Intercultural Challenges in Consumer Research in the Food Sector: The Case of Japanese Rice

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ABSTRACT

Within the study, we show that it is quite demanding to conduct consumer surveys abroad, in particular, if the targeted society differs in so many ways compared to the domestic market. This contribution presents results of a study analyzing consumer behavior in the Japanese rice market. The main focus was set on the evaluation of preferences of Japanese consumers when buying rice. Amongst others, one core attribute was origin which is actually a prominent attribute in Western European food markets. To approximate the impact of relevant attributes influencing consumers' purchasing decision (origin, brand, quality seals and price), we conducted a discrete choice experiment with Japanese consumers, mainly living in urban areas.

Keywords: Japan, rice, discrete choice modeling, choice based conjoint analysis, estimation of utilities, consumer survey

1   Introduction

Globalization and worldwide trade relations are affecting the food industry significantly. Therefore, more knowledge about consumer behavior is required to be successful in foreign target markets. This is in particular true for markets that are not comparable to domestic ones. Consumers coming from completely different cultures, with divergent value systems, eating behaviors, and consumption patterns – to name just a view differences –, may not be readily understood. Domestic organizations should know more about these cultures if they are eager to export products to these markets. However, empirical research focusing on consumer behavior is quite demanding in cultures where the targeted society differs in so many ways from the one of the domestic market.

The paper presents results of a study analyzing consumer behavior in the Japanese rice market. In Japan, rice is more than a staple food (Ohnuki-Tierney, 1993). Rice – and its byproducts (rice wine [sake], rice spirit [shochu], tea, but also e.g. rice straw in tatami mats) – is a central part of the Japanese culture and identity. However, changing dietary patterns and lifestyles, as well as demographic developments resulted in a 50% decrease of rice consumption between the 1960s and today (MAFF, 2007; MAFF, 2016). To react on these developments, the Ministry of Agriculture, Forestry and Fisheries (MAFF) released numerous campaigns to enhance domestic rice consumption, for example by stimulating the diversification of the use of rice. Since 90% of all farms in Japan grow rice, rice farmers and agricultural cooperatives make a lot of efforts to enhance marketing strategies. But even though rice consumption decreased significantly during the last decades, it is still one of the most important parts of Japanese diet. This fact as well as the easiness to describe the product "rice" in the food market made it a perfect research object for our study.

2   Japanese culture and social research

There is a large number of publications available dealing with the specifics, peculiarities, and characteristics of the Japanese culture, with classic works like Suzuki's (1959) book "Zen and Japanese Culture", the study of Starr and Garber (1987) about management in Japan and the US, or, more recently published Kokarevich and Sizova's (2015) article "Model of Tolerance of Intercultural Communication" where the authors show that the Japanese collectivistic culture was significantly influenced by American and European business and management models. Likewise, other publications show the influence of the Japanese culture on economics (e.g. Karlsson, 1989), or focus on the correlation between the Japanese culture and food (Freedman, 2016). The latter publication may serve as a connecting point for our contribution.

Confirming Kumagai and Keyser (1996), the Japanese society may be described as a society where modernity and tradition form a dual structured society today. Both influence the Japanese society and still coexist, determining values and behavior as well. Historically, Western capitalism influenced a former agrarian society with its values, systems, behavior and cultural traits (Kumagai and Keyser, 1996). However, in Japan – one the highest developed countries in the World – tradition still plays a major role in everyday life of Japanese citizens.

As Nakane (1970) pointed out in the famous study "Japanese Society" the collective group is of primary importance to Japanese people. The collective group could be a company or an association, the peer group, or the family. The individual itself is of less importance. "The term kaisha symbolizes the expression of group consciousness … kaisha is 'my' or 'our' company, the community to which one belongs primarily, and which is all-important in one's life" (Nakane, 1970). Japan can be considered to be a good example for a society, which is a reliable and important partner for Western economies but which differs in so many ways from Western societies. Therefore, it can be expected that social research in general and consumer research in particular are quite demanding in collectivistic societies like the Japanese one. Answers representing the overall opinions or expectations of the reference group (company, family, neighborhood, or the society as a whole) are more probable; in contrast, it will be difficult to collect the true opinion of individuals, in particular, if we focus on sensible, more complex issues. E.g., if the social desirability goes towards higher environmental awareness, interviews in collectivistic societies might tend to deliver biased, environmentally driven results as individuals will judge the expectations of the society higher compared their real, individual ones. Consequently, the general data will deliver results rather representing social expectations and not real behavior or attitudes. Some of the Japanese characteristics – though influenced by Western behaviors and values – are still quite strange to our Western society. It is necessary to include these considerations into the development of empirical designs in social research.

