

Assessing authorized labeling as a marketing tool: an empirical study of Japan

Mitsunori Hirogaki ¹⁺

¹ Faculty of Economics, Hiroshima University of Economics, Hiroshima, Japan

Abstract. In this study, we attempt to analyze consumer perceptions and responses toward authorized health claim labeling (Food for Specified Health Use, FOSHU, labeling) in Japan. Since the Japanese Ministry of Health, Labour and Welfare (MHLW) established the FOSHU system, a government-approved health claim regulation system, FOSHU labeling has played a crucial role in decreasing asymmetric information on the value of credence attributes and preventing potential market failure by communicating accurate information to consumers. Therefore, FOSHU labeling is considered to be a successful tool for product differentiation.

However, a few empirical studies analyzed consumer confidence in health claim regulation and its marketing effects on consumers' buying behavior. In this paper, we used data from 945 consumer responses to non-sugar FOSHU drinks and found that confidence in health claim regulation systems had a significant impact on shaping consumer choices for FOSHU foods. Willingness to pay a price premium for functional food and demographic factors were also important in determining the consumers' choice of food products. The results provide a basis for understanding the effects of using FOSHU labels as marketing tools and health claim regulation systems in Japan on food products. Moreover, we discussed the policy implications of these results.

Keywords: functional food, health claim regulations, FOSHU (Food for Specified Health Use), consumer confidence.

1. Introduction

Food products have several attributes such as search, experience, and credence. The consumer cannot confirm credence attributes even if he purchases or consumes the product; therefore, asymmetric information exists between producer and consumer. This asymmetric information allows the better-informed side to engage in opportunistic behavior, resulting in market failure. Recently, considering the occurrence of several issues regarding food safety (e.g., BSE, GMO, and pesticides), consumers have been paying closer attention to food product ingredients and origins. In food product marketing, labeling can play a crucial role in decreasing asymmetric information on the value of credence attributes and prevent potential market failures by communicating accurate information to consumers.

A category of product whose credence attributes have attracted significant attention is functional foods. Consumers cannot directly perceive the benefits from the credence attributes of a product unlike for instance taste and other sensory characteristics [6]. As a result of growing interest in improving health and adopting a healthy diet, the functional foods market has become a distinct category and has grown in volume and value. While the term "functional foods" is commonly used, there are no standards that define it. Brunso, Fjord, and

⁺ Corresponding author. Tel.: +81-82-871-1587 ; fax: ++81-82-871-1587 .
E-mail address: mt-hiro@hue.ac.jp

Grunert stated that the term “functional foods” denotes food products that have been enriched with natural substances or components with specific physiological preventive and/or health-promoting effects [4].

According to Datamonitor, the combined U.S., Western European, and Asia-Pacific functional food and drink market is worth US\$72.3 billion and this market is expected to grow at a compound annual growth rate (CAGR) of 5.7% between 2007 and 2012 [1]. New Zealand Trade and Enterprise points out that Japan is the second largest functional food and drink market in the world valued at US\$16.4 billion in 2007 [5].

Several countries have recently set up a regulation system to manage nutrition and health claims made on functional foods. Japan was the first country to introduce government-approved health claims [5] when the Japanese Ministry of Health, Labour and Welfare (MHLW) established government-approved health claim regulations called Food for Specified Health Use (FOSHU). FOSHU labeling on a food product indicates that the public sector (Consumer Affairs Agency) has determined that sufficient scientific evidence exists to confirm the physiological effects of that food product on the human body. Thus, the manufacturer is allowed to use the FOSHU seal, which contains dosage recommendations and health claims. The FOSHU seal can provide reliable information to consumers regarding food ingredients with specific physiological prevention effects and health-promoting effects, i.e., the FOSHU seal facilitates the appropriate circulation of credence attributes with differential factors.

However, previous studies hardly conducted any empirical analysis of consumer acceptance of functional foods and health claims in Japan. In this study, on the basis of an empirical study of consumer response to FOSHU foods (non-sugar green tea), we attempt to analyze consumers’ perceptions and responses to authorized health claim labeling (FOSHU labeling) in Japan as marketing tools.

This paper is organized as follows. Section 2 summarizes the regulation system for functional foods and health claims in Japan. Section 3 details the methodology of the study. Section 4 summarizes the empirical results, and section 5 contains a discussion and the conclusion.

2. Regulation of Health Claims in Japan

This section attempts to summarize the functional food regulation system and its definition in Japan.

