

Perspective on functional food commercialization in Thailand

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Abstract

Recent, launching a new product that claims to be “functional food” or “food that is good for health” is introduced into the market a lot, but there are just some products only to be successful. Therefore, the objective of this article attempt to explain and analyze what is perspective of the commercialization of functional foods and regulations governing the labelling of functional food products by qualitative and quantitative research. Result found that Thailand’s functional foods market volume in 2014 was approximately 96,000 million Baht or 2.72 billion U.S. dollars and growing at 6.0 percent per year until 2016. Number of functional food entrepreneur including manufactures and distributes availability at market are 29 companies. Marketing mix factors are used to finding the influencing the decisions to buy and consume functional foods. Satisfy the consumer’s needs and product quality influence the decisions at the very high level and the consumers tend to choose the products from their benefits and qualities. Prices influence the consumer’s decision would like a product that’s worth the price to be paid. Meanwhile place affects the buying decision at the average level. Products can be found in general convenient stores, easy to buy such as convenient location, internet were very affecting the decision on purchasing of functional foods. Regarding promotion, promotions through various types of media explaining product benefits and qualities and product testing influence on the decisions at the very high level. The success factors are consumer characteristics product characteristics and lifestyle fit and failure factors are market timing and sharing and regulation. Thailand do not have rule and regulation for functional but Thailand’s Food and Drug Administration under the Ministry of Public Health is applied the laws and regulations that are similar to this area as Act, Food Act B.E. 2522 (A.D. 1979) and notifications of Ministry of Public Health / Notifications and orders of Food and Drug Administration regarding food and beverage, and food supplement.

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Introduction

During the last decades, consumer demands and increasing public interest in possible health benefits in the field of food production have changed considerably (Mollet and Rowland, 2002; de Boer and Bast, 2015). This recent foods are not intended to only satisfy hunger and to provide necessary nutrients for humans but it is greatly motivated by demographic changes, specifically the aging of the population in most developed countries, the higher life expectancy and the desire for an improved quality of life. Moreover, an increase in life-style related diseases, combined with constantly rising health care costs, have stimulated research to identify or produce food with functions that can improve health and well-being, and reduce the risk or delay the onset of major diseases (Arai, 2002). It is in this context that the concept of functional food has emerged.

The term of functional food (in English) first

appeared in the Nature news magazine under the heading Japan explores the boundary between food and medicine (Swinbanks and O’Brien, 1993). At present, there is no universally accepted definition of functional foods. But, according to Foods for Specified Health Use (FOSHU), the definition of functional food is food from which a harmful ingredient has been removed or to which an effective ingredient has been added to create a food that provides nutrition, taste, and maintenance of healthy condition (Pothisiri and Kongchuntuk, 1996). The Food and Nutrition Board (FNB) of the food and nutrition board, Institute of Medicine, national academy of sciences in the United States defines a functional food as one that encompasses potentially healthful products including “any modified food or food ingredient that may provide a health benefit beyond that of the traditional nutrients it contains” (Milner, 2000). National food authority of Australia defines a functional food as foods similar in appearance to conventional food and

intended to be consumed as part of a normal diet but have been modified to sub serve physiological roles beyond the provision of simple nutrient requirements (Siro *et al.*, 2008).

In the market place, the development of functional foods appears to be a long-term trend with important market potential. The global market of functional food was worth an estimated USD 43.27 billion U.S. dollars in 2013 and expected to reach a value of at least 190 billion U.S. dollars by 2015 (Basu *et al.*, 2007; Doyon and Labrecque, 2008; Kaur and Das, 2011; Euromonitor International, 2015b; Euromonitor International, 2015c). The important markets of functional food are Japan followed by the United States and Europe that together has contributed over 90% of the total sales. The growth of the market have a bright future according to its compound annual growth rate of 7-10 percent per year between the period 2007-2014 and continues to demonstrate annual growth in excess of the world food industry as a whole (Kaur and Das, 2011; Euromonitor International, 2015b).