3   Origin, local, and regional food

Local and regional food as well as the emphasis on the origin are major food trends, and therefore are very important research fields (Zepeda and Leviten-Reid, 2004; Wilkins et al., 2000; Khan and Prior, 2010; Chambers et al., 2007; Cranfield et al., 2012). Consumers appreciate regional certification labels (Van Ittersum et al., 2007). In general, they show a higher willingness to pay for authentic, traditional, regional products (Balogh et al., 2016). A number of publications show that consumers are willing to pay a price premium for regional products (e.g.: Loureiro and Hine, 2002; Ruehle and Goldblatt, 2013; Weatherell et al., 2003). This price premium can go up to about 1/4 to 1/3 (Carpio and Isengildina-Massa, 2008; Vecchio and Annunziata, 2011; Brown, 2003) or even more for at least a small consumer segment (Adams and Adams, 2011).

Regional food can be defined as a "product whose quality and/or fame can be attributed to its region of origin and which is marketed using the name of the region of origin" (Van Ittersum et al., 2007). However, the attribute "regional" is by far not clear. A number of publications take distances from the place of consumption or political boundaries as core characteristics of regional food. Adams and Adams (2011) mention different distances confirming their empirical study, 80 km (50 miles) or less and also 160 km (100 miles). Cranfield et al. (2012) quote distances between ca. 50 to 240 km (where 160 km [100 miles] was the most commonly used within their study); only few interviewees define regional with state or home country. Comparable results can be found in Ruehle and Goldblatt (2013), and a number of other publications (Chambers et al., 2007; Hu et al., 2010; Khan and Prior, 2010; Zepeda and Leviten-Reid, 2004; Wilkins et al., 2000). However, there is no widely accepted convention of how to define regional food. There are obviously some difficulties in distinguishing between "regional food" and "local food" (Giovannucci et al., 2010). Taking the concept of distance between production and consumption of food, we assume that quite often the concept of short food supply chains and local food is meant.

As Suwannaporn and Linnemann (2008) showed in their study, within the product category "rice" origin is "the most distinctive of all buying criteria" in countries where rice is a superior part of the diet (like Japan). However, the distance between production and consumption of Japanese rice is probably less important. Confirming Kuznesof et al. (1997), specific product attributes can be due to cultural traditions, climate, soil and other natural conditions. This may result in particular food qualities that are related to specific conditions of a region. In Japan the *region* plays an important role in the production of food and is related to specific quality expectations and allocation by Japanese consumers. Therefore, we are typically talking about regional food and the regions of production usually means Japanese prefectures (Goto, 1997; see chapter 6.1). Regional differentiation of rice brands on the prefectural level is one of the most important marketing strategies to signalize the quality and trustworthiness of food to Japanese consumers.

4   Japanese rice market

Rice production: In 2010, out of 128,813 farms, 116,883 are active in rice farming (i.e. 90% of all farms, e-Stat, 2012). Rice growing farms are allocated in all prefectures. In terms of production quantity and production value, rice ranks under the top ten commodities in Japan. In 2015, the main production region is Tohoku (28 % of total rice production), followed by the Kanto/Tason region (18 %) and Hokuriku (14 %) (MAFF, 2016). Most rice produced in Japan is table rice; in 2014, table rice was planted on almost 1.5 million hectares (90 % of total rice-planted area nationwide; MAFF, 2015b). The total volume of processed rice products increased significantly during the last years. Within this product category, frozen rice food and aseptic packaged rice take a dominant role (MAFF, 2015a). In total, paddy rice production steadily decreased between the 1960ies to 2011 (from 8,233 kt to 5,714 kt milled equivalent, FAO s.a.). 2015 rice production was 5,352.63 kt (own calculation of milled equivalent[*]; MAFF, 2016), rice exports are usually playing a minor role and reached a level of about 50 kt (2015: 50,855 t, but only 6,649 t when rice for food aid is excluded; MAFF, 2016).

