

REVITALIZATION OF THE JAPANESE BREWING INDUSTRY

— COMPETITION AND INDUSTRIAL EVOLUTION —

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I. INTRODUCTION

The Japanese brewing industry has been changing dramatically. Since the end of the second world war, the Japanese beer market had been expanding very rapidly, and during this period, Kirin Breweries established the dominant position in the market. In the 1970's, the expansion slowed down, and the industry seemed to have matured in the 1980's. However, in 1986, Asahi Breweries, the third biggest brewer of the four in Japan at that time, caused the change. Asahi, which had lost market share for many years, introduced two new products one after the other, and expanded their market share from 9.9% in 1985 to 20.6% in 1988, becoming the second largest player in the beer industry. Now, even Kirin is taking notice. Since then, the Japanese brewers (Kirin, Asahi, Sapporo, Suntory) have been competing each other intensively, and as a result, the beer market began to grow again. The ranking in the industry had not changed for twenty years, and it was the first time for one brewer to increase its market share by more than 10% in only two years. This is the interesting case of the revitalization of the traditional matured industry.

The revitalization of the Japanese brewing industry was caused by successful challenge of Asahi, a follower in the industry. However, it is usually considered that a leader is the strongest company in the industry and that follower's challenges hardly succeed⁽¹⁾. That is because the leader in one industry has more managerial resources

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(financial and human resource, reputation, and so on) than the followers. With these abundant resources, a leader can compete with others advantageously. Moreover, there are some industrial characteristics which enable a large company to grow larger. In the industry with these characteristics, the leader broadens the lead and the followers' challenges have little influence. The Japanese brewing industry seems to have such characteristics. In fact, in spite of Asahi's various challenges, Kirin continued to expand its market share until 1970's. Nevertheless, in the latter half of the 1980's, why did Asahi succeed in increasing its market share and revitalize the industry ?

Since the late 1970's, maturity of the traditional industries and their revitalization have been broadly discussed. An important contribution to this discussion was made by Abernathy's study on the development of the U. S. automobile industry in terms of technological innovation (Abernathy; 1978). He found that as the industry matured, major innovations decreased and minor ones became prevalent. In another study, he also suggested that if some new technology develops, the existing technological system is outdated and matured industry might be revitalized (Abernathy et al.; 1983). Since then, several cases reported that high technologies such as microelectronics revitalized matured industries⁽²⁾. Radical technological innovation could deteriorate the leader's strength, intensify competition, and revitalize matured industries. However, the Japanese brewing industry revitalized itself without radical technological change.

Asahi's new products were not based on new technology, but on new product concept. This new product concept broke the existing belief about good beer and made both brewers and consumers search for new good beer. This change intensified competition in the industry and in turn the beer market began to grow again. It suggests that even in the industry with the characteristics favorable for a leader, under certain competitive pattern, followers' challenges are successful, and a leader lose the competition. Moreover, although it sounds paradoxical, it is considered that Asahi increased its market share very rapidly and its success was not temporary because of the industrial characteristics favorable for a leader. Therefore, the industrial characteristics and the change of competitive pattern are the key for the follower to succeed and consequently to revitalize the matured industry.

It is true that the organizational (cultural and structural) changes and the leadership of top management were important for Asahi's success. However, in this paper, we analyze the case in terms of the industrial characteristics and the strategies of the brewers. The purposes of this paper are to write a brief case story of the revitalization of the Japanese brewing industry, to explain the reason for Kirin's dominance after the second world war and Asahi's recent success consistently, and to study about competitive patterns, industrial characteristics, and industrial evolution.

In this paper, first of all, the history of the industry and Asahi's success are described. Secondly, we find out the characteristics of the industry that enabled Kirin to continue to expand its market share and enjoy the dominant position. During the in-

dustrial growth period it was important for a brewer to establish the reputation that its beer is high quality beer and the beer of beer lovers, because the brewer with the reputation can expand sales and expansion of sales can strengthen the reputation even more. In other words, there are some "market leader advantages" in the industry.

