

ORIGINAL RESEARCH:

Integration-oriented product development management in Japan - an application of product-customer matrix to KAO -

Seiichi Fujii¹ and Geunhee Lee²

Abstract

In this study, Product-Customer Matrix is suggested after a thorough literature review on the concept of value, in order to investigate how Japanese manufacturers have built their development management while emphasizing program integrative management. For the analysis, KAO Corporation, a Japanese leading company in the household goods industry was chosen as a case study. A series of analyses was conducted, such as situation analysis, situation comparison between 50 years ago to present, a comparison every ten years, and a comparison with other companies after having KAO's products categorized into different quadrants in the Product-Customer Matrix. As a result, KAO's business model that boosts the synergy effect between B-to-B Processed Products market and B-to-C Completed Products market has been clarified. Moreover, it is also determined that KAO has established its development management in accordance with its' wide variety of product group characteristics in the B-to-C Completed Products market.

Keywords: New business creation, Product-customer matrix, Program integrative management, Value integration.

Introduction

In the environment of the Japanese manufacturing industry, every single change has its own ambiguity, such as the development of information technology, the rise of the global market, and meta-national management aiming for the aggregation of resources scattered around the world. Uncertainty has been increased by the inherent complexity of these changes that are related to and are affected by each other. Due to such changes, consumers who now can gather, process, and send information at low-cost, which had been overwhelmingly dominated by companies, have acquired the means to enhance their own superiority. For this reason, totally new needs have emerged and various new businesses such as Google, Yahoo, and Rakuten have appeared in the information industry. Along with the creation of new industries, the importance of new business creation in the existing manufacturing industry has been pointed out before, such as in Kim and Mauborgne's Blue Ocean Strategy (2005) and Christensen's importance of radical innovation (1997).

In the research of project management, this kind of new business creation often starts from the program integrative management. The program integrative management in Project & Program Management is a concept of integrating multiple projects with a wider and higher point of view. This management seeks value in a process of chain reaction, after having insight from the project cycle (i.e., scheme model, system model, and service model) and utilizing the knowledge and know-how as a program. The goal of this type of value seeking activity is to pursue business value creation as a result of several new products and service development. Regarding this kind of business value creation, the movement of reconsidering the very definition of value has been pursued in each field of research. Service-Dominant Logic (hereafter, S-D Logic) (Vargo and Lusch 2004) in the field of marketing and Invisible Value (Kusunoki 2006) or Non-functional Value (Nobeoka 2010) in the innovation field are good examples that clearly explain the movement.

¹ Associate Professor, College of International Management, email: fujii@apu.ac.jp

² Associate Professor, College of International Management

Such a debate on the definition of new value in Japan has been led directly by the loss of direction in the Japanese manufacturing industry, along with the stagnation of the Japanese economy. Although the long-term downturn (i.e., the so called Lost 20 Years following the Lost 10 Years after the collapse of bubble economy) has continued, however, not all companies necessarily experienced the stagnation. There are also some prominent companies that lead the respective business industries. Some of these companies have kept a big advantage in the industry, moved ahead of the ‘follower’ companies, and continue business value creation activities.

Therefore, this study aims to determine the development management that successful companies have under the concept of a new definition of value in program integrative management. First, existing research will be reviewed regarding new concepts of value creation. Based on the findings from the literature review, a framework for further analysis will be presented. Secondly, a company (i.e., KAO Corporation) for the analysis will be selected in order to examine how the framework works for the company. Finally, both academic and practical implications for future study will be suggested.

Literature review on value creation

Program integrative management is composed of mission profiling that makes up the scenario in the long-term perspective, architecture management that designs and embodies the scenario from the module, and program strategic management that decides the best among the alternatives. Program integrative management ranging from the start of the entire process to the end (i.e., scheme model, system model, and service model) has a role to integrate the value of multiple projects over a long period of time. The integration of the value is not only for economic benefits, but also for the value of knowledge and competitiveness. Among them, the most important value is customer value. In recent years, a new debate about value has been active in both the marketing and innovation fields.

New proposal for customer value in the innovation field:

Researchers have set the research themes that can contribute to their domestic industries such as services research in Northern Europe, industrial goods marketing research in the Scandinavian countries, and financial research in the United Kingdom and the United States. In Japan, since the manufacturing industry’s contribution to the economy has been high as a whole, the research on value creation which is a major challenge of manufacturing companies has been carried out in recent years. According to Nobeoka (2010), product development and manufacturing no longer lead directly to value creation. Although most Japanese manufacturers have aimed for ‘High Performance High Cost’, it has become a mere ‘Pursuit of Customer Value Fantasy’. Positioning the value that has been pursued as a functional value, customers at present have begun to focus more on subjective non-functional value.

The value that customers want from the product is represented by the sum of the non-functional value and functional value, and in that case, the co-creation between customers and company is required. Also, manufacturing technology of an integral type that many Japanese manufacturers are good at is suitable to create a non-functional value that is important, especially for automobiles and home appliances manufacturers. Moreover, Nobeoka (2010) divides product development into two steps (i.e., understanding the customers as the first stage and planning and development stage to make the non-functional value as the second stage) and indicates that the criteria of non-functional value between industrial goods and consumer goods are different. In consumer goods, “self-expression value and external value” and

“attachment value and internal value” must be embedded in product development as a source of non-functional value, and this is why the second stage is important in this case. In industrial goods, on the other hand, the proposal of a product that can further increase the possibility of value creation (i.e., benefit and added value) of business customer is required. Therefore they should provide products or solutions in the position of their business customer at the first stage. Many aspects of the non-functional value presented in Nobeoka’s study (2010) overlap with those of what Kusunoki (2006), described as "value without dimension."

In the first place, for the definitions of the value in this field, Pitelis (2009) states that there are two different concepts as value creation and value capture which are highly influenced by internal and external system making inside an organization, and there are also customers’ economic value and the systematically recognized value. This definition of value can be interpreted that the created value can be distributed among various players such as customers, even competitors, or suppliers involved in the value creation. That is, it can be regarded as a wider social value creation and value distribution.