Rice consumption: A significant decrease in Japanese rice consumption can be observed over the last decades. In the 1960ies, per capita consumption of rice was 115 kg, declining to only 61 kg in 2005 (MAFF, 2007) and to about 55 kg in 2015 (MAFF, 2016). Aoki et al. (2016) employed a choice experiment to investigate the impact of origin, sustainability and taste on the purchase decision of Japanese and Thai consumers. The survey respondents had to choose between domestic rice and rice from the United States. In the study of Peterson and Yoshida (2004) the willingness-to-pay of Japanese consumers for rice of different brands and origins was estimated. In general, results show a preference for domestic rice (see also Aizaki 2015; Peterson et al., 2013). However, there seem to be no literature available regarding marketing strategies and consumer choices besides the liberalization focus. A study of Goto (1997) already showed that *Koshihikari rice* has a much higher price as the reference standard rice and even higher if it originates from *Niigata Prefecture*. The price of Koshihikari rice produced in the region *Uonuma* was nearly double than standard rice (Goto, 1997). We clearly see that there is a significant connection between willingness to pay and the *regionality concept* in the Japanese rice market.

Japanese rice brands and origin: Japonica rice includes numerous brands. Koshihikari is with 37.3 % of Japan's total rice acreage on top of production and popularity (MAFF, 2009). It is grown in nearly every Prefecture all over Japan but major production prefectures are Niigata, Tochigi and Ibaraki, all in the north of Japan (MAFF, 2014). Table 1 shows ten major Japanese rice brands, ranked by share of the total rice acreage. Besides Koshihikari, other brands like Hitomebore, Hinohikari, and Akitakomachi take a large share of rice acreage in Japan. However, rice is used differently (also for feed, for producing sake, etc.), so these numbers do not necessarily reflect the brands' popularity as table rice, or their visibility in food retail.

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[*] FAO converted world production of rice of 610 million tons into 410 million tons in milled equivalent. Based on this calculation, a 67 % conversion rate was used.

Table 1.
Top 10 Japanese rice brands measured by the share of total rice production acreage (2009).

	Rice brand	% of total rice acreage	Main Prefectures
1	Koshihikari (コシヒカリ)	37.3	Niigata, Tochigi, Fukushima
2	Hitomebore (ひとめぼれ)	10.6	Miyagi, Iwate, Fukushima
3	Hinohikari (ヒノヒカリ)	10.3	Kumamoto, Fukuoka, Oita
4	Akitakomachi (あきたこまち)	7.8	Akita, Iwate
5	Hinohikari (キヌヒカリ)	3.3	Hyogo, Shiga, Saitama
6	Nanatsuboshi (ななつぼし)	3.0	Hokkaido
7	Haemeki (はえぬき)	2.8	Yamagata
8	Kirara397 (きらら397)	2.4	Hokkaido
9	Tsugaruroman (つがるロマン)	1.6	Aomori
10	Masshigura (まっしぐら)	1.3	Aomori

Adapted from MAFF (2009).

5   Method: Conjoint analysis and discrete choice modeling

Conjoint Analysis (CA), one of the most prominent methods of marketing research (Green and Srinivasan, 1990) is widely applied in consumer research. Significant improvements led to numerous applications during the last decades (Moskowitz and Silcher, 2006). There are appropriate, easy-to-use software systems available (Halme and Kallio, 2011) helping us to approximate part-worth utilities for characteristics of products and services. The relevant product alternatives which are used in CA to approximate these part-worth utilities are realistic combinations of a limited number of attributes and attribute levels which are relevant for consumers' product purchase decisions. The approximation can be done on an aggregated (for a whole sample) or on an individual level (for each interviewee). "In particular, conjoint measurement allows the estimation of the impact of individual attribute levels on the overall utility of a product" (Annunziata and Vecchio, 2013). There are different CA methodologies available: Within the Traditional Conjoint Analysis (TCA), respondents are asked to rank a limited amount of product alternatives from best to worst. Comparable approaches use rating based methods (Moore, 2004; de Andrade et al., 2016; Endrizzi et al., 2011). E.g., Cranfield et al. (2009) estimated the importance of different product attributes of apples by use of CA ranking, Almli et al. (2015) provide a comparison between CA ranking and rating methods.