Third, we compare the competitive patterns between before and after the introduction of Asahi's new products in order to find out the reason for Asahi's success and revitalization of the industry. Finally, we propose a view of an industry and competition which seems to be effective in order to study industrial evolution and growth of the firm, and also propose some interesting research agenda.

II. THE CASE OF THE JAPANESE BREWING INDUSTRY⁽³⁾

(1) The History of the Industry

The Japanese brewing industry began in the 1860's. In the late nineteenth century, the industry was composed of many small brewers. However, in order to stabilize tax revenues from the industry, the Japanese government consolidated many small firms into one big company, Dai Nippon. Dai Nippon enjoyed a dominant position holding more than 70% of the market.

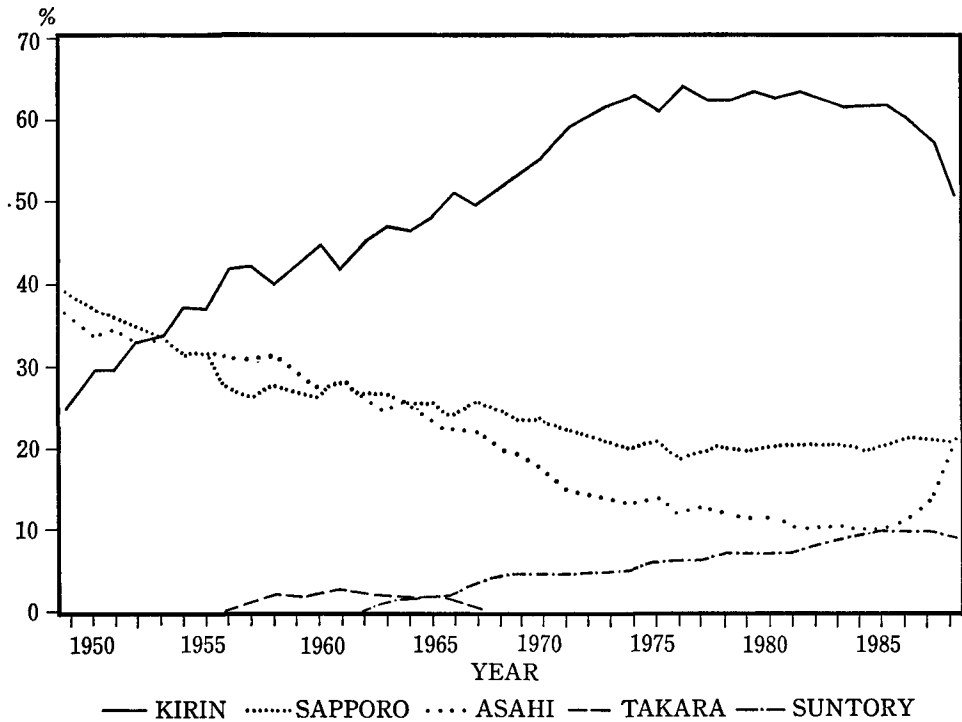
After the second world war, Dai Nippon was divided into Asahi and Sapporo, governmental limits on beer production were abolished, and beer brands revived. Brewers had to compete with each other. In 1950, the industry had three players, the market share was 37% (Sapporo), 33.5% (Asahi), and 29.5% (Kirin). However, by 1954 Kirin became a market share leader (see figure 1). The initial success of Kirin was caused by several reasons.

During that period, there were some initial conditions favorable for Kirin. Since Dai Nippon was geographically divided into Asahi (western area) and Sapporo (eastern area), Kirin was the only national player. The Kirin brand was known nationally, while Asahi brand was little known in eastern area although it was popular in western area. Kirin had factories all over Japan and could supply fresh beer nationally, while Asahi could not do it because of its biased factory location.

In addition, of course, Kirin's effort and strategy contributed to its own success. Kirin tried to improve the quality of beer by introducing new facilities and so on. Kirin also gave priority to supplying urban areas and big cities. At that time consumption in big cities was growing more rapidly than in the countryside, so Kirin could expand its market share. Moreover, Kirin's good reputation in big cities spread nationally as consumption in the countryside grew. For these reasons, Kirin expanded their market share and established the reputation that "Kirin beer is of high quality and the beer of beer lovers."