The growth of the market is higher in countries: the United States of America (USA) reported a market growth of functional foods of 0.9% over the years 2008–2013. Functional beverages mainly gained attention by health-conscious consumers, driving sales to an estimated 18.6 billion U.S. dollars by 2015. Probiotics have been sold on the market since the very start of the functional foods age. Key players in this probiotic segment include, among others, General Mills and the Danone Company, marketing their foods with health-promoting and wellness-maintaining attributes (de Boer and Bast, 2015). In Europe, functional food sales have increased significantly; Germany, France, United Kingdom and the Netherlands represent the most important countries within the functional food market (Annunziata and Vecchio, 2011). The EU functional food market has the largest grows in last few years. The European Functional Food market has a market volume of 6-8 billion U.S. dollars which about the current market share of functional food is below 1% of the total food and drinks market (Menrad, 2003).

Moreover in case of Asia, Japan is a biggest functional food market. The Japanese government has been active in promoting the role of food in maintaining good health and in disease prevention. The government has created a special regulatory category for functional food and has established the Food for Special Health Use (FOSHU) approval system. FOSHU foods are foods with specific effects contributing to the maintenance of health. Arai (2002) and Kaur and Das (2011) reviewed that more than

1,700 functional food products have been launched in Japan between 1988 and 2005 and total number of approvals under the FOSHU label reached 500 with an estimated market value of around 17 billion U.S. dollars.

In Thailand, Food innovation has the potential to grow the Thai food industry. As the consumer becomes more interested in health, there is increasing interest in the functional food. Recent, launching a new product that claims to be functional food or food that is good for health is introduced into the market a lot, but there are just some products only to be successful. As results, it is important to overview the perspective on the commercialization of functional foods in Thailand and to identify what factors influencing the decisions to buy and consume functional foods of customers and the turning points from failure to successful entrepreneurship of these ventures in Thailand. Moreover rules and regulations governing the labelling of functional food products is an important to commercialization of functional foods in Thailand too.

Therefore, the objective of this article attempt to explain and analyze what is perspective of the commercialization of functional foods and rules and regulations governing the labelling of functional food products in Thailand.

Methodology

The purposes of this study are explain and analyze the regulating Strategy of functional food in Thailand. Sequentially, we used two stages to research.

First, the perspective of the commercialization of functional foods in Thailand, qualitative and quantitative research was used to collecting and analyzing data. For qualitative research that observation technique, literature and document from various sources was used to identify market volume and market share of Thailand's functional food. Factors influencing the decisions to buy and consume functional foods of customers was used quantitative research by questionnaire to 450 samples in Bangkok.

Second, the success and failure factors of commercialization of functional foods and regulations governing the labelling of functional food products in Thailand, qualitative research was used to collecting and analyzing data. We used market observation techniques and explored financial statement report which reported at department of business development, ministry of commerce of identified available functional food products at local retail market, hypermarket and multi-level market. The successful Thai function food entrepreneurs were

Table 1. Functional food available at local retail market, hypermarket and multi-level market in Thailand.

