

Innovative Capabilities and Management Systems of Diversified Companies

—The Innovation Process in Ricoh's Copier Business—

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1. INTRODUCTION

The aim of this paper is to clarify the potential innovative capabilities prepared by diversified companies, and discuss the background factors that enable firms to actualize those capabilities. In keeping with this objective, this paper analyzes the innovation process at Ricoh Co., Ltd. in its copier business.

To begin, the basic assertion in this paper that evolves from the case study can be summarized as follows. When an existing diversified company faces innovation in a certain business field, it can assuredly demonstrate a high innovative capability through the application of technology from another business field. That adaptive capacity is in all cases a potential, however, and is not always demonstrated. For a diversified company to demonstrate a high innovative capability, a considerable period of time for pursuing deep technology accumulation and application behavior in another business field is assumed to be essential, and some background factors become necessary in order to maintain long-term strategic consistency. In this paper, I discuss the significance of long-term management system consistency as one such factor.

To develop the above basic assertion, this paper is organized as follows. First, in Section 2 I discuss the existing research, to derive the analytical point of view on which this paper relies. In Section 3, I study the performance of Ricoh Co., Ltd. based on several indicators, to clarify the innovation process that supported Ricoh's business recovery in the copier business. I then continue in Section 4 by discussing the mechanism Ricoh used to achieve innovation in the copier business, and analyzing Ricoh's management system at that time as a background factor that actualized the mechanism. Finally, in Section 5, I develop a progressive discussion to reach a conclusion.

2. RESEARCH QUESTION

2-1. Research question

Numerous sources have noted the point that Japanese corporations have low profit margins (Aoki, 1997; Kagono, Nonaka, Sakakibara and Okumura, 1983; Porter, Takeuchi and Sakakibara, 2000). When we use operating income margin to look at this fact from a long-term perspective, the change takes a form in which the profit margin, which we would not expect to have moved at that low

level for so long or to be inferior when viewed internationally, has maintained this long-term slump for over 40 years (Fujiwara, 2004a). The cause of such a long-term slumping profit margin trend frequently is sought in the growth intentions of Japanese firms that have sacrificed profit margins, and from this, much research furthermore also concludes such low margins to be directed at a diversification strategy that supported growth⁽²⁾.

Unquestionably there also were many firms that achieved growth when there was scant room for development based on an illogical strategy of diversification, and the discussions about selection and focus that heated up in the 1990s were based on this fact as well. We should not forget, however, that diversified companies can also have reap superior advantages. Against the backdrop of an awareness of such issues, this paper sought to reexamine the advantages enjoyed by diversified companies.

The result most frequently pinpointed as an advantage of diversified companies is the synergistic effect (Ansoff, 1965). A synergistic effect is produced by the mutual relationship of management resources among multiple operating divisions, and research has nearly clarified that this can create higher profit margins (Berry, 1975; Rumelt, 1974; Yoshihara, et al., 1981). This is the view that the mutual relationship among the management resources held by each operating division becomes the source of competitive advantage in product markets, and may in time function as a source of high profit margins. From such a view, it follows that the question of what kind of mutual relationships do diversified companies that generate higher profit margins possess has become the central question in the existing research.

On the other hand, however, we must clarify the mechanism of the competitive advantage in product markets if we are to link the ideal mutual relationship of management resources to a high profit margin. The questions we should ask when discussing that mechanism appear to be broadly specified into two inquiries.

The first is the question of how does the mutual relationship among management resources held by each operating division “forge” a competitive advantage in the product market. The response that has typically already been provided to this question is basically that the possibility of adopting a low-price strategy is increased because product production costs will be reduced, or that sharing the high levels of management resources that have already been accumulated makes it easier to quickly develop product performance differentiation strategies. This is the reasoning that the mutual relationship among management resources helps “forge” competitive advantage.

The second question is the question of how does the mutual relationship among the management resources held by each operating division “maintain” the competitive advantage in a product market. Compared with the first question, this second question is discussed less frequently. One reason appears to be that research concerning the relationship between the types of diversified companies and profit margins has a static nature. Therefore diversified companies are classified into several types at a certain point in time, and the differences in their profit margins fundamentally discussed. While this analysis certainly has beneficial aspects, on the other hand it leaves room for an analysis of the dynamic capabilities of diversified companies. Therefore in this paper I discuss the role the mutual relationship of management resources held by diversified companies plays in the “maintenance” of competitive advantage in a product market.

2-2. Literature review

One large key that enables a diversified company to maintain the competitive advantage it holds in a product market is solving the problem of how to accommodate the frequently occurring innovations in each product sector. In the traditional existing research on this question, the mechanisms by which existing firms decline and start-up ventures prosper as the result of innovation are variously discussed.

For example, Foster (1986) specifies that existing firms tend to delay the timing of investments in new technologies and lose their competitiveness because new technologies that are created cause the technology level of existing technologies to deteriorate further. Moreover, Tushman and Anderson (1986) discuss the high probability of existing firms that have achieved strong competitive advantage in an industry experiencing a decline in that product market when pressed by competence-destroying technologies. Abernathy and Clark (1985) argue that even after continuity with the existing market is factored in, existing firms are especially at a disadvantage when innovations that destroy both technologies and markets are created.

At such a time, however, the continuity of market-related value, if inverted, is also combined with the aspect of evaluation rigidity by customers. Accordingly, as discussed by Christensen (1997), even if value in the market were continued, this will be included in any evaluation by customers, and there is a danger that development of new technologies that might demonstrate advanced functions will not advance if based on the new evaluation axis, and that existing firms will decline. On the other hand, even if there is no major change technologically on the face of things, by completely modifying a new technology's architecture, conditions that make it difficult for organizations to respond are created, and there is a danger that existing firms will lose their competitiveness (Henderson and Clark, 1990).