From 1955 to 1963, the Japanese beer industry was in growth period. Although every brewer could increase production, only Kirin could expand market share. In the

Figure 1 BEER MARKET SHARE

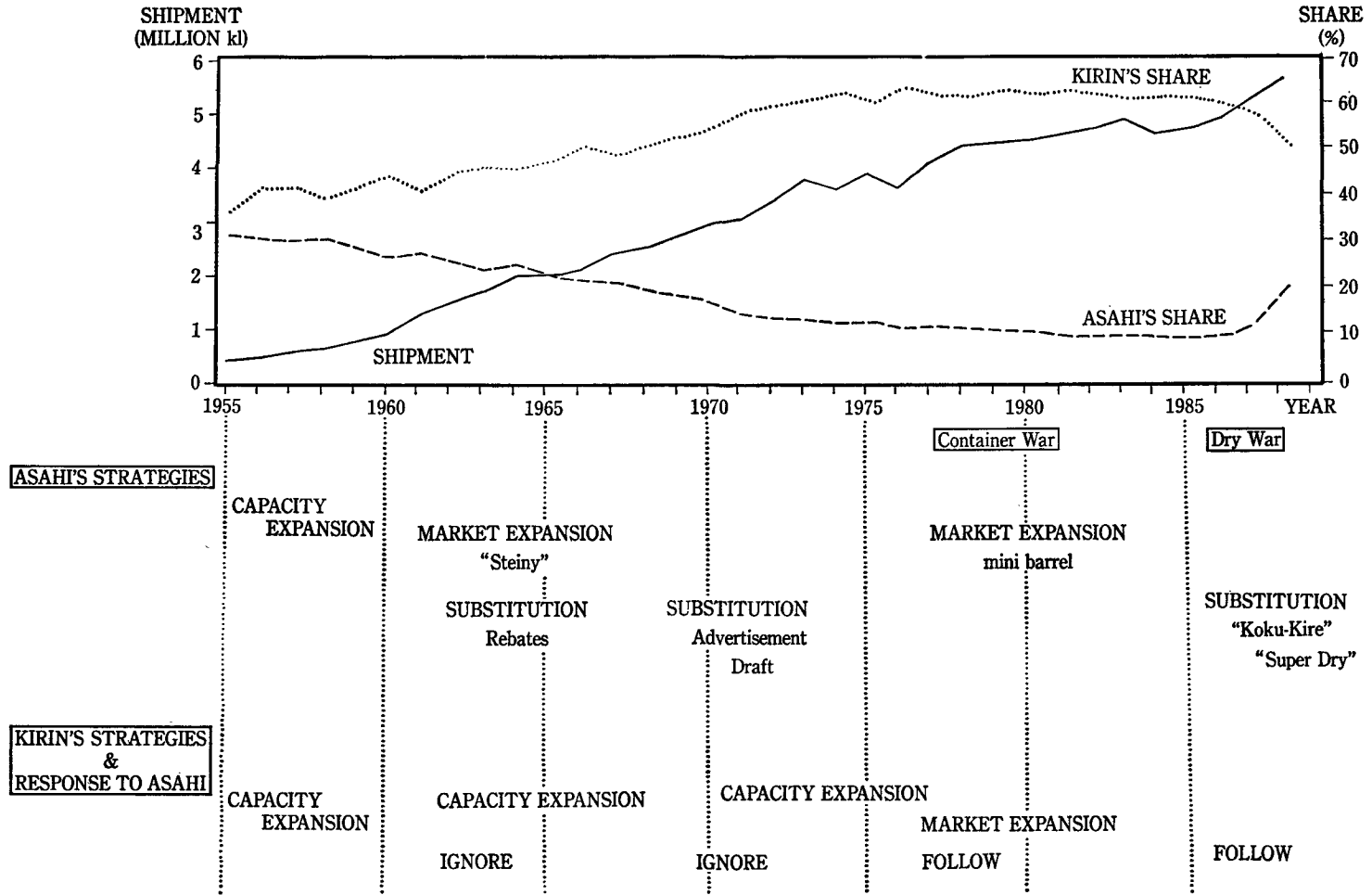


(SOURCE) Kirin Breweries, *Kirin Beer no Rekishi*, Nikkan Keizai Tsushinsha, *Shurui Shokuhin Sangyo no Seihin Hanbai Share*.

