

Searching for an Effective Marketing in the Food Supplement Industry in Japan

Michiko Miyamoto

Abstract—The market for "functional foods" and "foods with functional claims" that are effective in maintaining and improving health, has expanded year by year due to the entry of major food and beverage manufacturers following the introduction of the specified health food system in 1991 in Japan. To bring health claims related products or services to the market, it is necessary to let consumers to learn about these products or services; an effective marketing through advertising are important. This research proposes a framework for an effective advertisement medium for the food supplement industry by using survey data of 2,500 people.

Keywords—Functional foods, dietary supplements, marketing strategy, structural equation modeling.

I. INTRODUCTION

IN the USA, Food & Drug Administration (FDA) regulates both finished dietary supplement products and dietary ingredients. Dietary supplements are defined in section 3 of the Dietary Supplement Health and Education Act of 1994 (DSHEA) as a product which includes the following ingredients: vitamins, minerals, herbal products or other botanicals, animal extracts, amino acids, and any other substance used to supplement the diet [1]. Consumers can purchase dietary supplements in many different forms, including tablets, capsules, powders, energy bars, and liquids [2].

Unlike foods and quasi-drugs, health foods do not have a clear definition in Japan. It mainly refers to "functional foods" and "foods with functional claims" that are effective in maintaining and improving health. Before the 1990s, the health food market in Japan had no approval system and was targeted at a limited number of consumers, mainly small and medium-sized businesses.

The market has expanded year by year due to the entry of major food and beverage manufacturers following the introduction of the specified health food system in 1991. Since it takes a certain amount of time and money for research and development to obtain foods with specified health permit after being examined by the Consumer Affairs Agency, entry from different industries such as cosmetics manufacturers was seen in addition to major manufacturers. After that, the system of "Foods with Function Claims (FFC)" was introduced in 2015 [3]. Before this system was in place, only government-approved "Foods for Specified Health Uses (FOSHU)" and "Foods with Nutrient Function Claims (FNFC)" are allowed to

make function claims on food labels. According to Ministry of Health, Labor and Welfare (MHLW), FOSHU refers to "foods containing ingredient with functions for health and officially approved to claim its physiological effects on the human body" and FNFC refers to "all food that is labeled with the nutrient function claims specified by the MHLW" [4]. These systems remain in place. An outline of food labeling systems for health and nutrition by Consumer Affairs Agency in Japan is shown in Fig. 1 [5].

The effective verification process has been simplified for a variety of foods; the functionality can be labeled by notifying the Consumer Affairs Agency. Business entries of small to medium size companies into the health functional food industry have been expanding.

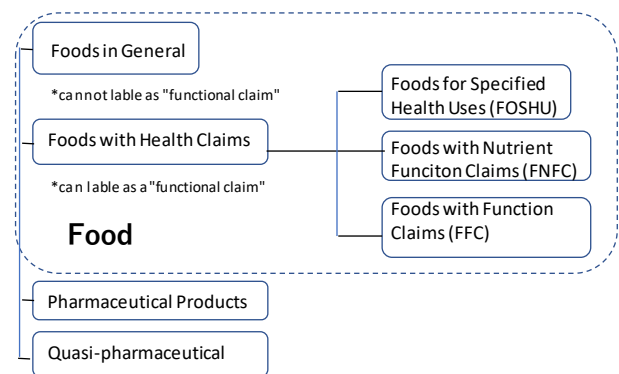


Fig. 1 Outline of Food Labeling Systems for Health and Nutrition in Japan [5]

The growing interests in healthy longevity among elderly people, who are the main users of health foods, and measures to build a body that allows them to stay healthy and move, as an extension of retirement age, and anti-aging awareness will continue to increase. In addition, it is expected that the awareness of measure for lifestyle-related diseases and physical changes due to aging in the middle-aged group, and consideration for physical fitness and health and beauty among younger groups will continue to increase as well. In particular, the expansion of function in foods with functional claims makes it possible to make more choices according to the physical condition and is expected to be recognized as an option for maintain one's own health. In foods with functional claims, the field of supplements is expected to expand, while in the general foods field, the market scale continued to expand (see Fig. 2). However, due to the shift to foods with special health qualities and general foods, the market size is expected to temporarily shrink in FY2019. The development of foods

M. Miyamoto is with Akita Prefectural University, Yurihonjo, Akita 015-0055 Japan (phone: +81-184-27-2000; fax: +81-184-27-2189; e-mail: miyamoto@akita-pu.ac.jp).

with functional claims is progressing in various food types, and major food manufacturers are also aggressive in the functional claims' foods, so active product launches are expected to continue in the future. According to Yano Research Institute Ltd. [6], the market for foods with functional claims in Japan is anticipated to continue to expand moderately in the future because of intense product revisions. The functionally labeled food markets have become a 300.7-billion-yen market (a 38.6% increase compared to the previous year). Drinks and supplements have grown (seen Fig. 3) and increasing proportion of lifestyle-related disease prevention by appeal is seen.

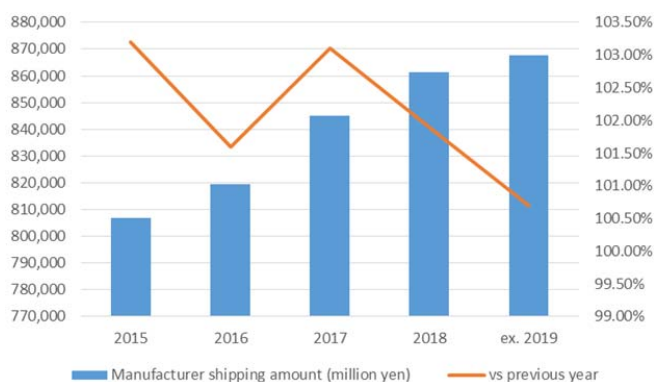


Fig. 2 Health-Foods/Functional-Foods Market Trend in Japan for 2015-2019 [5]

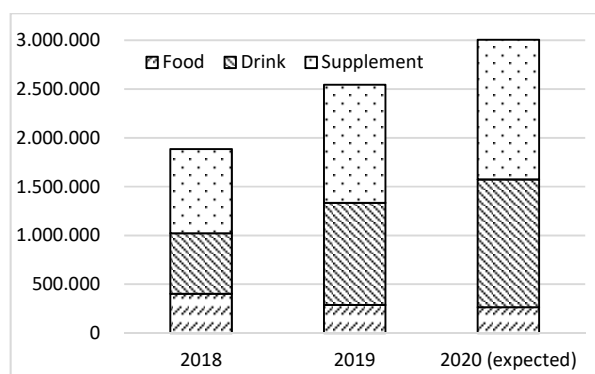


Fig. 3 Composition ratio by types (2018-2020) [5]

As for health food market channel, inbound demand (foreign tourists visiting Japan) contributed to the expansion of the market for FY2018 [6]. Domestic demand in the mail-order channel, which has supported the market growth in recent years, is struggling for mid-sized mail order specialists, while EC (electronic commerce) venture companies and other companies that have succeeded in digital marketing strategies increased sales and continued to grow overall. In addition, some companies are seeing growth in sales due to communication activities that push the functionally labeled foods to the front. Along with mail-order sales, drugstores that created highly visible sales floors centered on functionally labeled foods are performing well. The number of drug channels (mainly drug stores, wholesale routes to pharmacies and drug stores) expanded. In addition, the movement to incorporate training

and exercise into daily life has become more active among young people and older people, and distribution channels such as fitness gyms and health and gymnastics classes that strengthen sales of sports supplements have expanded.