Such a change of the direction of value creation in the manufacturing industry is also related to the fact that the main player of innovations has changed. As von Hippel (2005) and Ogawa (1998) discuss on information stickiness, it should be noted that the new movements of value creation activities are different from the traditional manufacturer-led value creation activities, or innovation activities. They reveal that information to solve the problem and to create new value lies deep inside the users themselves who have the problem, and the users cost their endeavors, time, and money to deliver the problem to product providers who they believe have the solutions. The information stickiness means the impediment that users have when communicating to others and the users themselves become the main constituents for innovation to solve this impediment by their own will. Von Hippel (2005) and Ogawa (1998) first argue about the industrial goods, or the B-to-B products between users and providers, but Ogawa (1998) later expands the study to B-to-C area. The study dramatically overturns the existing idea that traditional innovation is caused and achieved by product and service providers in the manufacturing industry (Ogawa 1998). This new movement is also widely witnessed in innovation activities such as the SPA that distributors cause, the development of private brand products, and "Makers Revolution" where individual innovation happens using information technology or 3D printers, for example. It clearly shows that the entity to determine the value begins to disperse (Anderson 2012).

New proposal for customer value in the marketing field:

It is the S-D Logic proposed by Vargo and Lusch (2004) that seeks to change the traditional concept of value fundamentally. They think customers as consumers are the center-piece and claim that value-in-context that occurs when a customer uses and consumes goods, is more important than the traditional value-in-exchange. In this case, customers perceive the service that encompasses the goods of traditional tangibles and the services of intangibles. It is totally different from the Goods-Dominant Logic (hereafter, G-D Logic) in the point that the subject of value judgment is the customer. At the same time, the application scope broadens. Thus, S-D Logic emphasizing the value-in-context is a broader concept of value-in-exchange which is important in G-D logic. Under this idea, value is created with the customers in the consumption process and determined by the customers through the usage, that is, value co-creation and co-production (Lusch and Vargo 2008). In other words, the customers (i.e., consumers or users) participate in value co-creation actively and positively and form their own value-in-context.

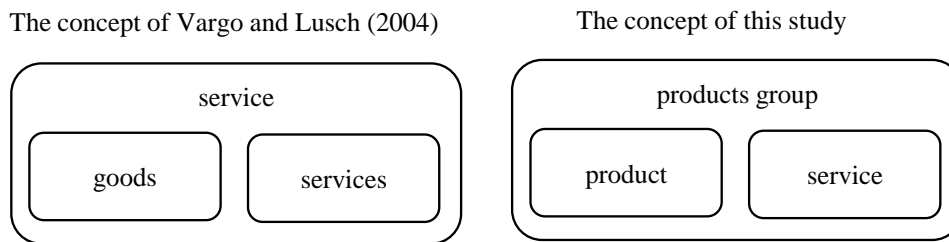


Figure 1. Comparison between the concept of Vargo and Lusch and this study [provenance: modified previous articles by authors (Vargo and Lusch 2004)]

It should be noted that, in order to avoid confusion in the comparison with Vargo and Lusch's idea of "goods as the tangible and service as the intangible" (Vargo and Lusch 2004), this study adopts the conventional way of representation (i.e., product as the tangible, service as the intangible, and products group as the sum of product and service) as shown in Figure 1.

Before S-D Logic appeared, as a part of the genealogy, there was a discussion of service management or marketing. The discussion was conducted mainly on something excluding products as tangible goods and services as intangible goods, and was intended to highlight the unique management different from traditional products. For instance, Grönroos (2008) clarifies the difference between product and service arguing that product has the characteristics of tangibility, homogeneity, the separation of production, distribution, and consumption, materials, production in a factory, imperishability, and possibility to transfer the ownership, while service has the opposite (i.e., intangibility, heterogeneity, simultaneity of production, distribution and consumption, production by seller and buyer, perishability, and impossibility to transfer the ownership). He also states that the relationship with customers is also important because of the characteristics of simultaneity and perishability. As such, the discussion on service has been developed, while closely involved in the relationship marketing that puts emphasis on the customer relationships. According to Minami (2005), relationship marketing occurs and develops based on industrial goods marketing research in the 1980s and service marketing research mainly in Europe, then in the 1990s entered the American distribution researchers. In this development, Webster (1994) stresses that relationship marketing of consumer goods is different from relationship marketing of industrial goods. It is one of the reasons why consumers are only considered as customers in S-D Logic, while the logic is also expected to be adaptable in explaining industrial goods.

However, S-D Logic has several challenges in addition to the lack of empirical research due to the short period from its introduction despite its usefulness for providing the new concept for value. For example, Muramatsu (2010) indicates the three directions that can be used when the classification is done; according to 1) "the will of the subject" respecting how much consumers ask for the co-creation, 2) how much the company as value co-creator consider "the importance of customer value", and 3) what mechanism companies and consumers use to go through the "value co-creation process."

Knowledge obtained from literature review:

The new trends related to value have been explored using Nobeoka (2010) in the innovation field and Vargo and Lusch (2004) in the marketing field. It was common that they both have a clear separation between consumer goods and industrial goods. It is also determined that the original definitions of value were

different since they put greater emphasis on social value in the first place. But more emphasis was placed on internal organizational value creation activities in the innovation field believing that customers are the ones who determine the value in the marketing field. However, the necessity to start from the definition of customers' value is also recognized in order to capture the organizational value even in the innovation field in recent years, thus, the directions of both fields are consistent in this regard. The value-in-exchange of the S-D Logic is close to the functional value of Nobeoka (2010), when value-in-context corresponds to the non-functional value. Further, behind the circumstance where direction transformation of value occurs, we witness the rise of consumers beginning to have power by the remarkable development of information technology and their even more diverse values.