In the existing research, which focuses mainly on the United States, it is often understood that the competitiveness of existing firms is being discussed. If we were to state this precisely, however, it probably would result in the expression that what we are discussing is the competitiveness of existing businesses. That is, much of the existing research concerning innovation actually becomes a picture not of existing firms vs. existing firms, but of an existing business vs. a startup venture.

Certainly, as Markides (1993) has clarified, it is also possible to consider the picture of existing business vs. startup ventures as a construct of existing firms vs. a startup ventures, because the number of pure-play firms in the United States increased in the 1980s. However, because of the diversification trend at Japanese firms since the 1990s as well (Iwasaki and Otsuki, 2002), this interpretation is difficult. The reason is that if we are to realistically take the firm as the unit of analysis, we must envisage firms that have multiple operating divisions.

When we attempt to amend our picture of existing business vs. startup ventures to a picture of existing firms vs. startup ventures, based on the fact numerous existing Japanese firms have diversified, one consideration arises. This is the point of what kind of innovative capability is produced by the interdependent relationship between a business field facing an innovation threat and the other business fields held by an existing firm. Because if the interdependent relationship with other business fields does not contribute anything to the business field facing innovation, the analysis view in terms of existing business vs. startup ventures used until now is sufficient regardless of whether existing firms have begun to diversify.

In contrast to this, Fujiwara (2004b) clarified that high innovative capability is demonstrated by the application of technology from another business field to the business sector faced with innovation. This has clarified that long-term interdependent relationships with other business fields contribute to the innovative capabilities of existing firms. Of course, among diversified companies there also are firms that adopt a conglomerate-type mode, where relationships among operating divisions are short-term and fluid. Nevertheless, in Japan, where the corporate mergers and acquisitions market is undeveloped and selection and focus are not very advanced, it probably is not unreasonable to envisage diversified companies as a mode in which there are long-term fixed relationships among operating divisions.

However, Fujiwara (2004b) is a single case study, and its validity remains uncertain. Furthermore, the study does not address the point of how firms were able to actualize the innovative

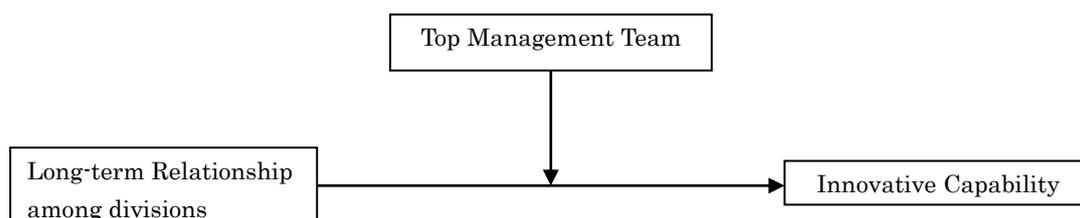
capability. Consequently, in this paper I will seek to verify the innovative capabilities of diversified firms, and further address the issue by analyzing the means of actualization by which those capabilities are demonstrated.

When progressively analyzing the means of actualization in this paper, I adopt the viewpoint of looking at the management organization that formulates the management strategy. The reason for adopting this analytical viewpoint is the following. The current existing research pertaining to strategy theory seems to have been devoted to clarification of the relationship between certain firm strategies and the results. This research was centered mainly on the questions of what strategies have generated the best results, and on what kind of mechanisms these strategies were based.

On the other hand, it appears that little attention was paid to the problem of why only those firms formulated and were able to execute strategies that generate such strong results. When we consider this question, we must turn our gaze to the firms' management systems. This is because the strategic capabilities of a firm are organized based on the general managerial skills of the management team (Lenz, 1980). We would be hard-pressed to say, however, that this aspect of management systems has been sufficiently illuminated. Therefore in this paper I will first investigate the innovative capabilities of diversified companies, and then study the management systems that create and execute strategies as one means to actualize those capabilities.

Based on such a discussion, Figure 1 summarizes the analytical framework developed in this paper. In the figure, I have indicated as the first framework that I will verify the effect that long-term interdependent relationships among operating divisions in diversified firms have on innovative capabilities. Next, a discussion of management systems as the variable that plays the role of actualizing innovative capabilities forms the second framework. The analysis in this paper is developed based on this analytical framework.

Figure 1 Framework of Analysis



2-3. Case selection and methodology

Finally, I clarify the reasons for the case selection and the study methodology. In this paper I have chosen Ricoh Co., Ltd. (Ricoh) as the subject of the analysis for the following three reasons.

The first reason is that Ricoh is a firm involved in general machinery. According to Fujiwara (2004a), general machinery is classified as one type of business with a notably severe long-term downward trend in operating income margin, along with electric machinery, transport machinery, and precision machinery. If there are any firms today that are going against the flow of the long-term drop in earning capacity despite operating in a battered business, those firms must be implementing some vital management measures. If that is the case, I think there is a strong probability we can amply glean some important hints from them.

The second reason is that up to a certain point, Ricoh also suffered from a long-term downward trend in its earning capacity. While firms that have maintained high earning capacity over the long term are interesting, it is difficult to garner hints from them for reversing earning capacity. If we assume that many firms have been suffering for years from the downward trend in earning capacity,

the approach of analyzing the process by which firms suffering from the identical conditions reverse their fortunes can be thought to yield more meaningful management suggestions. The third reason is that period when Ricoh restored its earning capacity was the so-called “lost decade” following the collapse of Japan’s economic bubble. During this period, when the growth rates of many industries slumped and the earning capacity of many firms also was sluggish, the actions of Ricoh, which restored its earning capacity by increasing its revenues and earnings, and not through a recovery of earning capacity as the result of a balanced contraction, is simply of extreme interest.