This research proposes a framework for an effective advertisement medium by using survey data of 2,500 people on health food, drink, and supplement, as well as word of mouth data on dietary supplement products.

II. LITERATURE REVIEW

A. Functional Foods

For many years, studies to find factors which influence consumers' choice of products and brands have been conducted. Yoshikawa et al. [7] listed four groups, health-related factors, sensory factors, socio-psychological, functional, and economic factors, influencing the choice of food. Functional foods and/or supplements might be used as regards to a healthy lifestyle or by means of an unhealthy lifestyle compensation [8]-[11]. Nutrition and health claims are information disclosures which are designed to provide useful information to the consumer concerning the health benefits of products, as well as to protect consumers from misleading and false information [12]. The manufacturers' health claims on ready-to-eat cereal, such as Kellogg for example, led to significant increases in consumer knowledge of the fiber-cancer relationship [13], [14]. However, a study conducted in UK, Germany, Spain, and Netherlands reported that consumers appeared unable to differentiate between a nutrition claim and a health claim that calls for improvements in communication which promotes benefits of healthier food choices [15].

In order to understand consumers' interpretation of health claims, Hodgkins et al. [15] utilize the Multiple Sort Procedure (MSP), a procedure for exploring the categories and systems of classification that people use in any given context. They also applied the Multiple Scalogram Analysis [16]-[18], which derives a single dimension that can be used to position both the questions and the subjects. They found that consumers may not sensibly distinguish between a nutrition claim and a health claim in the way that regulatory experts do and yield perception of where this might happen

Development of new functional components for manufactures is very challenging and expensive. To avoid major failures in investments of research and development, manufacturers must fulfill consumer expectations [19].

Consumers who look to buy functional foods were being more innovative and disciplined than the consumers of conventional food products [20]. Earlier studies indicate that demographic factors such as gender, age or education, as well as attitudes and lifestyle factors strongly affect the acceptability or intention to use functional foods [21]-[26].

Nocella and Kennedy [27] analyzed factors affecting consumers on health claims related products. They listed two groups of factors: the first group of factors influencing socio-demographic characteristics, familiarity, knowledge with nutrition information and attitude, which manufacturers cannot fully control. The second one concerning the product and the

way information is communicated verbally and visually. To bring health claims related products or services to market, it is necessary to let consumers to learn about these products or services; an effective marketing through advertising are considered as important. Thus, we add a role of advertising media to Nocella and Kennedy's model as shown in Fig. 4. The manufacturers could communicate verbally and visually about health claim related products through different advertising media.

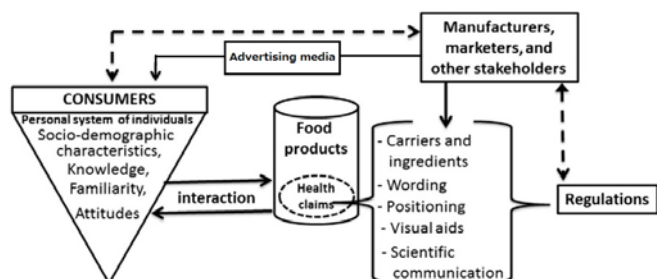


Fig. 4 Factors influencing consumers' understanding of health claims (the author adds the role of advertising media on [27])

B. Sensory Marketing

Recently, sensory marketing is regarded as an efficient way to engage consumers [28]-[31]. Sensory marketing is used to reach consumers' senses and influence their behavior based on how the products and brands make them feel. A well-marketed product will positively influence consumers' buying decisions by utilizing more than one of the five senses [32], engaging the consumer on both a conscious and subconscious level. By working on embodied cognition, sensory inputs can drive consumer behavior.

Some research on advertising effectiveness has targeted on sensory marketing as efficient way to engage consumers [28]-[31]. As for food market, sensory food advertisement is used to create sensory triggers that affect the perceived quality of an abstract food attribute like its taste, smell, or shape [30]. Elder and Krishna [33] test to see if advertisement for food products, such as potato chips, popcorn, and chewing gum, can affect taste perceptions by affecting sensory cognitions and found that the multiple-sense (a combination of visual (sight), tactile (touch) and olfactory (smell) cues) advertisements lead to significantly higher taste perceptions than those of the single-sense (e.g., only taste cues). They imply that this effect works through sensory stimulation. Krishna [30] shows that an advertisement emphasizing such multiple senses results in better taste perception than an advertisement emphasizing only taste.

Some studies focus on differences between healthy food advertisements and those of unhealthy ones [33], [34]. While food advertising is typically used to light up an interest in the food or an intention to buy or consume it, it not easily affects the consumers' taste perceptions [30]. After studying literature on consumer acceptance of functional foods, Verbeke [26] found that one of the main conditions for acceptance of functional foods is concerning to taste, besides convincing health claims. The results of the content analysis indicated that

healthy food advertisements are mainly informational, whereas unhealthy food advertisements are mainly transformational [36]. Roose and Mulier [35] investigated the effectiveness of sensory advertising for health food promotion, by comparing the taste perceptions, ad effectiveness, negative thoughts between the single-sense and multiple-sense ad slogans, and between the healthy and unhealthy food ad slogans. According to their findings, the interaction effects of ad type (i.e., a single-sense vs. multiple-sense) and product type (i.e., healthy vs. unhealthy food product) on taste perceptions and on ad effectiveness are mediated by negative thought, based on the moderated mediation analyses [37]

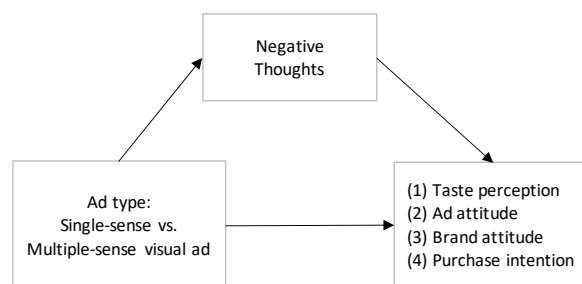


Fig. 5 The model for effect of ad type on ad effectiveness mediated by negative thoughts [35]

III. A RESEARCH MODEL AND DATA

Based on the literature mentioned in Section II, we propose a research model as shown in Fig. 6 to examine the relationship between different advertising media (traditional marketing mix, web experience, point-of-purchase displays), consumers' decision process (intention to use), and decisions (actual behavior) of consumers in the functional foods industry, especially for lowering blood pressure.

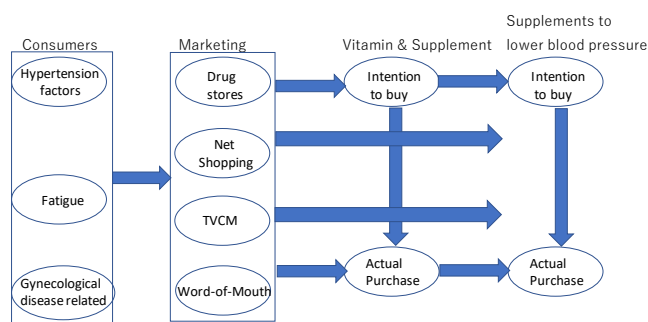


Fig. 6 A Research Framework

This research uses single-source data provided by Nomura Research Institute, Ltd, one of the largest consulting firms in Japan. Single-source data are data that measure media exposure and transaction information for the same people [38]. The data in this study are composed of "the marketing activity" such as advertisements of products and "process of consumer behavior." The dataset contains a collection of 2,500 consumers, including 1,288 males and 1,212 females, during the period from January 25 to March 28, 2020. This paper analyses consumers' activities in the functional food market, especially

those have claims for lowering blood pressure, and how they are influenced by different medium, such as TV commercials, SNS, or watching point-of-purchase displays when they stop by

at any stores. A list of variables is shown in Table I, and descriptive statistics of the data is shown in Table II.

