# The Evolution and Innovation of Business Models in Manufacturing Industry: Alternatives of Business Models for Increasing Returns

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## Abstract

The purpose of this paper is considering about the alternatives of the business for increasing returns through grasping the evolutionary process until the business model in the manufacturing industry reaches today.

The increasing returns mean the phenomenon that profits increase gradually in the point of view of the company management. As for this paper, however, it is aware of the increasing returns as a phenomenon that the expansion of the competitive advantage is shown through the capture of the rivals' competitive advantage. Therefore, we know that the clear sharp divide between winners and losers in a "Winner Takes All" game. We think that the phenomenon is brought by the increasing returns.

When we understand the increasing returns in that meaning, we know that most of the businesses for the increasing returns are realized by the electronic commerce through the Internet. Moreover, we also know that most is advanced in the field of the non-manufacturing industry. That mechanism doesn't attract the customer by the offer of their products, but the value, which the customer gets, is enhanced through the offer of many benefits. Increasing returns in the electronic commerce are concluded with enclosing many customers through the offer of them. Therefore, it is difficult to realize the business for the increasing returns in the manufacturing industry that makes the offer of the product a basis. So, this paper sorts business models in some types by the difference in nature of the business models in the manufacturing industry. And we think that each type should be analyzed.

This paper will explain the condition of the increasing returns and its contents in the business model of the manufacturing industry.

# 1. Introduction

Today, increasing returns is realized by electronic commerce businesses whose business models attempt to expand markets by providing many benefits to customers. As a result, it can be understood that these types of businesses expand marginal revenue. For example, in the case of Amazon.com, the company grew net sales by extending its products and service offerings beyond books. Amazon has been able to increase repeat purchase rate while expanding its new customer base year by year. In recent years, repeat customers account for roughly 70% of the company's sales. Customers are locked into Amazon at twice the rate as they are locked into other general bookstores.

The case of the manufacturing industry is far different from that of the electronic commerce businesses, and the realization of increasing returns is difficult. This is because the nucleus of the manufacturing business is to provide a tangible product for customers, which requires a business model that exhibits decreasing returns. Also, cost leadership and product differentiation are very important elements of competitive strategy (Porter 1986) for manufacturing businesses. When businesses compete with tangible products, however, those elements often become the target for imitation by rival companies. Therefore, the competitive advantage of the market leader may not be sustainable for a long time (Schnaas 1994)<sup>1</sup>.

With such a competitive strategy, it is difficult to build a business model that generates increasing returns, due to the changing nature of the competitive environment. We have a considerable amount of interest in the manufacturing industry, which exhibits such characteristics. The contents of that interest are mainly associated with how a manufacturing business can get out of a business structure that produces decreasing returns and develop one that shows increasing returns. We have given many discussions on this subject in the past. As a result, we found that the source of competitive advantage had been changing in the historical development process of the manufacturing industry.

The first purpose of this paper is to explain the process of business model evolution in the manufacturing industry. Next, business models that show increasing returns are considered, followed by a discussion on how to transplant such models to the manufacturing industry.

# 2. The Nature of Increasing Returns

### 2.1 The Concept of Increasing Returns

We can understand by the phrase "increasing returns" that the term refers to the phenomenon of gradually increasing profits. However, according to Arthur (1994), the actual significance of this type of business presumes that an overwhelming competitive advantage is established with increasing returns, and that it should be taken more seriously than the phenomenon of increasing profits. Accordingly, with the phenomenon of increasing returns, the competitive advantage of a rival company is deteriorated gradually. This can be symbolized by the clear sharp divide between winners and losers in a "Winner Takes All" game.

Even this paper argues in accordance with this recognition. In other words, if for example, Amazon takes away customers from an existent bookstore and CD shop, it can realize the phenomenon of locking in customer and increasing returns.