Category	Benefit	Brand/Company
functional food for brain	Omega 3, Docosahexaenoic acid (DHA), Soy Peptide, gamma-aminobutyric acid (GABA), Magnesium, Vitamin B12	Peptein/ Osotspa Brane Fit/Ajinomoto B-ing/Boonrod Omega-plus egg/CP Omega-3 egg/Dr.Hen Omega juice/Malee Brand's/Cereboss Scotch/S & Sons DNA_GABA/ Dutch Mill
		ProSlim/Nescafe
functional food for weight management	Conjugated linoleic acids (CLA), Antioxidant, L-carnitine, Fiber	L-Carnitine apple plus/Verena SP-fiber/Verena B-ing/Boonrod Nature Gift Coffee/ NatureGift
		Dakara/Tipco Skinn Fit/Ajinomoto Puriku/T.C. Pharmaceutical Brand's/Veta/Cereboss Scotch Puree/S & Sons Abalone Collagen/ Giffarine Blink Prune/T.C National Brand Innershine/Cereboss Collagen C2000/Wuttisak Acerola Q10/Wuttisak Gluta-C/Wuttisak L- Gluta Berry Plus/Verena Blink CQ/Blink C-Vitt/ Osotspa B-ing/Boonrod NutriMix/Unif Extra Coffee Q10 Plus/ NatureGift Pink/ Blink St. ANNA/SAPPE Vistra Gluta complex800/ Nutrina interfood
functional food for beauty & anti-aging	Collagen, Antioxidant Q10, L-glutathione, VitaminB2 (Riboflavin), Vitamin C (Ascorbic Acid) Ceremide	Yogurt Yakult /Yakult Yogurt Dutch Mill/Dutch Mill Yogurt Betagen /Betagen Yogurt Activia /Activia Yogurt Bulgaria /CP Meiji Hearti Plant Stanol/ Benecol Brand's/Veta berry/Cereboss B-ing/Boonrod M-150/Osotspa Ranger/ThaiBev visionLutein/LuteinBev i health gaci/Osotspa MANSOME/ T.C. Pharmaceutical Vitamax/ Dr.Tobi Som In Sum/ Osotspa Hang for play/ Osotspa GSD Gingseng drink/C.S.B. Drug Factory
functional food for well-being	Gut health –Probiotic (bifidobacteria, Lactobacillus acidophilus), Omega 3, Vitamin(A,C,D), Mineral, Bone health (calcium), Iron, Lutein, Zinc, Plant Stanol	

selected by sales criteria more than 10 million Baht per month, net profit and financial ratio in term of Profitability Ratios. Furthermore Thai Food and Drug Administration and member of dietary supplement industry club, The Federation of Thai Industries were interviewed. Face-to-face and group interviews with an initial semi-structured approach using open-ended questions which identify criteria for analyzing the success and failure factor of commercialization of functional foods and rules and regulations governing the labelling of functional food products in Thailand.

Results and Discussion

The commercialization of functional foods in Thailand

In Thailand, Food innovation has the potential to grow the Thai food industry. As increase in the population of elderly people and lifestyle-related diseases eventually caused the necessity for positioning the foods not only for function as nutrition, but also for sensory/satisfaction and health, there was increasing interested in the functional food. From literatures and documents found that Thai functional foods are categorized as group of

foods for special dietary uses and fortified food with health claims. Thailand's health food market in 2014 is 160,000 million Baht or 4.58 billion U.S. dollars. The market growth are about 6.1 percent per year and is growing at 6.0 percent per year until 2016. Functional food holds the top place at Thailand's health food market that approximately 60 percent of this market (96,000 million Baht or 2.72 billion U.S. dollars), a natural product and specific food is lower than the 30 percent and 8, respectively (Kasikorn Research Center, 2014). Database of entrepreneurs in food, health products and functional food were compiled and collected by Food intelligence center Thailand. The number of households on health products and functional food that has been collected from a total of 239. However, when analyzing the details of the database, but the company appears on such database found that functional food companies were 6 companies accounted for 3 percent from these database which were 123 companies in dietary supplement (51%), 82 companies in herbal products (34%) and 28 companies in others products (12%).

According to observation market survey at local retail market, hypermarket and multi-level market in Thailand showed in TABLE 1. The results found

Table 2. Mean and standard deviation of the attitude towards the marketing mix factors that influence consumer decision on the purchase of functional food.

