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The Position of Consumer Cooperatives as a Rice Retail Format in Japan: An Analysis of the Fukuoka Prefectural Consumer Cooperative Members' Rice–purchasing Needs and Behaviors

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To expand rice consumption in Japan, consumer cooperatives (hereinafter referred to as "co–ops") are an expected retail format. The aim of a co–op is to contribute to the creation of a consumer–oriented social system centered on ensuring food safety, which has become increasingly concerning among Japanese consumers. The purpose of this study was to develop recommendations for the formulation of more effective marketing strategies and to encourage the use of co–ops when purchasing rice among existing members. First, co–op members' diversified rice–purchasing needs are identified in order to investigate the relative position of co–ops among the numerous current retail formats for rice over a 10–year period. Data on rice purchases based on the psychographic criteria of co–op members were collected twice through mail questionnaire surveys: once in 2006 and once in 2015. The following six rice purchasing needs were identified using exploratory factor analysis: "Official information", "Trustworthiness", "Promotional information", "Low price", "Rinse–free", and "Rice milling date". Hierarchical cluster analysis based on these six needs identified the following five types of members: "Promotional information seekers", "Trustworthiness seekers", "Low price seekers", "Members with low involvement in rice purchases", and "Non–price elements seekers". Accordingly, the results suggested that as a rice retail format, co–ops satisfy all six rice–purchasing needs except for "Low price". Among the members, "Promotional information seekers" and "Non–price elements seekers" show the strongest loyalty to co–ops when purchasing rice. "Trustworthiness seekers" were recognized as a new segment that hopes to be much more loyal to co–ops in the future. In addition, significant changes in the manifestations of members' rice needs occurred over a 10–year period; these needs should be analyzed to identify suggestions for the formulation of future rice retail strategies for co–ops.

Key words: co–op, rice–purchasing needs, rice retail formats, EFA, HCA

INTRODUCTION

The Japan Agricultural News posted that in fiscal year 2014, Japan's food self–sufficiency rate was 39% for the fifth consecutive year based on calorific intake and a record low of 64%, down one percentage point from the previous year, based on production value. In recent years, Japan's food self–sufficiency rate has been the lowest among the major developed countries. Japan's Ministry of Agriculture, Forestry and Fisheries (2015) indicated that the decline of the domestic rice market was one of the main causes for this low rate. From 1970 to 2010, annual rice production decreased from 12.69 to 8.48 million tons, and annual rice consumption per capita decreased from 95.1 to 59.5 kg. Although the government began adjusting rice production to increase the price, it still has trended downwards since the 1990s. Therefore, based on this situation, working towards measures to expand rice consumption appears to be both important and necessary for improving Japan's food self–sufficiency rate. Since the "New Act on Stabilization of Supply, Demand and Prices of Staple Food" was amended and promulgated in 2004, rice retailing has been completely liberalized in Japan (Fukuda, 2004). Taking this as the turning point, interest in rice marketing activities has increased greatly, especially in rice production areas. In response to this situation, numerous studies (Isojima, 2006; Moritaka, 2006; Isojima and Hirao, 2008) were conducted to clarify rice purchasing needs, which are basic factors in the development of effective marketing strategies. In these previous studies, the targeted research subjects were general consumers. By contrast, the present study focuses on members of the Japanese Consumer Cooperative (hereinafter referred to as "CO–OP Japan"); these members are relatively special consumers who choose co–ops as one of their rice retail formats.

As reported by the Japan Finance Corporation (2011), consumers' food safety concerns and health intentions have both risen drastically since the Great East Japan Earthquake. Nowadays, health intentions remain the most important point among the factors that influence consumers' food purchasing behavior, and food safety concerns continue to show an upward trend (JFC, 2015). According to "The Law Concerning Standardization, etc. of Agricultural and Forestry Products", since 2000, all rice makers in Japan have had an legal obligation to provide information regarding rice production, including the place, year, variety, brand and milling date, on packaging for consumers. Rice retail formats that are more capable of securing and assuring the

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safety of a stable supply of fresh rice product are therefore expected to be seen to a greater extent than before in the rice market. CO–OP Japan is generally an expected retail format because it is the largest retail group in Japan based on cooperative philosophies and democratic management principles, the aim of which is to contribute to the creation of a consumer–oriented social system centered on ensuring food safety (Kikuchi and Yamao, 2014). With respect to this point, CO–OP Japan has already developed a number of unique characteristics and operation methods, including home delivery, group buying systems, and sanchoku, a specific type of community–supported agriculture philosophy originally developed by CO–OP Japan to ensure a consistent supply of safe and high quality products in response to consumers' food safety demands (JCCU, 2012). Similarly, group buying systems are trusted by co–op members to provide fresher, healthier products owing to reduced shopping time (Ada *et al*., 1997). Based on the performance of CO–OP Japan, improving existing members' frequency of co–op use can be considered necessary. This increased frequency of use could also be expected to be an effective approach for promoting the expansion of rice consumption.

However, faced with the rise in consumers' food safety concerns and health intentions, other retail formats, including supermarkets, have also started to actively take measures such as *chisanchisho* (local production for local consumption) or starting their own *sanchoku* (FARE Society, 2015). This has led to increased competition between co–ops and other retail formats. In 2015, the Japanese Consumers' Cooperative Union (JCCU) pointed out that among all co–op members, the aggregate proportion of those who rarely use co–ops (monthly spending in co–ops lower than 10,000 JPY) increased from 28.4% in 2006 to 46.2% in 2015. Therefore, it is clear that the frequency of co–op use by members has consistently decreased over the past decade. Meanwhile, their frequency of supermarket use has continued to rise. Furthermore, as reported by the JCCU (2015), in 2012, co–ops were still being the most frequently used rice retail format for co–op members; however, by 2015, the frequency of co–op use had already been equaled or exceeded by supermarkets, even when purchasing rice. In addition, some changes have occurred in members' leading reasons for choosing their favorite rice retail format. Based on survey results from 2006 and 2012, a "convenient delivery service" was the primary reason for selecting such formats (JCCU, 2006; JCCU, 2012); however, survey results from 2015 showed that this had changed to "low price" (JCCU, 2015). Furthermore, although "clear production area" was consistently becoming a more important reason every year up to 2012 (JCCU, 2006; JCCU, 2012), its priority had fallen to fourth place by 2015 (JCCU, 2015).

Considering these issues and circumstances, there is reason to suspect that some changes have occurred in co–op members' social characteristics or needs and behaviors regarding rice purchasing during the past decade. Moreover, among current rice purchasing formats, the relative position of co–ops may have changed in association with the increased competition with supermarkets and other formats.