For example, Muramatsu (2010) argues that S-D Logic should be refined pointing out that there are various types of consumers in terms of individual value consumption under the consideration of the relationships among consumers' knowledge, skill, or its intention and capability. As shown in Table 1, he defines a consumer who affords all with high level of knowledge and skills as a self-sufficient person and a consumer who entrusts all to the organizational knowledge and skills as a producer, while putting a typical consumer in between. Alternatively, in accordance with the strength of intention and the level of ability (i.e., knowledge and skill), Muramatsu (2010) also presents four types of consumers (i.e., Type 1: Weak Intention and High Ability, Type 2: Strong Intention and High Ability, Type 3: Strong Intention and Low Ability, and Type 4: Weak Intention and Low Ability) in order to show that efforts for value co-creation are different. This indicates that there are various ways of getting involved in the process of defining and consuming value.

Table 1. Consumer type by their intention and ability
[provenance: modified previous articles by authors (Muramatsu 2010)]

		Intension		Type 1: Weak Intention and High Ability Type 2: Strong Intention and High Ability Type 3: Strong Intention and Low Ability Type 4: Weak Intention and Low Ability
		strong	weak	
ability	high	Type 2	Type 1	
	low	Type 3	Type 4	

More specifically, for example, if the goods are something in the consumer goods category such as pens or sugar, its base is too wide for a company to get involved in value-in-context actively and its buyers also do not wish producers to get involved, or even deny them to do so. In the case of industrial goods as well, buyers determine the application and value-in-context in response to their own situations, when the goods are such things as glue or screws that anyone can easily obtain for a low price at any time. In the innovation field, whether selecting the voice type to continuously conceive of the B-to-B relationship in a long-term context, or choosing the exit type to immediately end the relationship if there is any problem with the other party, this becomes an important strategy (Helper and Sako 1995). In the case of the exit type, value-in-exchange is considered more important than value-in-context. On the other hand, if knowledge and skills of the provider are considerably high and significantly different from those of the buyer (e.g., medical, cargo transport, and insurance), the buyer will be forced to become a type 3 or type 4 and focus on value-in-context.

Framework of analysis

Definition of Product-Customer Matrix

As we consider the new concept of S-D Logic, it was found that there need to be two types of classifications. One is the relationship of value between the producer and the buyer in case whether value-in-exchange or value-in-context is strongly required. When the value-in-exchange is strongly required, the buyer hopes transactions to end soon by the exchange, which is the concept of traditional G-D Logic, then wishes to freely explore value of his own accord. On the other hand, when value-in-context is strongly required, buyers actively perform creative activities and determine the ultimate value for products and services provided by producers.

Another type of classification is that of the relationship between the buyers and the providers of value, which dramatically changes depending on whether the customer is a mere consumer or an enterprise in the marketing field or in the innovation field. For this reason, previous studies have not discussed this tangent point much, since the two have been considered completely different. However, on the other hand, there are many large Japanese manufacturing companies that provide consumer goods, such as automobiles and home appliances as well as industrial goods. In innovation studies, it is an important decision-making aspect of technology management for consumer goods companies whether to choose “make or buy” (i.e., making decisions of developing and producing the core key components or units internally or not) or to choose “sell or not-sell” (i.e., making decisions of selling the developed products or not) (Nobeoka 2006). When thinking about the value creation activities of Japanese manufacturers, it is impossible to miss the relationship between consumer goods and industrial goods, or the synergy of those if represented more actively, in program integrative management focusing on value integration. Also, it is meaningful to incorporate industrial goods in the sense of finding the direction of development and challenges of S-D Logic.

Therefore in this study, we divide the products group of value providers into the Product-Customer Matrix (Figure 2). The horizontal axis represents the characteristics of the products group divided into "Completed Products" and "Processed Products". The term "Completed Products" in this case means when buyers are reluctant to co-produce or co-create since they only use the product to achieve the goal, stress the exchange, and do not have any tangent point with producers after they have obtained the product group. On the other hand, the term “Processed Products” means when buyers are eager to have some relationship with producers, emphasizing the context, and actively participating in value co-creation and co-production activities before and/or after they have obtained the product group.

Section of Products Group Section of Customer	Completed Products	Processed Products
BtoB for Companies	general-purpose POS, general-purpose Production Equipment, Business Automobile, etc.	Components, Units, Parts, etc. for attaching to Completed Products
BtoC for Consumers	Private Automobile, household Appliances, Foods, Ballpoint pen, etc.	Additional Parts, Customized Parts, etc.

Figure 2. Product-Customer Matrix [provenance: partially modified previous articles by authors (Fujii 2010)]

The vertical axis indicates "B-to-B for Companies" and "B-to-C for Consumers" as a customer segment. This reflects the fact that the differentiation between consumer goods and industrial goods has been clear in both marketing and innovation fields. However, the distinction in this figure does not intend to "consider separately after clarifying the difference" as in the traditional studies, but to "think actively the synergy of two sections", which is different with the conventional way of thinking.

The upper left quadrant of the matrix in Figure 2 represents a place where buyers do not add anything new after the purchase and use the product for the production activity as producers in order to offer the product group to the following buyers. The product group includes general-purpose POS systems, general-purpose production equipment, and commercial automobiles. The upper right is the product group with which buyers actively perform creative activities by adding something new and use them for production activities after the purchase, including parts and units as typical examples. The lower left includes automobiles and pens which are consumed for the achievement of the objectives of their own after purchase. Finally, the lower right represents the product group such as additional parts and customized products which are used to perform consumption activities, actively adding something new by buyers in order to achieve the objectives.

Research Methods

The goal of this paper is to analyze how long-term value creation activities of industry leaders have been performed and to suggest a future plan for program integrative management. Therefore, it is necessary to obtain long-term information for the investigation. Thus, this study adopts the method of using financial information, such as annual reports and securities reports that companies publish. The securities report is available because it has been published since 1961. It is also meaningful to use the securities report because of the provision of certain restrictions regarding the items by regulatory agencies, the ease of comparing among companies due to the uniformity of the contents, and the rapid development of laws. Furthermore, the effectiveness of the methodology has been already presented in several previous studies (e.g., Bowman 1976; Staw 1981; Kida 2006).