Marketing Mix Factors	Mean	Standard Deviation	Interpretation
Products			
Products from nature	4.62	0.609	Extremely high
Brands' reputation	4.61	0.498	Extremely high
Ingredients that meet the needs	4.05	0.290	Very high
Product quality	4.04	0.268	Very high
Good taste	4.03	0.248	Very high
Reliable packaging	4.02	0.194	Very high
High production technology	4.02	0.414	Very high
Certification from trustworthy institutes	3.97	0.322	Very high
Credibility of manufacturers	3.95	0.291	Very high
Essential nutrients in adequate quantities	3.44	0.564	Very high
Total - Product	4.02	0.132	High
Price			
Price is worth the amount received	4.18	0.394	Very high
Price is worth the quality received	4.02	0.124	Very high
Cheaper price compared to the same products of other brands	3.91	0.376	Very high
Total - Price	4.04	0.196	Very high
Place			
Products can be found in general convenient stores	4.08	0.303	Very high
Products are easy to buy	4.07	0.287	Very high
Products are placed in a convenient location	4.00	0.195	Very high
Products are sold in a reliable place	3.99	0.231	Very high
Products sold on the internet	3.94	0.285	Very high
Selling location is decorated with product description explaining its quality	3.01	0.515	Average
Product can be found in a pharmacy, healthcare shop or clinics	1.84	1.101	Low
Total - Place	3.26	0.442	Average
Promotion			
Promotions through various types of media explaining product benefits and qualities			
Product testing	4.02	0.287	Very high
Recommendation from family or friends	3.99	0.226	Very high
Text ads	3.99	0.176	Very high
Marketing events / activities	3.97	0.239	Very high
Recommendation from salesman / product consultant	3.94	0.276	Very high
Price reduction	3.85	0.401	Very high
Celebrity branding	3.62	0.778	Very high
Giveaways / premiums	3.14	0.703	Average
Product reviews in the internet or social network	2.25	0.854	Average
Total - Promotion	3.26	0.442	Average

that the functional foods companies mostly attempt to add a benefit such as functional food for brain, functional food for beauty and anti-aging, functional food for well-being and functional food for weight management. They included fruits and vegetables, whole grains, fortified or enhanced foods and beverages. The number of functional companies including manufactures and distributes availability at these markets were 29 companies that compared with Food intelligence center Thailand database, found that 6 companies in database were in companies from observation market survey.

Factors influencing the decisions to buy and consume functional foods in Thailand

Marketing mix factors were used to finding the influencing the decisions to buy and consume functional foods in Thailand. The result of marketing mix factors influencing the purchase of functional foods surveyed from 450 persons was shown below.

Product

The survey shown that marketing mix factors

had influence on the purchase of functional food products with the mean score at 4.02. The extremely high influences were products from nature (at 4.62) and brand's reputation (at 4.61) respectively. The very high influences were the functional foods with ingredients that satisfy the respondent's needs (at 4.05), product quality (at 4.04), good taste (at 4.03), reliable packaging (at 4.02), high production technology (at 4.02), certification from trustworthy institutes (at 3.97), credibility of manufacturers (at 3.95), and essential nutrients in adequate quantities (at 3.44) respectively as shown in TABLE 2. Functional foods with ingredients that satisfy the consumer's needs and product quality influence the decisions at the very high level. This shown that the consumers tend to choose the products from their benefits and qualities.

Price

The respondents answered that prices had very high influence on their decision with the mean score at 4.04: price was worth the amount received (4.18), price was worth the quality received (4.02)

Table 3. The eighteen successful Thai function food entrepreneurs were selected.

