Analysis Using Purchasing Data in Japan

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Abstract. Purchasing style of Japanese consumers have made their own development. Purchase of goods with a large amount once a month or once a few weeks is a kind of global standard. On the contrary, purchase of goods with a small amount once in couple of days is common in purchasing style of Japanese consumers. Purchase of goods with a large amount in a weekend is recently getting to increase however the interval is a week at the longest.

Japanese supermarkets have various features to respond to such a unique purchasing style. First, in the rest of the world, stores are located in the extensive sites on the suburbs but, in Japan, stores are located in the town. Secondly, Japanese supermarkets handle a small amount of products which are subdivided. Furthermore, even if in the same category, supermarkets handle different kinds of products by different manufacturers. In this way, purchasing style of Japanese consumers have made their own development.

The analysis was carried out using the purchasing data of all customers who visited stores and distribution data of members-only coupon.

As the analysis, the authors have found that member registration rate of customers is very high. Its registration rate is as high as 70 %. Also, utilization rate of the coupons as member's privileges is low and, when the members pay in the stores, 70 % of them don't use the coupons.

In future task, how to analyze the member information which is not customer information.

Keywords: Comparative analysis · Marketing strategy · Membership system · Purchasing style

1 Introduction

Purchasing style of Japanese consumers have made their own development. Purchase of goods with a large amount once a month or once a few weeks is a kind of global standard. On the contrary, purchase of goods with a small amount once in couple of days is common in purchasing style of Japanese consumers. Purchase of goods with a large amount in a weekend is recently getting to increase however, the interval is a week at the longest.

As a background, there are a variety of factors. Firstly, it can be mentioned that motorization in Japan has not developed as Europe and America. Therefore, it is difficult to buy goods with a large amount. Secondly, it can be mentioned that Japanese residence is narrow. Japanese residence is narrower than Western residence. Residence in downtown is narrow in particularly. Therefore, even if it's bought in large quantities,

there is no place to keep. Thirdly, it can be mentioned that Japanese seek a fresh. Japanese tend to buy a fresh thing. Culture to eat raw fish, such as represented in sushi is its symbol. Therefore, in order to get fresh things, it is to the frequent shopping.

Retailing of Japan has various features to accommodate Japanese purchasing. According to L.P. Bucklin, it shows the four factors as distribution results that consumer seek: spatial convenience, lot size, delivery time and width and depth of assortment. In four factors of L.P. Bucklin, purchase of goods with a small amount once in couple of days has strongly demanded spatial convenience and lot size. As a result, retailings of Japan are improved spatial convenience to make small scale store in comparison with Europe and American. Also, lot size is smaller than Europe and American. Furthermore Japanese tendency to want to select products in comparison from the instruments that number also strong. Distribution style of Japan is making small scale store and preparing small lot of goods widely. Compared with store of Europe and American are located in the extensive sites on the suburbs and assorted at large lot of goods, it is inefficient. In order to perform efficient management, retailing is common to become large scale by M&A. As a result, Market becomes oligopoly. And leading market share increases. In actuality, in Australia, top five companies account for about 90 % of the market. Also, in America, top eight companies account for about 40 % of the market. On the contrary, in Japan, top five companies account only 7 % on the market. As a background, it was born to various operating styles to accommodate spatial convenience. Specifically, there is convenience store with improved temporal convenience by being open 24 h. Also, it is a factor that the government had been factor also had been protecting a small retailing to restrict the opening of large-scale stores by legal regulations. However, in recent years, these legal regulations have been abolished one after another by the deregulation. As a result of, case to overlap with each of management style has increased because retailing pursues the convenience. Specifically, convenience store is sold fresh food and supermarket is extended the operating hours. Therefore, market of retailing has become highly competitive. In addition, growth of online market is also more vigorously competition in recent years. Under such fierce competition, the retailing has been introduced a membership system in order to survive. The purpose of membership system is to enclose the customer by member benefits, such as coupon. However, if a membership benefit is functioning effectively, membership system is meaningless.