# 2.2 The Condition of Increasing Returns

So, we must think about the conditions of businesses that exhibit increasing returns. Even if existing customer are merely maintained (customer retention), we do not believe that the phenomenon of increasing returns occurs. In some cases, excellent customers may repeat purchases many times. If they do so, an increase in sales can be anticipated. However, we do not think that repeat purchases are always directly connected with the expansion of competitive advantage. Moreover, we can't think that this in and of itself will realize the phenomenon of increasing returns for a business. Also, merely maintaining customers will seldom have a direct influence on depriving the competitive advantage of a rival company. To achieve increasing returns, it is important to take customers away from other companies (rivals). In other words, the company that wins must aim at gaining new customers. The maintenance of existing customers and the acquisition of new customers can be thought to be a condition to achieving increasing returns. According to Fornell (1992), a business strategy is classified as either defensive or offensive. He explains that customer retention is a defensive strategy, while acquiring new customers is an offensive strategy.

In this paper, the pursuits of a defensive strategy and an offensive strategy are both considered "increasing customers". Therefore, we believe that a business model that realizes increasing returns makes increasing customers a primary condition. Though this paper discusses the possibility of the increasing returns in few business models in the manufacturing industry, we will argue whether increasing customers is a possible criterion for judgment.

However, this paper does not show the nature of each business model clearly. Therefore, further research that clarifies the nature of each business model is necessary to further the argument of this paper regarding the possibility of increasing returns.

## 3. The Evolutionary Process of Business Models

# 3.1 The Meaning of Business Model

We define a business model as the structure of a company's business that is used to compete and succeed in the market. From the viewpoint of business administration, there are many aspects by which to judge the competitive advantage of a company. However, because this argument is limited to the manufacturing industry, we focus on the "technology" for making things.

Added value is created by a company's technology and offered to the market. It becomes the fundamental mechanism by which profit is generated. This means that both technology and the market influence a company's business model. When managing its competitive advantage, a company must take these into account (Figure 1). Therefore, we must understand how technology and the market environment change in order to understand the process of business model evolution. In the following section, we will confirm how these two factors have historically changed.

#### Figure 1. Concept of Business Models



### 3.2 Understanding Grasping Business Model's Evolution

### (1) The Evolution of Business Models with Regard to Technology

In the past, the value that a customer received was the product itself. A company created value for its customers with its products. Companies lacked product development technology, and focused on expanding their corporate group (internalization strategy, which is explained later). This meant that companies gave priority to cooperating with other companies over obtaining necessary technology. In other words, the value that a customer received was wholly accounted for by the products provided by companies.

This type of business structure, where the whole value system of a product is completed within the company or the corporate group, is defined as a closed business model in this paper. The closed model creates value within the company and/or corporate group without introducing the architecture of the product and technology to other companies (Yamada 1997). Previously, IBM's mainframe business created all its added value internally.

A value system is the accumulation of all the parts that maximize the value that the end user obtains. The maximization of the value that is obtained from a product is attained by the product's various parts. Customer satisfaction is not maximized if one part of the finished product does not function well. For example, the value of a human body is maximized when both arms and both legs work completely. The value of a personal computer is maximized when the monitor, CPU, OS, RAM, application software, motherboard, etc. form a value system.

On the other hand, there is the type of business structure where a company specializes in a part of the whole value system. The company forms cooperative relationships with other companies that can contribute to the different parts of the whole value system. The business structure where cooperative relations enhance the whole value system is called an open business model. As for this open model, products are usually based on a standardized interface that makes linkage with products of other companies possible. When there is no standardized interface, the company aims to establish a new standard by introducing new architecture and technology to other companies (Yamada 1997).

This is conspicuous in the personal computer business industry where competition has intensified since the 80s. In the business world, there are many companies that do not supply a complete product, but whose technical advantage is established in the whole product. In other words, in the open model, companies in different fields of the value system build a relationship based on "competitive collaboration" (Hamel and Doz & Prahalad 1989) through opening their technology and architecture to their partners. Technological innovation is advanced through this competitive collaboration. Competitive collaboration shows that there is no recognition of a so-called destiny community based on a feeling of unity between companies. In the case of the open model, however, it is important to note that technological innovation is advanced through relationships with other companies.

Therefore, from the perspective of technological innovation in the manufacturing industry, it can be understood that business models can be divided by their closed and open nature.

#### (2) The Evolution of Business Models with Changes in Market

When building its competitive advantage, a company must adapt to the value criterion of its market. Therefore, a change in this value criterion divides the nature of business models. In the past, "the value criterion of the industrial society" was the center of business activities in the manufacturing industry. In an industrial society, the value produced by business activities is encompassed in visible and tangible products (*things*). We can consider the value criterion of an industrial society, where value is centered on the price, function, etc., as one paradigm.