TABLE I
VARIABLES

SNS	Twitter Facebook Instagram	0 = no use, 1 = less than once a month, 2 = once a month, 3 = once a week, 4 = 2~3 times a week, 5 = 4~5 times a week, 6 = almost every day
Blood Pressure related products	Dear Natura Peptide The Power of Healthya Chlorogenic acid FANCL Blood Pressure Support Sesame barley tea	0 = no use, 1 = more than once a month, 2 = more than once a week, 3 = more than twice a week
Shopping channel	Drug store Net Shopping	Welcia Matsumotokiyoshi Amazon Rakuten Yahoo Shopping
Word of Mouth	Official Internet site SNS (Twitter, Instagram, etc.) Reviews of sites other than SNS Reputation from friends and acquaintances Information from the salesperson Other informaiton	a dummy variable; 0 = no, 1 = yes
Healthy Foods	Drinks for specified health uses Supplements Health Drink Vitamin supplements Pharmaceutical Vitamins	
TV CM	Dear Natura Healthya green tea FANCL Sesame barley tea	0 = no, 1 = yes

TABLE II
DESCRIPTIVE STATISTICS

Age	20s = 503, 30s = 641, 40s = 766, 50s = 590
Gender	Male = 1,288, Female = 1,212
Marital Status	Single = 986, Married = 1,361, Divorcee/Bereavement = 153
Having any children	Yes = 1,038, No = 1,462
Household status	Single household = 537, Husband & wife = 385, Husband & wife & unmarried children = 1,174 A single parent & unmarried children = 185, Husband & wife & married children = 24, Three generations = 134, Others = 61
Income status	No income = 31; less than one million yen = 75; 1~2 million yen = 88; 2~3 million yen = 161; 3~4 million yen = 270; 4~5 million yen = 308; 5~6 million yen = 296; 6~7 million yen = 284; 7~10 million yen = 576; 10~15 million yen = 299; 15~20 million yen = 66; more than 20 million yen = 31

TABLE III
A CORRELATION MATRIX

	Twitter	Facebook	Instagram	Amazon	Rakuten	Yahoo! Shopping	Official Internet site	SNS (Twitter, Instagram, etc.)	Reviews of sites other than SNS	Reputation from friends and acquaintances
Twitter	1	.262**	.441**	.235**	.100**	.085**	0.031	.163**	.091**	0.020
Facebook	.262**	1	.391**	.171**	.113**	.119**	.079**	.102**	0.029	.052*
Instagram	.441**	.391**	1	.200**	.161**	.110**	.049*	.200**	.089**	.062**
Amazon	.235**	.171**	.200**	1	.378**	.395**	.115**	.120**	.093**	.048*
Rakuten	.100**	.113**	.161**	.378**	1	.333**	.130**	.111**	.096**	.050*
Yahoo!Shopping	.085**	.119**	.110**	.395**	.333**	1	.094**	.070**	.055**	.050*
Official Internet site	0.031	.079**	.049*	.115**	.130**	.094**	1	.116**	.183**	.092**
SNS (Twitter, Instagram, etc.)	.163**	.102**	.200**	.120**	.111**	.070**	.116**	1	.167**	.184**
Reviews of sites other than SNS	.091**	0.029	.089**	.093**	.096**	.055**	.183**	.167**	1	.133**

Reputation from friends and acquaintances	0.020	.052*	.062**	.048*	.050*	.050*	.092**	.184**	.133**	1
Information from the salesperson	0.015	.056**	.042*	.074**	.050*	.060**	.041*	.080**	.076**	.095**
Other informaiton	-0.022	-0.033	-.060**	-0.005	-0.027	-0.007	.040*	-0.022	-0.012	.043*
Welcia_2/1	0.024	0.019	.050*	.049*	0.021	.101**	0.000	.065**	-0.006	.060**
Matsumotokiyoshi_2/1	.047*	.085**	.064**	.089**	.095**	.068**	.093**	.066**	.063**	.075**
Welcia_2/29	-0.001	0.009	0.022	0.033	0.036	.123**	0.008	.067**	0.005	0.032
Matsumotokiyoshi_2/29	.048*	.055**	.062**	.080**	.078**	.053*	.078**	.059**	.072**	.070**
Dear Natura	0.007	0.016	.087**	-.066**	0.031	0.026	.058**	0.031	0.036	0.039
Healthya green tea	0.011	0.029	.121**	-.048*	0.020	0.027	.043*	0.002	0.007	0.030
FANCL	-0.007	0.011	0.031	-0.025	0.037	0.032	0.018	0.012	-0.014	.041*
Sesame barley tea	-0.024	0.033	0.031	-.047*	0.036	.075**	.068**	-0.007	0.035	0.034
	Information from the salesperson	Other information	Welcia_2/1	Matsumoto kiyoshi_2/1	Welcia_2/29	Matsumoto kiyoshi_2/29	Dear Natura	Healthya green tea	FANCL	Sesame barley tea
Twitter	0.015	-0.022	0.024	.047*	-0.001	.048*	0.007	0.011	-0.007	-0.024
Facebook	.056**	-0.033	0.019	.085**	0.009	.055**	0.016	0.029	0.011	0.033
Instagram	.042*	-.060**	.050*	.064**	0.022	.062**	.087**	.121**	0.031	0.031
Amazon	.074**	-0.005	.049*	.089**	0.033	.080**	-.066**	-.048*	-0.025	-.047*
Rakuten	.050*	-0.027	0.021	.095**	0.036	.078**	0.031	0.020	0.037	0.036
Yahoo!Shopping	.060**	-0.007	.101**	.068**	.123**	.053*	0.026	0.027	0.032	.075**
Official Internet site	.041*	.040*	0.000	.093**	0.008	.078**	.058**	.043*	0.018	.068**
SNS (Twitter, Instagram, etc.)	.080**	-0.022	.065**	.066**	.067**	.059**	0.031	0.002	0.012	-0.007
Reviews of sites other than SNS	.076**	-0.012	-0.006	.063**	0.005	.072**	0.036	0.007	-0.014	0.035
Reputation from friends and acquaintances	.095**	.043*	.060**	.075**	0.032	.070**	0.039	0.030	.041*	0.034
Information from the salesperson	1	.045*	0.037	-0.001	0.015	0.019	-0.012	0.011	0.020	0.031
Other informaiton	.045*	1	0.034	-0.001	.041*	-0.006	0.030	0.014	0.001	.048*
Welcia_2/1	0.037	0.034	1	0.010	.683**	-0.021	.043*	0.037	0.024	0.035
Matsumotokiyoshi_2/1	-0.001	-0.001	0.010	1	0.009	.658**	.044*	.055**	0.036	.052*
Welcia_2/29	0.015	.041*	.683**	0.009	1	0.015	.042*	0.037	0.011	.052*
Matsumotokiyoshi_2/29	0.019	-0.006	-0.021	.658**	0.015	1	.059**	.076**	0.030	.059**
Dear Natura	-0.012	0.030	.043*	.044*	.042*	.059**	1	.617**	.396**	.581**
Healthya green tea	0.011	0.014	0.037	.055**	0.037	.076**	.617**	1	.365**	.514**
FANCL	0.020	0.001	0.024	0.036	0.011	0.030	.396**	.365**	1	.346**
Sesame barley tea	0.031	.048*	0.035	.052*	.052*	.059**	.581**	.514**	.346**	1

** . Correlation is significant at the 0.01 level (2-tailed). * . Correlation is significant at the 0.05 level (2-tailed).