LITERATURE REVIEW AND OBJECTIVES

Literature review

In a review of the literature related to the history of co–ops as a retail format, Suzuki (1987) indicated that as early as the 1980s, accompanied by the intensification of market competition with emerging retail formats, such as supermarkets and discount stores, CO–OP Japan was being confronted with a dire choice between two directions of development: "large–scale economical co–ops", which were similar to supermarkets in terms of satisfying the consumer requirement of low prices, and "rounded co–ops", which satisfied diversified consumer needs. Moving into the 1990s, due to the bursting of the economic bubble, CO–OP Japan suffered from a downturn in business. Under this background, in response to the increasingly slower improvement of rice retail formats, especially that of the group buying system, a "large–scaled economical co–op" seeking higher returns, the Japanese Cooperative Store Modernizing Organization (hereinafter referred to as "COMO Japan"), a joint venture of the 11 largest co–ops in Japan at that time, was established in 1990 (Ozaki, 1996). However, referring to Sato (1994) and Yamashita (2007), the establishment of this new type of consumer co–op mechanism was not decided based on co–op members' needs; rather, these 11 co–ops forced the management policies of COMO Japan onto their locally–affiliated co–ops, and COMO Japan lost their diversity of service, which is a truly unique character of co–ops. Therefore, it was argued that the most important task in the CO–OP Japan movement was not to promote "large–scaled economical co–ops" like COMO Japan, but rather, to establish and improve regional co–ops closer to "rounded co–ops" on the basis of individual member needs. Meanwhile, the role of co–op members was emphasized as being more actively involved in promoting the rural industry as well as making an effort to reform the position of co–ops to be more rational in competition with other retail formats (Sato, 1994). However, Hirao (1998) pointed out that after the promulgation of the initial "Act on Stabilization of Supply, Demand and Prices of Staple Food" in 1995, consumer needs, especially those of rice, became more diversified than ever before and competition regarding product strategies between different rice retail formats was more intense due to the entry of other new retail channels such as "purchasing from rice farmers directly". These new dynamics resulted in the position of all retail formats, including co–ops, in the rice market being closer to one another. In other words, grasping the exact position of co–ops in comparison with other formats, especially in the rice market, has become increasingly complicated.

Based on the diversification of members' consciousness, Morikawa *et al*. (2000) classified co–op members into seven groups according to the following six socio–

demographic variables: number of joining years, occupation type, age, family size, age of youngest child, and annual household income. They then explored the loyalty of each group to co–ops by taking the frequency of use and the willingness to continue using co–ops as estimation indicators. On this basis, Morikawa and Takeya (2002) further divided members of each group into "heavy–user team" and "light–user team" by checking the frequency of co–op use compared with that of volume sellers (e.g., supermarkets) when purchasing rice and milk, and discussed the purchasing motivation of members of each group in each team. Their conclusion was expressed as follows: "the diversification of members' consciousness has almost no influence on members' appraising indexes for co–op commodities", and "all members, regardless of purchasing place, appraise 'safety' as the primary advantage of co–op commodities; however, the distinction between co–ops and other retailers with regard to 'safety' results in no great difference".

Regarding Morikawa *et al*. (2000) and Morikawa and Takeya (2002), three questions need to be addressed. First, classifying members only according to socio–demographic factors is likely insufficient, particularly as the consciousness of members has become increasingly diversified. Second, especially in the case of rice, focusing only on the frequency of co–op use and supermarket use while ignoring other retail channels is not sufficiently accurate if the purpose is to estimate "heavy–users" or "light users", because the structure of the rice retail market is more complex than ever before. Moreover, it is impossible to clarify the relative position of co–ops among the numerous rice retail formats if there is no comprehensive comparison. Third, considering these two points, it is reasonable to suspect that the conclusion about members' purchasing motivations such as "safety" may not be accurate because differences in motivation were likely averaged during the classification of members based on socio–demographic variables or frequency of use.

With awareness of these questions from previous studies, the objective of the present paper was to utilize a more appropriate research approach. Theoretically, retail business interacts with consumer behaviors (Takahashi, 2004). As noted by Leszczyc *et al*. (2000), for the retailer, it is pertinent to know the magnitude of store loyalty/switching behavior, the nature of the competitive structure in the market and how it is changing, and to be aware of any differences between consumer segments in these regards. For this purpose, a type of approach that has been more widely used in research on the relationship between consumer behavior and retail marketing already exists. This approach causes the segmentation of consumers by taking purchasing motivation (needs) as an estimation indicator instead of socio–demographic factors, which have been seen as relatively important by researchers, but not by retailing business (Takahashi, 2004). This approach is the opposite of that used by Morikawa *et al*. (2000) and Morikawa and Takeya (2002), which identify co–op members' diversified rice purchasing needs (motivation) and differences in motivation. Furthermore, this approach allows the diversification of members' consciousness to be estimated more accurately. This approach was also utilized by Isojima (2006), Moritaka (2006), and Isojima and Hirao (2008).

The objective of this study was therefore to figure out the relative position of co–ops among the numerous current rice retail formats through an approach that compares two different time periods starting from the identification of co–op members' diversified rice–purchasing needs (motivation). The results are expected to provide recommendations for the formulation of more effective marketing strategies for increasing existing members' frequency of co–op use when purchasing rice in the future.

Introduction of investigation object

In view of this background, the present case study focuses on the Fukuoka Prefectural Consumer Cooperative (hereinafter referred to as "F–Co–op") as the investigation object. At present, F–Co–op's business operation can be categorized into three main divisions: retail, mutual insurance, and various other services. The retail business consists of co–op store operation, home delivery, and online shopping. Through a comparison of two surveys, one conducted in 2006 on rice purchasing behavior and attitudes of F–Co–op members, and the other conducted in 2005 on those of general consumers in Fukuoka Prefecture, Fukuda and Shimizu (2008) found a group of members (consumers) collectively called the "safety and security intention group" among both F–Co–op members and general rice consumers, with the F–Co–op group paying much more attention to safety and security than general consumers. However, Fukuda and Shimizu (2008) also identified an F–Co–op group in which members preferred supermarkets over co–ops for purchasing rice, which was similar to the behavior of general rice consumers. Moreover, according to interview data obtained directly from F–Co–op, in the past decade, with the enrollment of about 33,000 new members, the number of F–Co–op members has continued to grow, reaching about 470,000 by 2015; however, total sales have remained unchanged or even fallen. This situation suggests that F–Co–op is a microcosm of CO–OP Japan, especially in terms of the downward trend in frequency of use for rice purchasing by members. Therefore, it is reasonable to focus on F–Co–op as the investigation object.

However, it is particularly noteworthy that F–Co–op maintains its own rice milling plant, Rice Center Co., Ltd. (hereinafter referred to as "Rice Center"), where a stock of high quality brown rice from original production place can be kept. This rice can be instantly polished according to members' actual ordered quantities. This particular Rice Center differentiates F–Co–op from other co–ops because it serves not only as a rice retail business, but also as a rice wholesaler that sells some rice to other co–ops or wholesalers such as Oita Pearl Rice Co., Ltd., in addition to F–Co–op members. Based on this background, rice can be considered a strategic category that plays an extremely important role in F–

Co–op's retailing business (Shimizu, 2007). Moreover, compared with other general co–ops, some specific rice–purchasing needs of F–Co–op members, such as freshness in relation to milling time, might be better satisfied because of the function of the Rice Center. From this perspective, F–Co–op, as the investigation object, is not an average co–op in the rice retail business. Its superior rice retail strategies can be expected to provide more advanced recommendations than general co–ops.