Actually, research and practice rather use choice-based approaches than TCA, also named as discrete choice modeling. A Choice Based Conjoint Analysis (CBCA) comes closer to real shopping behavior. External validity is higher compared to conventional approaches. In general, choices are less demanding than other forms of CA (Asioli et al., 2016). Respondents don't have to rank or rate product alternatives, they simply decide which product alternative they would select out of a limited set of product choices (including a no-choice option making evaluations more realistic; Vermeulen et al., 2008). Even though CBCA only provides binary data, it is possible to approximate individual part-worth utilities by use of the Hierarchical Bayes (HB) method (Lenk et al., 1996; Halme and Kallio, 2011; Gensler et al., 2012; Andrews et al., 2002). Considering the state of the art of conjoint measurement, we decided to use discrete choice modeling, a CBCA with HB estimation on an individual level, to approximate the importance of characteristics of rice. We can solve the commonly used CA additive model by HB estimation also on an individual level:

$$u_j = \mu + \sum_{k=1}^{K} \sum_{l=1}^{L} \beta_{kl} \cdot x_{jkl}$$

with

u_j : estimated total utility of alternative a_j

μ : mean part-worth over all stimuli

β_{kl} : part-worth of attribute level l (l = 1 … L) of attribute k (k = 1 … K)

x_{jkl} : dummy variable with x_{jkl} = 1 if attribute level l of attribute k at stimulus j exists, else x_{jkl} = 0

Discrete choice experiments require the specification of a choice model. The choice model explains how the respondents select one specific alternative based on their expected utility and estimates the probability of choice. Probit, logit, or multinominal logit models are used (Mangham et al., 2008). Logit is the most widely used discrete choice model and also used in our case.

6 Empirical design

6.1 Qualitative pre-study: Store check in Japanese food stores

Before we were able to develop an appropriate empirical design – mainly to select a valid number of characteristics for Japanese rice – we made a brief store check in Japanese food stores. In general, Japan's food retail has a fragmented structure, characterized by the coexistence of small, family-operated food retailers, food specialty stores, discount stores and large supermarkets (Assmann, 2011). There are three main types: supermarkets, department stores, and convenience shops. Total retail sales including food, beverages, general merchandise, fabrics, apparel, and accessories increased to 69,911 billion JPY in 2014. Food and beverage sales increased over the last years (Aoki and Oakley, 2016) but decreased in 2015. Only convenience shops recorded an increase in total sales and food and beverage sales (METI, 2015).

Table 2.
Food Retail Sales of Supermarkets, Department Stores and Convenience Stores and Food & Beverage Sales from 2013-2015 (Million JPY).

Year	Supermarkets	Food& Beverage	Department Stores	Food& Beverage	Convenience shops	Food& Beverage
2013	13,057,880	8,734,942	6,719,526	1,911,969	9,872,416	6,138,738
2014	13,369,938	9,071,134	6,827,373	1,928,884	10,423,230	6,581,894
2015	13,223,308	9,363,387	6,825,769	1,925,679	10,995,650	7,023,382

Adapted from METI, 2015 (Yearbook of the Current Survey of Commerce, Part 1, Part 3, Part 4 – Table 1).

Food and beverage sales account for about two thirds of supermarkets' and convenience stores' total sales, whereas department stores play a minor role in this sector.

The store check in Japanese food retail shops was necessary due to language barriers and cultural differences (see Chapter 2). There is almost no reliable literature available about rice in food retail in Japan, even the availability of imported rice is not clear. A preliminary study delivered valuable information about product availability, price ranges, origin, branding, packaging, quality cues, etc. Three supermarkets, four department stores and two convenient shops were selected regarding the criterion of highest market share in Tokyo. Supplementary information was gathered by visiting rice shops, a farmer's market, a discount chain store, and an organic grocery store. The results of store checks were then used for the empirical design. The basic results of the store checks are summarized in the following paragraphs.

Origin and Brands: All the rice examined during the store checks was grown in Japan and indications of origin usually refer to the prefecture. The prefectures Niigata, Akita, Hokkaido, Miyagi and Yamagata were most common. Usually, origin and rice brand are strongly linked to each other. There are some brands which only or predominantly occur with a specific place of origin, creating a brand together. Frequent combinations were (Brand/Prefecture): Koshihikari/Niigata, Akitakomachi/Akita, Yumepirika/Hokkaido, Hitomebore/Miyagi, or Tsuyahime/Yamagata.

