products with fixed parameters are easier to purchase online. Examples are books and CDs. The third reason is related to the shopper's situation regarding time and location, like the distance to the actual store or the time required to do the actual shopping. The fourth reason is related to individual characteristics, like knowhow and experience in using the purchase channel.

Based on the previous research mentioned above, the important factors for online food purchase seem to be related to product and channel attributes. The product attributes refer to items that are easier to purchase online or that can be purchased only online. Channel attributes refer to convenience, price, risk, perceived purchase value, and previous experience with the channel. Perceived purchase value relates to satisfaction with the available assortment and satisfaction with the service experience.

As said earlier, the research about purchase channel selection in the multi-channel context is scarce. For insight, the National Supermarket Association of Japan has compiled a comparative overview of the merits and demerits of online and actual store food purchasing (Table 2). Online ordering offers the benefits of avoiding crowded stores and saving time on going to the actual store; these attributes relate to the store or shopping conditions. For an actual store, the shopping pleasure is mentioned in the context of feelings about seasonal offers, selecting products, and promotions; these are attributes related to the actual product.

## 2.2 Research questions

The research questions for the current, initial part of the project are set in relation to shopper age and food categories.

### A. Purchase rate by age group

How has the food category online purchase rate (as a percent of the total annual food category purchase) developed over the years and across different age groups ?

**Table 2** Merits and de-merits of online and actual store food shopping  
(The National Supermarket Association of Japan, 2018: p. 85)

	Online	Actual store
Merits	Can order anywhere Save time by not going to the store Can order 24 hours Can buy items that are not available at store Can avoid crowded stores Can see comments left by other buyers	Can have products immediately Pleasure of shopping actual products Pleasure of shopping for seasonal products Pleasure of shopping for products on promotion Can check the actual product Can directly ask questions of the store personnel
De-merits	Time difference from order to delivery Troublesome to actually receive the order Pleasure of shopping is missing Freshness, quality of order is uncertain Shipping fee Member registration is troublesome	Have to go to store Store opening hours Limited assortment Same shopping time means crowded store

**Table 3** Percent who used online shopping by head of household age group in 2014. (Ministry of Internal Affairs, 2015: p. 12)

Head of household age group	~24 years	25~29	30~34	35~39	40~44	45~49	50~54	55~59	60~64	65~69	70~
% used online shopping	30.0	38.7	43.5	44.2	41.4	38.7	37.0	32.3	22.1	15.8	9.4

The “White Paper 2015 on Information and Communications” (Ministry of Internal Affairs, 2015) shows by head of household age group the percent who used online shopping in 2014.

According to the report, 44.2% of 35–39, 43.5% of 30–34 and 41.4% of the 40–44 age groups have the highest online purchase rate (Table 3). The online purchase rate was lower in younger and older age groups.

Although this report covers online shopping usage in general, the hypothesis for our analysis is that the food online purchase rate is highest for the 30~39 age group, followed by the 40~49 age group, and lowest for the under 30s’ age group.

#### B. Purchase rate by product category

Is the online purchase rate different for different product categories? Previous research has shown that product attributes are important for preferring online purchase for some categories, while the product attributes also tend to support actual store shopping.

In March 2018, Nakamura (Nakamura, 2019) conducted an online survey regarding food online purchase behaviour. The survey had 500 respondents above the age of 20 who were selected based on two criteria: 1) food online purchase duration of more than one year; 2) food online purchase frequency of at least once a month. According to the survey, the highest online purchase rate was for the beverages category, the second was for cereals, the third was for oil and condiments, and the fourth was for alcohol. Although the subjects were restrictive and the results should be modestly interpreted, based on that survey, the expectation is that the online purchase channel is preferred for heavy and bulky items.

### 3. Analysis

#### 3.1 Data overview

This analysis draws on Japan Statistics Bureau consumption data from the National Survey of Family Income and Expenditure (Statistics Bureau of Japan, 2000, 2011, 2015a, 2015b) which is conducted after every five years with the objective of identifying family income, household consumption, and assets.

