J Ethn Foods 4 (2017) 126–131

Contents lists available at ScienceDirect

Journal of Ethnic Foods

journal homepage: http://journalofethnicfoods.net

Original article

The effects of ingredient branding in the food industry: case studies on successful ingredient-branded foods in Japan

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ARTICLE INFO

Article history:
Received 8 March 2017
Received in revised form
2 May 2017
Accepted 14 May 2017
Available online 23 May 2017

Keywords:
food industry
functionality
geographical indication
ingredient brand
packaging

ABSTRACT

Background: Much of the previous literature argues that innovation activities are not as active in the food industry as in other industries. In particular, scholars have noted that research and development intensity in the food manufacturing industry is lower than in other industries. However, recent years have witnessed the development of strategies in which new ingredients, technologies, and designs are used in branded end products.

Methods: Defining such products as ingredient-branded foods (IBFs), this study clarifies the processes and effects of ingredient branding strategies in the Japanese food industry. We classified the 105 IBFs cases into six product categories that included confection and dessert, drinks, seasonings, preservative foods, dairy products, and agriculture products. By organizing the key IB feature, we also classified them into four IB categories of health and functionality, manufacturing and processing, producer and geographical indication, and packaging. In addition, we extract various types of intellectual property related to ingredient-branded foods and analyze them.

Results: The manufacturing and processing category for IBFs has the most cases, at 40.5% of the total, while health and functionality is the second largest as 30.6%. However, each product category has its own distribution range. In the confection and dessert category, manufacturing and processing is the largest. The categories of seasonings and preservative foods also have many IB cases involved with manufacturing and processing. Products with strong health functionalities stand out in the recent drink market. A similar tendency has been witnessed in agriculture products.

Conclusion: From the analysis, we conclude that many IBFs have been already introduced to the market and they have diversified in different product categories. IBFs based on manufacturing technologies and healthcare have been popular approaches, but we also find IBFs with new packaging designs and geographical identification.

1. Introduction

The food industry is an old industry. Some companies, such as *sake* breweries and wineries, have been in business for 400 years. For example, the soy sauce maker, Kikkoman Corporation, Tokyo, Japan, opened its doors for business in 1630. Nonetheless, the food industry has witnessed very little innovation historically. Compared with other industries, history, tradition, and culture tend to have great value in the food industry, and these features of the food industry are also valuable insofar as branding current businesses is concerned. Therefore, the food industry has experienced fewer innovation activities historically. Much of the previous literature argues that innovation activities are not as active in the food manufacturing industry as in other industries [1]. In particular, scholars have noted that research and development (R&D) intensity in the food manufacturing industry is lower than in other industries [2]. However, the previous literature has posited that food manufacturing companies are likely to engage in small-scale changes, such as developing products that are similar to those of competitors (me-too-products) and expanding existing product lines [3].

Nonetheless, food companies have recently introduced products that have been branded by ingredient factors, such as new components, technologies, manufacturing processes, and designs. These factors only function as elements in the end products. Kotler

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http://dx.doi.org/10.1016/j.jef.2017.05.010

and Pfoertsch [4] (2010) characterized these new branding strategies as ingredient branding (IB). However, little comprehensive research regarding IB strategies has been conducted. In particular, IB strategies in the food industry are less well understood. In spite of this lack of attention, there are good reasons to pay attention to the IB strategies of the food industry.

This article focuses on IB strategies in the Japanese food industry and elucidates the entire picture of IB. It notes that IB has a close relationship with intellectual property concepts because IB is based on specific components, technologies, and designs. Then, this article extracts and analyzes the intellectual property elements related to ingredient-branded foods (IBFs) as a new research approach.

2. Literature review

2.1. The Japanese food industry

In the Japanese food industry, domestic demand was saturated by the 1990s, and the initiative had moved from suppliers to consumers. The domestic food market including the food manufacturing industry, food logistics and retails, and food service industry peaked in the 1990s. Also the ratio of food expense in the household expenditure in Japan has kept decreasing since 1991 [5]. The data seems to tell us that the increase of the costs of communication and medical care causes the decrease of food consumption.

However, most food companies in Japan have not risked new product development for purposes of branching out into the international market. Instead, they have focused on exploiting Japan's domestic market. They turned their attention to biotechnology and nanotechnology and applied these sciences to develop safer and more durable foods [6]. They also paid close attention to enhancing design abilities, as it has become apparent that novel designs bolster the performance of food companies, particularly in Japan [7].