companies	Authorized share capital (Baht)	Total Income (Baht)		Net profit (Baht)		profitability ratios	
		2556	2557	2556	2557	2556	2557
		1	1,830,000,000	2,283,774,904	1,837,526,172	26,463,614	39,180,834
2	796,362,800	25,359,957,738	28,144,175,160	4,093,460,261	3,531,435,971	16.14	13.51
3	500,000,000	2,454,735,531	2,265,346,607	-76,145,544	-133,012,722	-3.1	-5.87
4	400,000,000	9,827,362,279	9,570,995,624	437,026,059	297,607,716	4.45	3.11
5	304,620,000	2,327,219,842	2,702,629,821	168,105,218	364,164,460	7.22	13.47
6	250,000,000	20,385,526,967	23,254,731,656	4,413,979,056	5,837,380,357	21.65	25.1
7	231,000,000	28,103,336,904	8,989,429,053	771,301,401	292,500,983	2.74	3.25
8	150,000,000	5,387,107,761	4,941,950,016	325,344,347	378,976,481	6.04	7.67
9	100,000,000	12,752,001,345	11,962,889,389	3,010,392,039	3,138,720,667	23.61	26.24
10	50,000,000	122,553,688	n/a	-28,236,267	n/a	-23.04	n/a
11	50,000,000	79,010,109	57,188,366	-749,201	115,794	-0.95	0.2
12	20,000,000	87,952,427	99,156,495	-6,548,967	1,041,671	-7.45	1.05
13	20,000,000	3,775,858,677	3,596,185,196	541,201,606	443,027,265	14.33	12.32
14	5,000,000	325,160,476	274,885,179	15,384,128	13,816,839	4.73	5.03
15	3,000,000	2,130,616,030	2,076,333,817	9,432,228	38,123,405	0.44	1.84
16	1,000,000	327,299,483	282,542,447	6,498,941	3,960,297	1.99	1.4
17	1,000,000	n/a	196,961	n/a	-204,935	n/a	-104
18	400,000	942,601,223	891,789,681	44,457,927	52,832,525	4.72	5.92

and cheaper price compared to the same products of other brands (3.91) respectively as shown in TABLE 2. Prices influence the consumer's decision would like a product that's worth the price to be paid.

Place

Generally the respondents think that places had an average influence on their decisions with the mean score at 3.26. The factors affecting the decision at a very high level were: the products could be found in general convenient stores (4.08), products were easy to buy (4.07), products were placed in a convenient location (4.00), products were sold in a reliable place (3.99) and Products sold on the internet (3.94) respectively. Selling location is decorated with product description explaining its quality with the mean score at 3.01. Meanwhile product that could be found in a pharmacy, healthcare shop or clinics affect the decision at an average level with the mean score at 1.84 had no effect on the decision as shown in TABLE 2. The result shown that Products can be found in general convenient stores, easy to buy such as convenient location, internet were very affecting the decision on purchasing of functional foods in Thailand.

Promotion

The survey shown that the promotion of functional foods affected the decision of the respondents with the mean score at 3.26. Influential factors at a very high level were promotions through various types of media explaining product benefits and qualities (4.04), product testing (4.02), recommendation from family or friends (3.99), text ads (3.99), marketing events/activities (3.97), recommendation from salesman/product consultant (3.94), price reduction (3.85) and celebrity branding (3.62) respectively. Meanwhile giveaways/premiums and product

reviewed in the internet or social network influence on the respondents at an average level with the mean score at 3.14 and 2.25 as shown in TABLE 2.

The success and failure factor of commercialization of functional foods in Thailand

According to our face-to-face and group interviews, the eighteen successful Thai function food entrepreneurs were selected by total income, net profit and financial ratio in term of profitability ratios as shown in TABLE 3. Furthermore Thai Food and Drug Administration were interviewed. The result of the survey as follows;

Success factor (1) consumer characteristics

The study found that gender, age and education level of consumers were critical to the purchase decision, and recognition in the functional food products. Especially, gender and age contributed to the decision to buy a function food product. It was found that the decision to buy functional food are female than males in all age ranges because females have interest towards food and health care than males, thus deciding which foods to strengthen protection and reduce the risk of disease. In addition, age was also a factor in the purchase decision. Teen ages could choose function food that control appetite and weight control. While, adults decide bought functional food to brain health, regulate cholesterol and blood pressure.

Success factor (2) product characteristics

Characteristics of the products must have good quality and effectiveness of action by invoking the functions. This was the most important way to build trust and acceptance consumption of functional food. The study found that ability to address unmet need, beauty well-being and weight management were

introduced into the market very successful. They were a growth area that was not limited to those suffering and about supporting modern life-styles for better looks and youth.