Table III contains the Pearson correlation coefficient between eleven variables with the two-tailed significance of coefficients. A correlation between variables indicates that as one variable changes in value, the other variable tends to change in a specific direction. Values can range from -1 to +1. If the correlation is greater than 0.8 then sever multicollinearity may be present. As the degree of multicollinearity increases, the regression model estimates of the coefficients become unstable and the standard errors for the coefficients can become inflated. Every correlation coefficients in this analysis are smaller than 0.8, therefore multicollinearity may not be concerned in this analysis. As for products claimed to be effective to lower the blood pressure, Instagram is positive and significant related with two products (Dear Natura and Healthya Green Tea); Amazon is negatively related for all brands. Relationships between official internet sites and a drug

store (Matsumoto-kiyosih) are positive and significant except FANCL, and only FANCL has positive and significant correlation coefficient with “Reputation from friends and acquaintances.” Details of each product are discussed in the next section.

A. Products Focused in This Research

Products which are focused in this study are those claimed to be effective to lower the blood pressure as follows.

[Foods with Functional Claims]

1. “Dear Natura Peptide” by Asahi Foods: Supporting lowering blood pressure for those with higher blood pressure with sardine peptide which has reported containing valyl tyrosine.
2. “The Power of Healthya Chlorogenic acid” by Kao: A powdered beverage containing coffee bean-derived

chlorogenic acids that helps lower high blood pressure.

3. "FANCL Blood Pressure Support" by Fancl: Double approaches to lower blood pressure with tripeptide MKP and GABA

[Food for specified health use (Tokuho)]

1. "Sesame Barley Tea" by Suntory: A beverage contains sesamin, a component of sesame. Sesame peptides are said to have an effect on lowering blood pressure.

Based on a research model proposed in Fig. 6, the author examines the relationship between different advertising media (traditional marketing mix, web experience, point-of-purchase displays), consumers' decision process (intention to use), and decisions (actual behavior) of consumers in the functional foods industry, especially for lowering blood pressure.

As for TV commercials, Sesame Barley Tea is the only product which has specified TV commercial. Those of Dear

Natura and Healthya green tea are related products. Those two brands do not have commercials for the blood pressure related products in this study, thus they are used as a proxy for the brand names.

FANCL is not displayed because the number of commercials posted is small.

Table IV presents heat maps of the total number of advertisements for each hour of the TV programs in which the commercials were televised; those for Dear Natura, sponsored TV programs concentrates during the day on weekdays and Saturdays, often around 1am; those for Sesame Barley Tea televised on Saturday and Sunday nights, and many weekday mornings; those for Healthya Green Tea, concentrates during daytime on weekdays.