In this securities report, there is an item called "1) Consolidated Financial Statements" in "5-accounting status" where the segment information is located as well as the performance of the previous year(s) and the year of the company. This also contains the names of the key products and services as well as the performance of each business segment. By investigating the contents over a long-term period, it is possible to see how the main product and service have been changed during that time. In addition, another item: "1- summary of financial results" in "2- business conditions" can be used to check the self-analysis on products with high sales and newly developed products each year. Also the names of products and services that are planned to be developed for the future can be found in "3- challenges" and "6- research and development activity" in "2- business conditions". Mainly using this securities report as public information, this study also collects other supplementary public sources such as annual reports supplementing financial information, the company's webpage, magazines, and new papers.

After gathering the products and services in the long term, they were plotted in the Product-Customer Matrix (Figure 2) to analyze the contents and the evolution. In particular, since the goal of this study is to analyze how development management has been taken emphasizing program integrative management, it is

important to investigate the relevance of the four quadrants, that is, how the value and utility were integrated with each other having a synergy effect.

Analysis and results

Target company and period

KAO Corporation has been chosen as a target company. The procedure to select the company is as follows. First, with the overall view of the Japanese industry as understood through the 2013 industry map issued by Hitotsubashi Research Institute (2012), we investigated each industry-wide scale and the sales volume of each company. Then, we accessed corporate information database services "eol" provided by PRONEXUS Co., Ltd., and identified each company whose sales volume is the largest in its respective industry. The database service "eol" is a powerful tool to search securities statements, semiannual reports, sales reports, etc. of domestic listed and non-listed companies, helping to compare the company attribute information and industries. This also made it possible to grasp other industries that are not listed in the 2013 industry map, which further expanded the scale of industry than planned in the beginning. In addition, after obtaining the securities statements of the company and comparing the rival company presented by "eol" and the 2013 industry map by Hitotsubashi Research Institute, we picked up other companies in the industries and procured the financial statements of these companies.

For the next step, a comparison of sales volume of 10 industries (i.e., housewares industry, apparel industry, pharmaceutical industry, housing equipment industry, consumer electronics industry, confectionery industry, instrument industry, automobile industry, liquor industry, and housing industry) was conducted. As a result, the criteria for a leader company was set for a company whose sales scale was twice or larger than that of the second tier company and below for a period of more than 10 years. The selected companies were KAO in the household goods industry, TOTO in the housing equipment industry, YAMAHA in the musical instrument industry, and TOYOTA in the automotive industry. Among these, KAO Corporation was chosen as the target company, due to its detailed product description in the securities report over many years, the easiness to obtain the other materials related to the products, and the easy and direct access to the company employees to listen to their opinion, leaving three other companies behind for the future studies. Although the securities statements data can be obtained from 1961, the data from 1962 to 2012 was used for this study since the most recent data available is from the 2012 fiscal year at this time.

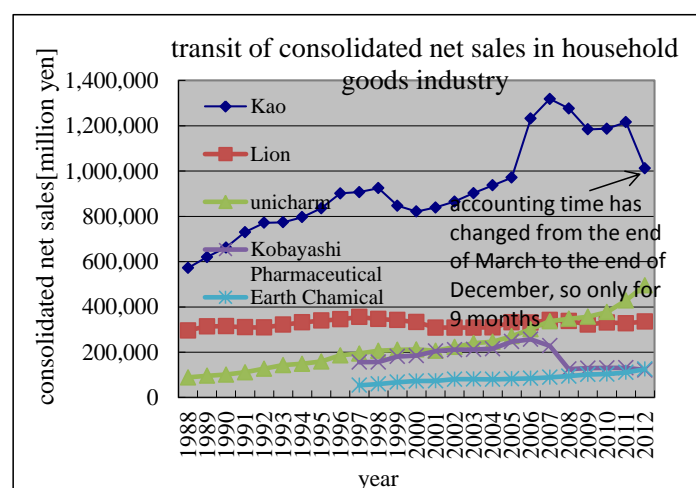


Figure 3. Comparisons of consolidated net sales in articles of daily use field [provenance: made by author]

The company is well known for its advanced marketing strategies (e.g., distribution and advertising) with the daily necessities products such as soap, shampoo, and detergent, which have grown with the development of the Japanese chemical industry. In addition, it has challenged many environmental issues, thus has a strong influence on the whole industry. As a result, in terms of the amount of sales as shown in Figure 3, it has always led the industry over the last 25 years.

Analysis: Program integrative management of industry leader KAO Corporation

Status of the fiscal year 2012:

The data from the fiscal year 1962 (from April 1, 1962 to March 31, 1963) to the fiscal year 2012 (From April 1, 2012 to March 31, 2013³) of KAO Corporation has been plotted into the Product-Customer Matrix.

From FIGURE 3, representing the fiscal year 2012, it can be noted that the specific weight of the lower left quadrant is overwhelmingly high. In addition, the products groups of B-to-B for companies are mainly born from the chemical business belonging to the upper right quadrant. In other words, the synergy of the arrow from the upper right to the other quadrants is strong as shown in the figure. KAO started its business producing soaps, a consumer product, but has grown the business, learning the technology and development of chemical products by riding on the development of the chemical industry in Japan. The share of R&D expenses related to chemicals is almost equal to the share of sales, while the share of the capital investment in chemical business such as fatty alcohols, fatty acids, and surfactants is slightly higher.

The fact that the chemical business is large-scale in nature, by the process production using equipment, that it has a top share in chemical products in the world, and that it has focused on the chemical business historically, can be conceivable reasons, but on the other hand, it also indicates that the business focuses mainly on the accumulation of capability such as know-how and technology that can be obtained by the mass production. Thus, it can be thought that by continuously developing and producing products that belong to the upper right quadrant, the company intends to have a synergy of R&D or production capacity inputting products to the other quadrants on ongoing basis. Arrows shown in Figure 4 explain that the capability developed in the right upper quadrant as the core technology, has expanded to different products that are located in the other quadrants. This synergy is a strategic movement that can be referred to as “Core Technology Application Synergy”.

Section of Products Group Section of Customer	Completed Products	Processed Products
BtoB for Companies	home care products for business, cosmetics by counseling etc.	commercial-use edible fats and oils, fatty alcohol, fatty acids, surfactants, fragrance and aroma chemicals, toner/toner binder etc.
BtoC for Consumers	self-selection cosmetics, beverages, sanitary napkins, baby diapers, bath additives, laundry detergents, kitchen cleaning products. etc.	cooking oil, refill, paper products for vacuum cleaner, cosmetics by counseling etc.