1950's, Kirin expanded its production capacity more aggressively than other two brewers. While Asahi and Sapporo began to build new factories in the 1960's when demand began to increase, Kirin predicted increasing demand early and began to build new factories in both 1955 and 1959. Without such aggressive capacity expansion, Kirin drinkers might have run into shortages and Kirin's good reputation might have been deteriorated.

In the middle of the 1960's the growth of the market slowed. As Asahi and Sapporo had just built new factories at that time, their capacity utilization ratio went down. To take advantage of excess capacity, they introduced new beer products in order to exploit potential market. In 1963, Sapporo began to sell very large size bottle, "Sapporo Giants," and Asahi began to sell strange shaped small size bottle, "Asahi Steiny" in 1964. On the other hand, Kirin ignored them and tried to expand capacity of its lager brand. Although the new products of Sapporo and Asahi exploited potential market to some extent, they also cannibalized the market share of existing product lines. Moreover, they sold well at the outset, but they were not ordered repeatedly. As a result, Kirin supplied its beer to the newly exploited market, and further ex-

Figure 2 TRANSITION OF BEER MARKET GROWTH,
MARKET SHARE, AND COMPETITIVE PATTERNS



REVITALIZATION OF THE JAPANESE BREWING INDUSTRY (Asaba)

panded its market share.

At the same time, Asahi secretly changed the taste of its beer to imitate that of Kirin beer. However, the imitation of Kirin beer did not attract Kirin drinkers. When Asahi and Sapporo realized that imitation was not effective, they forced wholesalers to give high rebates, and also tried to deteriorate Kirin's reputation by challenging advertisement. However, these efforts did not succeed.

When Asahi and Sapporo realized that these strategies failed, they changed their policy and began to sell draft beer with emphasis on the taste difference from Kirin's lager beer. On the contrary, Kirin ignored draft beer and concentrated on existing lager beer. While the consumption of draft beer grew gradually, the market share of challengers did not go up, while Kirin recorded the highest market share, 62.8% in 1977.

In order to enlarge the demand for draft beer, Asahi began to sell draft beer in a mini barrel in 1977. Kirin ignored it for a while, but when its market share stopped increasing, Kirin began to sell mini barrels in 1981. Then, "Container Wars" broke out and each player competed in terms of size, shape, and the other attractiveness of the barrel. As a result, competition shifted from taste difference between draft beer and lager to attractiveness of barrels, and market share in the industry remained relatively unchanged. The transition of market growth, market share of Kirin and Asahi, and the strategies of each brewer are exhibited in figure 2.

(2) Asahi's Success

In spite of various challenges by Asahi, its market share declined to 9.9% in 1985, and Asahi was afraid that it could not be viable in the market. However, the situation changed dramatically when Asahi began to sell two new kinds of beer, "Koku-Kire" in 1986, and "Super Dry" in 1987.

In the 1980's, Asahi formulated a corporate philosophy, began TQC activities, and introduced a new corporate identity. Through these activities, Asahi realized that it was necessary to develop new beer oriented to drinkers' taste. The marketing department surveyed the taste of 5000 beer drinkers in 1984 and 1985. The survey revealed that drinkers evaluated beer on the basis of "koku" (richness) and "kire" (sharpness). So Asahi began to develop new beer with these two characteristics.