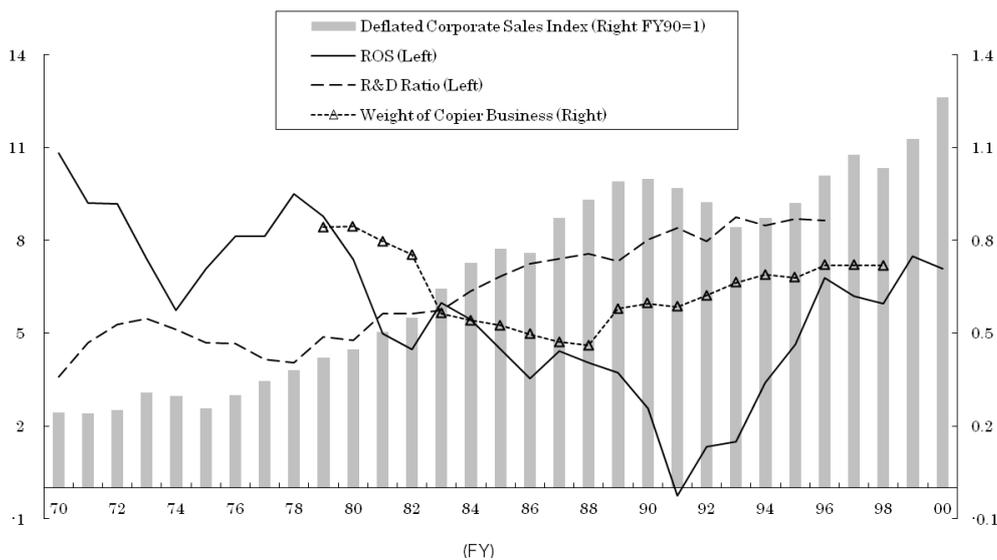
In addition to secondary materials, I emphatically conducted interviews with related individuals at Ricoh. Furthermore, because the relationship between the facsimile business and the copier business becomes a focal point for the analysis in this paper, I also conducted an interview at Matsushita Graphic Communication Systems, a competitor of Ricoh, in order to evaluate this point more objectively. Both interview surveys were conducted anonymously. In all I interviewed ten individuals, with each interview extending over a period of about two hours, during interviews conducted during 2002 to 2003.

3. CASE DISCRIPTION

3-1. Introduction

In this section, I will begin by understanding the business recovery process at Ricoh as a foundation for analysis. Figure 2 shows the sales figures, return on sales (ROS), and research and development (R&D) expense ratio for Ricoh’s substantive business, and the sales breakdown for the copier business. To look at the long-term change, for each indicator I used non-consolidated data, and for the firm’s sales, I used the GDP deflator to adjust the figures to show the real change and converted the results to an index using FY 1990 as one. The ROS and R&D expense ratio are based on the left-hand axis, and the real firm sales index and copier business as a percentage of total sales are based on the right-hand axis.

Figure 2 Basic Data about Ricoh



Source: Securities Report

First, when we look at the change in ROS we can discern there was a downward trend until the early 1990s. Ricoh's ROS, which was 10.8% in fiscal 1970, fell by more than half over the next 10 years and dropped below 5% in fiscal 1981, and fell even further over the 10 years after that, plunging into an operating deficit of -0.26% in fiscal 1991⁽³⁾. Fiscal 1991 marked a boundary, however, when these transitions were changed completely. The ROS recovered to a positive figure in fiscal 1992, and continued to improve almost consistently thereafter⁽⁴⁾. This profit margin recovery, furthermore, is characterized by the point that it was not a lower-revenue, higher-profit type of recovery based on restructuring. When we compare this with the actual firm sales index shown in the bar chart in Figure 2, the company certainly experienced lower sales and higher profits for several years from fiscal 1991, but thereafter its operating results have almost consistently shown higher sales and higher profits.

This business recovery based on higher sales and higher profits was borne mainly by the copier business. Looking at the copier business as a percentage of total sales shown in Figure 2, we can see the share began to rise gradually from the latter half of the 1980s, and since the early 1990s, when Ricoh's net sales and profits began to increase, the business has risen in step with this growth. The percentage of sales for the copier division, which had declined to 46% in fiscal 1988, rose to 72% in fiscal 1998. This fact means Ricoh's business recovery process, which began largely in fiscal 1992, was driven mainly by copiers.

What strategy, then, did Ricoh develop in its copier business, and how did it restore its earning capacity? If I begin with the answer that question, I believe it was because Ricoh responded skillfully to the technology conversion to digitalization that occurred in the copier business. Therefore let's first clarify Ricoh's involvement with digital technology, and then clarify the innovation process in the copier business.

3-2. Innovation process in the copier business

Ricoh first began working with digital technology when it entered the fax machine business. Ricoh, which had attempted to get into the facsimile business at the beginning of the 1970s, turned its attention to the fact that the transmission speed for a typical fax at the time took as much as six minutes. Ricoh, which had always been an office equipment manufacturer, recognized that spending as long as six minutes to transmit a document is extremely inconvenient. The company therefore strongly intended to boost the transmission speed by replacing the document image with a digital signal. This provided the opportunity for Ricoh to tackle digital technology.

Once Ricoh had developed a digital facsimile machine, a major factor that enabled it to quickly accumulate digital technology was the ability to utilize its copier sales channels. Specifically, the main customers of the facsimile industry at that time were newspapers and other mass media. However, Ricoh's first digital fax machine, the RIFAX 600S, successfully increased transmission speed, which also made document transmission by ordinary companies possible. As a result, the potential need from ordinary firms that did not traditionally exist was actualized. In particular, because large enterprises handled so many documents, and branch offices dealt with numerous documents as well, the needs met by the digital machines had increased rapidly.