Figure 4. Product-Customer Matrix of KAO in 2012 [provenance: made by author]

³ Since KAO changed the fiscal year system, the fiscal year 2011 is from April 1, 2011 to March 31, 2012 and the fiscal year 2012 is from April 1, 2012 to December 31, 2012. After this, the fiscal year 2013 is from January 1, 2013 to December 31, 2013.

Comparison of 50 years

KAO's net sales for the 50 years prior to 2011, as in Figure 5, shows a stagnation since the mid-1999's, but has increased sales almost consistently over the long term. The evolution of this business expansion was analyzed from the perspective of the Product-Customer Matrix.

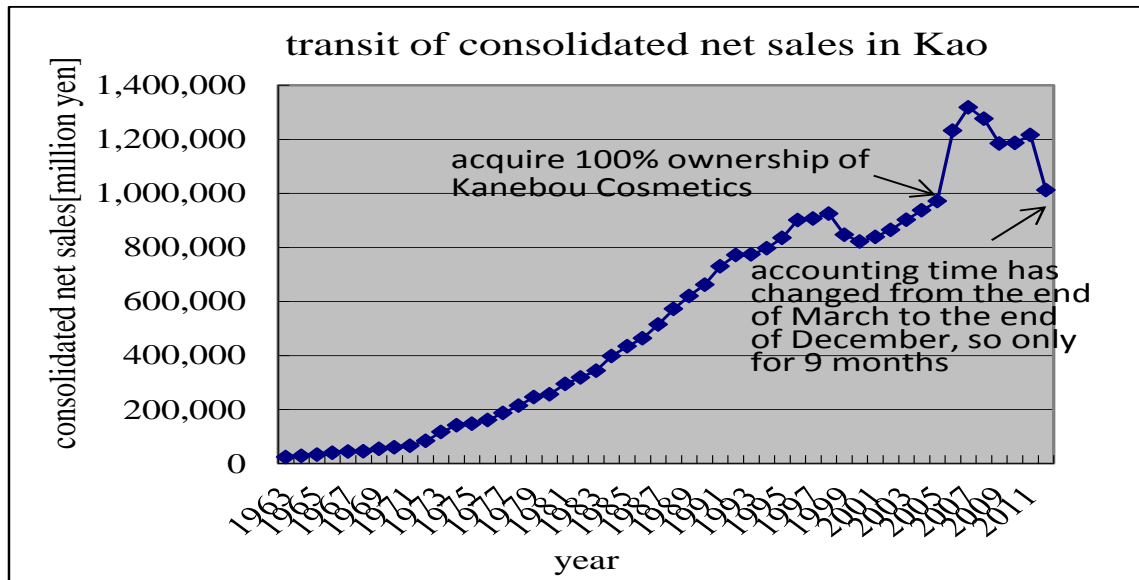


Figure 5. Transit of consolidated net sales for 50 years since 1962 [provenance: made by author]

From the comparison of Figure 4 showing the 2012 fiscal year and Figure 6 showing the 1962 fiscal year, the following can be drawn for the 50 years preceding 2011; 1) products for business use have appeared in the upper left quadrant, 2) product line of the lower left quadrant is substantial, 3) the lower right quadrant also shows the improvement of products, and 4) the turnover of products such as fragrance or toner binder can be seen in the upper right quadrant. Particularly remarkable is the adequacy of the lower left quadrant. It is noticeable that the company has developed each consumer brand and goods that can penetrate deeply into society, such as laundry detergents, household cleaners, cosmetics, bath salts, facial cleansers, body cleansers, dishwashing detergent, beverages, disposable diapers, and sanitary products. Additionally, business-use product development of these commercial products has also been made. It can be considered that KAO could establish a new distribution structure based on the acquisition of new customers in B-to-B and B-to-C businesses. The changes in product groups indicate the transition of the business model.

Section of Products Group Section of Customer	Completed Products	Processed Products
BtoB for Companies		glycerin, fat acid, surface acting agent, chloroethene plasticizer
BtoC for Consumers	soaps, laundry detergent	cooking oil

Figure 6. Product-Customer Matrix of KAO in 1962 [provenance: made by author]

Changes every 10 years:

Figure 7 shows the Product-Customer Matrix of every 10 years from the fiscal year 1962. As noted in the comparison of the 50 years prior to 2011, the active new product introduction to the B-to-C Completed Products in the lower left and the turnover of B-to-B Processed Products market in the upper right is noticeable. According to the published information from KAO, there are the laundry detergent “Zabu” in 1960, the shampoo “Merit” in 1970, the residential detergent “Magiclean” in 1971, the sanitary napkins “Laurier” in 1979, the facial washer “Biore” in 1980, the cosmetics “KAO Sofina” in 1982, the bath salts “Bub” in 1983, the disposable diapers “Merries” and the body cleansers “Biore u” in 1984, the residential cleaning tool “Quickle Wiper” in 1994, the edible oil "Econa cooking oil" in 1999, and the beverage "Healthy green tea" in 2003 as new input to the B-to-C Completed Products market. On the other hand, there is also a Completed Product such as a floppy disk, which is rare case.