The present paper begins with an introduction that highlights the background of rice consumption expansion in Japan, the necessity of research on the rice retail business for co–ops, and associated problems. A review of the literature to establish the study objectives is provided in Section 2, along with the introduction of the investigation object. A description of the study methodology and data is provided in Section 3, and an analysis of the results and a discussion are provided in Section 4. Finally, the conclusions and future implications of this case study are provided in Section 5.

METHODOLOGY AND DATA

Methodology and analytical framework

The segmentation, targeting, and positioning (STP) process addressed by Kotler and Armstrong (1999) is an important concept in the study and application of marketing. STP is widely regarded as an effective analysis theory for market expansion and penetration. The STP process is one in which segmentation is conducted based on a clarification of consumer needs, starting with characteristics or behaviors, followed by the selection of one or more target markets, and then finally, the implementation of positioning. The goal of the STP process is to guide an organization to the development and implementation of an appropriate marketing mix. On the basis of STP theory, the objective of this paper, in identifying the rice purchasing needs of co–op members and clarifying the position of co–ops among rice retail formats compared with around 10 years ago, can be described as the segmentation of co–op members in rice purchasing. Matlovičová (2008) noted that segmentation is most frequently understood as a process of recognizing market segments, in which case, substantial differences among users of a place should be identified. In other words, the aim of segmentation is to recognize real market segments that lead to further strategic decision–making. The present paper therefore aims to provide recommendations for more effective strategies and increase the frequency of co–op use among members when purchasing rice. However, according to Kotler and Armstrong (1999), a unified manner of market segmentation has yet to be established. Referring to Matlovičová (2008), "it is rather difficult to find a universally applicable system of criteria for market segmentation"; "the most frequently occurring classification in literature sorts criteria into three essential groups: geographic, demographic, psychographic or behavioral criteria." In the present paper, a system of psychographic criteria for rice purchasing, which is nearly identical to that used in a survey on rice purchasing behavior among F–Co–op members conducted in 2006 by Fukuda and Shimizu (2008), was used as part of a new survey conducted in 2015. The survey conducted in 2015 was identical to that conducted in 2006 for the convenience of a comparative analysis.

Furthermore, as noted by Katahira (1987), in Japan, even an extremely subtle difference or a small change in consumer needs for some commodity greatly influences the sales of that commodity because Japan remains a single nation–state in which consumers share high commonality. Accordingly, a number of previous studies (Ishitani *et al.*, 1996; Isojima, 1998; Moritaka, 2006; Fukuda and Shimizu, 2008) have already conducted an analysis of segmentations in the rice market in Japan based on differences in consumers' rice–purchasing needs. The analytical framework of the present case study is based on such discussions regarding analysis theory and previous analysis methods.

First, exploratory factor analysis (EFA) is used to extract co–op members' rice–purchasing needs as factors. In this step, the independent variables are psychographic criteria, which are manifestations of members' wants when purchasing rice. The data from both surveys are combined.

Second, the segmentation of members into clusters is carried out using hierarchical cluster analysis (HCA) based on the differentiation of rice purchasing needs identified in the previous step. Next, the composition ratio of each segment in 2015 is compared with that in 2006.

Third, we create contingency tables between the segments and rice purchasing behaviors of co–op members (e.g., the actual purchase price range, etc.), and perform a chi–square test and an adjusted standardized residual test to examine whether any changes occurred in the relative position of co–ops among the other rice retail formats, and if so, exactly what those changes were during the past 10 years.

Finally, a t–test is performed to provide a year–to–year comparison of the main rice purchase psychographic criteria belonging to key rice–purchasing needs, in which the segments with high loyalty to co–ops are mostly influenced according to the results from previous analyses. The purpose of this step is to identify specific changes that occurred in the manifestation of co–op members' needs during these years and devise recommendations for more effective rice retail strategies among co–ops.

Data

The primary data were collected twice between February and March in 2006 and 2015 using nearly identical structured mail questionnaire surveys. The respondents were F–Co–op members living in the vicinity of four areas that cover all of Fukuoka Prefecture: Fukuoka city, Kitakyushu city, Kurume city, and Keichiku and Tagawa. The primary rice buyer was requested to respond to the questionnaire when there were several F–Co–op members in the same household. Both of the questionnaires included three parts: a socio–

demographic profile, rice purchasing behavior, and psychographic criteria. After excluding those with incomplete information, a two–stage random sampling procedure was conducted to select 1,320 effective samples for analysis from a total of 1,473 respondents in 2006 and 1,617 effective samples from a total of 1,689 respondents in 2015.

A comparison of the respondents' socio–demographic profiles in 2006 and 2015 is presented in Table 1. The respondents were mostly female both survey years, probably because the main rice buyer in a household is typically the housewife. Among the four places of residence, most respondents (about 40%) in 2006 and 2015 lived in the vicinity of Fukuoka city. Compared with 2006, the proportion of the aged (over 60 years old) to total respondents markedly increased to more than half (52.94%). A recent interview with the principal owner of F–Co–op confirmed the accuracy of these results, and that they follow actual trends in member ages in recent years. As expected, the proportion of members who had a relatively low household income (less than 4 million JPY annually) rose from 22.29% in 2006 to 41.88% by 2015. Furthermore, in 2015, most families (57.96%) were small in size (2–3 members), which is different from the results in 2006, when most families (35.91%) were medium in size (4 members).

The results of a comparison between 2006 and 2015 about F–Co–op members' general rice purchasing behaviors are shown in Table 2. Compared with 2006, F–Co–op members were more likely than ever to purchase rice in fixed stores; especially notable was a 5% increase in the proportion of users of one fixed store. The actual purchasing price of rice decreased from the upper–middle to the lower–middle level during the 10–year study period in light of an increasing percentage (from 8.14% to 15.77%) of low–price rice ($\leq$ 1500 JYP/5 kg) and a decreasing percentage (from 42.14% to 31.66%) of high–price rice ($\geq$2000 JYP/5 kg). As for the use of each rice retail format, co–ops were still being frequently used by nearly half of the members. In addition to co–ops, supermarkets maintained a relatively high use percentage of about 15% from 2006 until 2015; moreover, the percentage of occasional use increased by more than 10% and retained its highest ranking. In addition, "Purchasing directly from rice farmers" and "Freely gaining from family or relatives", which were two types of rice retail formats used in the present study, both maintained comparatively high use percentages.

RESULTS AND DISCUSSION

EFA for understanding F–Co–op members' rice–purchasing needs

F–Co–op members' rice purchasing needs were extracted as factors using EFA taking 16 psychographic criteria, which were taken as manifestations of members' wants when purchasing rice, as independent variables. Primary data from a total of 2,937 respondents combined from both surveys were evaluated. Each criterion was ranked on a 5–point Likert scale from "1=not important at all" to "5=very important". In Table 3, the mean evaluation scores for each criterion are shown in descending order according to year.