For these large enterprises, Ricoh used the sales routes it had built with its core copiers. Matsushita Graphic, on the other hand, which had the lead market position, had not created such sales channels based on copiers⁽⁵⁾. Ricoh was therefore able to develop a digital facsimile business operation that was superior to other companies⁽⁶⁾. As a result, Ricoh expanded its market share and the percentage of its net sales accounted for by the facsimile business rose as well. As can be seen from Figure 2, the reason was that even though the percentage of total sales represented by the copier division was shrinking rapidly over the period of roughly ten years from the closing years of

the 1970s to the latter half of the 1980s, the percentage of total sales for the Information Device Division centered on fax machines was growing. These years were the period when Ricoh was pursuing growth in the size of its non-copier division business. The device mainly responsible for the growth in company size that Ricoh accomplished in the 1980s was the facsimile.

The facsimile, however, never became that large of a market. Furthermore, because digitalization of facsimiles lowered the industry's barriers to entry, it encouraged market entry by other firms and plunged the business into intensive low-price competition. As a result, as can be grasped from Figure 2, net sales of facsimiles rose and the percentage of sales generated by copiers declined, while as a firm the amount of operating income did not grow at all despite the increase in net sales, which caused the ROS to drop.

On the other hand Ricoh's copier business, which had been developed on analog copiers, introduced the RICORE 3000, its first digital copier, in 1982⁽⁷⁾. Because the product was an office-dedicated system for special applications, however, the digital copiers did not become a core product of the copier division and analog devices remained the mainstream in the entry-level model sector. Therefore in April 1985, Ricoh's Copier Division sought to develop a digital copier that could be introduced in the entry-level model sector and formed a "C Project Team" comprised of 18 people, and subsequently launched the IMAGIO series in 1987. During the IMAGIO development period, Ricoh's copy machine developers frequently "went abroad to study" at the facsimile division in order to incorporate fax machine functions into their devices. Referred to as the "ryugaku seido" (learning activities at another division), it was here that the study of digital technology also still took place⁽⁸⁾.

The IMAGIO series that Ricoh developed succeeded in garnering very strong support from customers, and orders for several dozen units were received before the product was placed on the market. Consequently the product drew looks of surprise from competitors as well, and what was especially surprising was the price. The price class for the IMAGIO series was set at less than one million yen. As a result, Ricoh successfully entered the entry-level model sector and expanded its market share in line with its initial plan. To expand the sales of its IMAGIO digital copies, in 1990 Ricoh added 200 dedicated, full-time sales staff, bringing its sales organization to 350 people. In 1992 it labelled this group the "Fukusha Honryu" (Copier First) and upgraded it to a digital device organization.

The introduction of IMAGIO, however, did not become the driver that enabled Ricoh to immediately and rapidly repair its operating results. Indeed, the opposite occurred. Because it held down the prices on its first digital machines as entry-level models, even though the costs were very high, the more it introduced its new digital machine products, the more this resulted in a structure that pushed earnings lower. In fact Hiroshi HAMADA, who was Ricoh's president at the time, noted in looking back that "because our profit margins were thin during the first stage of digitalization, our profits continued to decline for about five years from 1989 until 1993"⁽⁹⁾, and that "80% of the reason for the decline in operating results to the point of having operating losses was our investment in innovation. It was digitalization, our push to digitalize"⁽¹⁰⁾.

Human resources with experience in digital technology were sent in as well. Engineers who had participated in the digital fax machine development were afterwards also deeply involved in the digitalization of copiers. Kazuyuki HARA, for example, was an engineer who had worked on facsimile digitalization. He was involved with the facsimile digitalization while in his late twenties, and afterwards worked on digital copy machines. Mr. K, who similarly had experience from his involvement with development of the digital fax machine, also later became involved in Ricoh's digital copiers. The digital copy machines for which Mr. K was responsible gained enormous popularity as the Penguin series, which achieved a compact size and paper ejection within the device, beginning with the MF-150⁽¹¹⁾.

The technical requirements of the digital technology, however, were more rigorous for the copier business than the facsimile business. The standards demanded for the digital technology for fax machines could be kept to a minimum because there was a limit on the data transmission volume. In contrast to this, more advanced digital technology can be adopted for copiers because there is no data transmission limitation. The fact that digital technology in the facsimile business had advanced to a certain level was highly significant, however⁽¹²⁾. The reason is it was unnecessary to develop the digital technology from scratch, so development could commence from a certain level⁽¹³⁾.

The fastest innovation was achieved in Ricoh's copier business, which the company began digitalizing aggressively. Talking from the data, in the copier industry, shipments of digital machines exceeded those of analog devices in 1999. In contrast with this, at Ricoh shipments of digital machines exceeded those of analog machines fully 4 years earlier in 1995. This reflected the fact the MF-150 series mentioned earlier, which went on sale in 1993, was a blockbuster product that provided the opportunity for digital machines to greatly increase their share of total net sales. In 1996, the percentage of sales at Ricoh accounted for by digital machines had reached 70%. As a result, Ricoh's digital copiers proved highly competitive and supported the company's business recovery based on increased sales and higher profits.

3-3. Findings

The above is a description of the innovation process in Ricoh's copier business. This section summarizes the main discovery facts before discussing the contents of the case study.

- 1) Ricoh achieved a full-scale increase in its corporate profit margin based on higher sales and higher profits by promptly pursuing innovation from analog machines to digital machines in the copier business, which would become its core business.
- 2) When it digitalized the copier business, application of the digital technology to its facsimile business was accomplished through the "ryugaku seido" (learning activities at another division).
- 3) After accumulating digital technology in the facsimile business through its diversification strategy, Ricoh labelled its group "Copier First" and again positioned the copier business as the firm's core business, and appointed engineers who had gained experience through digitalization of the facsimile business to key posts in the copier business.