Quality seals and labels: There are various labels for Japanese rice, conveying reliability and quality in the broadest sense. The Japanese Agricultural Standard (JAS) ensures standards for quality and production processes. There are several JAS quality seals, for example the organic JAS label, carried by certified organic rice in Japan. Other quality labels (in its broadest sense) are: The label of the Japan Agricultural Cooperatives (JA), pictures of rice farmers and expressions highlighting the traditional production, product prizes, or simply the expression "premium". Fig. 1 shows pictures of some of these labels.

pic: M. Kubinger
Figure 1. Quality seals and labels on Japanese rice

In many cases, quality and origin seem to serve as quality cues as well. For example, if the rice was produced in a famous rice producing region like South-Uonuma in Niigata Prefecture, consumers have a strong belief in the quality of the product and high prices can be charged.

Prices and package size: Prince ranged from 320 JPY to 1426 JPY per kg (depending on quality, positioning, and package size). Rice packaging sizes start from tiny 300 g packaging capacity (2 servings). 1 kg and 10 kg packaging capacity are available, but most common were 2 kg and 5 kg packaging capacities.

6.2   Empirical design of the CBCA study

In accordance with the results of theory and of the preliminary store check we developed an appropriate design to evaluate the importance of different attributes of rice. Consequently, we used the characteristics origin, brand, quality seals, and price. Table 3 shows the 4 attributes and 3 attribute levels. These characteristics represent the empirical design of the discrete choice experiment.

Table 3.
Selected attributes and levels for the empirical design.

attributes	Origin (Prefecture)	Price (JPY/5kg, incl. taxes)	Brand	Quality seal
	Niigata	1800 JPY	Koshihikari	Special A
levels	Miyagi	2100 JPY	Hitomebore	JA
	Yamagata	2300 JPY	Tsuyahime	JAS

The prefectures of origin and the rice brands were selected carefully. All 3 prefectures are situated in the north of Japan which is famous for rice production. The 3 brands are popular high-quality premium brands. Prices (1800 JPY, 2100 JPY and 2300 JPY) were selected based on the store checks and correspond to premium quality. The package size of 5 kg was also used in similar studies (e.g., Aoki et al., 2016). The 4th attribute concerns quality and reliability which cannot be assessed by consumers directly. Therefore, we used three popular quality seals: The special A label concerns quality in terms of taste, the JA-label rather aims to prove reliability, the organic JAS-label comprises environmental issues.

Table 4.
Product profiles.

Profile no.	Origin	Price	Brand	Quality Seal
1	Miyagi	2100	Tsuyahime	JAS
2	Niigata	2300	Tsuyahime	JA
3	Yamagata	2300	Koshihikari	JAS
4	Yamagata	1800	Tsuyahime	Special_A
5	Yamagata	2100	Hitomebore	JA
6	Niigata	2100	Koshihikari	Special_A
7	Miyagi	1800	Koshihikari	JA
8	Niigata	1800	Hitomebore	JAS
9	Miyagi	2300	Hitomebore	Special_A

The design of the CBCA was done by use of graphics and textual description of the rice packages. Fig. 2 shows an example of a product profile in comparison to a real product, Fig. 3 the presentation of one choice set with four choices A to D and the no-choice option. In total, the interviewees had to make 9 choice decisions.

pic: M. Kubinger

Figure 2. Left: rice package as found during a store check in department store Matsuzakaya, Tokyo; right: rice package used in the choice tasks of the survey (with the organic JAS-label), both Koshihikari.

次のセット1～9において、あなたが購入してみたいと思う商品を、A～Dからそれぞれ一つずつ選択して下さい。購入してみたいと思う商品がない場合は、「なし」を選択して下さい。
セット1

Figure 3. Choice set 1 of 9 with choices A to D and no-choice option

7   Results

We used an online-tool to acquire the data. Of course, face to face interviews would be possible as well and would deliver more trustworthy, representative results. However, this would have required significant budgets and communication with Japanese market research institutes would have been demanding as well.

Therefore, a relatively low-cost approach using an internet survey and convenience sampling is an easy and fast ways to deliver first insights into foreign consumer behavior.