Only 13 of these criteria were actually utilized in the EFA because the commonalities of "Low price" and "Rinse–free" were too low (less than 0.1) and that of "Rice milling date" was too high (larger than 0.9) when all 16 criteria were originally entered into the EFA; therefore, these three criteria were excluded from the subsequent EFA and then independently handled as single rice–purchasing needs of members. The results of the EFA, which was conducted with the maximum likelihood (ML) method of extraction with varimax rotation, are

Table 1. Socio–demographic profiles of the respondents

Variables	Category	Percent		Variables	Category	Percent	
		2006 (n=1473)	2015 (n=1689)			2006 (n=1473)	2015 (n=1689)
Place of residence	Vicinity of Fukuoka City	40.31%	44.28%	Annual household income (JYP)	<4 million	22.29%	41.88%
	Vicinity of Kitakyushu City	39.14%	22.88%		4~6 million	36.09%	28.50%
	Vicinity of Kurume City	12.22%	18.06%		6~8 million	22.79%	16.61%
	Vicinity of Keichiku·Tagawa	8.33%	14.78%		8~10 million	11.21%	7.84%
Age	20~29	3.19%	0.77%		>10 million	7.62%	5.16%
	30~39	31.39%	8.38%	Family size (including respondent)	1	2.38%	5.68%
	40~49	32.08%	15.03%		2	13.37%	30.43%
	50~59	21.25%	22.88%		3	20.30%	27.53%
	60~69	8.75%	30.60%		4	35.91%	20.07%
	≥ 70	3.33%	22.34%		5	18.47%	10.18%
Gender	Female	96.99%	98.76%		≥ 6	9.57%	6.10%
	Male	3.01%	1.24%				

Source: The surveys on rice purchase behavior and attitude of F–Coop members conducted separately in 2006 and 2015
Note: The variable, "Origin prefecture", is omitted in that it has too many categories to tabulate.

Table 2. F–Co–op members' rice purchasing behaviors

Variables	Category	Percent		Variables	Category	Percent	
		2006 (n=1473)	2015 (n=1689)			2006 (n=1473)	2015 (n=1689)
Number of fixed store(s)	1 store	53.62%	58.73%	Retail format(s) frequently used (multiple choices)	Rice shop	5.06%	2.59%
					Discount store	3.11%	2.74%
	2~3 stores	20.06%	19.06%		Supermarket	15.35%	14.82%
					Convenience store or Mail order sales	0.95%	1.12%
	None fixed	13.99%	13.91%		Co–op	44.94%	49.93%
					Purchasing from rice farmers directly	10.01%	10.42%
	Others	12.34%	8.29%		Agricultural cooperative	1.89%	2.93%
					Farmers' market	1.22%	2.79%
Fixed rice production place(s) or brand(s)	None fixed	69.93%	51.42%		Freely gaining from family or relatives	16.24%	12.27%
					Others	1.22%	0.39%
	Only production place(s) fixed	6.92%	14.40%	Retail format(s) occasionally used (multiple choices)	Rice shop	4.55%	3.21%
					Discount store	6.00%	5.84%
	Only brand(s) fixed	7.20%	7.76%		Supermarket	30.91%	41.02%
					Convenience store or Mail order sales	1.45%	2.48%
	Both fixed	15.95%	26.42%		Co–op	24.00%	16.06%
					Purchasing from rice farmers directly	5.82%	4.09%
Actual purchase price range (JYP/5 kg)	≤ 1500	8.14%	15.77%		Agricultural cooperative	2.36%	3.36%
	1500~2000	49.72%	52.58%		Farmers' market	4.18%	7.30%
	≥ 2000	42.14%	31.66%		Freely gaining from family or relatives	20.55%	15.62%
					Others	0.18%	1.02%

Source: The surveys on rice purchase behavior and attitude of F–Coop members conducted separately in 2006 and 2015
Note: The variable in the survey of 2006– "frequency of rice purchase", and variable in the survey of 2015– "frequency of rice cooking", are different questions difficult to compare with each other, so that both of them are omitted in this study.

shown in Table 4. Three factors were extracted by the EFA; these three factors could explain about 55% of the information on F–Co–op members' wants when purchasing rice contained within the 13 criteria. Furthermore, Cronbach's α was over 0.7 for all three factors, indicating the credibility and reliability of the results. To interpret each factor (need), the criteria (wants) for which factor loadings were higher than 0.380 were taken into consideration. Consequently, the meaning of the factors could be identified as follows: Factor 1, "Official information needs"; Factor 2, "Trustworthiness needs"; and Factor 3, "Promotional information needs". In addition, as previously mentioned, three other kinds of needs remained: "Low price needs", "Rinse–free needs", and "Rice milling date needs". Overall, six rice purchasing needs of F–Co–op members were identified.

HCA for identifying segments of F–Co–op members in relation to rice purchasing attitudes

Next, the six rice purchasing needs were used as independent variables in the HCA to identify segments of F–Co–op members in regard to rice purchasing attitudes. The data used were the factor scores of the three needs extracted as factors through EFA and the standardized primary importance evaluation data (z–scores) of the other three needs, which were original criteria handled independently. HCA was performed using the squared Euclidean distance coefficient and Ward's method. The clustering results indicating the final segments are shown in Table 6. Five of the segments seem to be appropriate because the HCA agglomeration schedule (Table 5) revealed that the significant difference in the agglomeration coefficient between the two adjacent stages occurred in the fifth row from the bottom, which refers to the number of clusters as five. These have been described as follows according to their mean scores on each of the six rice–purchasing needs, especially relatively high ones, which are shown with underline in Table 6: Segment 1, "Promotional information seekers" ("PI seekers"); Segment 2, "Trustworthiness seekers" ("TW seekers"); Segment 3, "Low price seekers" ("LP seekers"); Segment 4, "Members with low involvement in rice purchases" ("LI members"); and Segment 5, "Non–price elements seekers" ("NE seekers").