If I were to derive from these three discovery facts the big question to analyze in the next section, it would probably be the question of what did Ricoh do that enabled it to achieve innovation in digital copiers. The second and third discovery facts lay out one answer to this question. According to these two discovery facts, when Ricoh turned to digital device development in the copier business its application of the digital technology across businesses was achieved through actions such as a "ryugaku seido" for the facsimile business and the transfer of engineers with fax business experience to the copier business.

If we wish to ask what we should study even more specifically based on these discovery facts, the question to ask is what role did the facsimile business play behind the scenes in the innovation in the copier business. In the next section, we will deepen the analysis by first verifying the logic by which innovation is achieved through the application of technology between businesses, and then further deriving constructive questions.

4. ANALYSIS

4-1. Innovative capabilities of diversified companies

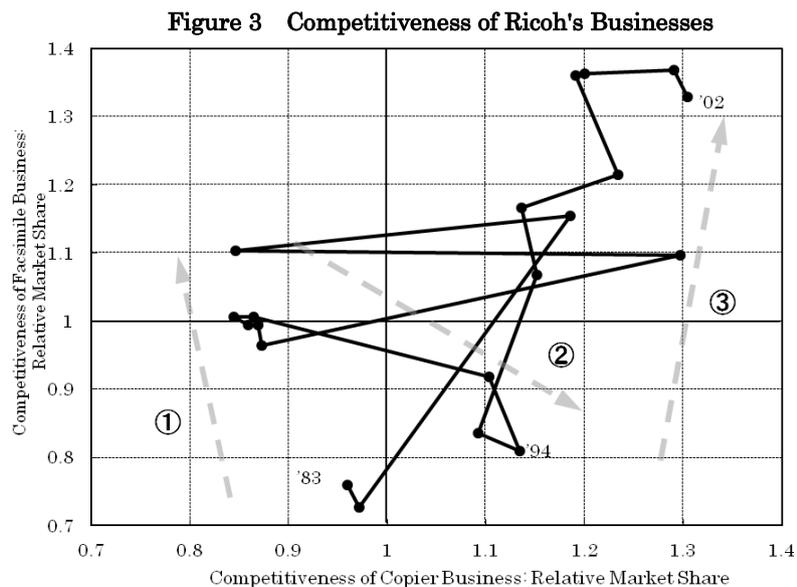
In the preceding paragraphs I clarified the innovation process in the copier business that

supported Ricoh's business recovery. I next elucidated the process through which the innovation was achieved by converting the digital technology first accumulated in the facsimile business to the copier business. So what kind of mechanism was at work in the background, and does the application of technology from a different business sector contribute to innovation in the business sector in which it is applied?

That basic role is confirmed by the fact another business sector functioned as the target of indirect investment through another division (Fujiwara, 2004b). As traditional existing research has discussed, it is extremely difficult for a former technology and a new technology to coexist within a single operating division. The reason is that friction arises between the two technologies, increasing the probability that sufficient investment will not be made in the new technology. In fact, the initial digital copiers were very extremely costly, and also had lower margins than analog copiers⁽¹⁴⁾. Therefore dissenting opinions vis-à-vis the technology development and product development were occasionally expressed by the director in charge of sales.

Another business sector, however, has almost no relationship to the friction that might occur within one operating division between an existing technology and a new technology. Consequently an investment made in another business sector can mean the technology accumulation required for a new technology will be developed more smoothly. In fact, at Ricoh, as just described friction with the analog products did exist during digital copier development, and the digital technology accumulation resulting from investment in the facsimile business was more efficient⁽¹⁵⁾. And as a result of converting to copiers the digital technology that had accumulated in the facsimile business and been improved to a certain extent, Ricoh promoted innovation and improved the competitiveness of its digital copiers.

Figure 3 suggests these linked processes by which Ricoh improved its competitiveness in the facsimile business, accumulated digital technology and converted this to enhance the competitiveness of its copier business. Figure 3 shows the competitiveness of Ricoh's copier business on the horizontal axis, and shows the competitiveness of its facsimile business from 1983 to 2002 on the vertical axis. Because the calculation of competitiveness is shown based on relative shares, when the value exceeds 1 Ricoh has acquired the leading share⁽¹⁶⁾.



Source: Yano Keizai Kenkyujo, Nihon Market Share Jiten

As can be seen, the diagram in Figure 3 is divided roughly into three phases. The first phase (①) is the 1980s, when Ricoh improved the competitiveness of its facsimile business. This reveals the situation in which Ricoh had commercialized its digital facsimile machine and effectively used the sales network it had established in its copier business to develop the business quickly and surpass Matsushita Graphic. At the close of the 1980s, Ricoh's relative share is moving minutely around 1. Even though the competitiveness of Ricoh's copier business exceeds 1 during two years in this first phase, we can see these were special years if we look at all of the 1980s.

The second phase (②) is a period of several years from 1993. During this phase, we can recognize a situation where the competitiveness of the facsimile business declined temporarily but the competitiveness of the copier business increased. This shows the situation where the competitiveness of the facsimile business declined because the core individuals who were responsible for the digital device development in the facsimile business were transferred to the copier business, and the competitiveness of Ricoh's digital copiers was enhanced by the technology transfers the company promoted. Finally, in the third phase (③), the situation can be recognized in which the competitiveness of not only the copier business but also the facsimile business improved. Here it is surmised that a synergy effect based on the digital technology was at work because both copiers and fax machines had been digitalized.