In total, we reached a total sample of n = 166 (only completed surveys were counted). The number of interviewees is not high. However, even this number was only possible by being supported by people living in Japan, a valid translation by a native speaker, an in-depth literature analysis with special emphasis on culture and consumer research, and a pre-test of the empirical design.

7.1 Socio-demographics

Most of the respondents live in Japan (94 %), are female (84 %) and live in the region of Tokyo (47 %), Kanagawa (9 %), or Aichi (7 %) (81 % of the respondents lived in an urban region). 80 % are between 25 and 54 years old, 8 % are younger, 12 % are older.

Table 5.
Demographic data of the Japanese population.

	Japan	Sample
total population (2015)[1]	127.11 million	n = 166 (94 % live in Japan)
median age [2]	46.90 years	40 years (mean)
Population ages 65 and above (of total)[3]	27.28 %	-
Population ages 15-64 (of total)[3]	59.75 %	-
Population ages 0-14 (of total)[3]	12.97 %	-
Population ages 55 and above	-	12 %
Population ages 25-54	-	80 %
Population ages 0-24	-	8 %
average household size [1]	2.39 persons	2-3 persons (60 %)
Urban population (of total, 2015)[3]	93.50 %	81 %
gross household income, monthly (2014)[4]	271,781.5 JPY	200,000-500,000 JPY: 47 % 500,000+ JPY: 41%
Tertiary education level of 25-64 year-olds (2015)[4]	49.54 %	87 %

[1] *Statistics Bureau, Ministry of Internal Affairs and Communications (2016, 8, 11);* [2] *CIA (2017, s.p.);* [3] *The World Bank (s.a.);* [4] *OECD (s.a.)*

The education level is very high (87 % University or Junior college), the household structure is dominated by 2-3 persons with an overall household income between 200,000 to 500,000 JPY (47 %); 41 % of the households have a higher average income, only 13 % a lower one. Compared to the overall structure of the Japanese population (CIA 2017), the sample is younger, higher educated, female dominated, with a somewhat higher household income (see Table 5).

7.2 Discrete choice experiment – CBCA results

To analyze the experimental, nominal data of the discrete choice experiment, we used a conventional software package (XLSTAT, an add-in to Microsoft Excel). First of all, we excluded all respondents from the total sample (n = 166) which exclusively selected the no-choice option (n = 25). Obviously, these respondents didn't favor any of the presented product profiles. It is not useful to approximate utilities for this group of people and excluded this group from the further CBCA analysis. Amongst others, one possible reason for their no-choice behavior could be that these consumers usually buy much cheaper (or, less probable, more expensive) rice.

The rest of the sample was included in the following approximation process using HB estimation of part-worth utilities for all attribute levels β_{kl} for all respondents individually. Based on their individual utility, the aggregated mean can be calculated representing the overall utility of the relevant attribute level. Finally, the importance of the four attributes β_k is estimated individually and aggregated (means). Table 6 shows the results of this approximation process (aggregated means for the whole sample n = 141).

Table 6.
Part-worth utilities confirming CBCA (Hierarchical Bayes estimation).

		Utility estimate		Importance	
		Attribute level β_{kl}	Std. dev.	Attribute β_k	Std. dev.
Origin	Miyagi	-1.231	1.274	0.3109	0.1457
	Niigata	1.166	1.380		
	Yamagata	0.065	1.082		
Price	1800 JPY	0.125	1.281	0.2172	0.1361
	2100 JPY	0.408	0.502		
	2300 JPY	-0.533	1.208		
Brand	Hitomebore	-0.713	0.781	0.2302	0.1277
	Koshihikari	0.777	1.220		
	Tsuyahime	-0.063	0.920		
Quality Seal	JA	-0.698	0.814	0.2417	0.1515
	JAS	-0.075	1.097		
	Special A	0.773	1.592		
(Zero)		-0.837	2.697		

n = 141

The most important attribute seems to be "Origin" with β_k = 0.31; the other attributes show β_k between 0.22 and 0.24 and are therefore almost of equal importance. No attribute seems to be irrelevant. Concerning the utilities of the attribute levels β_{kl} the following can be said: The largest contribution delivers attribute level "Origin: Niigata". However, standard deviation is quite high for all β_k and β_{kl}, respectively. Therefore, we conducted a consecutive cluster analysis, first identifying statistical outliers by means of single linkage (7 outliers), and then clustering the remaining sample of n = 134 (Ward's method, Squared Euclidean Distance, Elbow criterion). We identified 3 clusters within our sample (see Table 7):

Cluster 1: *Conservative cluster* with very distinct preferences regarding brand and origin, especially with a clear preference for Koshihikari from Niigata (n = 51; 38%); origin is most important.