Next, the composition ratios of each segment in 2006 and 2015 were compared, as shown in Fig. 1. The results indicated that "PI seekers", for which the composition ratios were around 31% in both years with almost no change during the decade, remain the largest segment among F–Co–op members. The "TW seekers", for which the composition ratios more than doubled from

Table 3. Importance of each psychographic criterion

2006 n=1320			2015 n=1617		
Psychographic Criteria	Mean	SD	Psychographic Criteria	Mean	SD
Production year	3.98	0.948	Good taste	4.09	0.712
Faith in purchase store	3.93	0.966	Production year	4.03	0.866
Rice milling date	3.80	1.010	Faith in purchase store	3.97	0.843
Single species	3.73	1.028	Rice milling date	3.95	0.912
Low price	3.64	0.769	Production place	3.57	0.897
Good taste	3.56	0.969	Reputation from other buyers	3.48	0.872
Reputation from other buyers	3.51	0.900	Single species	3.40	1.085
Rice variety	3.29	0.830	Rice variety	3.40	0.888
Production place	3.27	0.843	Brand	3.30	0.907
Specially cultivated rice	3.27	1.022	Specially cultivated rice	3.22	1.005
Brand	3.21	0.833	Cultivation history information disclosure	3.10	0.995
Cultivation history information disclosure	3.04	1.000	Low price	3.09	0.821
Rinse–free	2.82	1.310	Rinse–free	2.65	1.415
Advertisement and promotion	2.34	0.857	Advertisement and promotion	2.42	0.885
Advertising words on the package	2.20	0.886	Advertising words on the package	2.22	0.846
Design of packaging	1.85	0.802	Design of packaging	1.94	0.794

Source: The surveys on rice purchase behavior and attitude of F–Coop members conducted separately in 2006 and 2015

Note: (1) In the survey queationnaire of 2006, the price was not emphasized as "low price" actually. However, it has been confirmed that the meaning of "price" was definitely understood equally to "low price"

(2) "Special cultivated rice" is a category under which rice was sprayed with half the amount of pesticide as normal rice.

(3) "Rinse–free" is called "Musenmai" in Japanese which means the rice does not need washing because its residual bran was shaved off thoroughly during the rice milling.

Table 4. EFA results

Psychographic criteria	Rotated factor loading			Communality
	Factor1	Factor2	Factor3	
Rice variety	0.775	0.229	0.099	.663
Production place	0.675	0.222	0.060	.508
Brand	0.669	0.105	0.130	.475
Single species	0.406	0.325	0.026	.271
Production year	0.399	0.382	0.031	.307
Faith in purchase store	0.139	0.625	0.016	.410
Cultivation history information disclosure	0.169	0.577	0.198	.400
Reputation from other buyers	0.157	0.520	0.219	.344
Specially cultivated rice	0.131	0.501	0.105	.279
Good taste	0.248	0.473	0.069	.290
Advertising words on the package	0.058	0.127	0.830	.708
Design of packaging	0.079	0.059	0.714	.519
Advertisement and promotion	0.100	0.210	0.637	.460
Rotation sums of squared loadings	4.061	1.833	1.309	7.203
Cumulative % of variance	31.235	45.337	55.409	
Cronbach's α	0.769	0.713	0.781	

Note: "__" is for highlighting the factor loadings that are higher than 0.380

Table 5. HCA agglomeration schedule

Stage	Number of clusters	Cluster combined		Agglomeration coefficient	Coefficient difference with next stage
		Cluster1	Cluster2		
1	2936	3067	3068	0	–
			...		
2927	10	1	35	10070.45	298.62
2928	9	11	90	10369.07	371.65
2929	8	11	30	10740.72	461.43
2930	7	4	21	11202.16	467.79
2931	6	1	2	11669.95	497.66
2932	5	3	26	12167.61	662.81
2933	4	1	14	12830.42	1073.02
2934	3	3	4	13903.44	1545.25
2935	2	3	11	15448.70	2167.30
2936	1	1	3	17616.00	–

Note: (1) "..." means other stages omitted in this table.
(2) "__" is for highlighting the significant difference in the agglomeration coefficient with next stage

Table 6. HCA results

Rice–purchasing needs	Segments on rice purchase									
	Segment1		Segment2		Segment3		Segment4		Segment5	
	Promotional information seekers		Trustworthiness seekers		Low price seekers		Members with low involvement in rice purchase		Non–price elements seekers	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
① Official information need	0.123	0.771	0.379	1.044	–0.026	0.814	–0.827	1.041	0.744	0.919
② Trustworthiness need	0.402	0.754	0.501	0.898	–0.381	0.893	–0.802	0.976	0.569	0.689
③ Promotional information need	0.661	0784	–0.808	0.843	0.113	0.836	–0.232	0.931	–0.861	0.719
④ Low price need	0.059	0.792	–0.818	1.209	0.528	0.754	–0.119	0.904	–0.209	1.120
⑤ Rice milling date need	0.375	0.675	0.494	0.772	–0.003	0.800	–1.296	0.862	0.589	0.663
⑥ Rinse–free need	0.602	0.804	–0.919	0.494	–0.619	0.601	–0.013	0.960	1.179	0.592
Number of samples	N=924		N=420		N=776		N=548		N=269	
Number of samples in each year	2006	2015	2006	2015	2006	2015	2006	2015	2006	2015
	n=418	n=506	n=120	n=300	n=414	n=362	n=256	n=292	n=112	n=157

Note: "__" is for highlighting the relatively high mean scores which are referred to interpret each segment

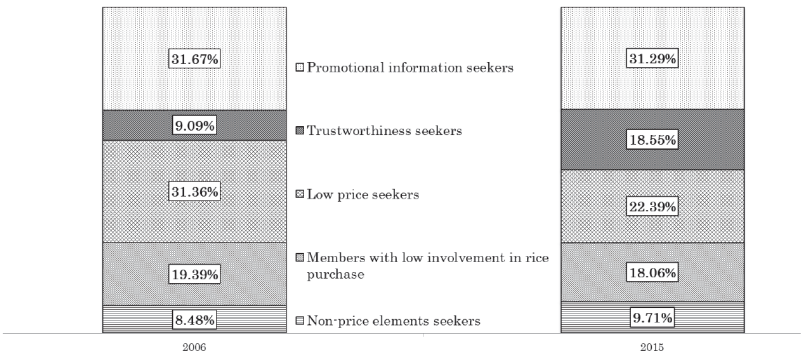

Fig. 1. Composition ratio for each segment.

9.09% in 2006 to 18.55% in 2015, became the third–largest segment. By contrast, the ratio of "LP seekers" declined by about 10% in 2015 compared with 2006, when its proportion was nearly as large as that of the top segment, "PI seekers". Regarding the "LI members", the composition ratio slightly decreased, but was overtaken by "TW seekers" by 2015. Finally, a small increase was seen in "NE seekers", but this segment, the smallest of all F–Co–op segments, remained under 10%.

Tests for confirming changes in the relative position of co–ops among other rice retail formats

After clarifying the segments of F–Co–op members in regard to rice purchases, the relative position of co–ops among other rice retail formats was confirmed through a comparative analysis with the same data from 2006. For this purpose, the analysis was conducted from three detailed aspects. First, the analysis was conducted to confirm and compare the characteristics of rice purchasing behavior for each segment in 2006 and 2015 (Table 7). Second, it was conducted to check what kinds of changes in rice purchasing behavior occurred in each segment during the 10–year period (Table 8). Third, it was conducted to examine how frequently F–Co–op members in each segment used the main types of rice retail formats in both years (Table 9). The statistical methods used in the present study were the chi–square test and the adjusted standardized residual test. As shown in the Tables 7, 8, and 9, only a few representative variables of rice purchasing behavior, "Fixed store(s)", "Actual purchase price range (JYP/5 kg)", and the frequency of use of the four main rice retail formats, which were previously described, were used. For the ease of discussion, only the results of the adjusted standardized residual test are reported. The chi–square test results are provided indirectly.