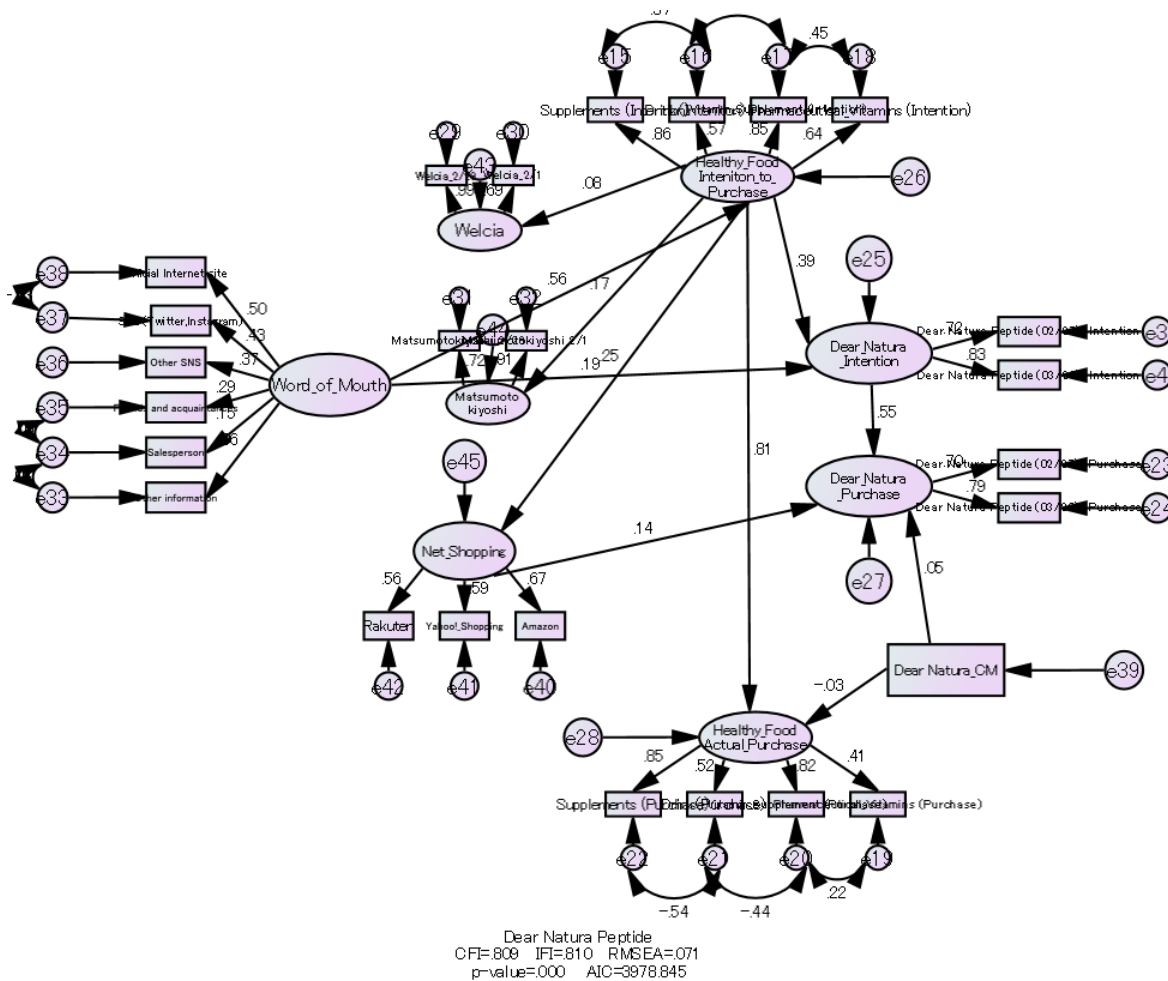


Fig. 6 Research Model: Dear Natura Peptide

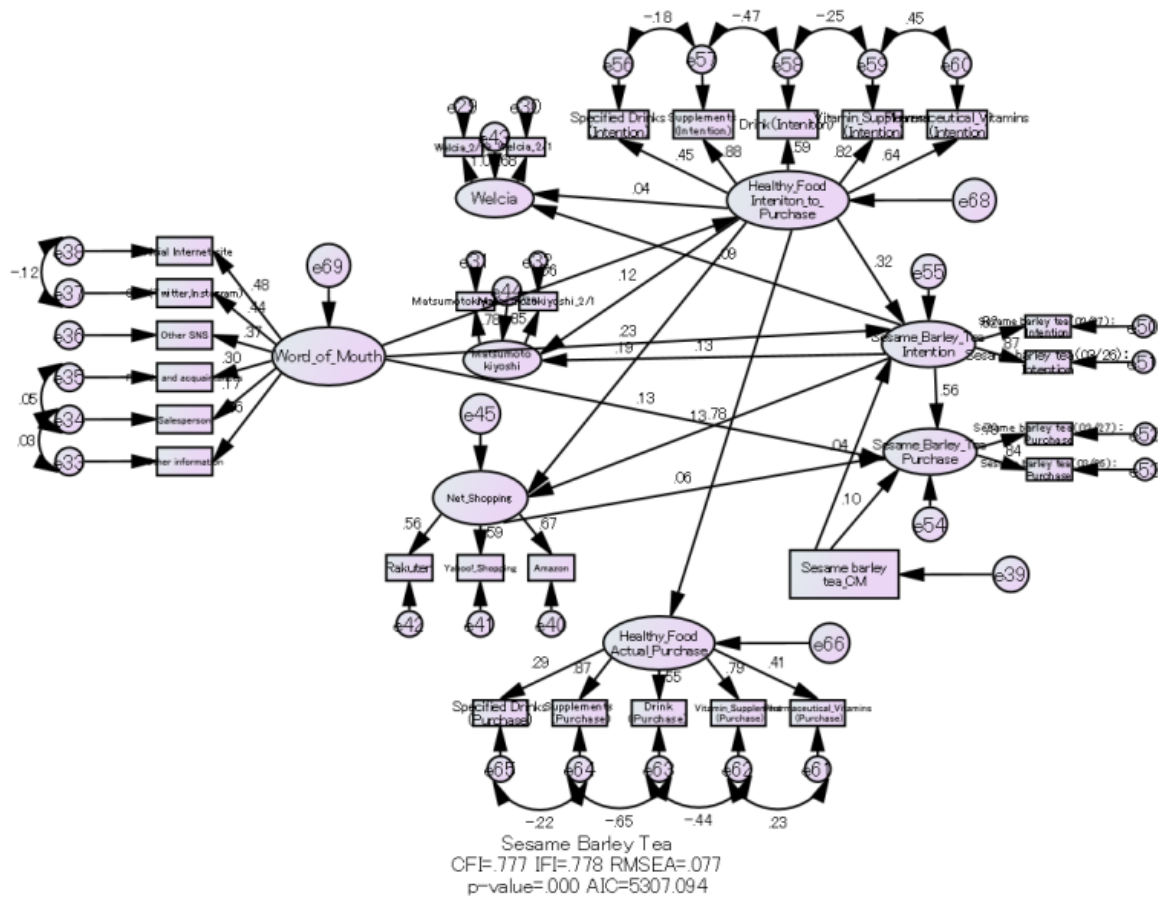


Fig. 7 Research Model: Sesame Barley Tea

TABLE V
 HEAT MAPS: THE NUMBER OF THOSE WATCHING THE FOLLOWING SPONSORED TV PROGRAMS

Healthya green tea							Dear Natura							Sesame Barley Tea							
Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	
12AM			1		2		12AM		3	1		1		12AM	1		3		1	1	1
1AM	1	1		1	1		1AM	2		3	2	3	5	1	5AM					1	
6AM		1	3	3	4	2	6AM		1		1			6AM					1	1	
7AM	2	1	6	1	2	2	7AM		1				1	7AM			1	2			
8AM		3	2	3	2	2	8AM	2	1					8AM	1		1				
9AM	1	1	4	1	1	1	9AM		2	1	1	2		9AM		2	3	4			
10AM							10AM	2	1	1	1			10AM			3				1
11AM							11AM		1	2		1	1	11AM	1		1	2	1	1	
12PM		2	3	2	1	1	12PM	1	4	1	2	1		12PM	1		1			1	3
1PM		2	1		2	1	1PM	1		1	1			1PM		3					2
2PM		1		1	2	1	2PM	1	2	1	2	4		2PM		1		1			
3PM			3		3	3	3PM	2		2	2	1	2	3PM			1	1			1
4PM		2				2	4PM	2		2	2	2	2	5PM	4		1				
5PM		1	1	1	3	1	5PM	1	1	5	2	1	2	6PM			1	1	1	1	1
6PM		1					6PM	1		2	2	3		7PM	1		1				1
7PM			1		1		7PM	1						8PM	2			1			
8PM		1	3		1		8PM		1		1	2		9PM	2	3	1	1		1	2
9PM		1	1		3		9PM	1	1		1	1	1	10PM	2		1			2	
10PM			2		1		10PM			2				11PM			1			2	5
11PM			1				11PM	2	1	1											

B. Hypotheses

Based on the research model, the authors had formed the

following hypotheses:

H1 There is a significant, positive relationship between

- H1 advertisement on SNS and actual purchase of blood pressure supplements
- H2 There is a significant, positive relationship between TV commercials and actual purchase of blood pressure supplements
- H3 There is a significant, positive relationship between point of purchase displays and actual purchase of blood pressure supplements

- H4 There is a significant, positive relationship between advertisement on SNS and intention to purchase
- H5 There is a significant, positive relationship between TV commercials and intention to purchase
- H6 There is a significant, positive relationship between point of purchase displays and intention to purchase
- H7 There is a significant, positive relationship between consumers' intention to purchase and actual purchase