On the other hand, we can also consider another recent paradigm, which is knowledge-based. This paper refers to a society with this paradigm as a "knowledge-based society". In a knowledge-based society, the important value criteria are not the visible and tangible characteristics of a product, but are the intangible functions of the products, or what they do. The assets that a company should possess in such a knowledge-based society are not material or financial assets, which can deteriorate over time. Rather, knowledge creation, intellectual property, or "know-how", are important. Competitive advantage in such a society is based on offering this know-how. This is because know-how presents solutions to customer problems.

At this time we must explain the meaning of "things" and "what a product does". As has been described, things are visible and tangible products. In other words, this means having and consuming goods. In the following argument of this paper, the concept of "things" is based on this definition. In contrast, as mentioned above, "what a product does" is an invisible and intangible characteristic of a product. If we follow this way of thinking, "things" point to the finished product itself, and "what a product does" encompasses such actions as the services provided to customers. For example, while IBM provides computers (a thing), it also provides services that help customers get the most value of "what its products do".

Therefore, what can be understood from the above argument is that business models can be classified in terms of the market value criterion, based on whether it focuses on providing value based on "things" or "what its products do".

#### Figure 2. Matrix of Business Models



## (3) The Process of Evolution

From the preceding discussion, Figure 2 classifies business models. The innovation of technology axis denotes whether technological innovation is achieved through a closed or open business model. The market value axis classifies businesses based on whether their competitive advantage is based on "*things*" or "*what their products do*". As a result, four types of business models (A, B, C, D) can be defined.

We must recognize that the value criterion of the market has shifted from "*things*" to "*what products do*", while there is no movement in the opposite direction. This is because more value is provided to customers by what products do. Generally, we cannot expect customers to place more value on the tangible characteristics of a product than on what it does. We can think, however, that the competitive advantage of a company's technology may be based "*things*" or "*what a product does*". A company's strategic intent decides whether a closed or open model is adopted. Therefore, we can consider the movement from an open to a closed model. Accordingly, the process of business model evolution in Figure 2 follows the flow of  $A \rightarrow B \rightarrow C \rightarrow D$ . Business models can then be sorted in accordance with this process into four "generations".

Next, the nature of these different generations of business models is discussed below in detail.

#### **3.3** The Specialization of Business Models

In this section, each business model is made specification to understand easily through diagramming them.

# Type A

Type A (first generation) business models are judged to be traditional in the manufacturing industry. This is because cell A is defined as businesses which focus on providing *"things"* in a closed manner. At this stage, supplying the whole product is the main purpose. Companies categorized in cell A were established to produce and supply whole products. In the past, companies that produce automobiles and durable items like home electric appliances offer value through their hardware. From this point, the business model of cell A companies is termed "H".

# Type B

As for B cell companies, both hardware and embedded software (S) are important. The market value criterion is the same as that of the first generation and is based on tangible "*things*". However, the value of "*things*" varies greatly by the contents (software) embedded into the software.

Typical B cell businesses are computer manufacturers whose competition intensified after the 80s. It is common knowledge that a computer does not create value based on only its hardware. Operating systems, various core parts, and application software are essential. In other words, competitive collaboration among companies (between hardware and software companies) is necessary, because competitors aim at an open business model. Recently, the same phenomenon can be seen in the automobile industry. Modern automobiles are equipped with not only a car navigation system but also with other the various types of software. Home electric appliances, such as washing machines, refrigerators, television sets, VCRs, air conditioners are also equipped with complex and advanced software. From the above description, cell B business models can be described as "H+S".

# Type C

C cell companies are characterized by focusing its competitive advantage on "what its products do" and by having

a closed business model. At this stage, companies do not compete by providing *things* (hardware and software), but by providing value based on *"what its products do"*.