2.1. Functional Foods in Japan: Definition

In Japan, functional foods are divided into three broad categories: FOSHU, Food with Nutrient Function Claims (FNFC), and other Health Foods. Under the FOSHU regulation system, approved products are permitted to make direct health claims on product labels. For a product to be approved as FOSHU, companies must go through an application process that typically takes about one year to complete [5].

2.2. FOSHU

FOSHU has its own approval system with minor exceptions. A FOSHU food product is one that the Consumer Affairs Agency has determined to have sufficient scientific evidence that confirms its physiological effects on the human body. These products can print health claims on their labels. A health claim is a presentation that states, suggests, or implies that a relationship exists between health and a food product or the constituents of a food product. Health claims include nutrient function claims, enhanced function claims, and reduction of disease risk claims [7]. There are several types of FOSHU: standard FOSHU, reduction of disease risk FOSHU, standardized FOSHU, and qualified FOSHU.

In 2009, 949 FOSHU products existed. Among these, 902 were standard FOSHU products, 11 were reduction of disease risk FOSHU products, 35 were standardized FOSHU products, and one was a qualified FOSHU product [2]. Considering the continuing recessionary economic environment and the maturation, the ordinary food market has decreased in volume and value. For example, sales of bottled green tea beverages decreased from 431.5 billion yen (about US\$5.56 billion) and 2,467,000 kl in 2007 to 382 billion yen and 2,241,200 kl in 2009 [3]. In contrast, the market for bottled green tea beverages with FOSHU labeling grew. Kao’s Healthya Ryokucha was the first bottled green tea with FOSHU labeling and health claims related to weight loss and weight maintenance and has been extremely successful since its introduction in 2003. This product is fortified with 540 mg catechins, a level four times higher than that in normal green tea. Sales of this product totaled 172 million yen (about US\$221 million) in fiscal 2009, and Fuji-keizai forecasted that

this market (that is, the drink market related to weight loss and weight maintenance) would grow to 659 million yen (about US\$ 1 million) in fiscal 2010 [2].

However, in 2009, a major oil brand that made health claims related to weight loss and weight maintenance halted the sale of its products because the products contained a small amount of glycidol fatty acid esters. This incident caused shrinkage of the market.

2.3. FNFC

FNFC has a standard regulation system, and this category is limited to 17 vitamins (e.g., vitamins A, B1, B2, C, and E) and five minerals (e.g., calcium, iron, and copper). Approval is not required, and these foods come with nutrient content labeling [5].

2.4. All Other Health Foods

All Other Health Foods include nutritional supplements (general foods category), and these cannot make health claims [5].

3. Data and Methodology

A detailed consumer survey on attitudes toward functional food with FOSHU labels was conducted over a one-month period from January 10, 2011, to January 31, 2011. Questionnaires were sent to undergraduate students in western Japan (the regions of Kansai and Chūgoku as well as the islands of Shikoku) who were studying social sciences. A total of 1,003 questionnaires were returned. The completed questionnaires (incomplete questionnaires were eliminated, 945 questionnaires remained) were used as the sample set. The sample set was collected from 717 males and 228 females, thus indicating a bias toward males. However, the sample set closely resembled the sex ratio of undergraduate students studying social sciences throughout the country.

4. Empirical Results and Discussion

The model was developed using binary logit analysis to control different factors. This model was used to analyze the factors that attract consumers of these products. The respondents were asked about their attitudes toward the bottled green tea containing catechins with a FOSHU label (willingness to buy the green tea with FOSHU labels). Bottled green tea was chosen over other products because it is highly recognizable among consumers, and many brands and products exist for this category. Survey responses showed that 37.8% of the respondents indicated that they wanted to buy this functional food. The logit model was estimated using IBM SPSS (Ver. 19.0), and gave results in a chi-squared value of 152.95 with significance at less than 0.01%. The overall model fit was 0.689, log likelihood was 1100.060, and pseudo R² was 0.203. Table I summarizes the results.

The results also showed that confidence with a government-approved FOSHU label and health claims (CONFIDENCE) and being health conscious (HEALTH) were significant factors and had a significant impact on shaping consumers' choice of FOSHU green tea. Moreover, concerns over the brand (BRAND), willingness to pay a price premium for functional foods and drinks with a FOSHU label (PREMIUM), a preference for product variety (VARIETY), and convenience (CONVENIENCE) were other significant factors, while negative images associated with the unnaturalness of functional foods (NATURAL) had no significant effect on determining the selection of bottled green tea having a FOSHU label.

Among the demographic variables, sex (SEX) and age (AGE) were significant, while only the size of household (HOUSEHOLD) was not significant. Furthermore, income levels (INCOME) were significant at the 0.1 level.