Success factor (3) lifestyle fit

It was include a fairly broad group of characteristics including convenience, eating habits, purchasing patterns, pill consumption, preferred product forms, vegetarianism and sustainability. Moreover it was meaning to channel for the distribution of functional food that are important for the purchase decision. Drug store was an important channel in the purchase decision, as there is a health expert advice and knowledge in functional food. However No longer were customers willing to seek out products in out-of-the-way health food stores; they expect to purchase where they shop, including convenience stores and the Internet. For today's busy consumer, one-stop-shopping had become the norm.

Failure factor (1) market timing and sharing

The research found that market timing and sharing were minor of failure factors. They were the strategy of making buy or sell decisions of financial assets by attempting to predict future market price movements. However, recently functional food in Thailand is going to early maturing phase which a product has become distributed within a market to the fullest possible extent, leaving demand for the product at a minimum.

Failure factor (2) regulation

The interview found that the important failure factor of the functional food marketing was the Thai FDA regulation because it could not be falsely claims to treat and reduce the risk of disease on product's label and advertising. Thus it could not be shown about the benefits and value of the product directly. The claims for functional food must be based on fact without distortion and must have adequate scientific data to support for the claim. Moreover there are not any specific rules and regulations about commercial technology in functional foods. Currently Thailand's Food and Drug Administration (FDA) under the Ministry of Public Health is applying the laws and regulations that are similar to this area. The regulatory systems worldwide are charged with the responsibility of ensuring consumer health is protected and that they are not being misled and also with creating an environment for industry to grow and develop. The European system for this category of foods is still in its infancy (the Regulation was only published in 2006) whereas in Japan and the USA and health

claims have been regulated for almost 20 years. Within all three countries, the systems have both similarities and differences. The regulatory systems in the USA and Japan have accepted that there may be potential in permitting the use of claims where the supporting scientific evidence is not significant (Arai, 2002; Shimizu, 2003; de Boer and Bast, 2015)

Rules and regulations governing the labelling of functional food products in Thailand

From later section, regulation was failure factor to introduce new functional food into the market and crossing the chasm. Therefore according to rules and regulation were important to know and understanding. Based on academic papers, literatures, reports from both public and private sectors found that functional foods gain high popularity from consumers in working ages with middle to high income. However, many functional foods are not supported by neither references nor scientific evidences, for example, a manufacturer promotes a product with low fat and cholesterol saying that low cholesterol food is good despite there is no supportive evidence. Thus, many countries such as Japan, USA, European Union, China, and South Korea have established rules and regulations of functional food commercial technology for consumer's safety (Arai, 2002; Roberfroid, 2002; Jeong *et al.*, 2004; de Boer and Bast, 2015)

According to our face-to-face interviews with an initial semi-structured approach using open-ended questions which identify criteria for analyzing rules and regulations governing the labelling of functional food products. The previous eighteen successful Thai function food entrepreneurs and Thai Food and Drug Administration were interviewed. Result shown that In Thailand, the popularity in consuming functional foods tends to grow continuously. Nevertheless, at this moment there are not any specific rules and regulations about commercial technology in functional foods. Currently Thailand's Food and Drug Administration (TFDA) under the Ministry of Public Health is applying the laws and regulations that are similar to this area as Act, Food Act B.E. 2522 (A.D. 1979) and notifications of Ministry of Public Health / Notifications and orders of Food and Drug Administration regarding food and beverage, food supplement, royal jelly and royal jelly products. Notifications of Ministry of Public Health and/or Food and Drug Administration stated above will be applied to the functional food or food with added substances that have physical characteristics as mentioned in these notifications.