The consistency of Ricoh's corporate strategy for digitalization can be given as one reason it was able to develop its digital copiers in this manner. A corporate strategy aimed at accumulating and utilizing digital technology was established and accomplished by Ricoh, which sought to transform itself into an integrated manufacturer of office automation (OA) equipment centered on digital machines. To describe this specifically, after advocating the concept of OA in 1977, Ricoh intended to remake itself from an office equipment manufacturer into an integrated OA equipment manufacturer with electronic technology as its core. This meant it would digitalize its office automation equipment. As can be understood from Figure 2, Ricoh undertook aggressive research and development investment in line with this objective, and consistently raised its R&D expenditure ratio even though its return on sales fell. According to Hamada, who served as the company's president at this time, "Even during a downturn we didn't cut our R&D expenditure and selling expenses"⁽¹⁷⁾, for the objective of this spending was to accumulate software skills concerning digitalization.

To take one example, the company put renewed emphasis on its Software Development Center. For Ricoh at that time, software development was a familiar but thin sector. Consequently Ricoh invited Hideko KUNII, who had studied electronics in the United States and had experience in starting up a software-related venture, to work as head of the center⁽¹⁸⁾. When Kunii assumed the post of director in 1983, the Software Research Center was a small facility, with fewer than ten people including four new employees. Therefore beginning from around this period, Ricoh boosted the center's technical capabilities by increasing the absolute number of researchers. In fact, among the university graduates it newly hired in the spring of 1984, Ricoh expanded the framework of technical staff centered on electronic engineering up to 250 people. Considering it had hired just 77 technical staff in the previous year, this was a significant increase. Based on its consistent corporate strategy, Ricoh did not regret its investment in the development and popularization of digital copiers at all.

Given the circumstances described above, it might be thought that diversified companies have prepared advanced innovative capabilities that will enable them to convert and apply technologies they've accumulated in another business to promote innovation within the business sector receiving the conversion. This does not mean, however, that firms will always demonstrate this innovative capability. It seems that this is always a *potential* capability, and that some actualizing device is needed.

4-2. Management system

For a diversified company to demonstrate its own innovative capabilities through the application of technology from another business sector, what kind of actualizing device might fulfill such a role? As already described at the beginning, this paper will focus on the management system, so here I will specify a working hypothesis.

Mishina (2004) has noted that the long-term downward trend in the profit margin of Japanese corporations has occurred in tandem with the shortened service periods of corporate presidents, and described how the shorter tenure of corporate presidents has caused firms to lose the long-term consistency of their strategy and plunge into “strategy failure” as a result. If this statement is turned inside out, it means at least one minimum condition for maintaining long-term consistency of strategy will be lengthening the time corporation presidents hold their office.

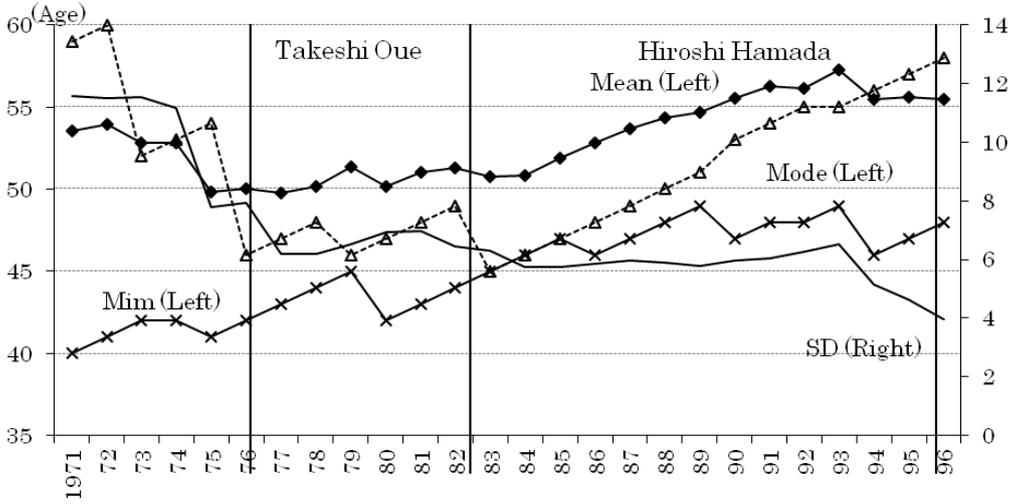
Herein lies precisely the point on which this paper focuses. In the preceding section I specified that Ricoh accumulated digital technology with the facsimile, and by convert converting this to copiers was able to smoothly develop that technology for its digital copiers because its focus on the accumulation and use of digital technology was consistent, and we can furthermore surmise that behind this focus was the long-term coherency of the president’s period of service⁽¹⁹⁾.

Seeing only the president when looking at the management system responsible for strategy formulation, however, is insufficient. This is because any corporate business decision-making is not carried out by the president alone, but is the systematic product of a management team centered on the president. Based on this point, the question we should verify here becomes whether the management team led by president Hamada was maintained as a long-term, fixed lineup. Presumably, if Ricoh’s management system was maintained consistently over a long term, we can also understand the strategy for digitalization was accomplished over an extended period. Therefore, in this paper I will take as a working hypothesis, and seek to verify, the question of whether the management system during the Hamada period was transformed into a long-term, fixed system.

Figure 4 is a diagram showing the age of management team at Ricoh⁽²⁰⁾ as a basic statistic from 1971 to 1996, with the spans of the presidents’ service periods added as well. First, when we confirm president Hamada’s term of service we can see it was the 13-year period from fiscal 1983 to fiscal 1995. Compared with Takeshi Ouye, the preceding president who retired after six years, Hamada was involved in running the company over twice as long. Compared with the average at Japanese firms as well, this is a long service term. Tanaka and Morishima (2004) have reported that the average term of service of 94 individuals who were serving as company presidents in 1990 was less than nine years. Because Hamada’s service period spanned 13 years, from this we can understand first that the president who formed the heart of the management system served over an extended period of time.