"System integration", which aims at the integrative use of advanced computer systems, does not create value through the offering of individual hardware or software. The integrated system creates value as a whole. This business model is expressed concretely in "solution businesses". Solution businesses develop an optimum combination of hardware and software to solve customers' problem. In other words, service (SV) occupies an important position in addition to hardware and software. Gradually over time, a product, which consists of bundled hardware and software, includes service. Bundled hardware and software became a means to realize service. In terms of the manufacturing industry, it is necessary to recognize the importance of service. As the third generation business model (C cell) takes in the above conditions, this generation can be described as "SV (H+S)".

In cell C businesses, the value of "*what a product does*" is provided through a closed business model. For example, IBM has cooperation relations with other companies for hardware and software. However, IBM is in charge of all system integration and consulting services. For example, IBM Japan conducted a system integration product for a museum that opened in Tokyo in 1993. At that time, IBM Japan took charge of not only the design of the exhibition booth, but also the selection and training of the temporary exhibition staff that manned the booths. In other words, the third generation business model involves all parts of service.

## Type D

The D cell business model is based on the C cell model. However, D cell models are open. Recently, companies, which provide various services through the Internet, have increased in the manufacturing industry. These businesses are based on networks (NW). We can understand that this type of business provides hardware, software and service as does cell C businesses. Then, the unique characteristic of cell D businesses is that their business model is based on networks. In other words, cell D businesses produce value based on an open business model that incorporates both business partners and customers.

For example, Dell Computer started GIGABUYS.com in March 1999. This business sells over 30,000 information technology products directly on the Internet. Customer evaluation accumulated on this web site is provided to the public. As a result, Dell has been able to improve new customer acquisition. Moreover, this web site includes information on peripheral products from other companies', such as Canon, NEC, and Hewlett-Packard. Although these products do not network with Dell's own product, they can be purchased. This service provides an added benefit to customers and helps to increase customer retention. This type of business model is described as "NW  $\iint$  SV (H+S)" in this paper.

Figure 3 illustrates the four business models in order. We will discuss the realization of increasing returns in the manufacturing industry next.

#### 4. Alternative Business Models for Increasing Returns

We verify the alternatives for realizing increasing returns. For the purpose of this paper, we select "increasing customers", which has already been discussed, as the criterion for evaluating these alternatives. This criterion includes increasing both the retention of existing customers (defensive strategy) and the acquisition of new customers (offensive strategy).

GY		VALUE CRITERION OF MARKETThingsWhat a Product Detection	
DF TECHNOLO	Closed Type	A:the 1 <sup>st</sup> Generation H	C: the 2 <sup>nd</sup> Generation SV (H+S)
INNOVATION C	Open Type	B: the 3 <sup>rd</sup> Generation H+S	D: the 4 <sup>th</sup> Generation NW∬SV (H+S)

#### Figure 3. Evolution of Business Models

## 4.1 The First Generation Business Model

Previously, most first generation business models were seen in the early stage of the development process of multinational enterprises (MNEs). Accordingly, verification through literature on MNEs is necessary.

After the 50s, many companies in the U.S. developed international business activities. Research on MNEs was frequent during this time. Afterwards, Hymer (1976) discussed the issues of 'exclusion of competition among companies' and 'maintenance advantage' as the motive for international business activities. We can understand that competitive advantage was maintained in a defensive manner. Furthermore, the theory of internalization has been developed as a method to solve these two issues. With regard to market transaction, however, internalization can protect the technology and information that a company possesses (Rugman 1981)<sup>2</sup>.

On the other hand, we can say that in some cases the target companies and customers are locked in by internalization. This means that internalization itself is an opportunity for acquiring new customers (in other words, offensive strategy). However, we are aware that the business mechanism of the first-generation model is different from that of the second-generation model, which is discussed in the following section. This is because the first generation model is closed. When other companies are not locked in by internalization, an opportunity to acquire new customers is not created. In others words, closed models do not continually target new customers.

From the above argument, we can confirm that the business model of the first generation model is defensive. This means that the condition of "the increasing customers" is not satisfied.