The purpose of the research is to discover more effective method of membership system by analyzing the actual data.

2 Data Used for the Analysis

The data that can be used for the analysis was offered from All Japan Foods Co., Ltd. There are two data that can be used for the analysis.

2.1 Store Data Used for the Analysis

It is used 5 stores in Hokkaido area and Tokyo area respectively to analysis. Data of store shows in Table 1.

Table 1. Store data

Area	Address	Shop area	Daily turnover
Hokkaido	Higasi-ku, Sapporo City, Hokkaido	879m^2	¥2,210,000
Hokkaido	Higasi-ku, Sapporo City, Hokkaido	1,285m^2	¥3,140,000
Hokkaido	Kita-ku, Sapporo City, Hokkaido	879m^2	¥1,740,000
Hokkaido	Bunkyodai, Ebetsu City, Hokkaido	244m^2	¥280,000
Hokkaido	Asahi, Ebetsu City, Hokkaido	482m^2	¥440,000
Tokyo	Higashitateishi, kaushika-ku, Tokyo	125m^2	¥390,000
Tokyo	Nishisakado, Sakado City, Saitama	330m^2	¥570,000
Tokyo	Higurashi, Matsudo City, Chiba	115m^2	¥290,000
Tokyo	Yashio, Shinagawa-ku, Tokyo	214m^2	¥490,000
Tokyo	Kumizawa, Totsuka-ku, Yokohama City, Kanagawa	198m^2	¥400,000

Area of Hokkaido is located in the north of Japan. Public transportation of Hokkaido is not much development. Therefore, motorized society is developing into Hokkaido in Japan relatively. On the contrary, public transportation of Tokyo is highly developed to be the center of Japan. Therefore, there are a lot of people who don't have a car.

Also, it is found that shop area is proportional to the daily turnover.

2.2   Purchasing Data of All Customers

It is indicated below about the outline of data.

Term: Jul.2013 ∼ Jun.2014
Area: Hokkaido area and Tokyo area, 5 each
Number of data: about 18.6 million cases

Data1 is receipt data. Including information is sale date, sale time, membership number (members only), large classification code, middle classification code, jancode, using coupon flag (members only), and coupon number (members only).

2.3   Ticketing Data of Member-Only Coupon

It is indicated below about the outline of data.

Term: Jul.2013 ∼ Jun.2014
Area: Hokkaido area and Tokyo area, 5 each
Number of data: about 9.1 million cases

Data2 is ticketing data of member-only coupon. Including information is membership number, month and years, middle classification code, coupon code, regular price, coupon price, number of sheets, number that was used.