Moreover, this was not unrelated to the fact that Hamada was very young when appointed at age 49. According to Itami (1995), Hamada was more than ten years younger than the average appointment age of 60 for 14 other individuals who held the position of president between 1981 and 1985. Moreover, according to Mishina (2002), who surveyed certain traditional large enterprises in 2000, the average appointment age of business managers was 49 years old. Of course, considerations such as the historical background or differences in company size and organizational structure are frequently cited as points that should be factored in, and it probably is necessary to pay attention to differences such as these.

Figure 4 Descriptive Statistics of Top Management Team



Next, let's turn to Ricoh's management team. The mean value of the ages of the management team (average age), mode value (most common age among the directors), minimum value (youngest director's age), and standard deviation (cohesion level of the age distribution) for each year, taken from the average age of the basic statistics, are shown in Figure 4⁽²¹⁾. Only the standard deviation is shown based on the right axis; all of the other statistics are shown by the left axis.

When we look at the change in the mean value, which shows the average age, we can see the average age of the management team when Hamada assumed the position of president is not something that should surprise us too much for Ricoh at that time. This is because the average age remained nearly flat at about age 51 from the last stage of the Tatebayashi period through the Ouye years. It is when we look further at the change in average age that the consistent upward trend in the Hamada years is recognized. But although we can certainly recognize the decline in the average age in the 1990s, we cannot verify such an uptrend during the periods of any other president. The story, however, is that even though the average age rose consistently, at most it's to an average age of 58. The change in average age described above means the management team during the Hamada years had no substantial alterations, and moved with nearly the same makeup of directors. We can see this because the change in standard deviation is nearly flat. That is, there is long-term consistency on the management system.

Furthermore, when we examine the change in the mode value, which shows the most directors of any age, and the minimum value that shows the age of the youngest director, the mode value and minimum value are identical in 1983, the year Hamada assumed the position of president. Even if we look over other years, we find no other years when such agreement occurs. This agreement means that among the Ricoh management team, the most numerous directors were the youngest directors 45 years old. In fact, four of the nine directors were individuals at the youngest age of 45. We can also simultaneously glean from the diagram that this situation continued for three years during the Hamada era.

Finally, when we more specifically extract from Table 1 the individuals who formed the core of Ricoh's long-term fixed management system, we recognize three managing directors from the same generation as Hamada: Tadahiro KOKUSHI, Takao NAWATE, and Shinpei WATANABE. When Hamada took the reins as president, four of the ten top individuals from the managing directors to the chairman were young, either 49 or 50 years old. Furthermore, this organization was not formed suddenly with the selection of Hamada, Kokushi, Nawate and Watanabe; all four individuals were

5. CONCLUSION

My objective in this paper was to first verify the innovative capability of diversified companies, and then discuss the device that a management system requires to actualize that capability. The conclusions of this paper can be summarized as follows. Diversified companies possess the potential to demonstrate a high innovative capability, and by actualizing that capability can expect to construct a sustainable competitive advantage and simultaneously achieve high profitability. To actualize that ability, however, a firm must resolutely stick to a consistent investment program over a long term, and for *that* it must prepare a long-term, consistent management organization. This is the argument I have laid out in this paper.

In the discussion developed in this paper, the point that must be argued progressively is why did technology obtained from another operating division, rather than technology procured from an outside market or even new technology development within the operating division in question, play a critical role. I will discuss this point at the end.

In this paper, the reason I believe technology application within a diversified company played the critical role is found in the implicit nature of digital technology. When a firm attempts to acquire a highly implicit technology through market transactions, strictly delimiting the technology it should obtain is difficult. The reason is that even if it merely procures some device, it is difficult to obtain the same technical result if the firm does not understand how to manage the technology, and the management process does not end with hiring engineers who are well versed on how to utilize the technology. This is because know-how unrelated to what the demand side wants is embodied in the engineers; this alone increases the price demanded by the firm selling the technology, and for the firm wishing to procure the technology, makes the cost involved in completing the purchase higher than necessary.

That is, when the demand side tries to obtain a desired technology without being overly dissatisfied, the demand side has no choice but to bear an extra cost in excess of the technology and know-how it wants directly. Beyond that, the problem becomes even more serious if the technology results are something that can be achieved by team play, and price negotiations surrounding technology procurement through the market can become difficult to finalize.

The same is thought to apply if seeking to acquire technology through an acquisition as well. Given the possibility of difficulties even if a firm with implicit technology is accurately identified, then even if the firm owning the technology is clear and an acquisition is attempted, it is thought that in this case the purchaser will have no choice but to take not only the engineers in whom the technology it naturally wants directly is embodied but various other employees as well, and the procurement cost will rise.

Thus, the impossibility of separating the implicit nature that comprises the advanced technology that should be procured and the people who are the vehicles for information accumulation makes it extremely difficult to obtain technology by purchasing it in the market. Accordingly, if a technology has a low implicit nature, then technology procurement through the market can of course be effective. The problem of whether to make the source of a technology the market or another operating division within the firm is thought to be decided according to whether the implicit nature of the needed technology is high or low.

If we point out the theoretical suggestions based on the above discussion, it is probably that first, in addition to the traditional analytical viewpoint regarding the difference between the type of diversified company and profitability, an analysis of the innovative capabilities of diversified companies is required as well. Second, it probably is important to turn some light on the relationship between firm management systems and corporate strategies. I believe that once we've accepted the

proposition that strategy follows the organization, we are compelled to next clarify the issue of what kinds of management systems produce the strategies that achieve the greatest results.