In addition, these factors were evaluated by measuring marginal effects (see Table 2). The factor CONFIDENCE had a high marginal effect (13.6%), which implies that, other factors being equal, this factor increases the probability of the willingness to buy this functional food product by 13.6%. Factors PREMIUM and SEX also had high marginal effects (17.7% and -13.2%, respectively). This result shows that consumers' willingness to pay a price premium for functional food increases the probability that the consumer will

choose this functional food product by 17.7%, and that being male decreases the probability that a male consumer will choose this functional food product by 13.2%.

Table 1: Empirical Results from the Binary Logit Choice Model

Variable	Result of analysis		
	Significant level	Coefficient	Standard error
Dependent variables:			
Willingness to buy the functional foods with FOSHU labels			
Independent variables:			
Demographic variable			
SEX (male)	***	-0.611	0.184
AGE	**	0.142	0.061
INCOME	*	-0.263	0.155
HOUSEHOLD (number of households)	-	-0.029	0.042
Other variable			
CONFIDENCE	***	0.591	0.152
BRAND	***	0.573	0.171
PREMIUM	***	0.843	0.204
NATURAL	-	0.091	0.167
HEALTH	***	0.516	0.150
VARIETY	***	0.324	0.147
CONVENIENCE	***	0.379	0.151
CONSTANTS	-	-3.106	1.277

***and ** and * indicate coefficients are significant at the 0.01, 0.05, and 0.1 levels.

Table 2: Marginal Effects

Variable	Marginal Effect
Demographic variable	
SEX(male)	-0.132
AGE	0.032
INCOME	-0.061
HOUSEHOLD	-0.007
Other variable	
CONFIDENCE	0.136
BRAND	0.126
PREMIUM	0.177
NATURAL	0.021
HEALTH	0.118
VARIETY	0.074
CONVENIENCE	0.087

5. Empirical Results and Discussion

This paper attempted to analyze consumers' perceptions and responses toward authorized health claim labeling and the factors that attract consumers of food with authorized labeling and authorized health claims. On the basis of an empirical study of consumer response to FOSHU bottled green tea and the consumer survey data from the western Japan area, a logit model was used to analyze consumer response to functional foods with authorized health claim labeling.

The results showed that having confidence in a government-approved FOSHU label and health claims is an important factor in determining consumers' decision to buy FOSHU green tea. Conflicting opinions have been recently raised over easing the regulations on FOSHU food products and its regulation system. One opinion is that the functional food industry could be promoted by easing regulations on the FOSHU system because this system is considerably restrictive and overly expensive for the industry. Another viewpoint insists that such deregulation may easily destroy consumers' confidence in health effects and food safety. Other countries face similar problems [4]. The results of this study suggested that regulations on the FOSHU system play an important role in Japanese consumers' choice of functional foods. Easing these regulations can have a significant impact on consumer attitudes toward foods having the FOSHU label and that make health claims.

This study showed that other important factors determining consumers' choice include being health conscious, being concerned with the brand, willingness to pay a price premium, having a preference for product variety, and convenience. Meanwhile, negative images associated with the unnaturalness of functional foods are not significant. These results differ from those of previous studies [4]. Future research is needed to determine the factors that lead to this difference.

6. Acknowledgements

This research was partly supported by Grants-in-Aid for Scientific Research (No. 23730424) and Hiroshima University of Economics Special Individual Research Grant.

7. References

- [1] Datamonitor, [Online] Available: <http://about.datamonitor.com/media/archives/612>, 2008.
- [2] Fuji-keizai, FOSHU Market 2010. (in Japanese), 2010.
- [3] Japan Soft Drink Association, Soft Drinks Statistics. (in Japanese), 2010.
- [4] K. Brunso, T. A. Fjord, K. G. Grunert. Consumers' food choice and quality perception. MAPP working paper no 77, 2002.
- [5] New Zealand Trade and Enterprise, "Market Profile for Functional Foods in Japan," 2009, [Online] Available : <http://www.nzte.g.,ovt.nz/explore-export-markets/market-research-by-industry/Food-and-beverage/Documents/functional-foods-market-in-Japan.pdf>.
- [6] N. Urala and L. Lähteenmäki. Attitudes behind consumers' willingness to use functional foods. *Food Quality and Preference*. 2004, **15** (7-8): 793-803.
- [7] T. Simizu. Health claims on functional foods: the Japanese regulations and an international comparison. *Nutrition Research Reviews*. 2003, **16** (2): 241-252.