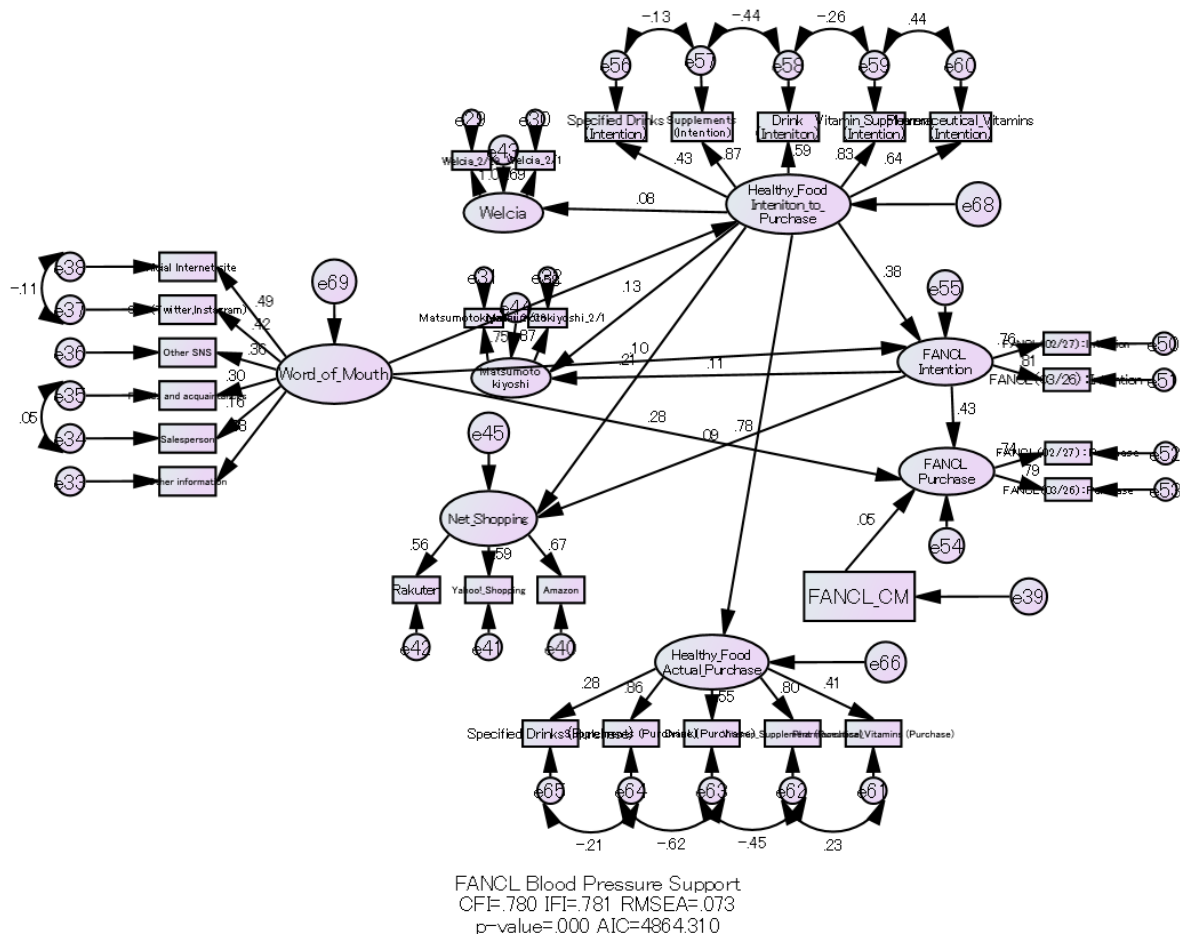


Fig. 8 Research Model: FANCL Blood Pressure Support

IV. RESULTS

Path analysis using structural equation modeling (SEM) was employed to estimate the structural relationships of blood pressure supplements, different kind of marketing activities and consumer behavior.

A. Dear Natura Sardine Peptide

- There was a strong relationship between the intention to purchase the Dear Natura Sardine Peptide and the number of actual purchases.
- There was a strong positive relationship between vitamin & supplement purchase intentions and the Dear Natura Sardine Peptide purchase intentions.
- The number of actual purchases of the Dear Natura Sardine Peptide and CM of Dear Natura's main product have positive, but there was almost no relationship.

- There was a weak positive relationship between word-of-mouth and reputation and willingness to purchase Dear Natura Sardine Peptide (see Fig. 6).

B. Sesame Barley Tea

- Purchase intention of Sesame barley tea and number of actual purchases has positive and strong relationship.
- Intention to purchase vitamins & supplements and those of Sesame barley tea has a positive and significant relationship.
- From the CM viewing, a weak but positive and significant relationship was found in the number of purchases of Sesame barley tea.
- There was a positive and significant relationship between word of mouth, reputation and number of actual purchases, and the intentions to purchase of Sesame barley tea.

- There are weak positive relationships seen between word of mouth, reputation, online shopping, vitamin & supplement purchase intention and Sesame barley tea purchase intention respectively (see Fig. 7).

C. FANCL Blood Pressure Support

- There was a strong positive relationship between purchase intention of FANCL Blood Pressure Support and number of actual purchases.
- There was a positive relationship between the intention to purchase vitamins and supplements and the intention to purchase FANCL blood pressure support.
- Between word-of-mouth/reputation and FANCL blood pressure support purchase intention, a positive and significant relationship (10% significant) was found.
- There is a positive, significant but weak relationship between FANCL CM and the number of actual purchases (see Fig. 8).

D. The Power of Healthy Chlorogenic Acid

- There was a strong positive relationship between the intention to purchase Healthy Chlorogenic Acid and the number of actual purchases.
- There is a weak but positive and significant relationship between the intention to purchase vitamins and supplements and the intention to purchase Healthy Chlorogenic Acid.
- There was no positive but significant relationship between word-of-mouth/reputation and intention to purchase Healthy Chlorogenic Acid.
- There were a negative and weak relationship between Healthy Green Tea CM and Healthy Chlorogenic Acid purchase intention and actual purchases.

Positive but weak and a significant relationship was found between intent to purchase Healthy Green Tea and Healthy Chlorogenic Acid (see Fig. 9).