Example 1: Coffee with substance A will be within the scope of:

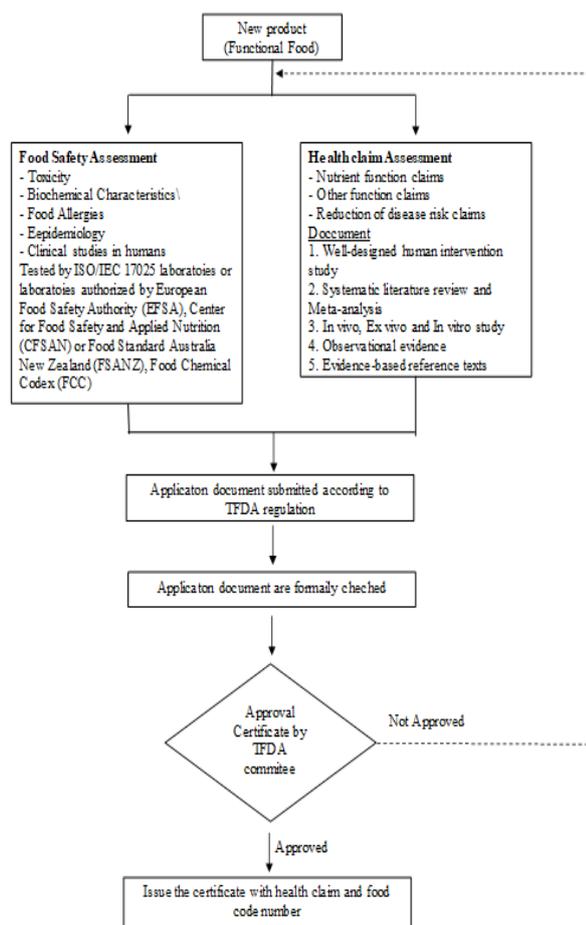


Figure 1. Approval flow chart for functional food in Thailand

- Notification of Ministry of Public Health (No. 197) B.E. 2543 (2000) Re: Coffee
- Notification of Ministry of Public Health (No. 276) B.E. 2546 (2003) Re: Coffee (No. 2)
- Notification of Ministry of Public Health (No. 330) B.E. 2554 (2011) Re: Coffee (No. 3)
- Notification of Ministry of Public Health (No. 356) B.E. 2556 (2013) Re: Beverages in Sealed Container

Example 2: Dairy product with Folic acid and DHA will be within the scope of:

- Notification of Ministry of Public Health (No. 352) B.E. 2556 (2013) Re: Other Milk Products.
- Notification of Ministry of Public Health (No. 356) B.E. 2556 (2013) Re: Beverages in Sealed Container

The claims for functional food must be based on fact without distortion and must had adequate scientific data to support for the claim. Therefore, the claims of functional food products must apply for the assessment of health claims to the TFDA first, and must comply with the rules and conditions of the request for evaluation of health claims.

Thailand's Food and Drug Administration has classified the labelling of functional food products

into two types, nutrient claim and health claim.

(1) Nutrition claims are divided into two categories:

(1.1) Nutrient content claim, a claim on a food product that directly or by implication characterizes the level of a nutrient in the food (e.g., "source of calcium", "high in fiber", or "low in fat"). However, it does not allow the claim "free" or "low" if that natural food is generally already exists without the use of a special production process. Because it makes the consumers misperception that food manufacturers will only have this feature.

(1.2) Nutrient comparative claim, a claim that compares the nutrient levels and/or energy value of two or more foods (e.g., "less than", "more than", "reduced", "light", "added", or "enriched"). The food that has been compared is called "reference food". Reference food must be the product is a manufacturer's own regular recipe, or the same product that available in country.

(2) Health claims mean any representation, including the thumbnail, design, symbol, trademark, or any message that states, suggests, or implies that a relationship exists between a food or a constituent of that food and health, Health claims include the following:

(2.1) Nutrient function claims is a nutrition claim that describes the physiological role of the nutrient in growth, development and normal functions of the body. Thailand's Food and Drug Administration authorize 29 nutrients in term of vitamin and mineral could be claim in nutrient function. For claim example, Nutrient A (naming a physiological role of nutrient A in the body in the maintenance of health and promotion of normal growth and development).