Recently, new food product development, including functional foods, has accelerated. In fact, the phrase “functional food” was used in Japan for the first time in 1984. In the beginning, the phrase indicated certain particular foods, including specific ingredients to strengthen nutrition values, sensory satisfaction, and physical adjustment functions [8]. Today, the role of functional foods is multi-faceted and includes controlling the physical condition of dairy products, decreasing the risk for certain diseases, such as diabetes, and repairing the damage from disease [9,10].

In this manner, IB strategies using new technologies, skills, designs, and functional foods have spread throughout Japan.

2.2. Ingredient branding

According to a survey in the US food market, the proportion of branded foods increased for 10 years beginning in 1987 [11]. A brand guarantees the safety and quality of a product in the minds of consumers, and a company with a brand or brands can achieve higher returns. Moreover, branded products maintain competitive superiority against their competitors for longer periods. Thus, food companies began to put more resources into their branding activities [12,13].

Various methods for strengthening food brands have been proposed, including incremental product innovation (IPI). The IPI process consists of gradual changes, such as product upgrades and line-up expansions as opposed to radical innovation. IPI affects consumer selection by changing consumer cognition regarding products [14]. Costa and Jongen [15] (2006) report that 77% of all new food products are based on IPI.

Alternatively, IB attracts consumer interest as a branded component contained in an end product [16]. IB helps infuse positive effects into the host brand although it acts only through an ingredient in an end product [4,17].

Signaling theory assumes that a brand is a signal or a method to send a cue to consumers [18]. IB can signal information regarding the qualitative value of end products to consumers. For example, Doritos Tortilla Chips (Frito-Lay North America, N.Y.) created a price premium by incorporating the characteristics of functionality as its IB. This case implies that IB might be able to send a stronger signal in combination with the host brand [19]. Furthermore, the host brand can leverage the effects of IB by applying IB to new product categories or lineups.

Although more studies are needed on the effects of IPI on brand identity, a few researchers have already reported some evidence of such effects [20]. For example, Ghodeswar [17] (2008) insists that diversifying product lineups should be certain to enhance brand equity because consumers directly reflect the diversification of product lineups on the brand images [21].

However, previous studies on IB are rare, because the concept of IB remains new and its development is somewhat premature; moreover, activities involving IB strategies are diversified and their impacts are varied. This multi-case study thus aims at performing the following two functions: (1) to understand the entire picture of IB in the food industry. In particular, which products would fit the characteristics of IB? And what types of IB would there be?; and (2) to extract information regarding various types of intellectual property and their effects on IBFs and to analyze the roles of the various types of intellectual property and their contribution to company performance.

3. Materials and methods

This article applied a multi-case study as a methodology. As a result, 105 IBFs cases were investigated. With regard to how we selected the cases, we followed the five main factors (F1—F5) relating the success of IB strategies indicated by [4]. F1 is the ingredient must be technologically superior and must be proven and protected by statutory intellectual property protection, such as patents and design rights. F2 is the ingredient which must be a key factor in the quality and functionality of the end product. F3 is the end product which should not be highly branded for reasons such as relatively new product categories. F4 is the end product which should be technologically complicated and should involve multiple manufacturing processes. F5 is the ingredient and the end product which should be able to advance together.

In this regard, food companies are not obliged to conform all the five factors to their IB strategies. This article then considered F1 and F2 as preconditions because of the high critical degrees, and if the case corresponded to one of the three factors from F3 to F5, the case was selected.

The common essential information extracted from the multi-case study included product development processes, raw materials, manufacturing technologies, price, merchandising channels, consumer segments, competing products, product categories, and key points to IB. IB strategies are effective in both business to business (B-to-B) and business to consumer (B-to-C) paradigms, but we limited the scope of our study to B-to-C business because of the ease of information extraction and measurement of IB effectiveness in that context.

4. Results

We classified the 105 IBFs cases into six product categories that included confections and desserts, drinks, seasonings, preservative foods, dairy products, and agriculture products.

Tables 1 and 2 show the results from the 105 IBF case studies and examples of IBFs. The total number is > 105 because some of the cases could have been classified into two IB categories. The manufacturing and processing category has the most case studies, at 40.5% of the total, whereas health and functionality is the second largest at 30.6%.

By organizing the key IB feature, we also classified them into four IB categories of health and functionality, manufacturing and processing, producer and geographical indication, and packaging. The relationship between product categories and IB categories is discussed in the relationship between product categories and IB categories section, and each characteristic of the IB categories are also discussed in the characteristics of IB categories section. Furthermore, the companies producing IBFs were divided into two groups by company size, small and medium-sized ($\leq$ 249 employees) and large ($\geq$ 250 employees), which is discussed in the firm size section.

At the end of the results section, we discuss intellectual properties affecting the competitiveness of IBFs.