Cluster 2: *Quality oriented cluster*, consumers with a tendency to special A sealed rice (n = 24; 18%); quality seals are most important.

Cluster 3: *Price sensitive cluster* (n = 59; 44%); highest importance for price of all 3 clusters.

A F-Test showed, that these clusters have significant differences for all variables with a critical F-value of $F_{(2, 131)}$=3.065. The minimum F-value amounted to 3.605 for utility price 2100 JPY, the maximum to 72.205 for utility origin Niigata.

Table 7.
Mean importance of attributes and utilities of attribute levels of the three clusters.

n, β_k, β_{kl}		(1) Conservative cluster	(2) Quality oriented cluster	(3) Price sensitive cluster	Total
	n	51 (38%)	24 (18%)	59 (44%)	134
Importance	Origin	**0.3904**	0.2320	0.2734	0.3105
	Price	0.1536	0.2250	**0.2789**	0.2215
	Brand	0.2867	0.1394	0.2122	0.2275
	Quality seal	0.1694	**0.4036**	0.2355	0.2405
Utility origin	Miyagi	-1.7759	-0.9547	-1.1914	-1.3714
	Niigata	**2.4901**	0.4802	0.5323	1.2681
	Yamagata	-0.7141	0.4744	0.6591	0.1034
Utility price	1800 JPY	-0.4014	-0.6848	**0.9363**	0.1368
	2100 JPY	0.4994	0.5658	0.2953	0.4214
	2300 JPY	-0.0980	0.1189	-1.2316	-0.5582
Utility brand	Hitomebore	-1.2548	-0.4175	-0.4616	-0.7556
	Koshihikari	**1.8328**	-0.0213	0.2023	0.7828
	Tsuyahime	-0.5780	0.4388	0.2593	-0.0272
Utility quality seal	JA	-0.5724	-1.5830	-0.5381	-0.7383
	JAS	-0.2052	-1.3499	0.5036	-0.0981
	Special A	0.7776	**2.9328**	0.0345	0.8364

7.3   Goodness of fit and Wald's parameter test

Concerning the Goodness of fit, a likelihood ratio test showed (p-value below 0.0001; Chi-Square = 435.694; df = 9) that the selected coefficients (the attributes) influence the dependent variable (the choices) significantly. The effect of each parameter on the model was tested by the chi-square distributed Wald test. Table 8 provides Wald's test for all the variables included in the model. The parameter estimates (log-odds) are given in the column labeled *B*.

Table 8.
Wald's test results for the parameters in the model.

	B	*Stand. error*	*Wald*	*df*	*Sig.*	*Exp(B)*
Miyagi	0.241	0.138	3.040	1	0.081	1.273
Niigata	1.112	0.134	69.302	1	0.000	3.040
Yamagata	0.571	0.128	19.809	1	0.000	1.771
1800 JPY	0.308	0.088	12.212	1	0.000	1.361
2100 JPY	0.189	0.092	4.203	1	0.040	1.208
2300 JPY [a]	-	-	-	0	-	-
Hitomebore	-0.314	0.093	11.343	1	0.001	0.731
Koshihikari	0.328	0.085	15.030	1	0.000	1.388
Tsuyahime [a]	-	-	-	0	-	-
JA	-0.774	0.088	76.577	1	0.000	0.461
JAS	-0.557	0.088	39.811	1	0.000	0.573
Special A [a]	-	-	-	0	-	-

[a] Parameter test for attribute level "2300 JPY", "Tsuyahime", "Special A" were not possible (not independent)

Since effects of log-odds are difficult to interpret, they are generally exponentiated, giving odds-ratios, *Exp(B)* in Table 8 (Landau and Everitt, 2004). The odds-ratio delivers the effect on the dependent variable (the choice). The odds-ratio of the parameter Niigata (3.040) expresses, that the purchase probability is over three times higher if rice comes from Niigata.

