SEGMENTATION OF JAPANESE CONSUMERS' BEEF CHOICE ACCORDING TO RESULTS OF CONJOINT ANALYSIS

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Introduction

In Japan, marbling score in *longissimus* muscle has been the most important factor for breeding, production, classification, and consumption of beef cattle. On the other hand, another important trend in recent years is the increasing diversification of consumers' requirements for food quality. In a previous study, we classified Japanese consumers into four groups by their requirements for beef quality (Sasaki and Mitsumoto, 2004). These groups included a 'Japanese brand high-marbled beef' oriented and a 'lean, fresh and safety beef' oriented group. The diversification is observed not only in marbling but also in price, shelf life, safety, and other characteristics of beef. But the diversification was not based on the quantitative impact of individual beef quality and labelling information in Japanese consumers.

In the present study, we segmented Japanese consumers according to the quantitative importance and utilities of beef appearance and labelling information obtained from conjoint analysis, which is a popular marketing research technique to determine the impact and utility of quality characteristics of products.

Materials and Methods

Preparation of profiles

Eight profiles of beef package were prepared by using four attributes presented in Table 1, according to 4^5 orthogonal arrays. These profiles were presented to consumers by profile cards as presented in Figure 1.

Questionnaire study

Respondents were recruited among the general public attending the 'open-day' of the National Institute of Livestock and Grassland Science on October 2003. We presented eight profile cards to participants, and asked them to rank profiles from most preferred to least preferred. In the present study, 247 guests responded completely.

Statistical analysis

The rank of profiles in each answer was applied to conjoint analysis carried out by TRANSREG procedure of SAS (Version 6.12, SAS Institute, Cary, NC). For the diversification of consumers, participants were segmented by cluster analysis carried out by SAS FASTCLUS procedure according to the importance of attributes and utilities of levels in each participant. Differences in importance of attributes among consumer segments were analyzed by SAS GLM procedure. Differences in characteristics among consumer groups were analyzed by chi-square analysis carried out by SPSS (Version 12.0J, SPSS Inc., Chicago, IL).

Table 1: Attributes and levels for profile preparation of beef.

Attributes	Marbling	Colour	Price (yen / 100g)	'Tenderness' guarantee
Levels	Low (BMS No.2)	Dark	140	Yes
	High (BMS No.4)	Blight	200	No
			260	
			320	

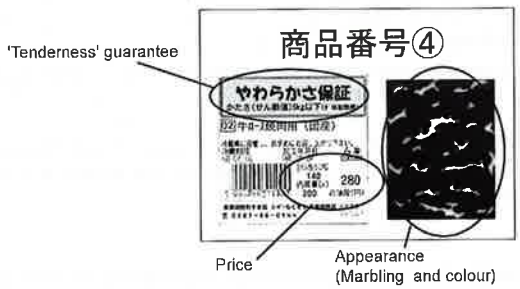

Figure 1: Appearance of profile cards used in the present questionnaire study: An example.

Results and Discussion

We divided participants into four groups by cluster analysis. The number of respondents and the importance of attributes in each group were presented in Table 2. Importance of marbling was significantly (P<.05) higher in groups 1 and 2 than in group 3 and 4, Group 3 placed significantly (P<.05) higher importance in 'Tenderness' guarantee and price than the other groups, respectively.

Utilities of levels in each group were indicated in Figure 2. Group 1 preferred low-marbled beef and group 2 accepted high-marbled beef. Group 1 and 2 had opposite utilities for marbling, although both groups 1 and 2 had high importance in marbling. The utility of each level in colour and 'Tenderness' guarantee was similar in four groups. Utilities of price levels were different among the groups. In group 4, which had highest importance in price among the groups, utility decreased with price increasing. But in groups 1 and 3, highest utilities were observed in high price and middle price, respectively. In group 2, utilities were unchanged in all price levels.

Chi-square analysis indicated that the age characteristics were different among the four groups. In groups 1 and 2, number of high-aged participants (60s and/or over) were higher than the expected value (P<.05). Group 4 had higher number of panelists in 20s and/or under and 40s than expected values (P<.05) (data not shown).

From these analysis, groups 1 to 4 were characterised as follows:

Group 1: 'Lean meat' and high price oriented and higher-aged group.
Group 2: 'Marbling' and 'Tenderness' guarantee oriented and higher-aged group.
Group 3: Middle price, 'Tenderness', and 'Marbling' oriented group.
Group 4: Low price and 'Tenderness' oriented and younger-aged group.

Table 2: Importance of attributes in groups of answerers.

Group	n	(%)	Importance (%)							
			Marbling		Colour		Price		'Tenderness' guarantee	
1	30	(12.1)	36.9 ± 2.7	a	12.0 ± 2.3	ab	34.6 ± 3.2	b	16.5 ± 2.8	b
2	64	(25.9)	42.8 ± 1.8	a	18.0 ± 1.6	a	21.8 ± 2.2	c	17.4 ± 1.9	b
3	50	(20.2)	14.6 ± 2.1	b	11.6 ± 1.8	b	42.8 ± 2.5	b	30.9 ± 2.2	a
4	103	(41.7)	15.2 ± 1.4	b	10.9 ± 1.3	b	55.9 ± 1.7	a	18.0 ± 1.5	b

Values with different superscript in each attribute mean differ among groups significantly (P<.05).

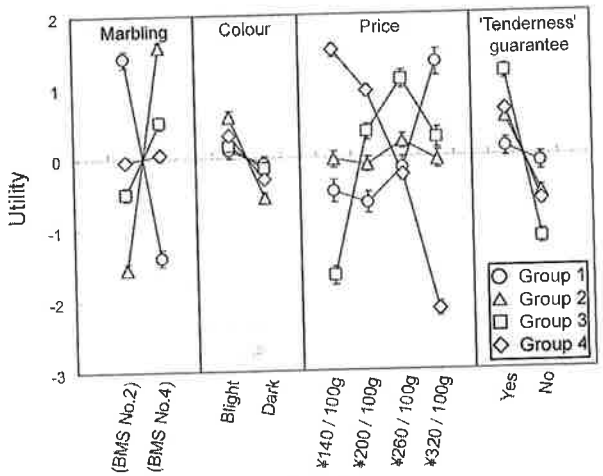

Figure 2: Utility of each level in four participant groups. Values are expressed as least square means ± SE.

Conclusions

Japanese consumers were segmented into four groups according to quantitative impact of each characteristics of beef obtained from conjoint analysis. The groups were characterized by their importance and utilities. It was also indicated that age characteristics were different among the four groups.

References

Sasaki K. and Mitsumoto M. (2004). Questionnaire-based study on consumer requirements for beef quality in Japan. Animal Science Journal, 75: 369-376.