4.1. The relationship between product categories and IB categories

Each product category has its own distribution range. For example, in the confection and dessert category, manufacturing and processing is the largest. Notably, we have recently witnessed increasing varieties of textures and flavors produced by advanced manufacturing technologies.

The categories of seasonings and preservative foods also have many IB cases involved with manufacturing and processing. Our case studies revealed several seasoning companies adopting original brewing techniques and a few preservative food companies developing new sterilization processes. Seasoning manufacturers attempted to differentiate their products from those of their competitors by engaging in old and traditional processes that require great care. In addition, these product categories use various IB strategies with new packaging technologies and designs. In the preservative food industry, for example, packages with advanced sealing technologies appealed to certain consumers. These products with new packaging designs prevent components from oxidizing, keeping them fresh and eliminating the need for additives.

Products with strong health functionalities stand out in the recent drink market. The existing market already has already witnessed the introduction of low-fat and low-calorie drinks, but now popular sodas have emerged with digestion-resistant dextrin and teas are hitting the market that are rich in polyphenols with antioxidant properties, such as flavonoid and catechin.

A similar tendency has been witnessed in the production of agriculture products. Following World War II, agriculture policy in Japan focused on the distribution of standardized agriculture products to each citizen. Standardized productivity and logistics were more important than nutrition, which became less and less the focus of the production of agriculture products, particularly vegetables. However, in and after the 1990s, crop nutrition was rejuvenated in the market following successful R&D related to breed improvements and productivities. Eventually, nutrient-rich agricultural products were introduced into the market. These products are expensive but are popular with consumers.

With regard to dairy products, the market has always featured highly nutritional products. Today, some dairy products have other strong sales points, such as new and various textures, tastes and flavors, which are similar to those of the confection and dessert category.

Table 1
Product categories and IB categories (each product category shows hatching in the highest number and underlining in the second highest).

Product categories		IB categories				
		Health & functionality	Manufacturing & processing	Producer & geographical indication	Packaging	Total
Confection & dessert	No. of IBF	4	14	8	5	31
	%	12.9	45.2	25.8	16.1	100.0
Drink	No. of IBF	15	5	6	2	28
	%	53.6	17.9	21.4	7.1	100.0
Seasoning	No. of IBF	1	12	4	4	21
	%	4.8	57.1	19.0	19.0	100.0
Preservative food	No. of IBF	4	10	1	4	19
	%	21.1	52.6	5.3	21.1	100.0
Dairy product	No. of IBF	6	6	1	0	13
	%	46.2	46.2	7.7	0.0	100.0
Agriculture product	No. of IBF	7	2	1	0	10
	%	70.0	20.0	10.0	0.0	100.0
Total	No. of IBF	37	49	21	15	122
	%	30.6	40.5	17.4	12.4	100.8

IB, ingredient branding; IBF, ingredient-branded foods.

Table 2
Examples of IBFs studied as cases.

Product categories	Product (IBF)	Company	Characteristics
Confection & dessert	Sweets Days	Lotte Co. Ltd.	The first chocolate in the world added by acetic acid bacteria
Drink	Euglena Drink	Euglena Co., Ltd.	Green euglena drink including 59 nutrients such as vitamin, mineral, amino acid, and unsaturated fatty acid
Seasoning	Yamasa Premium Soy Source	Yamasa Corporation	A soy source with a innovative package preventing contents from oxidizing by a specific valve
Preservative food	Frozen Jiao-zi (dumpling)	Ajinomoto Frozen Foods Co., Inc.	Can be stored for long periods and cooked without oil and water
Dairy product	Meiji Probio Yogurt R-1	Meiji Co. Ltd.	A yogurt which boosts immunity by Ecopolysaccharide (EPS)
Agriculture product	Smile Ball	House Foods Group Inc.	A onion which prevents cooks from tearing by decreasing a component causing tearing

IBF, ingredient-branded foods.

4.2. The characteristics of IB categories

Health and functionality: As discussed above, innovation activities in the food industry have rapidly changed into advancing science-based R&D. In this regard, the most common new product is functional foods. Aging societies in developed countries increasingly have more and more citizens who are pursuing their own quality of life, and they are spending substantial amounts of healthcare monies on household expenditures, and these amounts continue to rise [22,23]. The main targets of these functional foods are routine maintenance of physical condition, decreasing the risks of various diseases, and recovery from specific diseases, all of which require food companies to make technological advances.

Functional foods have been developed in most, if not all, food markets [2,23]. Although functional foods are classified in many diverse ways by researchers, the following classification (C1−C3) from the aspect of products is useful [23−25]: (C1) foods with additional nutrition; (C2) foods that remove, reduce, or replace one component with other effective ingredients; and (C3) foods enhanced by another effective ingredient during the manufacturing processes.