Data2 is distribution data of members-only coupon. Supermarket that was used in the analysis is issued 20 items coupon to customers every month. The contents of the coupon is determined from past purchase history. If there is not 20 items purchasing history, related Products of purchase history is added. Still, if there is not 20items, featured Products of the shop is added (Fig. 1).
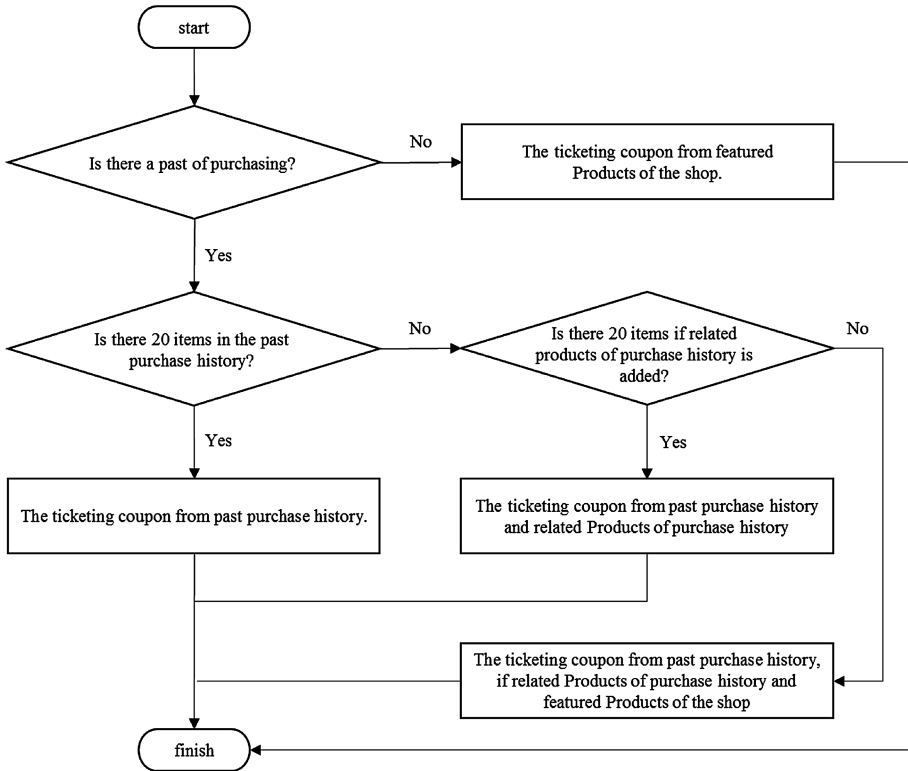
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                          start
                            │
                            ▼
          ┌──────────────────────────────┐    No    ┌────────────────────────────┐
          ◄ Is there a past of purchasing? ────────► │ The ticketing coupon from    │
          └──────────────────────────────┘          │ featured Products of the shop.│
                            │                        └────────────────────────────┘
                           Yes                                      │
                            ▼                                       │
          ┌──────────────────────────────┐    No    ┌────────────────────────────┐   No
          ◄ Is there 20 items in the past  ────────► │ Is there 20 items if related ├────►
          │     purchase history?          │         │ products of purchase history │
          └──────────────────────────────┘          │         is added?            │
                            │                        └────────────────────────────┘
                           Yes                                     Yes
                            ▼                                       ▼
          ┌──────────────────────────────┐          ┌─────────────────────────────────┐
          │ The ticketing coupon from      │         │ The ticketing coupon from past    │
          │ past purchase history.         │         │ purchase history and related      │
          └──────────────────────────────┘          │ Products of purchase history      │
                            │                        └─────────────────────────────────┘
                            │                         ┌─────────────────────────────────┐
                            │                         │ The ticketing coupon from past    │
                            │                         │ purchase history, if related      │
                            │                         │ Products of purchase history and  │
                            │                         │ featured Products of the shop     │
                            │                         └─────────────────────────────────┘
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Fig. 1. Flow chart of coupon ticketing

3   Result of Analysis

3.1   Comparison of Each Store

As a result, it was found that next thing. Firstly, member ratio is high. About 70 % of the customer is a member. Secondly, the average purchase price and the average purchase items is there is a difference of 2 times in the members and non-members. For example, in "Higashi-ku, Sapporo City, Hokkaido", while average purchase price of member is 2038 yen, average purchase price of nonmember is 1075 yen. Thirdly, the one with the wide store area, there are a lot of average purchase price and average purchase items. Specifically, while Average purchase price of "Higashi-ku, Sapporo City, Hokkaido" which area is 1285 m^2 is 2124 yen, Average purchase price of "Higurashi, Matsudo City, Chiba" which area is 115 m^2 is 901 yen (Table 2).