Although it was difficult to develop such a beer, CI and TQC facilitated the collaboration between marketing and production departments, and Asahi managed to develop a new product. The new beer, called "Koku-Kire," was sold with a new label. Asahi spent an extraordinary amount of money in advertisement and promotion. The company also paid attentions to the quality of beer by using good material and keeping the beer as fresh as possible. For instance, old beer in the distribution channel was regularly recalled and destroyed. Owing to these efforts, "Koku-Kire" sold well, and Asahi's market share recovered to 10.4%.

However, Asahi's challenge did not stop there. It began to sell another new beer, called "Super Dry." "Super Dry" was belonging to the same concept as that of "Koku-Kire," but new beer had a sharper taste and higher alcoholic content than the latter. "Super Dry" was a tremendous success and pushed Asahi's market share to 12.9%. Other brewers, including Kirin, began to sell a dry-type beer in 1988, and the "Dry Wars" broke out. Unfortunately for Kirin, at the beginning of the year, newspapers said that Kirin imitated Asahi in the package and the name of the new beer. Moreover, Kirin undervalued the growth of the dry beer market segment, and did not prepare enough capacity for its dry-type beer in the spring. Therefore, when retailers tried to push Kirin's dry beer, they were short of it. These things helped Asahi establish the reputation of "Super Dry" as the champion of dry-type beer, and Asahi won the war. As a result Asahi's market share rose to 20.6%.

When Asahi began to sell these two new products, it emphasized their taste was different from Kirin's lager beer. The differentiation of taste was based on one hypothesis — beer drinkers can be classified into older and younger generations. While the former prefers the taste of Kirin's lager beer, the latter prefers a sharper taste, however, selects Kirin only because of its reputation that Kirin beer is the beer of beer lovers. Which brand gets the reputation depends on which brand heavy drinkers or, in other words, beer lovers drink. In the 1980's, demographically, the younger generation made up a larger population of beer drinkers, therefore it was good time to offer a new taste of beer and deteriorate Kirin's existing reputation.

There was another reason why Asahi introduced not only "Koku-Kire" but also "Super Dry." Hitherto, Asahi's new products performed well initially, but they had no staying power and were soon replaced by Kirin's lager beer. Asahi felt that "Koku-Kire" could not maintain the increase of its market share and therefore it was necessary to introduce another new beer with a sharper taste. That is why "Super Dry" was introduced in spite of the fact that it would cannibalize "Koku-Kire"'s market share. In other words, by introduction of the two new products with similar taste, Asahi tried to expand the market for a beer with sharp taste.

Moreover, Asahi spent an extraordinary amount of money on advertising. Hitherto, Asahi ensured a certain level of operating profit and then determined their advertising budget. Therefore, advertisement of Asahi often declined after strong summer sales receded. However, Asahi's new president said that the company could pump money in advertising until operating profit went down to zero. In 1986, advertising expenses increased 50% over the previous year.

Asahi also invested in plant and equipment aggressively. In the brewing industry, it takes more than one year to expand capacity of even an existing factory. Therefore, the decision of expansion in 1988 was made in the spring of 1987, when it was still uncertain how much "Super Dry" would be sold. According to industry norms, even a 30% expansion is considered too aggressive, but Asahi expanded capacity by 50%

in 1988. As a result, however, when "Super Dry" became a hit in 1988, this capacity expansion enabled Asahi to increase its market share dramatically.

III. ANALYSIS

(1) Characteristics of the Brewing Industry

In the Japanese brewing industry, Kirin had expanded its market share from the end of the second world war until the middle of the 1970's. During that period, other brewers tried to maintain their market by various efforts, but failed. Kirin's success was partly due to initial conditions, but mostly due to established reputation that Kirin beer is the beer of beer lovers. Why, though, did this initial success of Kirin continue for such a long time? The answer appears to be that in the brewing industry, there are some factors which enable a large companies to grow larger. The factors which facilitate continued growth of market leader (hereafter referred to as "market leader advantages") are as follows:

The first factor is concerned with the pattern of consumption. An industry study showed that the top three reasons for brand selection are "quality," "past drinking habit," and "reputation" (Katayama; 1972). In other words, beer is purchased customarily and in the industry there is externality in consumption. This externality appears because beer consumption by beer lovers or heavy drinkers influences drinking habits of other people. Therefore, initial popularity for Kirin increased the demand for Kirin.