#### 4.2 The Second Generation Business Model

Obviously the second generation model is different from the first generation model in terms of the following point. As mentioned previously, the software included into "*things*" by companies decides the whole value of the product of a second-generation business model. This means that having hegemony over the components (parts and software)<sup>3</sup> that composes "*things*" is the conclusive factor toward high level competitive advantage in a second generation-model. This is especially true in the information technology industry. Morris & Ferguson (1993) point out that competitive advantage can be sustained by developing a de facto standard architecture. In other words, in the second-generation model, a company does not compete based on providing a complete and finished product. Competitive advantage is concentrated on a core part of product. It is easy to see that a de facto standard status is established with the architecture of this core part. The reason it is difficult to base competitive advantage on the whole of the product is explained next. The functions of many products are becoming exceeding advanced, making it difficult for one company to dominate the technology of the whole product and overwhelm competitors (Kokuryo 1995).

Therefore, it is necessary to network with other companies for the various different parts of the value system in order to enhance the whole value of the system. This means "externalization", or out-sourcing, is taken seriously by second-generation businesses. This is the reason that strategic alliances have been conspicuous over the last decade or so. In recent years, strategic alliances are not the only type of networking among companies. More deeper and active partnerships are increasing (Lewis 1990). Building collaborative relationships with other companies is the premise of competitive advantage in second-generation businesses. In other words, the whole business world is based on an open business model. The business activities – assembling finished products, developing software, developing core parts, etc. – are conducted by equal partners in the relationship.

Actually, an offensive strategy (acquiring new customers) is used to gain an advantage. As mentioned above, establishing a de facto standard architecture is the key to success for second-generation businesses. However, the architecture must be adopted by many companies in the market. Therefore, in second-generation businesses being favored as a de factor standard by new customers is a condition toward success. However, it is also a fact that the same strategy is not necessarily adopted for customer retention. Because customers can switch to rival products freely in case of products developed by open businesses. Over the last several years, many large personal computer manufacturers have switched from including Intel chips to AMD chips.

From the above argument, we recognize that in a second-generation business, market share expansion is focused more on acquiring new customers than on retaining existing customers. Thus, we can understand that second-generation businesses undertake an offensive strategy.

#### 4.3 The Third Generation Business Model

We have already mentioned the third generation model of IBM. In the heyday of the mainframe, IBM led the computer industry. However, the rapid downsizing wave of the late 80s seriously affect IBM's business, as the company could not grapple with business innovation at that time. However, IBM was able to regain its business success through innovation of its software and service businesses. As a result, software and service now account for more than 60% of the company's profit. In December 1999, IBM recorded the highest level profit in its history. The company can no

longer be recognized as a mere computer manufacturer.

For this generation, service is central to the competitive strategy of the manufacturing industry as well. Quinn, Baruch and Paquette (1990) emphasize that a product is not the focus of service management in the manufacturing industry. They pointed out that there should be deep knowledge regarding service skills at the center of strategy for the reason discussed next.

Today, many companies have decreased production costs through automation and systematization. Furthermore, most companies are decreasing the relative importance of production cost in the whole value chain. Therefore, the rearrangement of the value chain is important (Quinn 1992). The emphasis on service management is different from second-generation models in that strategic intent is concentrated more on customer retention than on new customer acquisition. Thus, the third generation model is a defensive one. Recently, though research on customer service has been active, there is much argument related to maintaining customers. Generally, with regard to service strategy, it has been argued about changing an existent customer into an excellent one. In such a theory, customers who have the potential to become an excellent customer can be segmented. It is considered important to concentrate service on this ideal segment (Davidow & Uttal 1989). It is also judged that the marketing costs necessary for acquiring new customers is enormous in a mature industry (Davidow & Uttal 1989). In other words, there is common recognition that customer retention produces a greater profit than new customer acquisition (Reichheld 1996).

From the above argument, we can understand that the third generation model does not necessarily aim at extending market share. In this generation, the company will not gain many new customers through developing an open business model. Rather, the company will give priority to a closed system that provides service to customers. However, IBM Japan cooperates with other companies for the development of both hardware and software, but undertakes its service functions on its own.

Thus, we understand that customer retention (defensive strategy) is actively pursued through emphasis on service within a closed system. At the same time, we also understand that this business model does not always gain new customers.

# 4.4 The Fourth Generation Business Model

This paper showed that " increasing customers" is a condition for increasing returns.