Table 2. Comparison of each store

Area		Average purchase price	Average purchase items	Member, nonmember ratio
Higashi-ku, Sapporo City, Hokkaido	Member	¥2,038	8.9	0.8
	Nonmember	¥1,075	3.8	0.2
	Total	¥1,822	7.8	
Higashi-ku, Sapporo City, Hokkaido	Member	¥2,124	9.0	0.8
	Nonmember	¥1,189	3.8	0.2
	Total	¥1,910	7.8	
Kita-ku, Sapporo City, Hokkaido	Member	¥2,016	9.4	0.7
	Nonmember	¥1,203	4.9	0.3
	Total	¥1,778	8.1	
Bunkyodai, Ebetsu City, Hokkaido	Member	¥986	5.4	0.8
	Nonmember	¥598	2.7	0.2
	Total	¥900	4.8	
Asahi, Ebetsu City, Hokkaido	Member	¥1,328	7.4	0.7
	Nonmember	¥826	4.1	0.3
	Total	¥1,191	6.5	
Higashitateishi, kaushika-ku, Tokyo	Member	¥1,003	5.4	0.6
	Nonmember	¥580	2.8	0.4
	Total	¥820	4.3	
Nishisakado, Sakado City, Saitama	Member	¥1,202	7.0	0.7
	Nonmember	¥696	4.0	0.3
	Total	¥1,061	6.1	
Higurashi, Matsudo City, Chiba	Member	¥901	5.1	0.6
	Nonmember	¥558	3.0	0.4
	Total	¥771	4.3	
Yashio, Shinagawa-ku, Tokyo	Member	¥1,102	5.8	0.7
	Nonmember	¥614	3.1	0.3
	Total	¥951	5.0	
Kumizawa, Totsuka-ku, Yokohama City, Kanagawa	Member	¥997	6.0	0.7
	Nonmember	¥633	3.7	0.3
	Total	¥881	5.2	

3.2 Comparison of Each Day

It is the same as comparison of store about the trend of members and non-members. It is worthy of special mention that average purchase price and average purchase items of holiday has not changed significantly from average purchase price and average purchase items of weekday. Specifically, while average purchase price of weekday is 1440 yen, average purchase price of holiday is 1783 yen. Purchase price of holiday is purchase price of weekday of about 1.23 times. We have expected that average purchase price and average purchase items of holiday is increased as compared to the weekend (Table 3).

Table 3. Comparison of each day

Day		Average purchase price	Average purchase items	Member, nonmember ratio
Sunday	Member	¥1,631	8.7	0.7
	Nonmember	¥881	3.9	0.3
	Total	¥1,423	7.4	
Monday	Member	¥1,633	7.6	0.7
	Nonmember	¥889	3.7	0.3
	Total	¥1,433	6.5	
Tuesday	Member	¥1,593	7.8	0.7
	Nonmember	¥858	3.7	0.3
	Total	¥1,394	6.7	
Wednesday	Member	¥1,608	7.6	0.7
	Nonmember	¥869	3.7	0.3
	Total	¥1,408	6.5	
Thursday	Member	¥1,676	7.6	0.7
	Nonmember	¥914	3.7	0.3
	Total	¥1,476	6.6	
Friday	Member	¥1,730	7.8	0.7
	Nonmember	¥904	3.7	0.3
	Total	¥1,488	6.8	
Saturday	Member	¥1,935	8.0	0.7
	Nonmember	¥1,022	3.9	0.3
	Total	¥1,678	7.4	