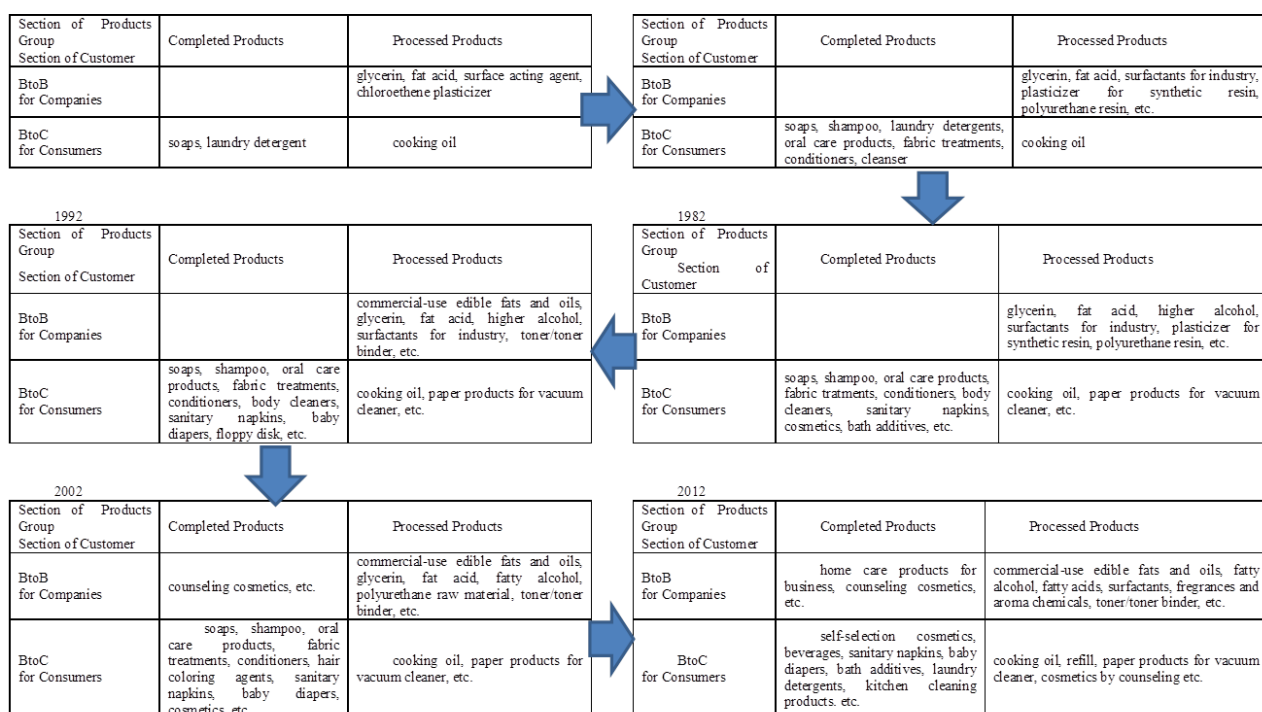


Figure 7. Transit of Product-Customer Matrix in each decade since 1962 [provenance: made by author]

Further, in the B-to-C Processed Products market, although glycerin and fatty acid have become the main products of the business over the long term while polyurethane resin, raw materials, or vinyl chloride among the plasticizer are not easily found, such products as toner or fragrance have also become the new main product group in the last 10 to 20 years.

In addition, KAO often carried out a review of the product category with the replacement or enhancement of product groups. Although the company only had small categories of four that cannot be called as an original business (i.e., soaps and detergents, oil and fat products, surfactants, and plasticizers) at the beginning of 1962, it later divided its categories into two as household products and industrial products after the 1970s. In the 2000s, the categories were divided into three groups: household products, industrial products, and cosmetics business. As seen in Table 2, however, the segment information has been reported since 2009 with four categories as beauty care business, human health care business, fabric and home care

business, and chemical business. The classification of these can be considered as its clear intention about future product development, although KAO itself announces that it is customized based on their customers' standpoints.

Table 2. Major products by reportable segment [provenance: quote from News Release 2013 by KAO⁴]

Consumer Products Business	Beauty Care Business	Cosmetics	Counseling cosmetics, self-selection cosmetics
		Skin care products	Soaps, facial cleaners, body cleansers
		Health care products	Shampoos, conditioners, hair styling agents, hair coloring agents
	Human Health Care Business	Food and beverage products	Beverages
		Sanitary products	Sanitary napkins, baby diapers
		Personal health products	Bath additives, oral care products, men's products
	Fabric and Home Care Business	Fabric care products	Laundry detergents, fabric treatments
		Home care products	Kitchen cleaning products, house cleaning products, paper cleaning products, commercial-use products
	Chemical Business	Oleo chemicals	Fatty alcohols, fatty amines, fatty acids, glycerin, commercial-use edible fats and oils
Performance chemicals		Surfactants, plastics additives, superplasticizers for concrete admixtures	
Specialty chemicals		Toner and toner binder for copies and printers, ink and colorants for inkjet printers, fragrances and aroma chemicals	

Comparison with other companies

Figure 8 is YAMAHA's Product-Customer Matrix for the 2012 fiscal year, whose main product is musical instruments. The figure indicates that the lower left, B-to-C Completed Products market is the core quadrant.

Section of Products Group Section of Customer	Completed Products	Processed Products
BtoB for Companies	commercial online karaoke equipment, routers, conferencing systems, factory automation equipment etc.	semiconductors, automobile interior wood components, plastic parts, etc.
BtoC for Consumers	pianos, digital musical instruments, string instruments, percussion instruments, golf products, etc.	music schools, piano tuning, music entertainment business, resorts facilities, etc.

Figure 8. Product-Customer Matrix of YAMAHA in 2012 [provenance: made by author]

⁴ Note the website of KAO, "Product History: KAO Corporation" (August 8, 2013)

The most remarkable characteristic of YAMAHA is the strong relationship between the B-to-C Completed Products market and B-to-C Processed Products market. Particularly the music school was a very important business in order to disseminate musical instruments to every household from the 1960s to the 1980s. Currently, the music school has diverse programs such as special classes for the elderly, mainly the baby-boomer generation, online schools, English schools, and schools for caregivers.

Also, the know-how related to communication technology and information technology obtained by the electronic musical instrument has contributed to new product introductions in the B-to-B Completed Products market and production technology, such as wood processing, is utilized to mold automotive interior parts. By comparing KAO and YAMAHA, the difference between the positioning of a core business has produced completely different Product-Customer Matrixes.

Summary

KAO's Product-Customer Matrixes have been analyzed in terms of the most recent one, a comparison of the 50 years prior to 2011, a change every 10 years, and a comparison with other companies. As a result, it has been clarified which area is the core, how synergy is obtained, how the deployment of business has been done, and what kind of business characteristics we can find. These patterns obtained by the core technology and core markets have become the *raison d'être* (i.e., reason for existence) of the company, strongly affected by a product that became the main product of business from the beginning of the company's establishment. Meanwhile, it was determined that product lines are small in the B-to-B Completed Products market, yet there is the possibility of new business development by considering the product development in this area in the future.