As shown in Figure 3, the third generation model is expressed as SV (H+S) in this paper. We mentioned that the core business of this business model was service. We recognize that a service strategy is defensive in nature. In the fourth generation business model (NW  $\iint$  SV (H+S)), service is also the basis for business. In other words, customer retention, a defensive strategy, is important as well.

On the other hand, network management is core to the fourth generation model. Quinn and Baruch & Paquette (1990) find that competitive advantage is based on networking members through service. This paper includes linkage with customers in the concept of networks. We believe that competitive advantage is enhanced by networking with not only other companies (competitive collaboration), but also with customers.

We have already mentioned that GIGABUYS makes public customer evaluation. One important characteristic of the fourth generation model is that network members, including customers, are encouraged to be active. In other words, value is magnified by network members. Increase in member participation (other companies and customers) creates knowledge and information. As a result, benefits to members increase, and the value of the network is enhanced at the same time<sup>4</sup>. This means that acquiring new customers (new network members) is indispensable (an offensive strategy). At the same time, this means that companies pursuing a fourth generation model have to pursue both defensive and offensive strategies.

In other words, the fourth generation model satisfies the condition of "increasing customers". From the above argument, we can say that the fourth generation model has the biggest potential for generating increasing returns in the manufacturing industry.

## 5. Conclusion

This paper discussed four generations of business models in order. We will discuss an actual case of the newest business model (the fourth generation model).

Sony has pioneered the fourth generation model in the Japanese manufacturing industry. After succeeding tremendously in the video game market with its "PlayStation", Sony continued to innovate. The company launched "PlayStation 2" this year with great fanfare. The business model for Sony's PlayStation 2 business is fourth generation. PlayStation 2 is not a mere video game. Sony was aware of the potential of PlayStation 2 as a network terminal. Customers can play a game with other persons or enjoy music over a network. Moreover, the company aims at direct selling of both their own and partners' products. In other words, customers can gain many benefits and services by

participating in this network. We propose that this business model can be depicted as "NW ∬ SV (H+S)".

It is more important for manufacturing companies to be "a service supplier" with the shift of the market value criteria from "*things*" to "*what a product does*". On this occasion, success can be realized if a company can create the network ("the value alliance") with its customers. The potential for success will increase if more benefits are found in the value alliance. The nature of a value alliance created by both a company and its customers becomes the key to creating a competitive advantage. We do not understand how Sony's PlayStation 2 business will develop in the future. However, if we make a judgment from the logic of this paper, we can say that the potential for generating increasing returns is large.

As mentioned above, this paper focused on the manufacturing industry. This paper showed that there is potential for increasing returns in the industry with the fourth generation business model, which are both offense and defense in nature. No other generation of business models are offensively and defensively effective.

We have analyzed the theme of this paper from the single measure of "increasing customers" so far. We intend to continue the analysis from the point of another measure to increase the persuasiveness of our argument.

# **Supplements**

- <sup>1</sup> Schnaas emphasizes the matter that the first mover companies don't necessarily get an absolute competitive advantage. On the other hand, there is a strategy that advances the differentiation through the brand royalty to sustain the competitive advantage. However, this is classified for the defensive strategy, which is going to be argued in the latter half of this paper. Therefore, this doesn't satisfy the condition of the "increasing customers", which we express.
- <sup>2</sup> The next point can be shown as the special reason why internalization is pursued. Because a mass production system was placed at the basis of the competition among the companies in the first generation, it was the key of a success to prepare the system, which was able to keep supplying more hardware in the manufacturing industry. However, a technological innovation in the mass production system was necessary to satisfy this condition. This created the structure, which enhanced the level of the necessary fund. In the structure like this, as it was necessary to monopolize the market for the companies, which had aimed at the acquisition of a large sum of fund in those days, they took the internalization strategy seriously (Bernal 1965).
- <sup>3</sup> The "parts" can be thought to have value as *the things*. But the parts are understood as well as "the software" here, when the parts are important to decide the function of the finished product. It is because the parts, such as the CPU included the personal computers, are caught as the components included in the finished product.
- <sup>4</sup> Gomes-Casseres (1994, 1996) argues about the acquisition of the competitive advantage through the company alliances. The fourth generation-type, which has been argued in this paper, makes Gomes-Casseres' argument develop more, and the network, which included the customers to the participation member, is presumed.

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