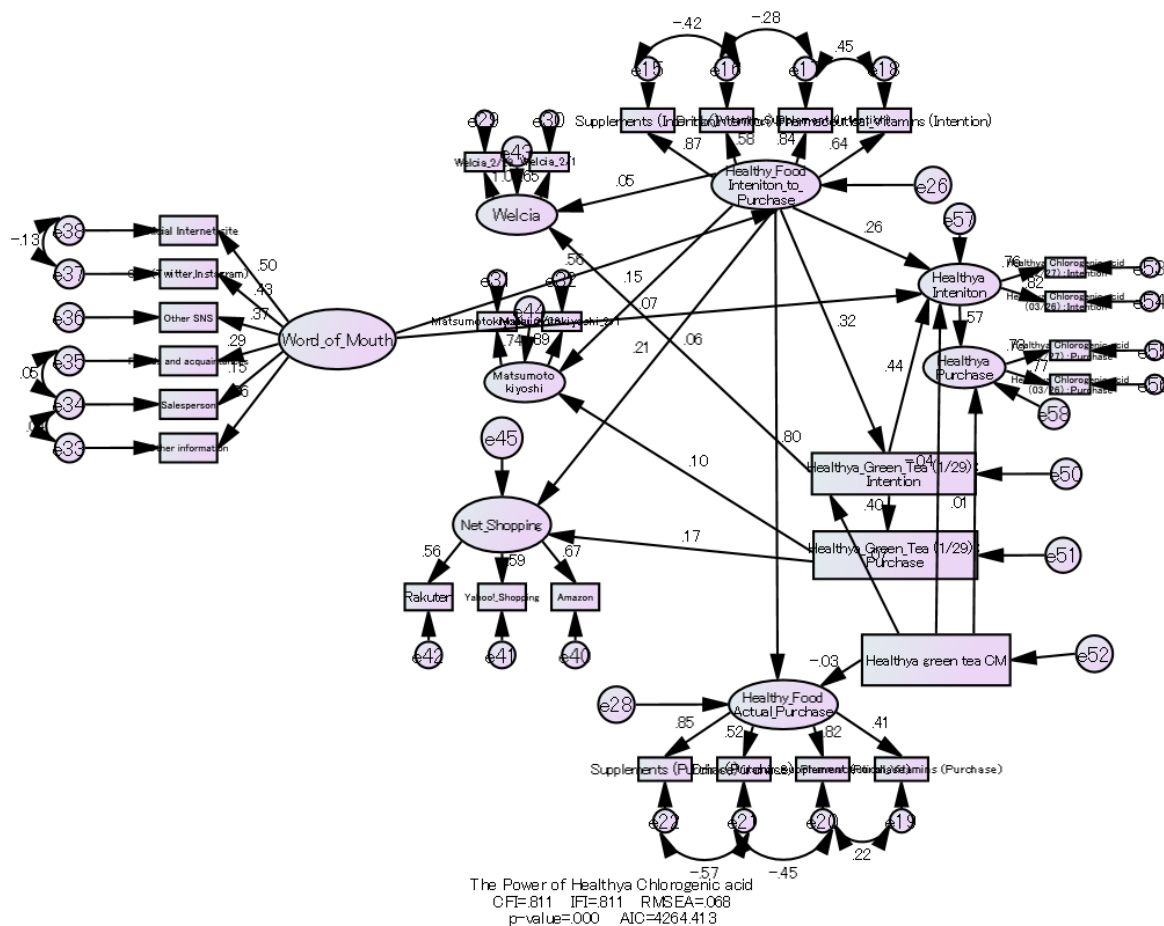


Fig. 9 Research Model: The Power of Healthy Chlorogenic acid

As a whole, there is a positive, strong and significant (1%) relationship between the purchase intention and the number of actual purchases for every product.

As for FANCL, Sesame barley tea, and Dear Natura Sardine Peptide, there are positive and significant weak relationships

between TV commercials, purchase intentions, and number of purchases, respectively. Those of Healthya are negative and not significant.

Word-of-Mouth of FANCL, Sesame barley tea, and Dear Natura Sardine Peptide are weak but positive and significant.

TABLE VI
THE PATH COEFFICIENTS OF RESEARCH MODEL

Dear Natura Sardine Peptide			Standardized	Estimate	P
Healthy Food Intention to Purchase	<---	Word of Mouth	0.563		0.037
Dear Natura Intention	<---	Healthy Food Intention to Purchase	0.391		***
Net Shopping	<---	Healthy Food Intention to Purchase	0.253		***
Dear Natura Intention	<---	Word of Mouth	0.192		0.057
Healthy Food Actual Purchase	<---	Healthy Food Intention to Purchase	0.807		***
Dear Natura Purchase	<---	Dear Natura Intention	0.551		***
Dear Natura Purchase	<---	Net Shopping	0.143		***
Healthy Food Actual Purchase	<---	Dear Natura CM	-0.03		0.042
Dear Natura Purchase	<---	Dear Natura CM	0.052		0.018
Welcia	<---	Healthy Food Intention to Purchase	0.079		***
Matsumoto kiyoshi	<---	Healthy Food Intention to Purchase	0.17		***
Sesame Barley Tea			Standardized	Estimate	P
Healthy Food Intention to Purchase	<---	Word of Mouth	0.563		0.021
Sesame Barley Tea Intention	<---	Healthy Food Intention to Purchase	0.316		***
Sesame Barley Tea Intention	<---	Word of Mouth	0.227		0.033
Sesame Barley Tea Intention	<---	Sesame Barley TeaCM	0.036		0.08
Net Shopping	<---	Healthy Food Intention to Purchase	0.189		***
Net Shopping	<---	Sesame Barley Tea Intention	0.134		***
Sesame Barley Tea Purchase	<---	Sesame Barley Tea Intention	0.558		***
Sesame Barley Tea Purchase	<---	Sesame Barley Tea 茶 CM	0.1		***
Welcia	<---	Healthy Food Intention to Purchase	0.041		0.092
Matsumoto kiyoshi	<---	Healthy Food Intention to Purchase	0.117		***
Healthy Food Actual Purchase	<---	Healthy Food Intention to Purchase	0.777		***
Sesame Barley Tea Purchase	<---	Word of Mouth	0.133		0.041
Sesame Barley Tea Purchase	<---	Net Shopping	0.06		0.021
Welcia	<---	Sesame Barley Tea Intention	0.087		***
Matsumoto kiyoshi	<---	Sesame Barley Tea Intention	0.126		***
FANCLE			Standardized	Estimate	P
Healthy Food Intention to Purchase	<---	Word of Mouth	0.583		0.004
FANCL Intention	<---	Healthy Food Intention to Purchase	0.382		***
FANCL Intention	<---	Word of Mouth	0.095		0.088
FANCL Purchase	<---	FANCL Intention	0.427		***
FANCL Purchase	<---	FANCL CM	0.047		0.031
Welcia	<---	Healthy Food Intention to Purchase	0.08		***
Matsumoto kiyoshi	<---	Healthy Food Intention to Purchase	0.128		***
Net Shopping	<---	Healthy Food Intention to Purchase	0.213		***
Healthy Food Actual Purchase	<---	Healthy Food Intention to Purchase	0.785		***
FANCL Purchase	<---	Word of Mouth	0.278		0.006
Net Shopping	<---	FANCL Intention	0.093		0.005
Matsumoto kiyoshi	<---	FANCL Intention	0.106		***

V. CONCLUSION

There was a positive and significant relationship between the purchase intention of each product and the number of purchases. In addition, there was a positive and significant relationship between the intention to purchase vitamins and supplements and the intention to purchase each product, although there were some differences. Since more than 40% of people intend to purchase vitamins and supplements, the issue is how to connect them to their own blood pressure products.

As for the relationship with TV commercials, only Sesame Barley Tea currently has TV commercials mainly for blood pressure products, so only a weak relationship was seen. Correlation analysis showed that "hypertension" was weak positive and significant with the purchase intention/frequency of purchase of Sesame Barley Tea and FANCL blood pressure

support and the purchase intention of Hesia Chlorogenic Acid. In other words, some brands did not take advantage of the mass coverage of TV commercials yet. In addition, no spill-over effect was observed from the main products of the same brand (for example, Healthy Green Tea).

Since the TV commercial for FANCL blood pressure support started on November 1, 2020, its effects on purchase intention or actual purchases will see later on. It is clear that their target consumer group is over 40s. Each company sells unique products, and more efficient and effective marketing strategies are needed to gain consumer recognition and purchase increase.

ACKNOWLEDGMENT

The author appreciates Nomura Research Institute Ltd for providing a valuable single source data.