In addition, it is determined that reconsidering the meaning of Completed Products and Processed Products is necessary, while classifying different products into the matrix due to the characteristic of the KAO's product group related to the value-in-exchange and the value-in-context by customers. For example, in the case of beverages, it is positioned in the lower left quadrant, that is, B-to-C Completed Products. Consumers typically buy and drink a beverage and do not seek any tangent point with the provider, in this case KAO. However, the situation is slightly different in cases of laundry detergents and fabric treatments. There is the big difference in accordance with the motivation, know-how, and skills of consumers about the product. In case of the laundry detergent, for example, a single male who lives alone would put the laundry in the washing machine, add the laundry detergent without thinking, and dry the laundry in the room. However, in the case of a female who wants to wash her precious dress at home, would take a different pattern. She might take actions after a careful investigation of the fabric and the level of dirtiness, and a thought of how to use the laundry detergent under what conditions. A housewife with a large family would also attempt to achieve her goal of washing after the thoughts of what to wash with, how much detergent to use, and how hot the water should be. In fact, a variety of notes are written on the packaging boxes of laundry detergent, such as material of clothes, the ingredients and the risks, the amount of water for the type of washing machine, and pre-processing.

When a consumer uses a product in the wrong way and has a bad result, then the consumer would think the problem comes from the laundry detergent and might not lay a hand on it again. Also, consumers have various situations that change all the time. Under such circumstances, consumers would want to cast various questions to providers or manufacturers. How the company corresponds to those questions could

affect the sale of the laundry detergent. For this reason, KAO has established the "Kao Communication Center" and has tried to smoothly address consultations with its consumers. This communication center is linked with the "KAO Echo System" in the company, not only used to answer their consumers rapidly, but also used to distribute information internally for the next product improvements as the needs for new products. As an example of the famous product improvement that was born in the function of this center, the company developed a container for shampoo and conditioner that has convex superior portion on only the top of shampoo for those people who are visually impaired. This idea has spread as a standard correspondence in the industry at present, by means of KAO.

If the example of laundry detergent is applied to the discussion of S-D Logic, there are cases where the consumer as purchaser pursues the value-in-exchange or where he or she seeks value-in-context that can be used to co-create and co-produce with manufacturers. It might depend on the consumer himself, or the circumstance where the consumer is placed. Based on these discussions, Figure 9 can be drawn considering whether it is the Completed Products strongly seeking value-in-exchange or the Processed Products strongly seeking value-in-context, using the characteristics that KAO's B-to-C products group has. Some only strongly require the value-in-exchange, while others seek a wide variety from value-in-exchange to value-in-context by a wide range by the consumer of situation.

While responding to its customers' needs making the product's package correspondingly when the value-in-exchange is strong, KAO establishes a system internally to support consumers who seek the co-creation or co-production after their purchase. This movement corresponding to the characteristics of products is the way of development management that has been cultivated, while continuously introducing new products in the B-to-C Completed Products market over the long term.

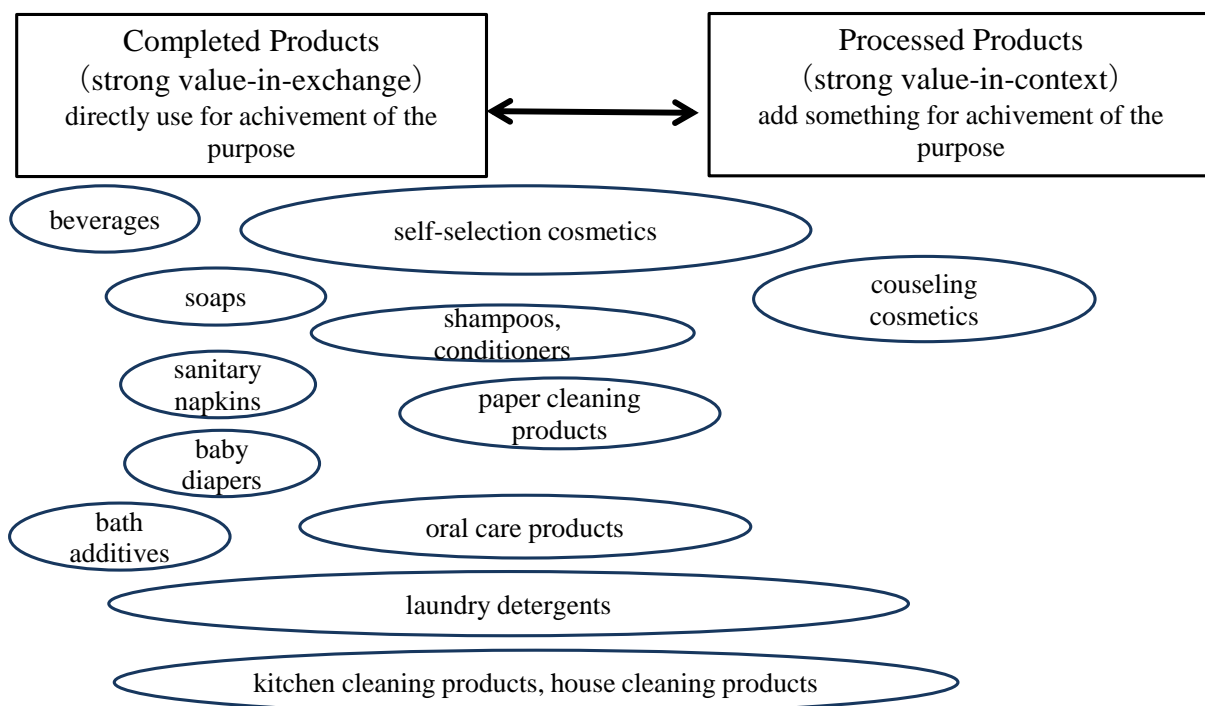


Figure 9. The characteristics of KAO's B-to-C products group [provenance: made by author]