For reference, the survey sample size in 2014 was 56,400 households. In particular, we used 2+ household (47,400 samples in 2014) consumption data for the following years: 1999, 2004, 2009, and 2014. The data specifies the purchase channel as shown in Table 4. However, the mail-order online and mail-order “other” detail is available only for the years 2004, 2009, and 2014. For 1999, only total mail-order data is available.

Table 5 shows non-store purchase rate development for annual food spending. The online purchase rate was 0.147% in 2004 and 0.585% in 2014, a change of +0.438ppts, and the “other” mail-order purchase rate change for the same period was +0.856ppts. The total mail order purchase rate increased by 1.294ppts (from 1.200 in 2004 to 2.494 in 2014). The online purchase rate increased +0.438ppts, but the “other” mail-order purchase rate increased almost twice as much +0.856ppt.

In this analysis, we use data for the total mail-order and the online order. This allows us to see the impact of the online order on the total mail-order development as well. Meanwhile, 2014 is the most recent year for which the data is available.

The age groups are defined by the age of the household head, and this allows analysis in only three age groups: under 30, 30–39, and 40–49. The older age groups are not in the scope of the current analysis.

The data allows analysis of online purchase rate development for total food by product category. Some category details were added gradually,

**Table 4** Purchase channels as per National Consumption Survey (Statistics Bureau, 2015b).

	Purchase channel	Description
Purchased at store	1. Regular store	Retail outlets other than 2~6, like private stores, kiosks, petrol station stores.
	2. Supermarket	Self-service retail stores selling groceries, clothing, etc.
	3. Convenience store	Small size self-service stores opened until late hours or 24-hours, selling mostly groceries
	4. Department store	Retail stores selling apparel, food, and a variety of products and with more than 50 salespeople servicing customers
	5. Cooperative	A union formed based on members' investments to create a purchasing and selling group
	6. Discount store, warehouse type bulk purchase store	Retail stores where all products are sold at a discounted price, like drug-stores, 100-yen stores.
Mail-order	7. Mail-order (online)	Products are purchased online (over internet)
	8. Mail-order (other)	Products are purchased via newspaper/magazine, radio, TV, catalogue, mail, telephone
Other	9. Other	Stores other than above, like beauty salon, open market, vending machine, etc.

but for the main categories the definition is consistent across all four survey periods.

**Table 5** 2+ Household average annual food purchase rate (Statistics Bureau, 2000, 2011, 2015a, 2015b). Purchase rate is defined as annual food spending via mail-order channel ÷ total annual spending.

Annual purchase rate (%)	1999	2004	2009	2014
Annual food spending	100	100	100	100
<u>Mail-order total</u>	0.535	1.200	1.163	2.494
- online (over internet)	NA	0.147	0.346	0.585
- other	NA	1.053	0.817	1.909

### 3.2 Analysis

#### A. Purchase rate by age group

Table 6 shows the mail-order purchase rate, and Table 7 shows the online purchase rate of total food purchase. Both tables show the purchase rate development over the years for the three age groups. Again, the age groups are defined by the age of the household head at the time of the survey. The total mail-order purchase rate was quite similar for all three age groups in 1999, but by 2014 the mail-order purchase rate was highest for the 40–49 age group. Online purchase rate in 2004 was lowest for under 30s' (0.165%). While the 30–39 and 40–49 age groups already had slightly higher purchase rates in 2004, and the purchase rate growth by 2014 was almost 1.5x higher than the under 30s'. The online purchase rate was highest for the 30–39 age group across all survey years. The mail order total purchase rate was highest for the 40–49 age group in 2014 (2.037%), and this group also had the highest growth rate (+1.642%).

These results are as expected for the online purchase rate. The higher purchase rate was for the 30–39 age group, followed by 40–49 age group. However, for total mail order, the 40–49 age group had the highest purchase rate.

**Table 6** Mail-order purchase rate as a percent of total food purchases by age group for 2+ households (Statistics Bureau, 2000, 2011, 2015a, 2015b). Calculated as annual mail-order purchase value  $\div$  annual food purchase value.