REFERENCES

- [1] Dietary Supplement Health and Education Act of 1994, Public Law 103-417, 103RD CONGRESS, National Institutes of Health, Office of Dietary (Online). Available: Supplements https://ods.od.nih.gov/About/DSHEA_Wording.aspx (accessed March 14, 2021).
- [2] U.S. Food & Drug Administration, "Questions and Answers on Dietary Supplements," (Online). Available: <https://www.fda.gov/food/information-consumers-using-dietary-supplements/questions-and-answers-dietary-supplements> (accessed February 1, 2021).
- [3] Food Labelling Division, Consumer Affairs Agency, "The system of "Foods with Function Claims" has been launched!" (Online). Available: https://www.caa.go.jp/policies/policy/food_labeling/information/pamphlets/pdf/151224_2.pdf, (accessed February 2, 2021).
- [4] Ministry of Health, Labor and Welfare, "Food with Health Claims, Food for Special Dietary Uses, and Nutrition Labeling," (Online). Available: <https://www.mhlw.go.jp/english/topics/foodsafety/fhc/index.html> (accessed March 10, 2021).
- [5] Consumer Affairs Agency, "Outline of Food Labelling Systems for Health and Nutrition," (Online). Available: https://www.caa.go.jp/en/policy/food_labeling/pdf/food_labeling_191001_0001.pdf (accessed February 2, 2021).
- [6] Yano Research Institute Ltd., "Survey on the Health Food Market (2020)," (Online). Available: https://www.yano.co.jp/press-release/show/press_id/2365 (accessed February 2, 2021). (Original in Japanese).
- [7] S. Yoshikawa, S. Nishimaru, T. Tashiro, M. Yoshida, "Collection and Classification of Words for Description of Food Texture," *Journal of Texture Studies*, Nov;1(4), 1970, pp. 437-442.
- [8] M. Hilliam, "Functional Foods: the Western consumer viewpoint," *Nutrition Reviews* 54, 1996, S189-S194.
- [9] S.F.L. Kirk, J.E. Cade, J.H. Barrett and M. Conner, "Diet and Lifestyle Characteristics Associated with Dietary Supplement Use in Women," *Public Health Nutrition* 2, 1999, pp. 69-73.
- [10] K.L. Radimer, A.F. Subar and F.E. Thompson, "Non vitamin, Non Mineral Dietary Supplements: Issues and Findings from NHANES III," *Journal of the American Dietetic Association* 100, 2000, pp. 447-454. Sparling MC & A.
- [11] N. de Jong, M.C. Ocké, H.A.C. Branderhorst, R. Friele, Demographic and lifestyle characteristics of functional food consumers and dietary supplement users. *British Journal of Nutrition*: 89(2), 2003, pp. 273-281.
- [12] G. Nocella and O. Kennedy, "Food health claims – What consumers understand", *Food policy*, 37: 2012, pp. 571-580.
- [13] J.E. Calfee and J.K. Pappalardo, "Public Policy Issues in Health Claims for Foods," *Journal of Public Policy & Marketing*, 10 (Spring), 1991, pp. 33-53.
- [14] P.M. Ippolito, M. Pauline and A.D. Mathios, "Health Claims in Food Marketing: Evidence on Knowledge and Behavior in the Cereal Market," *Journal of Public Policy & Marketing*, 10, (Spring 1991), pp. 15-32.
- [15] C.E. Hodgkins, B. Egan, M. Peacock, et al., "Understanding How Consumers Categories Health Related Claims on Foods: A Consumer-Derived Typology of Health-Related Claims," *Nutrients* 11(3), 2019, 539.
- [16] M. Wilson, "Structuring qualitative data: Multidimensional Scalogram Analysis". In *Research methods in psychology*, Edited by: G. Breakwell, S. Hammond, and C. Fife-Schaw, 2000, pp. 281-293. London: Sage.
- [17] D. Canter, J. Brown, and L. Groat, "A Multiple Sorting Procedure for studying conceptual systems". In *The Research Interview: Uses and Approaches*, Edited by: M. Brenner, J. Brown and D. Canter, 1985, pp. 79-144. London: Academic Press.
- [18] E. Zvulun, "Multidimensional scalogram analysis: the method and its application". In *Theory construction and data analysis in the behavioral sciences*, Edited by: Shye, S. 1978. pp. 237-264. San Francisco: Jossey-Bass.
- [19] N. Urala and L. Lähteenmäki "Consumers' changing attitudes towards functional foods," *Food Quality and Preference*, 18(1), January 2007, pp. 1-12.
- [20] M. Saher, A. Arvola, M. Lindeman, L. Lähteenmäki, "Impressions of functional food consumers," *Appetite*, 42(1), February 2004, pp. 79-89.
- [21] S. Bhaskaran, S. and F. Hardley, "Buyers beliefs, attitudes and behaviour: foods with therapeutic claims," *Journal of Consumer Marketing*, 19, 2002, pp. 591-606.
- [22] J. A. Bower, M. A. Saadat, and C. Whitten, "Effect of liking, information and consumer characteristics on purchase intention and willingness to pay more for a fat spread with a proven health benefit," *Food Quality and Preference*, 14, 2003, pp. 65-74.
- [23] D. N. Cox, A. Koster and C. G. Russell, "Predicting intentions to consume functional foods and supplements to offset memory loss using an adaptation of protection motivation theory," *Appetite*, 43, 2004, pp. 55-64.
- [24] N. de Jong, M. C. Ocké, H. A. C. Branderhorst, and R. Friele, "Demographic and lifestyle characteristics of functional food consumers and dietary supplement users," *British Journal of Nutrition*, 89, 2003, pp. 273-281.
- [25] N. Urala, and L. Lähteenmäki, "Attitudes behind consumers' willingness to use functional foods," *Food Quality and Preference*, 15, 2004, pp. 793-803.
- [26] W. Verbeke, "Consumer acceptance of functional foods: socio-demographic, cognitive and attitudinal determinants," *Food Quality and Preference*, 16, 2005, pp. 45-57.
- [27] G. Nocella and O. Kennedy, "Food health claims – What consumers understand," *Food policy*, 37, 2012, pp. 571-580.
- [28] J. Haase and K.-P. Wiedmann, "The sensory perception item set (SPI): An exploratory effort to develop a holistic scale for sensory marketing," *Psychology & Marketing*, 35(10), 2018, pp. 727-739.
- [29] A. Krishna, *Sensory Marketing. Research on the Sensuality of Products*, 2010, Routledge, New York.
- [30] A. Krishna, "An integrative review of sensory marketing: Engaging the senses to affect perception, judgment and behavior," *Journal of Consumer Psychology*, 22(3), 2012, pp. 332-351.
- [31] H. Krishna, M. Alizadeh, D. Singh, U. Singh, N. Chauhan, M. Eftekhari, R. K. Sadh, "Somaclonal variations and their applications in horticultural crops improvement," *Biotech* 6, 2016, 54.
- [32] B. Hultén, N. Broweus, and M. van Dijk, *Sensory Marketing*, Basingstoke, 2009, Palgrave Macmillan.
- [33] R. S. Elder and A. Krishna, "The Effects of Advertising Copy on Sensory Thoughts and Perceived Taste," *Journal of Consumer Research*, Oxford University Press, 36(5), February 2010, pp.748-756.
- [34] L. Adams and M. Geuens, "Healthy or unhealthy slogans: that's the question," *Journal of Health Communication*, 2007, 12, pp. 173-185.
- [35] G. Roose and L. Mulier, "Healthy Advertising Coming to Its Senses: The Effectiveness of Sensory Appeals in Healthy Food Advertising," *Foods* 2020, 9(1), 51.
- [36] G. Roose, M. Geuens, I. Vermeir, "From informational towards transformational advertising strategies? A content analysis of Belgian food magazine advertisements," *British Food Journal*, 120(6), 2018, pp. 1170-1182.
- [37] K. J. Preacher and A. F. Hayes, SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments & Computers*, 36(4), 2004, pp. 717-731.
- [38] K. Rao, M. Sneathen, N. Bradbury and M. Nazzaro, "Using Single-Source Data to Drive Precise, Profitable Marketing,"

Michiko Miyamoto studied at the State University of New York College at Buffalo, where she received her Bachelor of Science degree (*magna cum laude*). She received her MBA from the University of California at Los Angeles. After a 7-year career with Goldman Sachs and Company, obtained her PhD further to a thesis about Econometrical Approaches to Economic and Strategic Management Studies at the University of Tsukuba, Graduate School of Systems Management. In 2008, she joined the Department of Management Science and Engineering at the Akita Prefectural University.