For the first aspect of analysis, the results, as shown in Table 7, indicated that compared with 2006, "PI seekers" showed less of a preference to purchase rice in one fixed store, even though they still purchased high–priced rice and frequently used co–ops. Moreover, they did not purchase rice in supermarkets or directly from rice farmers in 2006, but this behavior had changed by 2015. Next, regarding "TW seekers", there were two notable points about their rice purchasing behavior. One is that, compared with other segments, they always prefer to purchase rice directly from farmers. The other is that their rice purchasing price changed from low to high. Regarding "LP seekers", their preference for low–priced rice became even stronger in 2015 than it was in 2006, falling from middle to low. Furthermore, they preferred supermarkets compared with the other segments. Moreover, some "LP seekers" did not need to spend money in buying rice, but rather received it for free from

Table 7. Adjusted standardized residual test results for rice purchasing behavior of each segment in each year

Rice purchasing behavior variables	Category	2006 (n=1320)					2015 (n=1617)				
		Segments					Segments				
		PI seekers	TW seekers	LP seekers	LI members	NE seekers	PI seekers	TW seekers	LP seekers	LI members	NE seekers
Number of fixed store(s)	1 store	5.0*	–1.4	–6.7*	0.3	3.8*	2.0*	1.7	–7.4*	0.9	3.8*
	2~3 stores	–0.4	–0.9	3.5*	–2.1*	–1.2	–1.2	0.1	3.5*	–1.6	–1.2
	None fixed	–3.4*	–0.6	5.3*	0.2	–2.8*	–1.1	–3.9*	5.7*	1.1	–2.6*
	Others	–3.8*	4.3*	0.1	2.3*	–1.5	–0.6	2.0*	0.9	–0.7	–2.1*
Actual purchase price range (JYP/5 kg)	≤ 1500	–4.0*	2.2*	2.2*	2.5*	–2.5*	–3.5*	0.1	4.6*	1.1	–2.5*
	1500~2000	–2.0*	–2.1*	5.4*	–0.3	–2.9*	0.0	–1.9	1.6	1.3	–1.5
	≥ 2000	4.2*	0.9	–6.6*	–1.0	4.4*	2.7*	2.0*	–5.3*	–2.3*	3.6*
Purchasing in Co–op	Frequently	7.6*	–4.0*	–6.3*	–2.0*	4.6*	3.9*	–3.6*	–4.9*	1.1	4.1*
	Occasionally	–0.8	0.4	1.8	–0.7	–1.1	–0.8	–1.0	2.2*	0.7	–1.5
	Never	–7.5*	3.9*	5.4*	2.5*	–4.2*	–3.7*	4.3*	4.0*	–1.6	–3.4*
Pruchasing in supermarket	Frequently	–4.3*	–2.8*	7.8*	0.6	–3.8*	0.3	–3.1*	6.3*	–1.4	–3.5*
	Occasionally	0.5	–0.8	0.8	–0.5	–0.8	–0.1	–3.2*	2.6*	–0.1	0.8
	Never	3.3*	2.9*	–7.2*	–0.2	3.8*	–0.2	5.0*	–7.1*	1.2	2.2*
Purchasing from rice farmers directly	Frequently	–4.3*	6.9*	0.3	0.4	–1.1	–1.0	4.4*	–1.3	–0.3	–2.2*
	Occasionally	–0.5	0.2	–0.4	0.2	1.0	0.8	0.1	–0.4	–0.4	–0.4
	Never	4.2*	–6.5*	–0.1	–0.5	0.6	0.6	–4.2*	1.3	0.4	2.2*
Freely gaining from family or relatives	Frequently	–0.2	1.8	0.8	–0.3	–2.3*	–2.1*	1.3	2.4*	0.4	–2.3*
	Occasionally	0.0	–1.2	1.4	0.0	–1.0	0.8	–1.2	1.3	–1.1	–0.1
	Never	0.2	–0.8	–1.6	0.3	2.7*	1.3	–0.4	–2.8*	0.3	2.0*

Note:*>1.96

Table 8. Adjusted standardized residual test results for rice purchasing behavior of each year in each segment

Rice–purchasing behavior variables	Category	Segments									
		PI seekers		TW seekers		LP seekers		LI members		NE seekers	
		2006 (n=418)	2015 (n=506)	2006 (n=120)	2015 (n=300)	2006 (n=414)	2015 (n=362)	2006 (n=256)	2015 (n=292)	2006 (n=112)	2015 (n=157)
Number of fixed store(s)	1 store	0.7	–0.7	–2.8	2.8*	–0.4	0.4	–1.4	1.4	–0.3	0.3
	2~3 stores	0.9	–0.9	–0.5	0.5	0.2	–0.2	–0.1	0.1	0.1	–0.1
	None fixed	–1.7	1.7	1.7	–1.7	–0.6	0.6	–0.6	0.6	–0.7	0.7
	Others	–0.6	0.6	3.3	–3.3*	1.1	–1.1	3.2	–3.2*	1.2	–1.2
Actual purchase price range (JYP/5 kg)	≤ 1500	–4.1	4.1*	–0.6	0.6	–4.7	4.7*	–1.2	1.2	–2.3	2.3*
	1500~2000	–2.1	2.1*	–1.4	1.4	1.2	–1.2	–0.4	0.4	–1.7	1.7
	≥ 2000	4.4	–4.4*	1.8	–1.8	2.7	–2.7*	1.3	–1.3	2.8	–2.8*
Purchasing in Co–op	Frequently	1.0	–1.0	–2.4	2.4*	–1.9	1.9	–3.2	3.2*	0.1	–0.1
	Occasionally	1.3	–1.3	1.7	–1.7	0.9	–0.9	0.1	–0.1	0.9	–0.9
	Never	–1.9	1.9	1.6	–1.6	1.3	–1.3	3.3	–3.3*	–0.6	0.6
Pruchasing in supermarket	Frequently	–2.5	2.5*	–0.7	0.7	0.8	–0.8	1.6	–1.6	–0.6	0.6
	Occasionally	–1.8	1.8	–0.3	0.3	–3.1	3.1*	–1.9	1.9	–2.2	2.2*
	Never	3.4	–3.4*	0.7	–0.7	1.7	–1.7	0.1	–0.1	2.3	–2.3*
Purchasing from rice farmers directly	Frequently	–2.5	2.5*	2.6	–2.6*	0.9	–0.9	0.3	–0.3	0.6	–0.6
	Occasionally	–0.1	0.1	0.6	–0.6	0.6	–0.6	0.8	–0.8	1.3	–1.3
	Never	2.4	–2.4*	–2.7	2.7*	–1.1	1.1	–0.6	0.6	–1.1	1.1
Freely gaining from family or relatives	Frequently	3.0	–3.0*	2.0	–2.0*	0.7	–0.7	1.0	–1.0	0.7	–0.7
	Occasionally	0.3	–0.3	0.0	0.0	0.7	–0.7	1.3	–1.3	–0.3	0.3
	Never	–2.8	2.8*	–1.8	1.8	–1.1	1.1	–1.7	1.7	–0.3	0.3

Note:*>1.96

family or friends. Regarding "LI members", no specific rice purchasing behavior characteristics were seen. Finally, "NE seekers" preferred to frequently use one fixed store co–ops when purchasing high–priced rice.