Next, if we are to point out some practical suggestions, the first might be that for a diversified company to demonstrate a high innovative capability, maintaining long-term, fixed relationships among operating divisions is preferable. The reason is investment activity over an extended period of time is required in order to achieve technology applications among businesses, and this creates the need to maintain the interdependent relationships among operating divisions for an extended period as well. In that sense, the fact the market for buying and selling businesses is underdeveloped is not just an inconvenience but might also function as a systemic factor combined with preferred aspects as well. Second, I believe keeping the management system unchanged over a long period is the preferred approach. The reason is the strategies that are formulated will change too much with the passage of time when the management system undergoes short-term, fluid changes. Of course, there also is the danger that a management system locked into place for too long will result in “reckless driving” by the management team. Nevertheless, this paper suggests we cannot overlook the negative aspect that strategy is buffeted when the service periods of the top managers are shortened.

On the other hand, this paper leaves three points as future topics for research. The first is that although the application of technology from the facsimile business to the copier business was noted, the substance of the digital technology itself must be scrutinized in the future to clarify the mechanism of the technology application. In the progressively developed discussion, the implicit nature of the digital technology was noted, but there is still the need to analyze the problem of where the source of that implicit nature lies. Certainly, the emphasis of this paper was taking a close look at the innovative capabilities of a diversified company and the management system as the device for actualizing those capabilities, rather than entering into the substance of the technology. Consequently no space remains to discuss the technology in detail, and this is a point that should be left as a future task.

Second, just as the existing research focuses attention on the difference in profit margin by type of diversified company, I believe there is a need to isolate differences in innovative capability by type of diversified company. While in this paper I envisage the diversified company as a corporate form that maintains a long-term fixed relationship among operating divisions, I cannot assert that diversified companies will in all cases maintain a long-term fixed relationship among operating divisions. Therefore we need to especially consider the classification of the relationship among operating divisions and the level of innovative capability.

Third, there probably is a need to analyze competitors as well. The reason is that the validity of the discussion in this paper will be verified by contemplating how involvement in the facsimile business at Canon Inc., which had a competitor relationship with Ricoh in the copier industry, impacted Canon’s digitalization of its copiers. These three points are future research topics.

- (1) As of 2005. The current title is Associate Professor, Hitotsubashi University.
- (2) In this paper, I define diversification of a firm as “a firm engaging in business activities to increase the overall diversity of its product sectors for selling externally” according to Yoshihara, et al. (1981).
- (3) Until fiscal 1991, Ricoh’s operating income margin fluctuated considerably below the office equipment industry average. During the period from fiscal 1960 to fiscal 1991, Ricoh exceeded the industry average only twice, in fiscal 1977 and fiscal 1978.
- (4) After surpassing the industry average in fiscal 1993, Ricoh’s operating income margin continued to climb for ten years.
- (5) Interview with individuals related to Matsushita Graphic.

- (6) Interview with individuals related to Ricoh Co., Ltd.
- (7) The difference between analog and digital copiers is as follows. An analog copier uses a mirror and lens to create an electrostatic latent image of an optical image directly on the drum. In contrast to this, a digital copier uses a CCD to convert the optical image read by the scanner through the mirror and lens into an electrical signal, and after executing various processing in the processor unit converts the electrical signal into laser light in the print assembly unit and creates the electrostatic latent image on the drum.
- (8) Interview with individuals related to Ricoh Co., Ltd.
- (9) *Zaikai* (財界), Spring 2002, special bumper issue, p. 30.
- (10) *Zaikai* (財界), Spring 2002, special bumper issue, p. 24.
- (11) Interview with individuals related to Ricoh Co., Ltd.
- (12) Interview with individuals related to Matsushita Graphic.
- (13) Interview with individuals related to Ricoh Co., Ltd. I discuss the technology re-application process from digital fax machines to digital copiers more specifically and in greater detail in a separate paper. The objective of the current paper is to understand the facts of technology applications and then analyze the devices that make it possible to actualize innovative capabilities, and this does not leave space to exhaustively discuss the details.
- (14) Interview with individuals related to Ricoh Co., Ltd.
- (15) Interview with individuals related to Ricoh Co., Ltd.
- (16) The method of calculating a relative share is (Ricoh's market share)/(market share of 2nd place firm) when Ricoh is in the top position, and (market share of the top place firm)/(Ricoh's market share) when Ricoh is in any other position. Therefore when Ricoh's relative share exceeds 1, this means Ricoh has the leading position in the market.
- (17) *Nikkei Sangyo Shimbun* (日経産業新聞), March 6, 1986.
- (18) Her invitation can be taken as circumstantial evidence of Ricoh's strategic consistency in trying to broadly accumulate digital technology. The reason is that this group under Kunii and others was responsible mainly for database system software technology, and is thought to not have had very extensive participation in technology for embedded software such as firmware.
- (19) What must be noted here is that the situation indicated in the preceding section – that the facsimile business functioned as the target of *ex-post facto* indirect investment through another division – will always be an after-the-fact statement, and assuming Ricoh steered a course exactly as it had intended beforehand is not very realistic. We ought to at least acknowledge, however, that the focus on digital technology accumulation and use was maintained consistently by the firm as a whole.
- (20) In this paper I define the management team as the directors, managing directors, executive directors, presidents, chairmen and advisors; I have not included the corporate auditors, who are not responsible for day-to-day decision-making activities. Each director's age was calculated as of the end of June when the "Annual Securities Report" is submitted.
- (21) The median value consistently falls below the mean value. This is because the older age of Advisor Shinichi MIYOSHI raises the mean age.
- (22) On the point of what specific role each of these five individuals played, this issue is somewhat removed from the objective of this paper and should be discussed in a separate paper. I want to leave this issue to a separate paper that looks deeper into the management system and discusses it with a more specialized focus.

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