Discussion and Conclusion

At first, this study reviewed an advanced concept regarding value in order to analyze how Japanese manufactures have built development management while emphasizing value integration. Secondly, a Product-Customer Matrix was developed that incorporates these value concepts. Then, after choosing KAO Corporation, a leading company in household goods industry as an example, the product groups of KAO were plotted in the Product-Customer Matrix using public information such as securities reports. Also, management development related to product development of KAO has been revealed through the current situation, the comparison between the current period and fifty years ago, the consideration on change every 10 years, and the comparison with other companies. The revealed result clearly shows KAO's business model thoroughly injecting the know-how and technologies developed in B-to-B Processed Products market into B-to-C Completed Products market over the long-term continuously. In addition, it is also understood that as the possibility of future business development, there are less number of products in B-to-B Completed Products market. Moreover, this study finds that products group positioned in the KAO's B-to-C Completed Products market may have a wide range of properties from the Completed Products to the Processed Products depending on purchasers', or consumers', motivation, knowledge, skills, or the circumstances that they are in. And, KAO has built the development management corresponding to this breadth.

There are three remaining challenges. First, although this study only focused on KAO, there were three other companies, TOTO, YAMAHA, and TOYOTA. Comparison analysis was performed in the part of this paper using YAMAHA as an example, but was not sufficient. It is believed that by applying this framework to the three remaining companies, the potential for business and new patterns of business models in the future of the respective companies can be drawn. Next, although the result drawn from KAO's Product-Customer Matrix is something that can be referred to as "Core Technology Application Synergy", there was another type of synergy found from YAMAHA. This synergy is important in development management integrating value, thus it will be also meaningful to explore the synergies that are common to several companies. Finally, since sometimes it is difficult to distinguish whether some products are Completed Products or Processed Products, or whether value-in-exchange or value-in-context, it is necessary to consider how this problem can be solved and reflected in the Product-Customer Matrix. To do so, it is required to investigate the characteristics of each product in more detail. This is also one of the limitations of this study.

References

- Anderson, Chris. 2012. *MAKERS : The New Industrial Revolution*. Random House Business Books.
- Bowman, Edward H. 1976. Strategy and Weather. *Sloan Management Review* 17(2): 49-62.
- Christesen, Clayton M. 1997. *The Innovator's Dilemma: When new technologies cause great firms to fall*. Harvard Business School Press.
- Fujii, Seiichi. 2010. "Shinseihinn Kaihatsu ni okeru Marketing to Innovation no Tougou" [Integration of Marketing and Innovation in New Product Development] *The Executive Summary Anthology of The 50th Anniversary Study Report Conference by The Academic Association for Organizational Science* :117-120.
- Grönroos, Cristian. 2008. Service logic revisited: who creates value? And who co-creates?. *European Business Review* 20(4): 298-314.

- Helper, Susan R. and Sako, Mari. 1995. Supplier relations in Japan and the United States: are they converging?. *Sloan Management Review* Spring: 77-82.
- Hitotsubashi Research Institute . 2012. “2013 Nen Ban Zukai Kakumei Gyoukai Chizu Saishin Digest” [Year 2013 Graphic Illustration: Newest Map of Business Field]. Takahashi Shoten,
- Kida, Masaki. 2006. “ASAHI no Sosiki Kakushin no Ninchiteki Kenkyuu- Yuukasyoukennhoukokusyo no Text Mining,” [Precognitive Study of Organizational Innovation by ASAHI –Text Mining of Annual Report]. *Organizational science* 39(4):79-92.
- Kim, W. Chan and Maubougne, Renee. 2005. *Blue Ocean Strategy*. Harvard Business School Press.
- Kusunoki, Ken. 2006. “Jigen no Mienai Sabetsuka” [Invisible Differentiation in Dimension]. *Hitotsubashi Business Review* 53(4): 6-24.
- Lusch, F. Robert and Vargo, Stephen L. 2008. Service-Dominant Logic: continuing the Evolution. *Journal of the Academy of Marketing Science* 36(1): 1-10.
- Minami Chieko. 2005. “Relationship Marketing –Kigyoukan ni okeru Kankei Kanri to Shigen Iten” [Relationship Marketing – Relationship Management and Resource Transfer between companies] Chikura Publishing.
- Muramatsu, Junichi. 2010. “ S-D Logic to Kenkyuu no Houkousei” [S-D Logic and Directionality of that Study] Pp.120-135 in *Service Dominant Logic*. Inoue, Takamichi and Muramatsu, Junichi. Dobunkan Shuppan.
- Nobeoka, Kentaro. 2006. *MOT :Gijutsu Keiei* Nyuumon [*MOT: Management Technology*]. Nikkeishinbun-sha.
- Nobeoka, Kentaro. 2010. Value Creation and Value Capture at Manufacturing Firms: Importance of Non-functional Value *IIR working paper* WP#10-01.
- Ogawa, Susumu. 1998. “Does sticky information affect the locus of innovation? Evidence from the Japanese convenience-store industry,” *Research Policy* 26(7): 777-790.
- Pitelis, Christos. 2009. The Co-Evolution of Organizational Value Capture, Value Creation and Sustainable Advantage. *Organization studies* 30(10): 1115-1139.
- Staw, M. Barry. 1981. The Escalation of Commitment to a Course of Action. *The Academy of Management Review* 6(4): 577-587.
- Vargo, Stephen L. and Lusch, F. Robert. 2004. Evolving to a New Dominant Logic for Marketing. *Journal of Marketing* 68(1): 1-17.
- von Hippel, Eric. 2005. *Democratizing Innovation*. MIT Press .
- Webster, Frederic E. 1994. *Market-Driven Management*. John Wiley & Sons.
- PRONEXUS Inc. “ the Comprehensive Corporate Information Database ”eol”, <http://eoldb.jp/EoIDb/>_(accessed 8 August 2013)
- KAO Corporation ” About Kao Group : Product Introductions ” http://www.kao.com/jp/en/corp_about/history_01.html (accessed 8 August 2013)