The results of the second aspect of the analysis are shown in Table 8. Compared with 2006, "PI seekers" showed a preference to buy low–priced rice in supermarkets or directly from farmers. For "TW seekers", an increasing tendency was seen in recent years to purchase rice in one fixed store and use co–ops more frequently. At the same time, they have begun to stop purchasing directly from rice farmers. The same results were seen for "LP seekers", in that they preferred lower–priced rice than before. These findings suggest that "LI members" have begun to use co–ops more frequently. "NE seekers" are similar to "PI seekers" in that they prefer low–priced rice.

Finally, Table 9 shows how frequently F–Co–op members in each segment used the different rice retail formats in both years. "PI seekers" changed their preference from co–ops and "Freely gaining from family or relatives" in 2006 to co–ops and supermarkets in 2015. "TW seekers" continued purchasing rice from co–ops or directly from farmers. "LP seekers" used both co–ops and supermarkets until recently. "LI members" had not frequently used co–ops before 2006, but in 2015, they were using both supermarkets and co–ops. "NE seekers" maintained a great deal of loyalty to co–ops up until more recently.

In summary, the relative position of co–ops among the other formats can be identified by combining the above arguments with changes in the composition ratios of each segment, which were clarified in the previous subsection. The results suggest that, compared with the other segments, "PI seekers" and "NE seekers" maintain a great deal of loyalty to co–ops when purchasing rice. However, "TW seekers" have recently demonstrated an obvious and increasing preference for co–ops, which suggests that they can be recognized as a new segment expected to become increasingly loyal to co–ops in the future if appropriate and effective marketing strategies are devised. Accordingly, the distinguishing feature of rice purchases among these three segments was the special position of co–ops compared with the other store types. All three segments preferred high–priced rice (more than 2,000 JPY per 5 kg), so co–ops are positioned as a retail format with relatively higher prices compared with supermarkets and other formats. Furthermore, the main rice purchasing needs that were shown to be particularly important for the three segments can be recognized as specific factors for distinguishing co–ops from other rice retail formats.

T–test for identifying changes in the manifestations of F–Co–op members' rice wants

As described above, three segments, "PI seekers",

Table 9. Adjusted standardized residual test results for main rice retail formats according to the frequency of use of each segment in each year

Segments	Main rice retail formats	2006 (n=1320)			2015 (n=1617)		
		Frequency of use			Frequency of use		
		Frequently	Occasionally	Never	Frequently	Occasionally	Never
PI seekers	Supermarket	–7.7*	4.6*	4.7*	–5.1*	8.7*	–0.2
	Freely gaining from family or relatives	–4.7*	0.2	4.3*	–9.3*	–0.8	9.2*
	Purchasing from rice farmers directly	–11.2*	–5.1*	13.3*	–9.6*	–5.8*	12.3*
	Co–op	23.6*	0.4	–22.3*	24.0*	–2.1*	–21.2*
TW seekers	Supermarket	–4.8*	1.6	3.6*	–6.0*	4.5*	3.4*
	Freely gaining from family or relatives	–0.5	–0.9	0.9	–4.1*	–0.6	4.1*
	Purchasing from rice farmers directly	1.4	–2.2*	–0.2	–2.5*	–3.5*	4.1*
	Co–op	3.8*	1.6	–4.4*	12.6*	–0.4	–11.7*
LP seekers	Supermarket	2.6*	3.6*	–4.5*	1.2	8.6*	–6.4*
	Freely gaining from family or relatives	–3.8*	0.4	3.2*	–4.5*	–1.5	5.1*
	Purchasing from rice farmers directly	–7.8*	–5.8*	10.7*	–8.3*	–6.3*	11.6*
	Co–op	9.0*	1.8	–9.4*	11.7*	–0.7	–10.3*
LI members	Supermarket	–2.1*	2.8*	0.3	–5.0*	6.9*	0.8
	Freely gaining from family or relatives	–3.2*	0.3	2.8*	–5.3*	–2.0*	6.0*
	Purchasing from rice farmers directly	–5.5*	–3.5*	7.1*	–6.7*	–4.7*	8.9*
	Co–op	10.8*	0.3	–10.2*	16.9*	–0.2	–15.7*
NE seekers	Supermarket	–5.5*	1.8	4.2*	–5.6*	6.4*	1.5
	Freely gaining from family or relatives	–4.2*	–0.5	4.2*	–5.6*	–0.8	5.6*
	Purchasing from rice farmers directly	–4.7*	–1.4	5.1*	–6.1*	–3.5*	7.6*
	Co–op	14.4*	0.0	–13.6*	17.3*	–2.1*	–14.8*

Note:*>1.96

"NE seekers", and "TW seekers", maintained relatively high loyalty to co–ops and are therefore expected to be the target groups of members. Therefore, devising more effective marketing strategies to satisfy those members' rice–purchasing needs could be expected to increase the frequency of co–op use. The HCA results clarified the needs of members belonging to these three segments. In order to obtain some recommendations for advancing more effective rice retail strategies, what kind of manifestations of F–Co–op members' wants are highly valued by each of these three segments compared with 2006 needs to be clarified. The manifestations of wants were presented through the criteria that influence each of the needs identified in the EFA results (Table 4). In addition, the price is normally considered important information for marketing, so an examination of "Low price needs" in each segment was required. The t–test was utilized to identify changes over time using data regarding the evaluation scores of each rice purchase criterion.

The results of the t–test are shown in Table 10. Based on the results, significant differences were seen in six kinds of criteria that influenced "PI seekers". "Packaging design", "Advertisement and promotion", and "Good taste" became significantly more important in 2015 compared with 2006; however, the mean values for "Packaging design" and "Advertisement and promotion" were lower than 3.00 in 2006 and 2015; therefore, little consideration needs to be given to these two criteria when discussing rice retail strategies. In contrast, "Faith in purchase store", "Rinse–free", and "Low price" were evaluated significantly lower in 2015 than in 2006, but "Faith in purchase store" maintained a relatively high mean value (higher than 4.00), suggesting that this criterion should be considered more seriously than before. For "NE seekers", the evaluation scores for "Production place" and "Good taste" increased to over 4.00, suggesting that both of these criteria became much more important than before. Conversely, the importance of "Single species", "Specially cultivated rice", and especially "Low price" was not as high in 2015 as it had been in 2006. In addition to these criteria, another special criterion, "Rice milling date", was notable for "NE seekers". The importance of this criterion maintained a very high mean value (over 4.00) over the study period. For "TW seekers", "Good taste" was evaluated more highly than before, whereas "Specially cultivated rice" and "Low price" were evaluated much lower.