8   Conclusions, discussion and limitations

The study revealed, that origin has the highest influence on the purchase decision (31%), followed by quality seal (24%), brand (23%) and price (22%). The highest utility has a mid-priced Koshihikari rice from Niigata Prefecture with a special A seal at a price of 2100 JPY (i.e. mid-priced level). For future marketing strategies, the results could be interpreted as follows:

(1) The emphasis on the prefecture of origin might be a successful strategy for domestic producers; for foreign exporters this is a significant obstacle – at least in this product category where Japanese origin is of high relevance.
(2) Japanese consumers tend to buy premium rice; it can be expected that also in other food categories the price is not that relevant – at least for a significant part of the population. In our sample, less than half of the respondents preferred the lowest price; all other respondents preferred the mid-priced product alternatives.
(3) In comparison to origin, branding of rice is not that important within our sample. However, as shown in chapter 6.1, origin and branding are usually connected within the Japanese trade. Therefore, to separate brand from origin is quite far off real market conditions.

Apart from rice, the results could also be interpreted that, in general, the domestic origin is an important attribute in the Japanese food market which could be an obstacle for foreign companies that are eager to export food to Japan. Of course, the relevance of origin and regionality will depend on the relevant product category. For selected food categories (like wine) foreign provenience (e.g. France, Italy), will likely be an advantage (or even a prerequisite, e.g. regional specialties with legal protection like PDO or PGI; Vecchio and Annunziata, 2011).

Further, we have to consider that – as usual – the results are not homogenous. There are sub-groups within the sample indicating that specific market segments might be more interesting for selected marketing efforts compared to others. E.g., in our case there are two sub-groups where origin is not that important compared to overall results (quality oriented and price sensitive consumers). If the results were representative results (they are not), foreign corporations could take special emphasis to reach these consumers where local, Japanese production is not a significant obstacle. In all, rice seems to be a national embedded product category. Foreign importers will rather face significant challenges in the Japanese food market. For other product categories, results will differ significantly (as mentioned above).

This leads to an interesting aspect about foreign markets, different cultures, and social research: The investigation about the regionality concept and the Japanese rice market is not the whole story behind this study. We also wanted to address the issues of doing consumer research in cultures with completely different values, behavior, and market conditions. We wanted to show, that it is possible to do basic research, even though one is not completely integrated into the Japanese society. It is possible but it is quite demanding, of course. Without the help of local experts and travelling into the country for our qualitative pre-study (the store check), it would have been almost impossible to generate results with any reasonable accuracy. The validity of the presented results is of course limited; but at least we acquired a better understanding about the importance of the regionality concept within the Japanese society. The applied method (discrete choice modeling, CBCA) was an appropriate tool to get reliable answers. This is a high priority condition to prevent respondents from giving answers that are desirable from a social perspective. This point is even more important in collectivistic cultures (like the Japanese; Nakane, 1970) where individual concepts are less relevant compared to larger peer groups or the society as a whole or where traditional values and concepts are of huge importance even though the society itself is one of the highest developed ones worldwide. One has to consider findings like the ones of Kumagai and Keyser (1996) concerning traditional values within the Japanese society if consumer research should be successful in these countries.

To get more reliable, representative results it would be necessary to co-operate with local market research institutes, universities, or comparable institutions which are used to doing research in these countries. However, we could show that even our limited approach delivered results that are comparable to findings in literature: A study of Saito and Saito (2013) came to similar results concerning consumers' preferences and the influence of the origin on their purchase decision (they investigated the product

category "bread"). We could roughly replicate results of different authors dealing with the regionality concept and rice (Peterson and Yoshida, 2004; Aizaki, 2015; Peterson et al., 2013, Suwannaporn and Linnemann, 2008). Also, the study of Goto (1997) delivered similar results (preference for Koshihikari rice and Niigata Prefecture). Further, the low average price sensitivity in the sample could be explained by the relatively small amount of household budget that is necessary for rice purchases by the Japanese households (Ohnuki-Tierney, 1993). In all, even our low-budget, simplified approach delivered valuable insights with regard to consumer behavior in one specific foreign market with a different culture. It is more than advisable for organizations that want to get first findings without having to invest significant resources into consumer research, to generate more knowledge about a different market and a different culture. This could be done by using our approach or similar methodologies, taking into account the preconditions and requirements of the relevant culture and society.

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