(2.2) Other function claims is a claim that concern specific beneficial effects of the consumption of foods or their constituents, in the context of the total diet on normal functions or biological activities of the body. Recent Foods with Probiotic Microorganisms just only one could be authorized in other function claims from Notification of the Ministry of Public Health (No. 334) B.E. 2554 (2011) Re: Use of Probiotic Microorganisms in Foods. For claim example, Substance A (naming the effect of substance A on improving or modifying a physiological function or biological activity associated with health).

(2.3) Reduction of disease risk claims is a claim relating the consumption of a food or food constituent, in the context of the total diet, to the reduced risk of developing a disease or health-related condition. Thailand's Food and Drug Administration wasn't authorize this claim.

If functional food manufacturers wish to claim

that food or its component has beneficial nutrition properties, they must file a request to the Food and Drug Administration for a health claim audit. They must follow the criteria and condition of health claim audit and advertisement consent regulations. The Approval system of the Thailand's Food and Drug Administration was very important is illustrated in Figure 1. As shown in Figure 1, new product of function food was food safety assessment and health claim assessment before submit application to Thailand's Food and Drug Administration. Since almost new product of function food having new ingredient, which classified in novel food. TFDA regulation notified that before novel food registration, it must was food safety assessment and health claim assessment.

Conclusion

Overview the perspective on the commercialization of functional foods in Thailand, functional food holds the top place at Thailand's health food marker. Market volume of functional foods in 2014 was approximately 96,000 million Baht or 2.72 billion U.S. dollars and growing at 6.0 percent per year until 2016 that approximately 60 percent of health food marker, a natural product and specific food is lower than the 30 percent and 8, respectively. Number of functional food entrepreneur including manufactures and distributes availability at these markets are 29 companies.

The marketing mix factors influencing the purchase of function foods are generally in the extremely high level with the mean score at 4.02. Products from nature and famous brands affect the consumers' decisions the most with the mean score at 4.62 and 4.61 respectively. Functional foods with ingredients that satisfy the consumer's needs and product quality influence the decisions at the very high level. This shows that the consumers tend to choose the products from their benefits and qualities. Prices influence the consumer's decision at a very high level with the mean score at 4.04. They care if price is worth the amount received (4.18), price is worth the quality received (4.02) and cheaper price compared to the same products of other brands (3.91). Meanwhile place affects the buying decision at the average level with the mean score at 3.26. The place like convenient stores influence on the consumers' decisions at the very high level. Regarding promotion, promotions through various types of media explaining product benefits and qualities and product testing influence on the decisions at the very high level.

There are numbers of positive and negative

factors that strongly impact on the rise or the fall of entrepreneurship. The success factors are consumer characteristics product characteristics and lifestyle fit and failure factors are market timing and sharing and regulation. The turning points of successful entrepreneurship technology ventures in case Thai functional food companies are technology, marketability and regulation.

Regulation is failure factor to introduce new functional food into the market and crossing the chasm. Therefore according to rules and regulation are must understanding. In Thailand, the popularity in consuming functional foods tends to grow continuously. Nevertheless, at this moment there are not any specific rules and regulations about commercial technology in functional foods. Currently Thailand's Food and Drug Administration (TFDA) under the Ministry of Public Health is applying the laws and regulations that are similar to this area as Act, Food Act B.E. 2522 (A.D. 1979) and notifications of Ministry of Public Health / Notifications and orders of Food and Drug Administration regarding food and beverage, food supplement, royal jelly and royal jelly products. The claims for functional food must be based on fact without distortion and must had adequate scientific data to support for the claim. Therefore, the claims of functional food products must apply for the assessment of health claims to the Thailand's Food and Drug Administration first, and must complied with the rules and conditions of the request for evaluation of health claims. Furthermore approval system for new product of functional food, food safety assessment and health claim assessment are first priority to achievement before submit application to Thailand's Food and Drug Administration.

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