CONCLUSION

In the present paper, the diversified rice–purchasing needs and segmentation of co–op members were investigated, and then the relative position of co–ops among the other rice retail formats was clarified through a com-

Table 10. T–test results

Segments	Rice–purchasing needs	Psychographic criteria	Mean		T–value	Mean difference
			μ2006	μ2015		μ2015–μ2006
PI seekers	Promotional information need	Design of packaging	2.26	2.45	3.642	0.186**
		Advertising words on the package	2.74	2.77	0.676	0.032
		Advertisement and promotion	2.76	2.92	3.435	0.167**
	Trustworthiness need	Faith in purchase store	4.26	4.16	–2.027	–0.094*
		Cultivation history information disclosure	3.41	3.44	0.545	0.031
		Reputation from other buyers	3.85	3.80	–1.165	–0.056
		Specially cultivated rice	3.63	3.52	–1.912	–0.108
		Good taste	3.83	4.23	8.537	0.405**
	Rinse–free need	Rinse–free	3.66	3.46	–2.867	–0.204**
	Low price need	Low price	3.62	3.20	–10.073	–0.424**
NE seekers	Official information need	Rice variety	3.83	3.99	1.712	0.163
		Production place	3.78	4.04	2.704	0.261**
		Brand	3.63	3.67	0.293	0.035
		Single species	4.38	3.97	–3.595	–0.409**
		Production year	4.45	4.51	0.771	0.063
	Trustworthiness need	Faith in purchase store	4.41	4.45	0.456	0.042
		Cultivation history information disclosure	3.25	3.37	1.007	0.119
		Reputation from other buyers	3.68	3.57	–0.967	–0.112
		Specially cultivated rice	3.79	3.48	–2.577	–0.311*
		Good taste	3.94	4.49	6.135	0.553**
	Rice milling date need	Rice milling date	4.40	4.48	0.941	0.076
	Rinse–free need	Rinse–free	4.38	4.31	–0.715	–0.072
	Low price need	Low price	3.48	2.94	–4.869	–0.546**
TW seekers	Trustworthiness need	Faith in purchase store	4.44	4.19	–2.858	–0.252**
		Cultivation history information disclosure	3.48	3.38	–0.917	–0.103
		Reputation from other buyers	3.66	3.54	–1.121	–0.118
		Specially cultivated rice	3.78	3.38	–3.347	–0.398**
		Good taste	3.90	4.34	3.936	0.440**
	Low price need	Low price	3.13	2.46	–6.434	–0.677**

Note:* significant at 5%, ** significant at 1%.

parison of the years 2006 and 2015. Data were collected from surveys conducted in those two years with F–Co–op as the investigation object. Consequently, some recommendations to promote more effective rice retail strategies and frequency of use for co–ops can be offered.

The findings confirm that there are six kinds of rice–purchasing needs among co–op members: "Official information needs", "Trustworthiness needs", "Promotional information needs", "Low price needs", "Rinse–free needs", and "Rice milling date needs". Furthermore, based on these needs, members can be divided into five segments based on rice purchasing behavior: "Promotional information seekers", "Trustworthiness seekers", "Low price seekers", "Members with low involvement in rice purchases", and "Non–price elements seekers". In the meantime, the diversification of co–op members' consciousness at present was also more clearly identified. Furthermore, it was proven that this diversification exerts a major influence on members' evaluations of co–op commodities, for example, rice; this result contradicts that of Morikawa and Takeya (2002).

Moreover, among these segments, "Promotional information seekers" and "Non–price elements seekers" were found to maintain a high level of loyalty to co–ops when purchasing rice, and "Trustworthiness seekers" were recognized as a new segment that prefers to be loyal to co–ops. Accordingly, co–ops are recognized and believed by loyal members to be in a position to satisfy all of their rice purchasing needs except for "Low price needs". In other words, the price of rice purchased in co–ops is relatively higher in general compared with other formats such as supermarkets. Moreover, the advantage of current co–op rice retail businesses is not only "safety", as noted by Morikawa and Takeya (2002), but also other factors such as abundant promotional information and a relatively rich variety of rinse–free rice. At the same time, the contents of "safety" have been detailed more than ever before as a clearer indication of official information,

a further establishment of trustworthiness, and a notice of the rice milling date. These are key factors for the expansion of co–ops in competition with the other retail formats.

In addition, some significant changes seen during the study period in the manifestations of co–op members' needs of rice, from which recommendations for more effective retail strategies specifically aimed at prompting members to use co–ops more frequently when purchasing rice, have been examined. Based on the implications of these significant changes, some suggestions can be provided for co–ops in order to outline future rice retail strategies that more effectively target each of the three segments loyal to co–ops.

First, although the composition ratio of "Promotional information seekers" remains the largest, with very little change from 10 years ago, only a small tendency was seen in regard to lower–priced rice and frequency of supermarket use. This suggests that an effective incentive for this segment is currently needed; this incentive could be "Good taste", which is a psychographic criterion that has a great deal of influence on "Trustworthiness needs", and has become much more important in evaluations by "Promotional information seekers" than ever before. Regarding the successful experience of F–Co–op's Rice Center, the "Rice Taste Test", the definition for which was taken from the Japan Grain Inspection Association (KOKKEN), is a test for the taste of rice through both organoleptic examination and physicochemical analysis; this may be an effective method for ensuring the provision of delicious rice. At the same time, it also appears very important to convey accurate and well–understood information about the results of the "Rice Taste Test" to such members.

Second, targeting "Non–price elements seekers", four manifestations of their rice wants should be considered. First, "Good taste" was more highly evaluated by "Non–price elements seekers". In relation to this point, the suggestion is the same as that offered above. The next manifestation of their wants is "Production place", which was also more highly evaluated than before. This suggests that knowing the exact location of excellent production places is critical for co–op members. After learning the exact production place, the next step is to ensure the rice supply from these places. "Rice milling date" was extremely important (over 4.00) with almost no change during the study period for members of this segment. In response to this point, referring to the methods of F–Co–op's Rice Center, purchasing rice–milling equipment so that brown rice can be polished instantly and according to the quantity of rice ordered by members may be an effective strategy. Furthermore, "Specially cultivated rice" has not been important for these members, so there is no need to consider the supply of specially cultivated rice.

Third, in response to "Trustworthiness seekers", "Good taste", and "Specially cultivated rice" are primary points that should be kept in mind. The recommendations for "Good taste" are nearly identical to those expressed previously with related content. In addition, similar to "Non–price elements seekers", "Trustworthiness seekers" seem to no longer be concerned with "Specially cultivated rice".

Finally, a brief discussion about "Low price" is needed. According to the test results, all three segments loyal to co–ops cared less about low price than ever before. However, despite a marked decline in the composition ratio, 22.39% of co–op members remain "Low price seekers". Their preference for low prices has become even stronger compared with 2006, and they tend to prefer supermarkets over other formats for their rice purchases.

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