The second factor is about taste. The taste of beer is deteriorated as beer gets old. So, brewers try to supply as fresh beer as possible. This is called "fresh rotation." A larger brewer can enjoy a faster turnover in inventory and keep beer fresher. Such a brewer realizes fresh rotation naturally. Since Kirin beer was always in demand, it remained fresh which in turn leads to further increase in demand.

In advertisement, there are also market leader advantages. Advertisement is not effective without a certain level of expense regardless of the sales volume. This means that advertisement is more advantageous for the larger brewer. In addition, popular products advertise themselves. Popular brands occupy prime shelf space and are exposed to consumers.

The final factor concerns rebates. Although producers give rebates to wholesalers, rebates from wholesalers to retailers are larger and, therefore, more important in the Japanese brewing industry. There are two kinds of wholesalers in the industry. One is the general wholesalers that deal with all brands of beer, and the other is the exclusive wholesalers that deal with only a single brand. Wholesalers give retailers higher rebates for the slower moving brands than for the popular brands. This rebate structure financially weakens the exclusive wholesalers that deal with an unpopular brand. On the other hand, the general wholesalers do not want to push the slow

selling brands because of higher rebates for them, and as a result, promotional efforts are concentrated on popular brands. Therefore, popular brands enjoy strong support from the wholesalers.

Using the above four factors, we can understand why Kirin could continue their initial success. Once Kirin beer established a good reputation; ① Kirin drinkers became repeat customers and other brand drinkers switched to Kirin, ② Kirin beer became fresher with high inventory turnover rate, ③ more consumers recognized Kirin beer because of leading market share, ④ wholesalers pushed Kirin beer because of its popularity.

(2) The Change of the Competitive Patterns

In the Japanese brewing industry, there are some market leader advantages. Other than beer, there are several industries with a tendency towards concentration. In those industries, there are other market leader advantages such as experience effect or network externality (Henderson; 1979, Katz and Shapiro; 1985). Although it seems to be difficult for smaller players to succeed in an industry with these advantages, Asahi succeeded in expanding its market share by introduction of new beer. It is probable that radical technological innovation caused the change in such an industry, however, Asahi's new products were not based on technological change. Why did Asahi succeed? What differentiates "Koku-Kire" and "Super Dry" from Asahi's former new products? In order to answer these questions, we must compare "Super Dry" with the three former new products, "Asahi Steiny," draft beer, and mini barrel in terms of competitive patterns.

We characterize competitive patterns in the three points.

- (a) Attractiveness: material, size, or shape of containers vs. taste
- (b) Industry leader's reaction: follow vs. ignore
- (c) Result: market expansion vs. market share change

The attractiveness of "Steiny" was its strange shape and small size of the bottle. Kirin ignored this challenge. "Steiny" expanded the beer market, but the market share in the industry did not change. As to draft beer, Asahi emphasized the taste, "fresh." Kirin had not introduced draft beer for a long time. Draft beer did not caused either market expansion or change of the market share so much. Mini barrel attracted people's attention in terms of its strange shape. Kirin followed Asahi in a few years. Mini barrel expanded the beer market slightly, however, Kirin won the "Container War" because of its strong sales force, so the market share did not change radically. The attractiveness of "Super Dry" is its different taste from lager beer. Kirin introduced its own dry-type beer when it was clear that "Super Dry" sold well. "Super Dry" and "Dry War" made the beer market grow again and Asahi's market share increased dramatically.

According to this comparison, the new product in cell C in figure 3, whose attrac-

Figure 3 COMPARISON OF COMPETITIVE PATTERNS

		attractiveness	
		container	taste
leader's reaction	ignore	"Steiney" (A)	(B) draft
	follow	mini barrel (D)	(C) "Super Dry"

tiveness is taste and leader's reaction to which is to follow, is considered to have the potential to change the market share. In order to understand the reason for this, we make a simple model of the competition in the industry.