Table 4. Comparison of time zone

| Time zone			Average purchase price	Average purchase items	Member, nonmember ratio
Zone1	~11:59	Member	¥1,834	8.6	0.8
		Nonmember	¥888	3.5	0.2
		Total	¥1,598	7.3	
Zone2	12:00 ~ 14:59	Member	¥1,747	8.0	0.7
		Nonmember	¥844	3.5	0.3
		Total	¥1,504	6.8	
Zone3	15:00 ~ 17:59	Member	¥1,687	7.9	0.7
		Nonmember	¥924	3.8	0.3
		Total	¥1,490	6.8	
Zone4	18:00~	Member	¥1,510	7.2	0.7
		Nonmember	¥952	4.0	0.3
		Total	¥1,332	6.2	
Total		Member	¥1,689	7.9	0.7
		Nonmember	¥907	3.8	0.3
		Total	¥1,474	6.8	
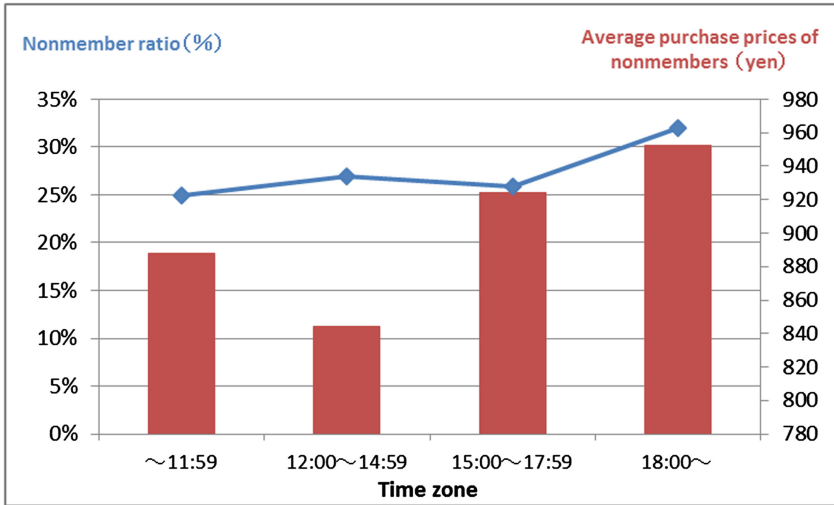
Fig. 2. Average purchase and ratio of nonmember

Table 5. Utilization ratio of coupon

Area	Average monthly visit number of times	Average monthly coupon number of uses	Utilization ratio
Higasi-ku, Sapporo City, Hokkaido	10.5	3.7	35.2%
Higasi-ku, Sapporo City, Hokkaido	10.8	3.8	35.5%
Kita-ku, Sapporo City, Hokkaido	9.4	3.6	38.7%
Bunkyodai, Ebetsu City, Hokkaido	10.4	3.9	43.3%
Asahi, Ebetsu City, Hokkaido	9.3	4.0	40.6%
Higashitateishi, kaushika-ku, Tokyo	11.6	4.7	37.5%
Nishisakado, Sakado City, Saitama	13.9	5.2	37.5%
Higurashi, Matsudo City, Chiba	9.5	3.9	41.2%
Yashio, Shinagawa-ku, Tokyo	12.9	4.9	37.7%
Kumizawa, Totsuka-ku, Yokohama City, Kanagawa	9.4	3.8	41.0%
Total	10.7	4.0	37.7%

3.3   Comparison of Time Zone

It is the same as comparison of store about the trend of members and non-members. It is worthy of special mention that the purchase price and ratio of nonmembers of zone4 has increased slightly. Specifically, average purchase price and ratio of nonmember is the highest in the all times zone. If it seems that main customers of zone4 is a single person of the work way back, it is considered that member ratio of single person is low (Table 4 and Fig. 2).

3.4   Utilization Ratio of Coupon

As a result, it was found next thing. Average monthly visit member of times is about 10 times. On the contrary, average monthly coupon member of uses is 3 times (Table 5).

4   Conclusion

4.1   Conclusion

The authors analyzed purchasing data of all customers and ticketing data of member-only coupon. The purpose of the analysis was to clarify the different between member and nonmember and the problems of usage of coupons.

As a result of the analysis, it was clarified that member ratio was very high and coupon is not used sufficiently.

4.2   Further Task

As a result of analysis, it was clarified that coupon is not used sufficiently. All Japan Foods Co., Ltd that was offered in this time dose not be collected customer information. It is easy to become member by being not collected customer information. The purpose of membership system is to acquire and analyze customer information. In future task, how to analyze the member information which is not customer information.

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