In our case studies, we focused on the chocolate with added acetic acid bacteria (Lotte Co. Ltd., Tokyo, Japan) and the miso soup with added ornithine corresponding to 70 freshwater clams (Nagatanien Co. Ltd., Tokyo, Japan) as C1. We also focused on cola with low sugar replaced by indigestible dextrin (Kirin Beverage Co. Ltd., Tokyo, Japan) and the mini tomato enhanced by lycopene and catechin in the same process (Dole Japan, Tokyo, Japan) as C2 and C3, respectively.

Manufacturing and processing: In the 2000s, the European Union (EU) analyzed the competitiveness of its food industry and began an initiative to promote food innovation activities [26]. Against this background, the EU has many traditional food industries, which make up the largest of its manufacturing industries, thus leading the EU economy [9,27]. Those food industries had traditionally focused on cutting manufacturing costs.

This initiative was driven by changes in the circumstances characterizing the food industry [26]: (1) the needs of consumers had rapidly grown. Eventually, many companies' R&D activities had diversified, and the management of these companies had adversely affected their competitiveness [28,29]; and (2) technological developments in nanotechnology and biotechnology had a substantial impact on the food supply chain.

Bigliardi and Galati [30] (2013) arranged these technological developments into the following six categories [30]: (1) new ingredients and components; (2) new freshness technologies; (3) new food-processing technologies; (4) upgrades in quality; (5) new packaging technologies; and (6) new logistical and sales systems. Numbers (2) and (3) of the six are related to food manufacturing and processing. From the examples of this case study, Meiji Co. Ltd., Tokyo, Japan succeeded in creating a new chocolate whose melting point was 3°C lower than ordinary chocolate, at 28°C. This change made the chocolate smoother. Another example is Amano Jitsugyo Co. Ltd., Hiroshima, Japan, which developed a miso-soup that maintained its freshness for extended periods of time based on its freeze-drying technology.

Producer and geographical indications: Strategies that utilize unique locations or producers as a brand are widely known. In particular, legal protections of the characteristics of origin and quality embody a common business approach in the EU food industry. This approach gives farmers and breeders in the geographic area of origin competitive advantage because the ingredients with original characteristics increase the competitiveness of the product, comported with ordinary commoditized products. These differentiated products also benefit consumers. Such types of geographical indication have now been accepted globally by regulations such as the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).

In Japan, the Regional Collective Trademark System was created in 2006, strengthening the protection of the origin of certain agriculture and food products. In 2014, the Act on the Protection of the Names of Specific Agricultural, Forestry and Fishery Products and Foodstuffs (Japan Geographical Indication) was enacted.

Packaging: The case study revealed that companies such as Ezaki Glico Co. Ltd., Osaka, Japan and Lotte Co. Ltd., Tokyo, Japan have applied to Japan's Patent Office for design rights to products simultaneously with their introduction to the market. Those design rights are related to the packaging or creation of new products. It is apparent that this strategy attempts to promote product recognition and branding by means of new packaging. New packaging design often attracts the attention of consumers regardless of the newness of the product itself [31].

The application of design rights synchronized with the introduction of a product to the market also creates a barrier to imitation that protects against competitors. In fact, Miyanoshita et al [7] (2016) reported that accumulated design rights related to packaging or form positively impacts the growth of profits and operating revenues. Packaging and/or product form are used as a communication channel to consumers; thus, to combine these rights exclusively might capture the premium market, leading to high and sustainable income.

Furthermore, new packaging not only triggers a temporary premium but also can endure as a brand effect. Packaging design can serve to enhance loyalty and emotional attachment to the product using a series of similar package designs [32].

4.3. Firm size

We divided the companies producing IBFs into two groups, small and medium-sized companies and large companies. Fig. 1 shows how many of the 105 IBFs by IB category and company size. To develop an IBF in health and functionality requires advanced science and technology, which is why small and medium-sized companies are less prominent than large companies in health and functionality.