Suppose that two firms, A and K, are competing in the beer market. Firm K attracts beer lovers and it enjoys a good reputation that K's beer is good beer because beer lovers select brand K. Because of the reputation, drinkers other than beer lovers drink K's beer, and firm K has a much larger market share than firm A. Initially, firm A introduces a new product, and gets some market. However, because of K's strong reputation, firm K may absorb the market of the new product with time. As a result, firm K's market share may not decrease. Moreover, the market share may increase because firm K absorbs the market newly exploited by A's new product.

However, suppose that the extent of absorption depends on how much K's reputation was deteriorated initially. It is considered that deterioration of K's reputation depends on how many beer lovers drink the new beer, that is, how much the new product substitutes for K's existing product (Remember drinkers of K's existing product are regarded as beer lovers). When substitution is very large, that is, when the beer lovers switch their favorite brand, the other drinkers consider that the new beer is better than K's existing beer. Therefore, A enjoys the good reputation, K's reputation is deteriorated, and absorption becomes small.

The market of firm A's new product consists of the three parts. First, firm A's new product exploits a potential market which we denote with N_a . Secondly, the product substitutes firm K's existing product denoted by bS_kM_o ($0 < b < 1$). S_k is K's market share, and M_o is the market size before introduction of the new product. The value of b is determined by the power of the new product to substitute K's existing product. Third, the new product cannibalizes A's existing product and we denote this with cS_aM_o ($0 < c < 1$). S_a is A's market share and the value of c is determined by the power of the new product to cannibalize. Therefore, the market of A's new product is $N_a + bS_kM_o + cS_aM_o$.

In such a competitive situation, the reason people are attracted to a new beer is an important factor. When the new beer attracts drinkers because of good taste, b (substitution) is considered to be large, since beer lovers are sensitive to taste or quality

(Remember the top reason for brand selection is "quality" in the industry study referred before). On the contrary, when attractiveness of the new beer is due to novelty of the container, in other words, when the brewers propose a new way of drinking with the new container, N_a (exploitation of new demand) may be large. However, b is small because the drinkers of K, beer lovers, are sensitive to taste but not to container. Therefore, in case of new beer with new taste, substitution is larger and absorption is smaller.

Moreover, different reaction of the leader brings different result. If the leader ignores the new product, the substitution of it for K's existing product is only bS_kM_o . However, if leader K follows A and introduces a new product, the market of K's new product is $N_k + bS_aM_o + cS_kM_o$. So, the substitution of the new product (of the two companies) for K's existing product expands to $bS_kM_o + cS_kM_o$, so the leader's power of absorption becomes weak. Therefore, only the new product in cell C in figure 3 can change market share.

When Asahi introduced "Super Dry," it emphasized that the taste was completely different from Kirin lager beer and that new beer lovers should have select the new taste. On the other hand, Asahi's former new products such as "Steiny" and mini barrel mainly exploited new demand. Moreover, Kirin, which had ignored Asahi's challenges of "Steiny" and draft beer, followed Asahi in case of "Super Dry." That may be because Kirin was anxious about the low growth rate of the market and its own sales. Consequently, at that time, the competitive pattern of the industry was changed.

Once Asahi won the competition and attracted beer lovers, some of market leader advantages made Asahi's share increase rapidly. When Asahi established the reputation that new beer lovers select "Super Dry," Asahi drinkers became repeat customers and other brand drinkers switched to Asahi. Asahi could keep its beer tasty because of fresh rotation. "Super Dry" occupied prime shelf space and advertised itself. Therefore, the industrial characteristics, which previously contributed to Kirin's dominance, caused Asahi's great success⁽⁴⁾.

There are several other reasons for Asahi's success such as Asahi's new product development oriented to drinkers' taste, introduction of similar new products one after the other (this means larger bS_kM_o than if only one product is introduced), tremendous advertising expense, and aggressive capacity expansion. However, these efforts of Asahi would not have been effective without the change of competitive patterns. Therefore, the change of competitive patterns is the most essential reason for the market change.