Mail order total purchase rate %	1999	2004	2009	2014	2014 v 1999
under 30	0.345	0.726	0.526	1.328	+0.983
30-39	0.437	0.929	1.032	1.973	+1.536
40-49	0.395	1.060	0.905	2.037	+1.642

**Table 7** Online purchase rate as a percent of total food purchases by age group for 2+ households (Statistics Bureau, 2000, 2011, 2015a, 2015b). Calculated as annual online purchase value  $\div$  annual food purchase value.

Online purchase rate %	1999	2004	2009	2014	2014 v 2004
under 30	NA	0.165	0.273	0.551	+0.386
30-39	NA	0.229	0.497	0.893	+0.664
40-49	NA	0.189	0.461	0.788	+0.599

### B. Purchase rate by product category

The available data is consistent for total food and for 13 product categories across the four surveys. For 1999, the total mail-order data is available, and as of 2004 and afterwards, the online and the other mail-order data is available. Table 8 shows the mail-order, the online, and the other mail-order purchase rate, and the difference between 2004 and 2014 (2014 v 2004 column) by category for four surveys. From the Table 5, we already know that the mail-order total purchase rate increased by 1.294ppts from 2004 to 2014, while the online purchase rate increased by 0.438ppts, and the other mail-order increased by 0.856 ppts.

We can see that the online purchase rate for several categories signifi-

cantly increased from 2004 to 2014 (marked bold in the table). The beverages category had the highest online purchase rate (2.053%) in 2014. Additionally, alcohol and oils, fats, and condiments categories had online purchase rates above 1% in 2014. Looking at the online purchase rate growth from 2004 to 2014, fruits +0.752ppts, other cooked food +0.561

**Table 8** Average 2+ household food category purchase rate (Statistics Bureau, 2000, 2011, 2015a, 2015b). Calculated as annual category mail-order (online) purchase value ÷ annual category total purchase value. Bold indicates categories growing ahead of average.

Year	2004				2009			2014			2014 v 2004		
Purchase rate %	Mail - order	Mail - order	Online	Other	Mail - order	Online	Other	Mail - order	Online	Other	Mail - order	Online	Other
Food total	0.535	1.200	0.147	1.053	1.163	0.346	0.817	2.494	0.585	1.909	1.294	0.438	0.856
Cereals	0.581	1.001	0.172	0.829	1.168	0.423	0.745	2.433	0.722	1.711	1.432	<b>0.550</b>	0.882
Fish, Shellfish	0.423	0.897	0.141	0.756	1.536	0.406	1.13	2.883	0.589	2.294	1.986	0.448	<b>1.538</b>
Meat	0.196	0.420	0.078	0.342	0.532	0.213	0.319	1.775	0.328	1.447	1.355	0.250	<b>1.105</b>
Dairy, Eggs	0.174	0.382	0.088	0.294	0.441	0.189	0.252	2.466	0.481	1.985	2.084	0.393	<b>1.691</b>
Vegetables, Seaweeds	0.491	0.976	0.098	0.878	0.913	0.264	0.649	2.386	0.504	1.882	1.41	0.406	<b>1.004</b>
Fruits	0.887	1.856	0.091	1.765	1.649	0.37	1.279	3.279	0.843	2.436	1.423	<b>0.752</b>	0.671
Oils, Fats, Condiments	0.896	1.953	0.266	1.687	2.026	0.428	1.598	3.738	1.017	2.721	1.785	<b>0.751</b>	1.034
Cakes, Candies	0.458	0.901	0.217	0.684	1.166	0.493	0.673	1.726	0.538	1.188	0.825	0.321	0.504
Cooked Food	0.993	3.290	0.136	3.154	1.782	0.395	1.387	4.02	0.545	3.475	0.73	0.409	0.321
Cooked main dish	0.231	0.345	0.063	0.282	0.527	0.124	0.403	1.17	0.245	0.925	0.825	0.182	0.643
Other Cooked*	1.561	5.235	0.184	5.051	2.656	0.583	2.073	5.921	0.745	5.176	0.686	<b>0.561</b>	0.125
Beverages	2.882	4.291	0.691	3.600	4.444	1.171	3.273	5.835	2.053	3.782	1.544	<b>1.362</b>	0.182
Alcohol	0.555	0.883	0.294	0.589	1.234	0.689	0.545	2.252	1.155	1.097	1.369	<b>0.861</b>	0.508

\*Other Cooked includes products like frozen foods, meal sets for dinner, soup or oden sets, other cooked foods like cooked eel, hamburger, fritted vegetables (tempura), etc.



ppts, and cereals +0.550ppts have grown ahead of the average online purchase rate (+0.438ppts).