A similar tendency is observed in packaging because packaging development should be more effective when the product line-ups

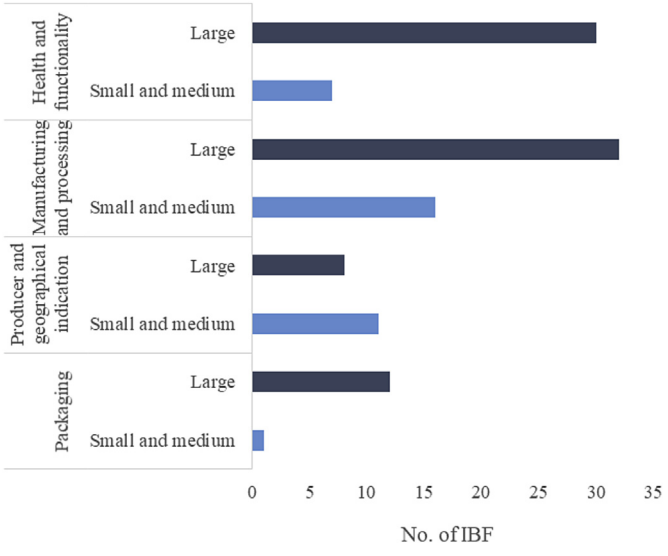

Fig. 1. A group of 105 IBFs by IB categories and company size. IB, ingredient branding; IBF, ingredient-branded foods.

Fig. 2. Bocca Milk Pudding (Bocca Co., Ltd., Hokkaido, Japan) has a design right [36] and several patents to protect it from imitations of its product on the market. This pudding is wrapped with a rubber balloon and when it is picked with a needle, the balloon is peeled off rapidly. Consumers enjoy the process before eating.

are sufficient to promote a variety of products. IBFs in producers and geographical indication are basically produced in the place near the farmers, breeders, and geographical characteristics. Therefore, local companies are able to collaborate using these resources.

Manufacturing and processing also has a greater number of large companies, but small companies (with < 49 employees) produced 10 IBFs in these categories. Japan National Innovation Survey in 2009 (JNIS2009) reported that small companies were more likely to develop process innovation than large companies, which tend to create product innovation. Our results correspond to the report of JNIS2009.

4.4. Intellectual property

As discussed above, much of the previous literature argues that innovation activities are not as active in the food industry as in other industries [1,2]. In particular, it has been emphasized that R&D intensity in the food manufacturing industry is not as strong as in other industries [2].

However, driven by increased needs for various foods and newcomers from outside the food industry, R&D activities have become a staple in the food industry as well [5,33]. Given the ongoing shift in food demand, customization must be focused upon as a platform for innovation in food companies [34].

When a food company promotes IBFs, it must employ advanced technologies and high levels of management skills, including intellectual property management and openness. To secure profits from IBFs and to introduce new products into the market before competitors, complex new product designs that cannot be easily imitated, and secure new product manufacturing processes are required in addition to the legal protection offered by patents and design rights [35].

In this case study, we found 35 cases of patent applications (a total of 567 patent applications) and 10 cases involving design rights (a total 24 design rights). Most of these cases also involve trademarks and all these rights are combined to maximize the benefit from those new products based on intellectual property protection. For example, Bocca Milk Pudding (Bocca Co., Ltd., Hokkaido, Japan) has a design right (Fig. 2) and several patents to protect it from imitations of its product on the market. This pudding is wrapped with a rubber balloon and when it is picked with a needle, the balloon is peeled off rapidly. Consumers enjoy the process before eating.

5. Conclusion

From the analysis, the following four points were found: (1) many IBFs have been already introduced to the market and they have diversified in different product categories; (2) there have been various IB aspects. IBFs in manufacturing and processing technologies and health and functionality have been popular approaches in recent years, but IBFs in some product categories prefer packaging and geographical identification; (3) health and functionality and packaging have been selected by large companies. However, geographical identification has been effectively used by small and medium companies; and (4) almost one third of total case studies apply intellectual property rights to protect the competitiveness of their IBFs.

In this study, many IBFs were found to have already been introduced into the shrinking Japanese market since the middle of the 1990s. Nevertheless, food companies in Japan are focused on digging into domestic demand.

One of the reasons for this tendency has been the high specifications that the Japanese market demands for food products and ingredients. In particular, food safety and security requirements are extremely strict in Japan, and a premium is placed on the visual presentation of food. If Japanese food companies were to bring their products to international markets, their prices would likely be higher than these markets could bear. Another reason for Japanese companies' hesitance regarding branching out into the international marketplace is that most of the developing countries have been on a learning curve since the 1990s, which means that there have been significantly fewer middle-income consumers.

During this period, Japanese society has experienced a good deal of aging. As a result, > 1700 functional foods were introduced over the 10-year period beginning in 1988 in Japan [37]. According to the Euromonitor survey, the market for functional foods in Japan was the biggest in the world in the early 2000s [38].

In light of these changes, a few food manufacturers engaged in new product development and introduced new products into international markets as well. In fact, they have succeeded in garnering some share of these international markets or in developing new markets for themselves, and one of the primary factors driving these achievements is product innovation and diversification.

Conflicts of interest

The authors declare no conflicts of interest.

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