IV. CONCLUDING REMARKS

Asahi's challenge was not based on the technological change but on the new product concept. Asahi could propose the new concept because it doubted the basic assump-

tion of the industry — Kirin's legacy of strength. In addition to Asahi's challenge, Kirin's reaction changed. So the competitive pattern was changed and Asahi's market share increased dramatically.

Other than the change of product concept, Asahi paid attentions to product quality and expanded its capacity aggressively. With these things, Asahi established the reputation that its beer is good beer and the beer of beer lovers. Interestingly, what Asahi did is associated with what Kirin did after the second world war. It seems that the key factors for success in the brewing industry do not change and that the industrial characteristics favorable for a leader or a winner are influential even now.

With Asahi's success as momentum, the reputation about which brand is the beer of beer lovers became undetermined like in 1950's. As a result, the brewers are now making strong promotional efforts in order to establish their reputation. They are also developing various kinds of new beer in search of a new standard instead of Kirin's lager beer. This movement has revitalized the matured industry and caused the beer market to grow again.

Why could Asahi doubt the basic assumption of the industry and make the new concept work? The answer is considered that the new concept is the fruit of Asahi's experiences with failure. In 1960's, Asahi gave various challenges to Kirin. However, at that time, Asahi gave in to the basic assumption that Kirin's lager beer was the beer of beer lovers, and instead tried various strategies for growth other than a challenge in taste. As a result, these strategies failed, and the only unexploited area for competition was basic assumption.

When the history of the Japanese brewing industry is viewed in this manner, we can regard an industry as the field of learning through competition between individual firms. "Learning" in this context, is to pursue a right answer by eliminating alternatives sequentially. Followers challenge a leading firm with one of the alternative ways of competition such as imitation, advertisement, promotion, and so on. When the selected strategy is found to be ineffective, followers challenge with the other way of competition. With these challenges repeated, followers may be able to find a right answer, that is, an effective way of competition. This view of an industry may be useful to study the behavior of the firm, change of competitive patterns, and evolution of the industry (Nelson and Winter; 1982, Reinganum; 1985).

It is possible to draw some similarities between the Japanese brewing industry and the U. S. automobile industry. Abernathy (1978) found that in the initial phase of the automobile industry, there are major innovations in search of a dominant design. He also found that once the dominant design was determined, major innovations were replaced by minor ones and the industry matured. A dominant design in Abernathy's study corresponds to the basic assumption in this paper, and minor innovations correspond to Asahi's various challenges in the 1960's.

Although there are some similarities, there also is a major difference between the

case presented in this paper and existing studies about industrial dematurity. In the existing studies about dematurity driven by technological change, it is often said that a large incumbent declined because it overlooked new technology and stuck to existing technology (Foster; 1986). On the contrary, Kirin failed in spite of immediately following Asahi's lead. Kirin's aggressive reaction neutralized its advantage of reputation. The leader's optimal reaction to the follower's challenge in the dematurity of an industry is one promising research area⁽⁵⁾.

NOTES

- (1) In this paper, "leader" and "follower" mean a market share leader and a market share follower. They do not correspond to strategic types in the text of marketing strategy such as Kotler (1980).
- (2) For example, dematurity of the watch industry was caused by new technologies. See Shintaku and Kuwada (1989).
- (3) This case was written based on interviewing and published literatures below.
Ishiyama, J., *Asahi Beer no Chosen* (The Challenge of Asahi Breweries), Nihon Noritsu Kyokai, 1988 (in Japanese).
Kirin Breweries, *Kirin Beer no Rekishi* (The History of Kirin Breweries), 1969, 1985.
- (4) Rebates for Asahi beer do not become small so soon. However, it is said that rebates for Kirin beer increased, so the strength of Kirin concerned with rebates weakened.
- (5) Game theoretic analysis seems to be effective to study the leader's optimal reaction to the follower's challenge. One possibility is shown in Asaba (1990).

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