The “other” mail order purchase rate increased by more than 1.5ppts from 2004 to 2014 for two categories: fish and shellfish, and dairy and eggs. The “other” mail order purchase rate was highest for “other cooked” category in 2014.

### 3.3 Overview of analysis results

#### A. Purchase rate by age group

Previous research has shown that experience with an online channel is not always an important factor for online purchase rate development. Rather, the middle age group tends to have a higher online purchase rate compared to younger age groups.

Based on our analysis using household consumption survey data, the online food purchase rate *per se* and purchase rate growth for the 30–39 and 40–49 age group has been higher than that of the under 30s'. The younger age groups may be more accustomed to digital technology in general, but regarding online food purchases, the digital knowhow seems to be not the main contributing factor. This analysis result supports previous research.

As both, online and total mail-order purchase rates have been growing, the merits of non-store shopping seem to be influencing the changing shopping behaviour. These merits are mostly store related attributes, like time saved from going to the store, the location of the store, avoiding crowded stores. While shopping at the actual store tends to be related to the shopping pleasure, like shopping for seasonal products, shopping for promotional products, selecting actual products (touch and feel).

#### B. Purchase rate by product category

Online purchase rate by product category in Table 8 shows that beverages, alcohol, “oils, fats, condiments”, fruits, other cooked food, and ce-

**Table 9** Possible reasons for high online purchase rate. Authors.

Category	Possible reasons for higher than average online purchase rate
Beverages	Lower price on case purchase Home delivery
Alcohol	Wider assortment than average supermarket Can buy directly from producer Online product description offers more/better information compared to actual store
Oils, fats, condiments	Wider assortment than average supermarket
Fruits	Can buy directly from producer
Other cooked food	Can buy directly from producer (for example cooked eel, frozen seafood)
Cereals	Wider assortment than average supermarket Can buy directly from producer Lower price on higher purchase volume

reals have higher than average online purchase rates. This result is similar to Nakamura's research (Nakamura, 2019) about the online food purchase rate by category. In the current analysis, we also find that fruits and other cooked foods have high online purchase rates. Possible reasons for that seem to be related to product attributes. For example, there is a wider assortment at an online store compared to a local supermarket, an opportunity to buy items like fruits directly from the seller with home delivery, and the convenience of home delivery of heavy products like beverages.

#### 4. Discussion and research options

Online food mail-order offers business opportunities with its large market size potential, but the online order rate for the food category is still

low at 2%. Although the online food purchase rate is growing, the growth rate is still behind that of other consumable categories. As new providers are entering the food mail-order service, it is important to understand, who are the main users of online food purchase service, and what motivates these shoppers to choose online ordering rather than visiting the local store.

Current analysis shows that for 2+ households, the 30–39 and 40–49 age groups' online purchase rate, as per cent of annual food spending, is higher and growing when compared to that of the under 30s' age group. The 30–39 and 40–49 groups are the consumer groups with high annual food spending, indicating that with the right strategy these consumers are willing to switch to online or other mail order purchase options.

However, for the food category, the other mail order purchase rate is higher and has had higher growth compared to the online purchase rate. Based on the current analysis, we also expect that in the future, the combination of online and the other mail order purchase options is expected to contribute to non-store purchase rate development.

The online purchase rate analysis by category showed that categories that tend to have a wider online assortment and products that can be purchased directly from the seller have high online purchase rates. Additionally, the convenience of home-delivery of heavy products, like beverages, seems to be an important factor for a high online purchase rate.

Further understanding about the purchase channel selection for different food categories is needed to unlock the food mail-order business potential.

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